UNIT 3: Technology Facilitating Language and Communication

3.1 Introduction

Technology helps us in learning.It also helps us in improving our knowledge and skill development. Thereby facilitating language and communication skills.There are various types of low cost technology which enable not only the disabled population but also normal students.Visual aids like classroom objects,writing boards,old news papers help a child to learn.Various printed materials like pictures,magazines,photographs,calendars and postcards can be used.Audiovisual materials like cassette,tape-recorder,cable television,slides and transparencies are also helpful in facilitating learning.Electronic and web based technology like television,digital recorders,downloaded AV films also facilitates language and communication.Language and communication can be achieved through use of search engines,online learning materials and language apps.

Web based technology has been used for using and training of Indian sign language. The ISL Pronto live chat support software is now integrated with Lionbridge GeoFluent to help businesses assist international customers more effectively. Whilst ISL Pronto enables website customer service with real-timeinteractions between online visitors and help desk operatorsTranslations into and between 30+ languages are initiated on-demand by customers or operators within the existing ISL Pronto chat application. A new software application being developed by scientists in Aberdeen is the first of its kind in the world which can be used on portable devices and allows users to customise sign language to their own specific needs.The technology has the potential to transform how sign language users communicate, whether they are profoundly deaf or have lost hearing in later life.Computing scientists at *Technabling*, a spin-out company of the University of Aberdeen, are behind the technology which aims to bridge the gap between sign language and more standard forms of communication.This technology has the ability to convert sign to text and text to sign.AAC(Alternative Augmentative Communication) also facilitates language and communication. Advances in computer technology have led to the creation of specialized devices—called augmentative and alternative communication (AAC) devices—that help

make it possible for individuals with no speech, or individuals with poor speech, to overcome their communication problems.Augmentative devices are designed to support or enhance the speaking capability of a person. Alternative devices, on the other hand, replace speech as a means of communication.There are a variety of electronic AAC devices on the market, ranging from very low tech to very high tech, and ranging in price.

3.2 Objectives

1. To have knowledge about various Low Cost Technology and its application in development of teaching learning   materials.
2. To develop an overview of various Electronics and web based technology applications:T.V,digital recorders,downloaded AV films,search engines,online learning materials,language apps
3. To develop knowledge of various web based technology for using and training of ISL.
4. To know about the concept of sign to text and text to sign.
5. To know about AAC for children with Hearing Impairment.

3.3 Low Cost Technology and its application in development of teaching learning materials

Visual aids are very important and effective in the process of meaningful teaching and learning. If we use audio-visual aids considering the needs of the students as well as the lesson, impact of lesson, teaching and classroom environment is long lasting.

Visual aids capture the attention of students and they start participating and taking interest in the lesson.Students not only clarify their concept but also associate their abstract concepts with the visual aids and they get better understanding of the concepts.

Visual examples from surroundings of the daily life work as great motivation for the students. Paul Stephens (1994) said that for the effective teaching it is necessary for the teachers to make subject exciting and like that whenever possible the students can relate to their real world.Teachers should take great interest in

selection of creative teaching techniques and must incorporate low cost AV aids in their lesson plan.Maximize student participation to lessen teacher's work load. Head teacher may act as a resource person.School canteen can be a good source to collect resource materials. Every year assign a project to senior classes that become a permanent part of the school such as wall clock making and hang it in the classroom or one point camera making and take a group photo of that year students with their respective teacher and principal and display it in the entrance or any important place.Honor the class by placing their names on their projects.

Students individually and in groups under the supervision of subject teacher may be assigned the preparation of teaching aids which may help out to meet the expenditure.Hold student's competitions individual and in groups for model preparation. Such a brain storming initiative will motivate them to come out with hundreds of new ideas ensuring learning.

Display student's projects in the form of exhibition to inspire others to participate in such competitions.Appreciate innovative ideas that are not copied from anywhere.

3.3.1Types of Low Cost Material Used for Teaching

Teaching aids based from surrounding:
a)   Yourself
b)   Children
c)   Classroom Objects
d)   Writing Board
e)   Library old newspapers
f)   School dustbins

The teachers themselves: The teacher can use gesture, facial expression and actions to show the meaning of words and to explain situations wear makeup, colors and clothes that have some symbolic meaning to the lesson.

Children: Children, illustrate the situation according to the instructions given by the teacher.

·   Classroom Objects: Such as table, chairs, window, fans etc. can be used as AV aids to give some specific concepts e. g. talking about materials, preposition (asking position of different objects) shape, colors etc.

· Writing Board: the teacher or students can use it to draw pictures, diagrams, maps etc.

3.3.2 Three types of Low cost Material can be used for successful teaching/learning as per requirement.

Printed Materials	*Audio-Visual Material*	*Display Material*
Textbook & Reference	*Radio*	*Pictures*
News Paper	*Cassette & Tape Recorder*	*Flash Cards*
Magazines		
Photographs	*Cable Television*	*Charts*
Calendars/ Postcards	*Satellite Television*	*Graphs*
		Maps
	Slides	*Diagrams*
	Transparency	*Posters & Bulletin Board*
	Computers/CD's	*Peg Board*
	Film Strips	*Flannel Board Small*
	Mobile Videos and Sounds	

3.3.3 MAKING AND USING LOW COST TEACHING AIDS

Making teaching aids is an emotionally intellectually aesthetically and professionally rewarding experience. It is an act of creation. It is an affirmation that I as a teacher care about the pupils and believe that, with the help of these learning aids, they can learn. It is an act of love.Teaching aids provide a stimulus for exploration end thinking. With the added input of verbal, personal communication with an adult, interaction and discussion arise...and these are crucial to reel, activity-based learning.

Adults (and older children) help younger ones to interpret sensory and language experiences, to clarify them and relate them to their previous understandings. Children then learn by blending language with experiences. They learn to think. For maximum mental growth and personality development, a child's life needs to be filled with stimulating, encouraging experiences. Appropriate low cost learning materials (teaching aids) help children to develop their innate abilities Who can make these low cost teaching aids?

Teachers, anganwadi / balwadi workers.
Teacher trainees and workshop/refresher course participants.
Older school students...to fulfil the community service requirements of their syllabus. Interested parents and other community volunteers.Residents of old-age homes, jail inmates, and others.

3.4 Electronics and web based technology applications:T.V,digital recorders,downloaded AV films,search engines,online learning materials,language apps

Children learn best by observing and copying the behaviors of adults. It is therefore evident that learning is more effective when sensory experiences are stimulated. These include pictures, slides, radios, videos and other audiovisual tools including TV,Digital Recorders,downloaded AV films . According to the Webster dictionary, audio-visual aids is defined as 'training or educational materials directed at both the senses of hearing and the sense of sight, films, recordings, photographs, etc. used in classroom instructions, library collections or the likes". There are various types of audiovisual materials ranging from filmstrips, microforms, slides, projected opaque materials, tape recording and flashcards. In the current digital world, audiovisual aids have grown exponentially with several multimedia such as educational DVDs, PowerPoint, television educational series, youtube, and other online materials. The goal of audio-visual aids is to enhance teacher's ability to present the lesson in simple, effective and easy to understand for the students. Audiovisual material make learning more permanent since students use more than one senses. The outcome is to promote the audiovisual material in secondary schools because they lack the resource to produce them. The visual instruction makes abstract ideas more concrete to the learners. This is to provide a basis for schools to understand the important roles in encouraging and supporting the use of audiovisual resource. In addition, studies have shown that there is significant difference between the use and non-use of audiovisual material in teaching and learning.

The web is a fast growing Technology.The number of sites doubles every six months.Web is too vast to browse by merely following the links.A number of websites consist of searchable indexes to information on the web.Infosys and yahoo are topic oriented indexes.Altavista is a search engine with availability of full text indexes.Askjeeves is a natural language search site.Search engines keep track of information available on the internet.They have programs to follow everylink in a given page and make an entry into huge database,which is often indexed.There is another type of search engine known as meta search engine that gives information to other search engines.There are various online learning materials which help in facilitating language and communication that can be accessed in the internet.Apart from that we have various language apps available

and downloaded in ipads and mobiles which facilitate communication.Some of them are discussed below.

3.4.1Language Apps for children

App Name	Focus	Age Group	Description	Purchase/Download Info
Peek-a-Boo Barn Lite	- Spatial concepts (in, on, under, next to) - Animal sounds - Vocabulary (animals names, open/shut, barn) - Turn-taking - WH questions (what, where)	0-3	Listen to animal noises, then push barn doors to reveal the farm animal inside. Available in 10 languages.	Free on iTunes for iPhone/iPad and Android
Toca Boca Kitchen Monsters	- Verbs - Labeling (foods) - Language expansion (practice 2+ word phrases) - WH questions - Following directions - Environmental sounds	2-6	Choose and prepare various foods before feeding them to a Toca monster.	Free on iTunes for iPhone/iPad
TallyTots	- Verbs - Two-word combinations - Counting - Concepts (i.e. matching, size (big/little, on/off) - Following directions	2-6	Involves counting 1-20. Each number coordinates with an activity that illustrates language concepts	iTunes for iPhone/iPad and KindleFire/Android
Speech Tutor	- Articulation - Visual cues (what mouth, lips, tongue, etc. are doing) for production - Tips for producing the sound - Other information about a selected	All Ages	Watch a virtual mouth as it produces selected sounds. This application also provides tips for producing the sound and age for when we expect mastery of each sound.	Free on iTunes for iPhone/iPad

	sound			
My PlayHome Lite	• Vocabulary (around the house) • Actions • Pronouns • Following directions	2-6	Manipulate people and things inside an interactive home (i.e. make Mom drink water, put Dad behind the couch, make the boy jump on a chair).	Free on iTunes for iPad and Android
Articulation Station	• Articulation • Matching • Labeling	All ages	Speech sounds in words, sentences and stories in all positions of words (i.e. initial, medial and final). Choose from flashcards or matching games. Easy to keep track of accuracy and progress.	Free to download on iTunes for iPhone/iPad
iSequence	• Sequencing • Expressive language (grammar, syntax) • Vocabulary	5-7	Put 3-4 picture sequences in the correct order. Includes 100 sequences.	On iTunes for iPhone/iPad
Blue Whale-NACD	• Apraxia and articulation (CVC productions only)	1+	Imitate consonant-vowel-consonant ("CVC") productions. 8 levels of complexity included.	On iTunes for iPad. Also available for for Kindle, Android tablets and Nook.
Describe It to Me	• Word-finding • Categories • Salient features • Object function • Parts • Location	5+	Complements EET program (Expanding Expression Tool). App can be used both expressively (e.g. to generate ideas), or receptively (e.g. correctly select or point to various objects' categories, function, parts). Customize vocabulary given child's needs, as well as skills targeted (categories, parts, etc).	On iTunes for iPad (free sample on iTunes).

Full Social Skills Builder	• Understanding emotions • Perspective taking • Identifying appropriate responses (making comments, asking for information)	5-12	Videos are organized according to age group (school age, adolescent). Watch videos in different environments (school, community). Child answers 3-5 multiple choice questions following video.	On iTunes for iPhone/iPad .

Here are seven other assistive communication apps for the iPad that you may find useful:

Proloquo2Go

 Company: AssistiveWare

Proloque2Go is the most well known of of all the assistive communications apps on the iPad. It is also one of the priciest. Proloque2Go is a full-featured augmentative and alternative communication solution for autistic children who have difficulty speaking. Easy to set up and use it provides natural sounding text-to-speech voices, high resolution up-to-date symbols, powerful automatic conjugations, a default vocabulary of over 7,000 items and is fully expandable. The app is very easy for individuals with special needs to navigate through the menus. It has a beautiful graphic display and great voice quality.

iCommunicate for iPad

iCommunicate for iPad allows you to create pictures, flashcards, storyboards**,** routines, visual schedules and record custom audio in any language. Aside from beeing an AAC device iCommunicate also includes task completion and audio visual prompting. iCommunicate comes preloaded with 10,000 symblstix pictures. You also have the ability to insert Google images and the story boards are printable. One negative is that this app is for the iPad only. The feature set is definitley not as robust as Proloque2Go, but you get what you pay for.

iComm

Looking to get your feet wet with an AAC app without forking over big bucks? iComm may be for you. iComm lets you load picture and audio and record your own voices. Ideal for children with autism, cerebral palsy, apraxia and down syndrome. A heads up, although this app is free a lot of the features available. Another downer is that iComm only works with the iPad and iPhone and not the iPod Touch.

My Talk Tools Mobile

My Talk Tools Mobile for the iPhone, iPod touch and iPad enables people with communication difficulties to express their needs and desires to those around them. My Talk Mobile represents a major breakthrough in augmentative, alternative communications (AAC) by making it easy to customize how you communicate through a variety of images, pictures, symbols and audio files including human voice. In 5 minutes, you can create your very own content and communicate in a way that YOU choose. My Talk offers a robust feature set for the price. The app can also be shown on an external display making it great for school.

Look2Learn – AAC

Look2Learn (L2L), a revolutionary AAC software application for the iPod Touch, iPhone, and iPad allows individuals to work at their communicative level using photographs to express wants and needs. The easy to use system integrates preloaded vocal output so that individuals can use their "voice". In addition, users are able to record their own personalized audio and pair it with photos! This is a good app for beginners not willing to shell out more money. One thing to concerned about is that the app can only hold 140 pictures.

Voice4U

Voice4u, is a revolutionary AAC (augmentative and alternative communication) application that helps individuals to express their feeling, thought, actions and things they need. It is a perfect solution for learning and communication for autistic individuals and people around them. With it, you will never have to guess at an individuals' wants and needs and will break down the barriers of communication for individuals with special needs. Two complaints about Voice4U are that the illustrations are not the best and that you are limited to 9 categories.

iConverse

XcellentCreations

iConverse is an educational tool designed for young children, autistic individuals, and individuals with other communicative disabilities, and also toddler-aged children who have yet to master language. iConverse is an Augmentative Alternative Communication (AAC) application for the iPhone and iPod Touch that replaces bulky and expensive communication devices used in the past. iConverse comes with only 6 preloaded image buttons so you will need to do some button making work before you can use it. It also does not come with a scheduler to help with transitions.

Use of computers for communication and networking activities via the Internet can expand the learning environment beyond the walls of the classroom and allow students with disabilities, just like other students, to access and send information literally around the world. Yet improved access and delivery systems do not necessarily bring improved instruction. To the contrary, improved learning is dependent upon the quality of instruction and not on the medium through which it is delivered.Communication technologies become a powerful tool for learning only if they offer students opportunities to gather a wide variety of resources and information and then to exchange their thoughts and ideas with others in collaborative learning environments, networked through the Internet. Use of web based technology can enhance a student's acquisition of skills and content knowledge when the computer is used to deliver well-designed and well-managed instruction.A teacher's ultimate goal is to help students develop skills and knowledge that can be used in real-world settings.Many computer-based applications—such as the Internet, communication technologies,CD-ROM reference materials, and multimedia presentation tools can provide students with opportunities to use their skills to engage in projects.

3.5 Web based technology for using and training of ISL

Cloud-based remote desktop, live chat and web conferencing solutions, had announced a partnership with Lionbridge Technologies, Inc. (NASDAQ: LIOX), a leading provider of translation solutions, to deliver customer support software with automated multi-language chat translations. The ISL Pronto live chat support software is now integrated with Lionbridge GeoFluent to help businesses assist international customers more effectively. Whilst ISL Pronto enables website customer service with real-time interactions between online visitors and help desk operators, the integrated GeoFluent service delivers instant, quality translations of their text chats. Translations into and between 30+ languages are initiated on-demand by customers or operators within the existing ISL Pronto chat application. ISL Pronto is live chat support software for websites that lets you respond directly to your online visitors and offer immediate technical assistance. Apart from basic text chatting, rich functionality such as customer identification, CRM integration

, quality desktop sharing and a video conference, improves consumer satisfaction and increases conversions. Unlike other live chat solutions, ISL Pronto is available in 32 languages, including most of the European languages, as well as Arabic, Japanese and Chinese.

Although international companies find the service appealing, the main problem with real time support remains in language related issues. "Since the language barrier exists in a surprisingly high percentage of chats," explained Jure Pompe, CEO and co-founder of ISL Online, "we wanted to improve ISL Pronto with an automated on-demand translation service to help assist international customers better, faster and without the extra language-specific operators. Lionbridge's GeoFluent was the logical addition to our chatting facilities."

GeoFluent is a customized automated translation solution for customer support applications such as online chat and community applications. Unlike other automated translation solutions, GeoFluent's patent-pending technology delivers an actionable and understandable real-time translation where other automated approaches fail, and where traditional translation approaches are not practical. With GeoFluent, support organisations can expand their international operations more easily while reducing their costs. In India Indian Institute of Technology Guwahati is undergoing a research project.Development of Text to Speech System in Assamese and Manipuri Languages Sponsoring Agency: DIT, Govt. of

India. Principal Investigator: Prof. S. R. M. Prasanna Co-investigator: Dr. R. Singh (CSE Dept.)

Another research project is been carried out in IIT,Guwahati on Development of an Indian Sign Language Recognition System for Hearing Impaired Students of India .

Sponsoring Agency: National Mission on Education through ICT, MHRD, Government of India.
Principal Investigator: Dr. M. K. Bhuyan
Co-investigator: Prof. P.K. Bora

Ramakrishna Mission Vivekananda University , was established with Faculty of Disability Management and Special Education (FDMSE) as one of its faculties in Ramakrishna Mission Vidyalaya, Perianaickenpalayam, Coimbatore.They have created a visual dictionary of Indian Sign Language containing huge number of signs and they are improving it everyday. They are also planning to introduce flash cards, quizzes, puzzles etc to make learning Sign Language easy and fun.

3.6 Sign to text and text to sign technology

The software application being developed by scientists in Aberdeen is the first of its kind in the world which can be used on portable devices and allows users to customise sign language to their own specific needs.The technology has the potential to transform how sign language users communicate, whether they are profoundly deaf or have lost hearing in later life.Computing scientists at *Technabling*, a spin-out company of the University of Aberdeen, are behind the technology which aims to bridge the gap between sign language and more standard forms of communication.One of its main focuses is to help young deaf people gain employment opportunities.Dr Ernesto Compatangelo, a lecturer in Computing Science at the University of Aberdeen, and founder and Director of *Technabling* said:"The aim of the technology – known as the *Portable Sign language Translator (PSLT)* - is to empower sign language users by enabling them to overcome the communication challenges they can experience, through portable technology."The user signs into a standard camera integrated into a laptop, netbook, Smartphone or

other portable device such as a tablet."Their signs are immediately translated into text which can be read by the person they are conversing with."The intent is to develop an application - an "app" in Smartphone terms - that is easily accessible and could be used on different devices including Smartphones, laptops and PCs."The *PSLT* has the potential to be used with a range of sign languages including British Sign Language (BSL) and Makaton.The number of people in the UK whose first or preferred language is BSL is estimated to be between 50,000 (Action on Hearing Loss) and 70,000 (British Deaf Association).BSL is however, a general-purpose language and therefore poses limitations for users, making it impossible for them to easily express certain concepts and terms that are very specific or used only within particular areas of society – for example education and the workplace.To overcome this, *PSLT* enables users to personalise sign language to their own individual needs.In India some IT based companies are trying to develop some web based software and mobile applications to convert the sign to text and text to sign.

3.7 Augmentative and Alternative communication for children with Hearing Impairment and additional /associating concerns.

Advances in computer technology have led to the creation of specialized devices—called augmentative and alternative communication (AAC) devices—that help make it possible for individuals with no speech, or individuals with poor speech, to overcome their communication problems.Augmentative devices are designed to support or enhance the speaking capability of a person. Alternative devices, on the other hand, replace speech as a means of communication.There are a variety of electronic AAC devices on the market, ranging from very low tech to very high tech, and ranging in price. Some devices are "dedicated,"that is, their only purpose is to provide a means of communication. Other devices have been designed to work in conjunction with a computer that plays multiple roles (such as word processing or calculations). In addition, existing computers can now be modified for use as an AAC device through the addition of special communication software and hardware. These modifications are often less expensive and more flexible than many custom-built AAC devices.All AAC systems vary in terms of their portability, complexity, input method, vocabulary representation format, and means of output delivery. Selecting an appropriate system must be tied to the needs and capabilities of the student. For example, students with physical or mental disabilities who cannot use a standard keyboard can use alternative input devices,

such as touch-sensitive pads,selection switches, or optical pointing devices. For students who have difficulty with vocabulary, AAC systems have been developed to allow communication through word selection devices or even devices using pictures and graphics. To assist students with disabilities in delivering a message, various speech and print output devices have been developed. Today, many communication devices have incorporated either synthetic or digital speech output.Synthetic speech is artificially generated by the computer, while digital speech is an actual recording of human speech stored in the memory of the device. Written output can be provided by printers that are built into the communication device or attached externally, but this option is cumbersome because of the large amount of paper required. As a result, some devices use liquid crystal displays (LCDs) to show students' messages—some displaying a single line of text at a time, some displaying multiple lines of text, and some using both the LCD and speech output together.Clearly, AAC systems can be extremely powerful tools for individuals with speech and language disorders. At a banquet for software publishers in 1998, a letter was read from a young man whose computer had been outfitted with a device converting text to speech output. In his letter, he talked about how technology had changed his life:"Until now, I have never had a voice or a way to communicate. Until this year I was in a special education classroom. Now I am in the regular school in eighth grade. My computer has been the best thing that has ever happened to me in my life. Now people do not have to read my words. They can listen like everyone else." While an AAC device can enable some students with severe communication disorders to participate in instructional activities alongside their nondisabled peers, the rate of message transmission is still quite slow compared with normal speech. As computer-based technologies advance and AAC devices become smaller, more flexible, and less expensive, they will likely help even more students with communication disorders in the future.

Lets Sum Up

Technology plays a very important role in facilitating language and communication.Both low cost technology as well web based technology helps in development and learning.Low cost aids like printed materials as in books,news papers,magazines,articles,calendars,postcards,flashcards,diagrams,charts,etc facilitates learning.Apart from it Audiovisual aids using electronic technology like television.digital recorders,Audiovisual films also helps in learning.Internet has made everything and anything impossible as possible.With one touch and click

everything is in our hands.Various search engines,online learning materials and various downloaded language apps can facilitate learning.

Web based technology for using and training in ISL implies to the use of Internet based technology for training in Indian Sign Language.The ISL Pronto is a recent development which is a live chat support software for websites that lets you respond directly to your online visitors and offer immediate technical assistance. IIT Guwahati is undergoing two projects regarding web based technology and its use in ISL.Ramkrishna Mission ,Coimbatore has developed a web based ISL Dictionary.

AAC systems can be extremely powerful tools enabling some students with severe communication disorders to participate in instructional activities alongside their nondisabled peers.

The barriers of inadequate teacher training and high cost are problematic– significantly inhibiting the use of technology in classroom settings. There is no doubt that technology has the potential to act as an equalizer by freeing many students from their disability in a way that allows them to achieve their true potential. More widespread use of technology would meet both the legal requirements and the spirit of the laws calling for students with special needs to be educated in the least restrictive environment. Working together, parents, teachers,administrators, and school board members, as well as both students with disabilities and their nondisabled peers, can help create classroom environments in which *all* students have opportunities to learn.

Check your progress

1.What do you mean by low cost technology teaching aids?

2.What are the different types of low cost technology teaching aids?

3.What are the different electronic and web based applications?

4.How can internet be used as a technology facilitating language and communication?

5.What is sign to text and text to sign technology?

6.How can web based technology be used in training of ISL?

7.What is Alternative and Augmentative Communication?

8.What are the different types of AAC'S used for Hearing Impaired population?

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