

Paper –II: Group B

Unit-V: Pedagogical Approaches

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5.1 Introduction

The word 'Education' has been derived from the Latin word 'Educare'. Meaning of 'Educare' is to bring up or to raise the child mentally and physically.

In other words, it means to lead out the best in the child or to guide. Others are of the opinion that education is derived from Latin word 'Educatum' which means the act of teaching or training.

Operationally, Education can be defined as an overall development of a complete personality. Educationists are defining education in various dimensions. So, for all round development of child education is important which comes through teaching and learning. In this context, they used the term pedagogy which means teaching and learning both.

Pedagogy is a term used in educational writing but its meaning is assumed to be self-evident. Many of the strategies that have been developed to redress inequity in school have targeted classroom practice and teaching as an important site of change.

5.2 Objectives

After completing this unit, learners will be able to :

- know the concept of pedagogy;
- understand the meaning of critical pedagogy;
- know about the relation between teaching and learning;
- have knowledge regarding the lesson plan.

5.3 a) Concept of Pedagogy

Pedagogy deals with the theory and practice of teaching and its effects on the learning of students. Pedagogy explains teaching actions, judgments and teaching techniques by considering the 'theory of learning', understandings of students and their needs and the backgrounds and interests of individual students. It aims furthering liberal education.

The teaching of adults, as a specific group, is referred to as '**Aandrogogy**'.

Pedagogy, is the art and science of teaching children. In modern day usage, it is a synonym for 'teaching' or "education," particularly in scholarly writings. Throughout history, educators and philosophers have discussed different pedagogical approaches to education, and numerous theories and techniques have been proposed. Educators use a variety of research and discussion about learning theories to create their personal pedagogy and are often faced with the challenge of incorporating new technology into their teaching style. Successful education for all depends on teachers being able to embrace both the art and science of pedagogy, acting as parents who understand the needs, abilities, and experiences of their students being trained in the best methods of communication and presentation of appropriate materials.

Pedagogy is an art

From the very beginning education was given the status of art — the art of teaching, of leading children to knowledge which shows that the profession of educator first started in Ancient Greece. Before that, the slaves were performing the role of educator. The slaves were engaged to take the master's children to school, take care of their physical appearance and take part during the play. Socrates was considered to be the founder father of education. (5th century BC).

Pedagogy is a science

The development of scientific field as sociology and psychology is accompanied by the emergence of pedagogy as an applied science. Pedagogy is now treated as a science with the feeling that it guides the process of teaching and learning. So, it is a field of science that tells us how to teach. It's not coincidence that we have used the subjunctive mood here, since pedagogy – as the science of teaching and learning – is not a fully-formed discipline, thereby leaving room for other educational sciences, a plural science. It became clear over time that the exotic science known as “Pedagogy” could not be soluble there.

Pedagogy is an applied science

Now a days pedagogy has been accepted has an “applied science,” that is, as a discipline geared towards the practical application of acquired knowledge. Pedagogy is the history of pedagogues or it is the history of practitioners and theorists of the instructional process as per Jean Houssaye.^(LEPOLE, 2018) And they are the men and women “engaged in the actual educational process, using both theoretical concepts and practical skills combined in such a way as to obscure the extent to which the practical skills employed in the educational process are more important than theoretical concepts, and vice versa.”

Allied Concepts

5.3.1 Teaching

Concept of Teaching

A concept is meeting but the image formed regarding an object, people or idea. It is the result of our direct and indirect experiences which we gain about objects, people or ideas and it is same for the concept of teaching. Concept of teaching means all those which we know about teaching in terms of its meaning, it froms the other similar concepts and activities. Hence, to know regarding the concept of teaching in totality, we have to look it from the following angles:

- Understanding its meaning and defining it;
- Knowing about the nature and characteristics of teaching;
- Comparing teaching with other similar concepts;
- Knowing about the relationship between teaching and learning;
- Discussing about the analytical concept of teaching.

Meaning and Definitions of the Term Teaching

Teaching is nothing but either an occupation or profession of a group known as teacher. Also it is an activity of a group undertaken to help an individual to learn or acquire some knowledge, skills, attitudes or interests. However, it is very complex social, cultural and ethical process designed in a social or cultural context.

Since, it is designed within a social context and, therefore, is related to the social structures, cultural environment, values and ideals of the people, society and the government. All these factors always have flexibility and dynamism. So, the meaning and definition of teaching always change depending on the need of time, place and society. Due to this various definition of teaching are as follows:

H.C. Morrison (1934): Teaching is an intimate contact between a more mature personality and a less mature one which is designed to further the education of the latter. ^(Khan, 2011)

John Brubacher (1939): Teaching is an arrangement and manipulation of a situation in which there are gaps and obstruction which an individual will seek to overcome and from which he will learn in the course of doing so. ^(Khan, 2011)

B.O. Smith (1960): Teaching is a system of actions intended to product learning. ^(Khan, 2011)

N.I. Gage (1962): Teaching is a form of interpersonal influence aimed at changing the behaviour potential of another person. ^(Khan, 2011)

B.O. Smith (1963): Teaching is a system of actions involving an agent, an end in view, and a situation including two sets of factors – those which the agent has no control (class size, size of classroom, physical characteristics of pupils etc.) and those that he can modify (way of asking questions about instruction and ways of structuring information or ideas gleaned.) ^(Khan, 2011)

Edmund Amidon (1967): Teaching is defined as an interactive process, primarily involving classroom talk which takes place between teachers and pupils and occurs during certain definable activities. ^(Khan, 2011)

Clarke (1970): Teaching refers to activities that are designed and performed to produce change in student (pupil) behaviour. ^(Khan, 2011)

Thomas F. Green (1971): Teaching is the task of a teacher which is performed for the development of a child. ^(Khan, 2011)

5.3.2 Instruction

For any activity or work, instruction is a must, and for education, it plays the vital role. It is nothing but the transfer of learning from one person to another. By instruction, direction is given and told how to do something.

The term *instruction* is often used to describe the most rudimentary programming commands. For example, a computer's *instruction set* is the list of all the basic commands in the computer's machine language.

Relation between Teaching and instruction

Education is the result of going to school and learning values and acquiring culture where as Instruction is when you teach someone how to do a particular thing. Teacher when teaches about any subject in various methods, then it is called 'teaching'. But when the teacher directs the students how they can implement this in various processes then it is known as 'instruction'. For example, teaching medicine, carpentry or management.

Teaching vs. Instruction

Teaching and instruction are mutually exclusive. Soldiers are instructed, students are taught. An equipment manual contains instructions. An instructor lays down rules to be obeyed; a teacher strews ideas to be subverted. Instructions prescribe; teaching provokes. Instruction is regimentation; teaching is liberation.

The name "instructor" is potentially fatal to a teacher's teaching: it encourages data feeding into dull automata, rather than the stimulation of independent minds. Fundamental to the

notion of “instruction” is the doctrine that students must believe what teachers say. Fundamental to teaching is that they should question and quarry and challenge and harry it.

5.3.3 Indoctrination

When ideas, doctrines, attitudes and cognitive approaches are forcibly applied then the process is called Indoctrination. Humans are social animals inescapably shaped by cultural context, and thus some degree of indoctrination is implicit in the parent–child relationship, and has an essential function in forming stable communities of shared values.

Education is a process which involves in seeking the facts and learning the truth and then act. But indoctrination, people are influenced to believe facts without their operation; one can be indoctrinated into a political party, a cult or a belief system.

Relating teaching and Indoctrination

Education involves in seeking facts and learning about what is the truth and what is not. Indoctrination is aimed at influencing people to believe in facts, without being able to back up these newfound facts with anything but opinion.

5.3.4 Conditioning

Conditioning, in physiology, is a behavioural process whereby a response becomes more frequent or more predictable in a given environment as a result of reinforcement. Early in the 20th century, through the study of reflexes, physiologists in Russia, England, and the United States developed the procedures, observations, and definitions of conditioning. After the 1920s, psychologists turned their research to the nature and prerequisites of conditioning.

Conditioning is a form of learning. In this process, in which-

(1) a given stimulus (or signal) becomes increasingly effective in evoking a response or
(2) a response occurs with increasing regularity in a well-specified and stable environment. The outcome will be determined by the type of reinforcement applied. When two stimuli are presented in an appropriate time and intensity relationship, one of them will eventually induce a response resembling that of the other. The process can be described as one of stimulus substitution. This procedure is called classical (or respondent) conditioning. Three types of learning are- **i) classical conditioning, ii) operant conditioning, and iii) observational learning**. Both classical and **operant conditionings are forms of associative learning**, in which associations are made between events that occur together.

Operant conditioning differs from classical conditioning in which reinforcement occurs only after the organism executes a pre-designated behavioral act. When no US is used to initiate the specific act to be conditioned, the required behaviour is known as an operant. When it occurs regularly, it is also regarded as a conditioned response. B.F. Skinner, the American psychologist, studied spontaneous (or operant) behaviour through the use of rewards (reinforcement) or punishment. For example, a hungry animal will respond to a situation in a way that is most natural for that animal. If one of these responses leads to the reward of food, it is likely that the specific response which led to the food reward will be repeated and thus learned. The behaviour that was instrumental in obtaining the reward becomes especially important to the animal. The same type of conditioning can also be applied to an action that allows the animal to escape from or avoid painful or noxious stimuli.

5.3.5 Andragogy

Andragogy is methods and principles used for adult education. The word comes from the Greek *andr-*, meaning "man", and *agogos*, meaning "leader of"; which means "leading man" and "pedagogy" means "leading children".

Two primary understandings of "andragogy" are:

1. The science of understanding (theory) and supporting (practice) lifelong education of adults.
2. It is a specific theoretical and practical approach. Humanistic concept of self-directed and autonomous learners as well as teachers as facilitators of learning is the base of this approach. The term also invites other definitions such as as "*adult education practice*", "*desirable values*", "*specific teaching methods*", "*reflections*", and "*academic discipline*", with many authors claiming it to be better than traditional adult education.

Some authors used this term to allow discussion of contact between self-directed and self-taught education.

5.4 Concept of Critical Pedagogy

Introduction

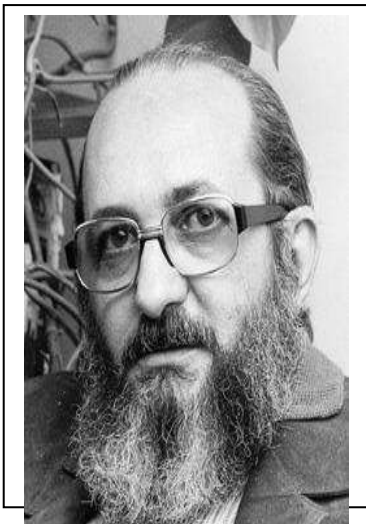
The teachers, who are able to embrace both the art and science of pedagogy, may provide successful education. They act as "parents" who understand the needs, abilities and experiences of their students. They are also to be trained in the best methods of communication and presentation of appropriate materials.

To bring out the possibilities of intelligence and love of learning from their students, educators have tried to find interesting ways from the very beginning.

Critical Pedagogy (CP) is an approach to language teaching and learning. According to Kincheloe, it is concerned with transforming relations of power which are oppressive and which lead to the oppression of people. It tries to humanize and empower learners. It is most associated with the Brazilian educator and activist Paulo Freire. He used the principals of critical theory of the Frankfurt school as its main source.

Critical Pedagogy comes from critical theory, which is concerned with the idea of a Society in which people have political, economic, and cultural control of their lives. "Thinkers of critical theory believe that these goals are satisfied only through emancipating oppressed people which empowers them and enables them to transform their life conditions. It is the first step for critical pedagogy. The major hurdle of critical pedagogy is with criticizing the schooling in capitalist societies. As per Gor awareness raising and rejection of violation and discrimination against people are the major goals of critical pedagogy.

The most celebrated critical educator Paulo Reglus Neves Freire influenced critical pedagogy very much. Freire was a Brazilian educator and philosopher who was a leading advocate of critical pedagogy. He is best known for his influential work, *Pedagogy of the Oppressed*, which is considered one of the foundational texts of the critical pedagogy movement.



Freire considers the students' ability to think critically about their educational situation. This type of approach allows them to "recognize connections between their individual problems and experiences and the social contexts in which they are embedded".

Paulo Freire contributed a philosophy of education that came not only from the more classical approaches stemming from Plato, but also from modern Marxist and anti-colonialist thinkers. In many ways his *Pedagogy of the Oppressed* (1970) may be best read as an extension of, or reply to, Frantz Fanon's *The Wretched*

of the Earth (1961), which emphasized the need to provide native populations with an education which was simultaneously new and modern (rather than traditional) and anti colonial (not simply an extension of the culture of the colonizer). The basic characteristics of critical pedagogy are given below:

Critical Pedagogy and the Educational Process

As per Vandrick, The major goal of critical pedagogy (CP), is to emancipate and educate all people regardless of their gender, class, race, etc. Gadotti (1994) also feels that pedagogy is of major interest for Freire by which he seeks to change the structure of an oppressive society. In Kanpol's views, CP rests on the belief that every citizen deserves an education which involves understanding the schooling structure by the teacher that would not permit education to ensue. Freire (1970) distinguishes between banking education and problem posing education. In the traditional view of education, teachers know everything and the students know nothing. Teachers deposit knowledge in students and never ask them to question that knowledge. The students comply whatever content the teacher chooses. Teacher is authority and students are obedient to authority. In this model students are the receivers. They receive, memorize and repeat. They are not asked to use this knowledge to the current problems and injustices in the society and improve the society. They get a positive role in this approach. Freire terms this approach as *banking model of education* because it is like depositing of money in a bank. This model mirrors the structure of an oppressive society in which the oppressed and the oppressors are divided. It advocates fixation of reality. So it is a vehicle for continuing the political oppression and working against liberation or emancipation. (Aliakbari, M. & Faraji, E. 2011)

a) Banking Model of Education

Banking model of education is the education in which the student is viewed as an empty account to be filled by the teacher. Freire is best known for his attack on this "banking" concept of education. He feels that it converts students into receiving objects. This model attempts to control thinking and action of students which forces them to adjust to the world and inhibiting their creative power. Scholars like Rousseau and John Dewey expressed their concern about passive learning mechanism before Freire put forward his idea of critical pedagogy. John Dewey strongly criticized the idea of transmission of mere facts as a goal of education. He described education as a mechanism for social change. Freire's work, however, updated the concept and placed it in context with current theories and practices of education, laying the foundation for what is now called critical pedagogy.

b) Culture of Silence

According to Freire, the system of dominant social relations creates a 'culture of silence' that instills a negative, silenced and suppressed self-image into the oppressed. The learner must develop a critical consciousness in order to understand that this culture of silence is created to oppress. A culture of silence can also cause the "dominated individuals [to] lose the means by which to critically respond to the culture that is forced on them by a dominant culture." Social domination of race and class are interlaced into the conventional education system, through which the "culture of silence" eliminates the "paths of thought that lead to a language of critique.

To fulfill the goal of creating not only a better learning environment, but also a better world, Freire's practice required implementation of a range of educational practices and processes. He himself is of the opinion that this was not merely an educational technique but a way of living in our educative practice.

As per critical demographic theory, education or learning as an on-going, two-way, dialectic process that is built around the experiences of the student and allows for critical thinking and action to help students *grow*. In a truly democratic school, students are given the chance to express their views on the basis of their experiences and interests which are given due respect while planning for their continuing growth. Traditional hierarchies must be broken down and teachers must also be learners (particularly learning from their students) and being critically reflective about their practice to bring about *conscientization*. Teachers become facilitators to help students as they: share experiences and learn from each other; undertake critical inquiry and create their own plans of action. The importance of dialogue (between students, teachers, administration, parents and community) must be given priority. Tension between opposing conditions (subject and object, the individual and world, the word and the world) is seen as barrier for growth. As Freire states “the subjectivity and objectivity thus join in a dialectical unity producing knowledge in solidarity with action, and vice versa.”

c) Curriculum and Authentic Materials

In CP, curriculum is based on the idea that there is no one methodology that can work for all populations. Bartolome feels that since all decisions related to curricular and material to be studied are based on the needs and interests of students, so there is not fixed curriculum or a programme. Degener also feels that on the basis of the experiences and realistic of their lives, the curriculum is framed. This curriculum is transformative, that is, it fosters students’ acquisition of the necessary strategies and skills that help them become social critics who are to make decisions which affect their social, political, and economic realities. Kessing- Styles (2003) also confirms that CP covers understanding curriculum as political text at the center of which, she believes, lies the social and political critics of everyday life.

On the basis of authentic materials such as TV, commercials, video movie, etc. (Which are representative of the culture that are to be examined by the students), CP lesson plan should be prepared. Kincheloe argues that texts and their themes should be provided by both teachers and students who bring their experiences for study and place that knowledge with the context in which they work. According to Okazaki, the content should be immediate and meaningful to students in order to make them aware of both the reproductive nature and the possibility of resistance to problematic content. The authentic materials help students link their knowledge to existing problems in society and take necessary actions for its improvement. This transformation practices help students develop skill in reflection and action that allows them to recognize and work against oppressive conditions in society. Ares feels that special attention is required to be paid to students’ cultural heritage, practices, knowledge, and languages for enabling transformative practice. It is also emphasized that the aim of transformative practice is social information.

d) Critical Pedagogy and the Role of Teacher and Student

In this approach teachers are viewed as problem posers. However Dewey feels that learning through problem solving and practical application leads students to take a more active role in determining their experiences and positions within society. Kincheloe and McLaren (1994) maintain that teacher must empower his or her students by raising their awareness of reproducing process of an inequitable status quo in schooling and offer societal institutions. As per Giroux, the teachers are *Transformative Intellectuals* who have the knowledge and skill to critique and transform existing inequalities in society. This role is learn from students, appreciate their viewpoints and to take part in the dialogical process. As per Giroux, by creating appropriate conditions, teachers by creating appropriate conditions, teachers enable students to become cultural producers who can rewrite their experiences and perceptions. They also help students

learn from each other and to theorize and understand how to question the authoritarian power of the classroom.

e) Critical Pedagogy and Praxis

The purpose of the educator and the educated, the leader and the followers in a dialogue between equal partners is called praxis. It is defined as “the self-creative activity through which we make the world. The requirements of praxis are theory both relevant to the world and nurtured by actions in it, and an action component in its own theorizing process that grows out of practical and political grounding”. Bridging the gap between theory and transformational action in the aims of Praxis in education that means the connection of education with social transformation is done by praxis. According to Freire, praxis is action and reflection, interpretation and change. He also thinks, Critical consciousness is brought about not through intellectual effort alone but through praxis.

5.5 Science of Teaching- Relation between Teaching and Learning

Introduction

Scientific teaching is a pedagogical approach used in undergraduate science classrooms whereby teaching and learning is taught with the same rigor as science itself. According to a 2004 Policy Forum in Science magazine, "scientific teaching involves active learning strategies to engage students in the process of science and teaching methods that have been systematically tested and shown to reach diverse students."

What is Science?

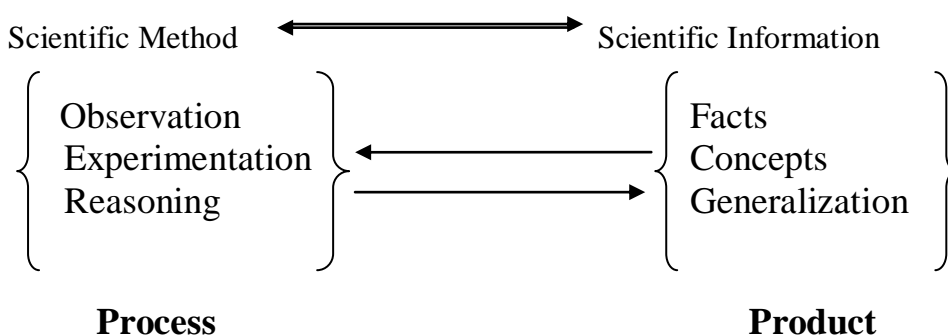
As per Kothari Commission’s report, “Science is universal and so can be its benefits. Its material benefits are immense and far-reaching industrialization of agriculture and release of nuclear energy, to mention two examples-but even more profound is its contribution to culture”. In simple words, science is the investigation and interpretation of natural phenomena which occur in our daily life. Thus Science is simultaneously a body of knowledge and continuous, self evaluative process of enquiry.

Science thus has two important approaches.

- (a) Science as a Product.
- (b) Science as a Process.

Various laws, theories, principles etc., are included in the category of science as a process. Though both aspects are important in their own way but to attain the aims of science education in schools more emphasis will be places on process approach.

The process of searching scientific knowledge can be explained as follows:



It is indicated that products (concepts, facts etc.,) are derived from process (observation and experimentation) and that these products lead to further process. So it is said that science is a continuous search for new knowledge through continuous inquiry. From the above relationships by saying that 'Science is both a body of knowledge (Product) and method of inquiry (Process)'. It is one of the specialized characteristics of science.

a) Concept of Teaching

Concept regarding anything is nothing but the general notion, popular opinion and the image that we form about any object; people or idea .It is the result of our direct and indirect experiences which we gain about object, people or ideas. The same is true for the concept of teaching. By the term 'concept of teaching' we know or ought to know about teaching in terms of its meaning, nature, and characteristics and all those which can distinguish it from the other similar concepts and activities. Hence, if we intend to know thoroughly about the concept of teaching , we have to look it from the various angles as follows :

- Understanding its meaning and defining it
- Knowing about the nature and characteristics of teaching
- Comparing teaching with other similar concepts
- Knowing about the relationship between teaching and learning
- Discussing about the analytical concept of teaching.

Teaching is nothing but an occupation or profession of a group known as teachers or an activity of a activities of a group under taken to help an individual to learn or acquire some knowledge, skills, attitudes or interests. However, the meaning and concept of teaching is not so simple. It is a very complex social, cultural and ethical process designed in a social or cultural context.

It is always designed within a social context by all means and in any shape and therefore, is related to the social structures, cultural environment, values and ideas of the people, society and the government. All these factor are flexible and dynamic and therefore, the meaning and definitions of teaching are changing depending on the need of time, place and society. It has resulted into various definitions of the term teaching some of which are as follows:

H.C. Morrison (1934): Teaching is an intimate contact between a more mature personality and a less mature one which is designed to further the education of the latter.

John Brubacher (1939): Teaching is an arrangement and manipulation of a situation in which there are gaps and obstruction which an individual will seek to overcome and from which he will learn in the course of doing so.

B.O. Smith (1960): Teaching is a system of actions intended to product learning.

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B.O. Smith (1963): Teaching is a system of actions involving an agent, an end in view, and a situation including two sets of factors – those which the agent has no control (class size, size of classroom, physical characteristics of pupils etc.) and those that he can modify (way of asking questions about instruction and ways of structuring information or ideas gleaned.)

Edmund Amidon (1967) :Teaching is defined as an interactive process , primarily involving classroom talk which takes place between teachers and pupils and occurs during certain definable activities .

Clarke (1970) : Teaching refers to activities that are designed and performed to produce change in student (pupil) behaviour .

Thomas F. Green (1971): Teaching is the task of a teacher which is performed for the development of a child. (Khan, 2011)

b) Concept of Learning

Life is a journey of learning starting from childhood to every stage of aging. Teaching & learning is interrelated to each other in a process where learning plays a key & significant role to the learner & teacher both. Let us discuss here briefly about what is learning, what is its nature & characteristics as well as the relationship between teaching & learning through which concept of learning will be understandable.

Meaning and Definitions of the Term Learning

The term learning is very common & most natural in everyone's life in every different situations & times whether it is necessary or not. So in this perspective the way of learning, involvement & engagement in the process are also very important aspects. In this reference here is an example - to a child for the first time has no idea about the burning from fire, when he/she touches fire of a burning matchstick could feel the heat/ temperature & to some extent burns & gets to know what is fire through a process of learning. So from this situation the child is able to acquire the idea of self protection & keeps self away from the effect of fire for the future. From this process a child could get to gather experience of adverse effect, danger or self harm from the different type of incidents which is defined as learning. The behavioural changes of individual come through different way with the help of different experiences directly or indirectly. Some well – known definitions of the term learning are as follows:

Gardner Murphy (1968: 205): “The term learning covers every modification in behaviour to meet environmental requirements.”

Henry P. Smith (1962: 260): “Learning is the acquisition of new behaviour or the strengthening or weakening of old behaviour as the result of experience.”

Woodworth (1945: 288): “Any activity can be called learning so far as it develops the individual (in any respect – good or bad) and makes him alter behaviour and experiences different from what that would otherwise have been.”

Kingsley and Garry (1957: 12): “Learning is the process by which behaviour (in the broader sense) is organized or changed through practice or training.”

Pressey, Robinson and Horrocks (1967 : 232) : “Learning is an episode in which a motivated individual attempts to adapt his behaviour so as to succeed in a situation which he perceives as requiring action to attain a goal.”

Crow and Crow (1973: 225): “Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things and it operates on an individual's attempts to overcome obstacles or to adjust to new situation. It represents progressive changes in behaviour. It enables him to satisfy interests to attain a goal.”

Hilgard (1958 : 3): “Learning is the process by which an activity originates or is changed through reacting to an encountered situation , provided that the characteristics of the changes in activity cannot be explained on the basis of native response , tendencies , maturation or temporary states of the organization (e.g. fatigue or drugs , etc.).”

The definition stated above may now help us to devise the following conclusion about the meaning and characteristic of learning:

1. Learning is a process and not the product.
2. It involves all those experiences and trainings of an individual (right from his birth) which help him produce change in his behavior.
3. Learning leads to changes in the behaviour but it does not necessarily mean that these changes always bring improvement or development in the positive direction. One has equal chances to be drifted to the debit side of human personality.
4. Learning prepares an individual for the necessary adjustment and adaption.
5. All learning is purposeful and goal- oriented. In case there is no purpose, there would hardly be any learning.
6. The scope of learning is too wide to explain in words. It is a very comprehensive process

which covers nearly all the domains – conative, cognitive and affective - of human behaviour .
7. Learning is universal and continuous. Every creature that lives learns. In human beings , it is not limited to any age , sex , race or culture. It is a continuous never – ending process that goes from womb to tomb.

8. Learning does not include the changes in behaviour on account of maturation, fatigue , illness or drugs. (Khan, 2011)

c) Relationship between Teaching and Learning

With the context of relationship between teacher & learner it needs to be mentioned that these two terms "teacher" & "learner" are as much as relative to each other also it is not essential for teaching to be ended with some kind of learning. Similarly, learning may also take place without involving the formalities of teaching process. There are different type of institutions to raise up a child & they grown up through different technique, different environment & different type of guidance. So learning role is constant variable though teaching role varies from place to place & time to time. There are so many way of learning to upgrade or educate oneself that it depends on learner how & where they are interested to be involved & engaged. But it can be said still all times golden words -if there is a good teacher there will be a good student & vise versa. They are successful when both of them are able to reach to the same goal & meet in the same point by the process of teaching & by the process learning.

Teacher teaches in the class to produce better qualities, implements better techniques, changes in ideas & thinkings to each individual in the same process. But it is quite natural that the learning outcome could be different, even though same opportunities & situations are provided by the teacher. The learning achievement varies from learner to learner depending on their abilities & backgrounds.

5.6 Planning the Lesson: Herbartian Approach; ICON Design and 5E approach

Introduction

In each and every sphere of life systematic, disciplined and organized planning always very essentials to do any task successfully in our life. Proper planning of any work helps us to utilize our time and energy on the part of human and material resources. Same way it is equally needed for the process of teaching and learning. A teacher has to warm up herself for teaching effectively and efficiently. An organized work always gives good result as he/she is fully prepared to be taught in the class. To educate herself teacher had to plan for the full academic session. This is further classified into different categories. For the benefit of teacher and student it can be planned in different scheme, such as-1) yearly planning, 2) unit planning and 3) daily lesson planning. There are many requirements mandated by the school system regarding the plan.

Lesson Planning In Teaching Learning Process:

Teaching has been repeatedly emphasized that good and effective teaching stimulates the learners to think and motivate them learn further. Teaching needs a technique. Teacher has to create learning situation so that the child feels the inner urge to know, to think and to do. Intelligent planning is key of success for the learners. Teacher is already ready with blueprint which helps us in the efficient, economical and smooth conduct of teaching learning activity. Teacher should go through and through of the topic and make huge other questions connected with the topic and make the class interesting for the learners to learn properly.

Origin of Lesson Plan:

A great psychologist Gestalt is known as the origin of lesson plan. His theory of learning has a great influence on human learning. As per him the learner perceives a thing or a problem or a situation in totality or as a whole. In learning of student a unit executes a vital role in understanding the whole concept. Thus, the whole is perceived part by part. Meaningful activities are related to one another within a unit. These activities provide, purposeful learning experiences and the learner understands the whole concept. There are two approaches of teaching plan. The first approach is propounded by Herbart. He stresses on the content and information's in a plan. The second approach is given by John Dewey and Kilpatrick. They have emphasized on the experiences of learner rather than information.

Need and Importance of Lesson Plan:

In the process of teaching lesson planning is foremost important. The need and importance of lesson planning has lots of values and advantages. It can be precisely mentioned in the following points:

1. To teach systematically it provides guideline to the teacher.
2. Teacher's aims and objectives more clearly helped him to delimit within his field of work.
3. It provides the teacher to achieve the objectives.
4. Instead of haphazard teaching it makes teaching-learning a systematic, orderly and economical process.
5. The sequences of contents is maintained.
6. By means of psychological basis the learners developed or encouraged by linking the new knowledge with the previous knowledge of the pupils.
7. In course of teaching activities, it helps the learning structure.
8. In the presentation of the content use of appropriate teaching aids, suitable techniques, strategies, tactics is determined.
9. It also helps to control the students behavior, to identify suitable place during the teaching.
10. The classroom teaching activities are determined with the consideration of individual differences during the lesson planning.
11. It also helps to develop confidence and teaching activities satisfactorily between student and teacher.
12. A good lesson plan's effectiveness depends on a teacher.
13. It also develops the power of reasoning, decision making and imagination between student and teacher.
14. Specific teaching skills are developed by micro lesson.

15. According to I. K. Davies, “Lessons must be prepared for here is nothing as fatal to a teacher’s progress as unpreparedness”.

5.6.1 Herbartian approach to lesson planning:

Herbartian approach is also known as Herbartian five steps approach. This approach is attempted in most of the teachers training institutions. This lesson planning is an ancient concept. During that time various attempts have been made to formulate a general procedure for the conduct of various types of lessons. Herbart is a first man to generate this famous procedure. John Fredrik Herbart (1776-1841 AD), a German philosopher and great educationist and his followers adopted and evolved the most famous procedure known as the ‘Herbartian Formal Steps’. These are called formula steps, because these deal with the content of lesson. In the beginning Herbart introduced four steps. Later on another step added by his followers. According to the Herbartian School of Pedagogy, the five formal steps are as follows:

1. Preparation
2. Presentation
3. Association or comparison
4. Generalization
5. Application

Herbartian approach is theoretically based on apperceptive mass theory of learning. According to this theory, the child receives or learns the new knowledge easily if it is connected with the knowledge learnt previously by him. This approach is widely used in teaching of various school subjects. Outline of Herbartian Lesson Plan On the basis of five steps mentioned above an outline of a lesson plan has been developed to prepare lesson notes in practical form which include following points:

1. Subject, topic, class with section, period and date.
2. General aims of the subject teaching.
3. Specific objectives related to the topic or lesson.
4. Introduction
5. Statement of aim.
6. Presentation
7. Explanation
8. Black-board summary.
9. Recapitulatory questions or review questions.
10. Home work or assignment.

1. Subject, Topic, Class and Date-

In this step trainee teacher point out the date, period, class with its section, subject and topic to be taught at the top of his lesson note and concentrates on the content of a particular topic.

2. General Objectives of Subject Teaching –

Each and every school subjects have their own general objectives. Student's standard of class, the general aims and objectives are varied according to the subject.

3. Specific Objectives –

During the 40-45 minutes period the teacher mentioned the specific objectives for fulfill the main aims of the topic. The specific objective may be knowledge, skill and appreciation.

4. Introduction –

Herbartian's five steps approach, introduction is preparation stage. It is beginning of teaching activities and student's mind should be prepared to receive new knowledge. The teacher asks some questions on the basis of their previous knowledge to connect the preparation is a sort of testing and rearranging the contents of previous lessons or correlating the lesson with the daily routine life. Arousing the interest of the students is a pre-requisite to the learning process that is way preparation is called 'Motivation' or 'Introduction'.

5. Statement of Aim –

The statement of aim should be clear cut, concise and free from unknown words. Introduction of the lesson should be effectively done. Then the aim will automatically emerged out .

6 Presentation -

Begning of the class introduction of the topic is very necessary. Later presentation should be done with the help of developing questions. Questions should be arranged according to the teaching procedure adopted.

7. Explanation -

Discussion of the previous questions and answer in simple form is done or presented if student are not able to answer this questions the teacher is supposed to explain the element or concept by giving explanation.

8. Black-board Summary —

In the beginning before starting the lesson some usual entries should be done such as date, period, and duration of the period, class, section and subject on the top of the black-board. Black board summary should include the main points of lesson, important terms, difficult words, formulas definitions explanations etc. In case of mathematics teaching blackboard is indispensable. As mathematics can be clarified only through writing because explanation not appropriate.

9. Recapitulation or Application –

In this step questions are asked by the teacher for practice. . It helps the teacher to know how far he has succeeded in the attainment of objectives. Going through this step student's knowledge and progress is developed or not is understood.

10. Home Work or Assignment—

At last home work is given to the student on the same topic . As practice is very necessary, so according to Herbartian lesson plan practice is must. And above mentioned steps should be followed.

5.6.2 ICON design

In education, the Interpretation Construction (ICON) Design Model is said ICON. It is one of the design models of constructive learning theory. In constructivist theory learners are directly involved in learning process. Learning, in the constructivist frame, is a process of meaning construction and interpretation, and certainly, social interactions from teachers and peers also influence learners' knowledge construction. Teachers are not the course material presenters or controllers; rather, they become the facilitators of students' knowledge construction. The ICON model emphasizes learners' interpretations of information and their processes of knowledge construction. Science learning, clearly, involves a series of information or observation interpretations and knowledge construction.

This model prescribed instruction based on observations and **constructing** information. **Interpretations** (understandings) based on observations and background contextual information. In this model, the Role of the teacher is creating a Study Support Environment (SSE).

Concept of ICON design

In learning process constructivist epistemology in viewing students many cognitive psychologist share that (Brooks and Brooks, 1993; von Glasersfeld, 1989) meaningful learning neither stems from direct motivation nor from environmental pressure (i.e., external stimulus). Hence prior knowledge plays an essential role in the learning process here events are engaged in construction and interpretation of individual experience. It also constructs and influence social interaction, knowledge and construction.

Instructional design or instructional science is concerned knowledge about optional 'blue-print'. In the field of instructional design there are two main theoretical approaches, such as the systematic approach and constructivist approach. Systematic approach is viewed as a process, consisting input and output process.

Epistemology and psychological aspect of constructivist learning views instructional design in order to facilitate students learning through creation. Main emphasize is on the principles of learning related with authentic context, which includes learning in social experience and the experience of knowledge constructions.

Different criteria are based on learning and teaching approaches. As present teaching and learning approaches are considered based on 'individual' or 'group'. According to constructivist design model is oriented towards one person or student is called individual and several people learning in a small or large group of students is called group based

In regard to learning and teaching process if model contents the capacity for designing both individual and group then it can be named with dual purpose.

There are many teaching learning models based on this approach. Some of them are listed below:

1. Participatory Design Model
2. Anchored Instruction
3. Cognitive apprenticeship
4. Generative learning
5. Computer Supported Intentional Learning Environment (CSILE)
6. Discovery Learning
7. Interpretation Construction Design Model (ICON)
8. Mind Tools
9. Problem-Based Learning
10. Project Method

Here in this sub unit we will discuss in detail the ICON Design Model as a potent pedagogical approach.

Principles of the ICON model

Teaching and learning approach of ICON model emphasizes on student's encounter with authentic issues in groups on constructing interpretation or searching for information in group and facing different interpretation about the problem in groups; individual learning process is a evidence and therefore dual purpose learning is acceptable model.

Relevant principles by the ICON model

- a) Observations in authentic activities; interpretation construction; contextualizing prior knowledge
- b) Cognitive conflict; interpretation construction
- c) Interpretation construction; contextualizing prior knowledge
- d) Cognitive apprenticeship; collaboration; interpretation construction
- e) Multiple interpretations; multiple manifestations; interpretation construction
- f) Interpretation construction; multiple interpretations

Characteristics of ICON model

- i. Instructions are based on observation and constructing information
- ii. It is a group-based teaching learning approach
- iii. It rest on constructive design principles
- iv. It views teacher as a creator of Study support Environment
- v. This model fosters the construction of interpretations based on observations and background contextual information

Steps of the ICON model

1. Observations in authentic activities
2. Interpretation construction
3. Contextualizing prior knowledge
4. Cognitive conflict
5. Cognitive apprenticeship
6. Collaboration

7. Multiple interpretations
8. Multiple manifestations

1. Observations in authentic activities-

Number of researches has been done in this matter. Observation in authentic activities is very important as if they only memorize students cannot do the work appropriately There is problem in science educators should do some authentic observation so that they could construct their own frames.

2. Interpretation construction-

Learners cannot simply reproduce transmitted knowledge but have to construct it by themselves. Teachers have to create learning environments where students have opportunities to construct their interpretation of new information. A proper understanding of creative nature of scientific knowledge can help students actively engage in the interpretation construction process.

3. Contextualizing prior knowledge

The contextualization intends that students access background and contextual materials of various sorts to aid interpretation and argumentation. So, the students should use their own relevant prior knowledge to interpret some phenomena in a certain context.

4. Cognitive conflict

It is recognized that the demonstration of discrepant events is only one of the many steps for students to process conceptual change.

5. Cognitive apprenticeship

Constructivist teacher are very different from so called traditional teacher, who are simply information providers. Teachers should give proper situated guidance when facing students various interpretation. On the other hand they emphasize the importance of the cognitive apprenticeship guided by teachers.

6. Collaboration

Collaborative group learning can promote students achievement, motivation and attitudes towards learning. Educators should encourage students to be collaborative in observation, interpretation and contextualization.

7. Multiple interpretations

Students can collectively construct various interpretations for a natural phenomenon, and they can together evaluate these views and further decide which one is most useful and meaningful in explaining this phenomenon in the particular context.

8. Multiple manifestations

Educators also suggest that when learning a new scientific conception, showing its fruitfulness is a necessary condition for student's conceptual change. Students acquire

transferability by seeing multiple manifestations of the same idea at different times and in various contexts.

Example of ICON model

To illustrate the application of this design framework, it is described SSE programs. SSE means Study Support Environments. The key consideration in designing a SSE is fostering the construction of interpretations based on observations and background contextual information.

Teachers College, Columbia University has been collaborating with the Dalton School (a K-12 independent school in New York City) on the Dalton Technology Plan. The general aim of this plan is to develop a digital knowledge-base and information infrastructure for all aspects of the K-12 educational experience, and to implement educational strategies designed to make use of this infrastructure, enhancing significantly an already excellent educational experience.

Specifically, it is describe how these constructive design principles apply to the *Archaeotype* program used in class 6th grade history, to the *Galileo* programme used in 11th and 12th grade science (particularly for students not scientifically oriented), and the *Playbill* programme used in 10th grade English at the Dalton School. *Archaeotype* is a computerized archaeological simulation. Developed as a network-based multimedia alternative to the textbook bound class curriculum in the Ancient World, *Archaeotype* provides students with a collaborative and interdisciplinary environment in which to uncover and interpret the past by presenting primary sources, both textual and artifactual, as evidence for the students' construction of history.

In the *Archaeotype* program, students study ancient Greek and Roman history by using observations of simulated archaeological digs to construct interpretations of the history of these sites, while drawing upon a wide variety of background information. The *Archaeotype* program prepared a programme (implemented in supercard on Apple Macintosh computers) and presents the students with a graphic simulation of an archaeological site, then the students study the history of the site through simulated digging up of artifacts, making various measurements of the artifacts in a simulated laboratory (**Observation**), and relating the objects to what is already known using a wide variety of reference materials (**Contextualization**). The students work cooperatively in groups (**Collaboration**), while the teacher models how to deal with such a site then fades her involvement while coaching and supporting the students in their own study efforts (**Cognitive Apprenticeship**). The students develop ownership of their work by developing their own interpretations of the history of the site and mustering various kinds of evidence for their conclusions (**Interpretation Construction**). By arguing with the other students and studying related interpretations in the historical literature, they get a sense of other perspectives (**Multiple Interpretations**). By going through the process a number of times bringing each contextual background to bear on a number of different artifacts, the students learn and understand the many ways that the general principles behind what they are doing become manifest (**Multiple Manifestations**).

This approach can be applied to Study Support Environment programs in widely different fields of study -- namely, history, science and literature. In addition to learning specific content, students using these programs acquire generalizable interpretation and argumentation skills. Thus, constructivist design framework is useful both for guiding design and for producing valuable learning results.

5.6.3 5E Method

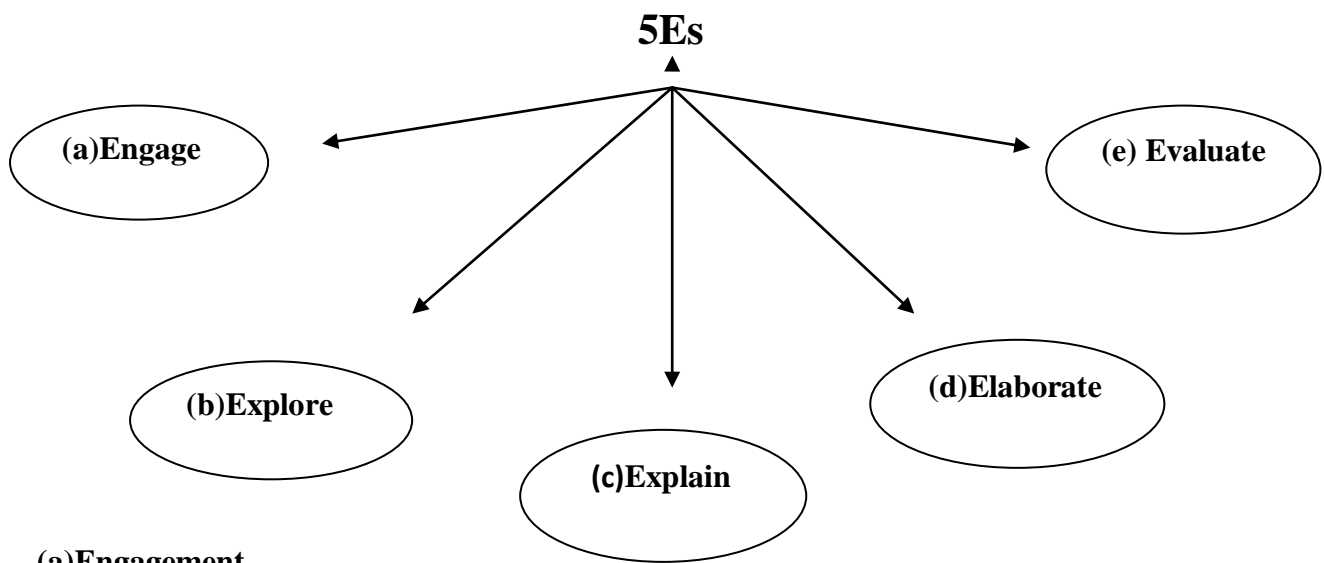
The 5E is describe the phase of learning for all age groups. It is a instructional model based on constructivist approach in learning. Constructivist approach is based on the believe that

learners are actively involved in a process. Each of the 5Es such as Engage, Explore, Explain, Elaborate, and Evaluate.

Research made by John Dewey and Jean Piaget influenced in development of informal education and childhood development. Dewey's idea of influential education suggests that education must engage with and enlarge experience and the exploration of thinking and reflection associated with the role of educators. Piaget's role in the constructivist teaching suggests that we learn by expanding our knowledge by experiences which are generated through play from infancy to adulthood which are necessary for learning. Their theories are now encompassed in the broader movement of progressive education. Therefore, children learn best when they are allowed to construct a personal understanding based on experiencing things and reflecting on those experiences.

One of the primary goals of using constructivist teaching is that students learn how to learn by giving them the training to take initiative for their own learning experiences.

The instructional model is based on constructivist learning theory. This theory suggests that students learn best when they are allowed to work out explanations for themselves over time through a variety of learning experiences structured by the teacher. Students use their prior knowledge to make sense of these experiences and then make connections between new information and their prior knowledge. To help them make the connections between what they already know and new information, teachers will organise each Primary Connections unit into five phases – Engage, Explore, Explain, Elaborate and Evaluate.



(a) Engagement

Through the use of short activities that promote curiosity and helps them to engaged in a new concept. This task creates connections between past and present learning experiences expose prior connection and organize student thinking current activities.

(b) Exploration

Conceptual change is facilitated and identified if students are provided to explore their common experiences. To generate new ideas, explore questions and possibilities that help them to use prior knowledge.

(c) Explanation

This phase focuses student's attention on a particular aspect and explore experiences provide opportunities to demonstrate their conceptual understanding, process, skill or behaviour. And explanation from the teacher may guide them towards a deeper understanding.

(d) Elaboration

In this step students apply their understanding of the concept by conducting additional activities. Students through new experiences develop deeper and broader understanding more information and adequate skill.

(e) Evaluation

In this phase teachers get opportunities to assess their ability and to evaluate student's progress toward achieving the educational objectives.

Conclusion

A national vision of science teaching and learning is being promoted that accentuates the need to restructure science education. Several national reform documents illustrate the need to make science classrooms across the country active and inquiry based environments. With much research to support inquiry-based teaching and learning, many teachers are opting for this non-traditional teaching approach. The incorporation of learning cycles in the classroom aids teachers in the pursuit of the development of effective inquiry-based science lessons. The 5E Instructional Model serves as a flexible learning cycle that assists curriculum developers and classroom teachers create science lessons that illustrate constructivist, reform-based, best teaching practices.

5.7 Let Us Sumup

Pedagogy is a term used in educational writing but its meaning is assumed to be self evident. Pedagogy deals with the theory and practice of teaching and its effects on the learning of students. Concept of teaching means all those which we know about teaching in terms of its meaning. Teaching is nothing but either an occupation or profession of a group known as teacher. Also it is an activity of activities of a group undertaken to help an individual to learn or acquire some knowledge, skills, attitudes or interests. The meaning and definition of teaching always change depending on the need of time, place and society. For any activity or work, instruction is a must, and for education, it plays the vital role. The term *instruction* is often used to describe the most rudimentary programming commands. The difference between Education and Instruction is that, Education is the result of going to school and learning values and acquiring culture where as Instruction is when you teach someone how to do a particular thing. For example, teaching medicine, carpentry or management. When ideas, doctrines, attitudes and cognitive approaches are forcibly applied then the process is called Indoctrination. Conditioning, in physiology, is a behavioural process whereby a response becomes more frequent or more predictable in a given environment as a result of reinforcement. Conditioning is a form of learning. In this process, in which-(1) a given stimulus (or signal) becomes increasingly effective in evoking a response or (2) a response occurs with increasing regularity in a well-specified and stable environment. Andragogy is a methods and principles used for adult education. The word comes from the Greek *andr-*, meaning "man", and *agogos*, meaning "leader of"; which means "leading man" and "pedagogy" means "leading children". Critical Pedagogy (CP) is an approach to language teaching and learning. Critical Pedagogy comes from critical theory, which is concerned with the idea of a Society in which people have political, economic, and cultural

control of their lives. “Thinkers of critical theory believe that these goals are satisfied only through emancipating oppressed people which empowers them and enables them to transform their life conditions. The most celebrated critical educator Paulo Reglus Neves Freire influenced critical pedagogy very much. Freire was a Brazilian educator and philosopher who was a leading advocate of critical pedagogy. He is best known for his influential work, *Pedagogy of the Oppressed*, which is considered one of the foundational texts of the critical pedagogy movement. Science has been derived from the Latin word “Scientia” which means knowledge. It is a systematized body of knowledge which may pertain to any subject. Scientific teaching is a pedagogical approach used in undergraduate science classrooms whereby teaching and learning is taught with the same rigor as science itself. Concept regarding anything is nothing but the general notion, popular opinion and the image that we form about any object, people or idea. It is the result of our direct and indirect experiences which we gain about object, people or ideas. The same is true for the concept of teaching. Life is a journey of learning starting from childhood to every stage of aging. Teaching & learning is interrelated to each other in a process where learning plays a key & significant role to the learner & teacher both. With the context of relationship between teacher & learner it needs to be mentioned that these two terms "teacher" & "learner" are as much as relative to each other also it is not essential for teaching to be ended with some kind of learning. In each and every sphere of life systematic, disciplined and organized planning always very essentials to do any task successfully in our life. An organized work always gives good result as he/she is fully prepared to be taught in the class. Teacher should go through and through of the topic and make huge other questions connected with the topic and make the class interesting for the learners to learn properly. In the process of teaching lesson planning is foremost important. The need and importance of lesson planning has lots of values and advantages. According to the Herbartian School of Pedagogy, the five formal steps are as 1. Preparation, 2. Presentation 3. Association or comparison, 4. Generalization 5. Application. In education, the Interpretation Construction (ICON) Design Model is said ICON. The Information Construction (ICON) model contains seven stages, such as Observation, Interpretation Construction, Contextualization, Cognitive Apprenticeship, Collaboration, Multiple Interpretations, Multiple Manifestations. The 5E is describe the phase of learning for all age groups. It is an instructional model based on constructivist approach in learning. Constructivist approach is based on the believe that learners are actively involved in a process. Each of the 5Es such as Engage, Explore, Explain, Elaborate, and Evaluate.

5.8 Unit End Exercise

- Q. 1. What do you mean by Pedagogy?
- Q. 2. Write the definition of term teaching.
- Q. 3. Write a short note on ‘Andragogy’?
- Q. 4. Discuss briefly the concept of ‘Critical Pedagogy’.
- Q. 5. What do you mean by Banking Model of Education?
- Q. 6. What is the relation between Teaching and Learning?
- Q. 7. Write the importance of Lesson Plan.
- Q. 8. Narrate vividly the Herbartian approach regarding Lesson Plan.

Q. 9. Write a short note on 'ICON'.

Q. 10. Discuss briefly the '5-E Approach'.

5.9 References

1. Aliakbari1, M. & Faraji, E. (2011), Basic Principles of Critical Pedagogy, 2011 2nd International Conference on Humanities, Historical and Social Sciences IPEDR vol.17 (2011) © (2011) IACSIT Press, Singapore <http://www.ipedr.com/vol17/14-CHHSS%202011-H00057.pdf>
2. Duran, L.B.& Duran, E., The Science Education Review, 3(2), 2004 pgs 49-57,Retrieved from <https://files.eric.ed.gov/fulltext/EJ1058007.pdf> on August 27,2018
3. Fernández-Armesto Felipe,(2006) *Teaching vs. Instruction*, CAUT Bulletin Archives1996-2016 Retrieved from <https://bulletin-archives.caut.ca/bulletin/articles/2006/05/teaching-vs-instructionon-july,2018>
4. Indoctrination ,(2018), Retrieved from Wikipedia <https://en.wikipedia.org/wiki/Indoctrination> on July 18, 2018,
5. Khan Intakhab Alam, Education and Pedagogy (2011), Mittal Publications, New Delhi (INDIA) pgs-1-4,
6. LEPOLE, Vellas Etienne, A History of Pedagogy (2018) Retrieved from <https://lepole.education/en/index.php/pedagogical-culture/27-history-of-pedagogy?showall=&start=1> on July 16, 2018
7. Mangal, S.K. & Mangal, U., Essential of Educational Technology (2013), PHI learning Private Limited, Delhi, pgs-615
8. Paulo_Freire, (2018), Retrieved from Wikipedia https://en.wikipedia.org/wiki/Paulo_Freire on July 23, 2018,
9. Pedagogy,(2018),Retrieved from Wikipedia: <https://en.wikipedia.org/wiki/Pedagogy> July 16,2018
10. Tsai, C.C., (2011), The interpretation construction design model for teaching science and its applications to Internet-based instruction in Taiwan. *International Journal of Educational Development* 21 (2001) 401–415

