
UNIT 11 ICT FOR DISABILITY

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11.1 INTRODUCTION

Technology has the potential for making significant impact in the lives of persons with disabilities. It can enable them to compensate for physical or

functional limitations and as a result allowing them to enhance their social and economic inclusion in society. Technology helps persons with disabilities to live an independent life to a great extent. Assistive technology provide greater independence to persons with disabilities by enabling them to perform tasks that earlier they were not able to accomplish or had much difficulty in doing.

Recent pandemic has forced the extensive use of technology by various people. As a matter of fact only technology is connecting all of us to the outside world and most of us have been using it to compensate for physical contact. Many organisation/companies have allowed the employees to work from home. Schools are teaching children through technology at their home, NGO's are providing counseling and other online support to the beneficiaries.

The rehabilitation services provided to persons with disabilities can be improved with the help of new advanced technologies. Keeping in mind the need and demand of persons with disabilities many new technological solutions have come into existence. The effective use of these technologies can enhance the functional capabilities of persons with disabilities and in turn they can contribute effectively for the society.

In this unit we will discuss about the various technologies useful for persons with disabilities.

11.1 LEARNING OUTCOMES

After going through this unit you will be able to:

- Describe the benefits and limitation of ICT for persons with disabilities;
- Analyse the emerging trends related to ICT for persons with disabilities;
- Discuss various types of ICT used at institutional level for persons with disabilities;
- Enumerate various types of technologies available for persons with disabilities for individual use.

11.2 ICT FOR PERSONS WITH DISABILITIES

Various Government, non-government organizations and individuals have taken initiatives for developing technologies after considering the needs of persons with disabilities. They have not only developed these technologies after research but they have also adapted several technologies developed in other countries to suit the local needs.

11.2.1 Terminologies

There are several terminologies that are used interchangeably for technology, let us discuss some of these terminologies.

11.2.1.1 Information Technology (IT)

Wikipedia definition of Information Technology (IT) is – “Information Technology the use of computers to store, retrieve, transmit and manipulate data or information in its various forms”.

11.2.1.2 Assistive Devices (AD)

The terms assistive device has been applied to a wide range of highly specialized mechanical, electronic and computer based consumer tools that are now commonly used in rehabilitation and education settings.

11.2.1.3 Assistive Technology (AT)

Assistive technology refers to any tool, item or product used for enhancing, preserving or increasing the competencies and abilities of individuals with disabilities to their potential.

11.2.1.4 Information and Communication Technology (ICT)

Information and Communication Technology are defined as diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. Basically ICT is technology that supports activities involving information such as gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication hence information technology has become ICT.

11.2.1.5 Universal Accessibility

Universal accessibility means making a device, product, website or a building usable by the larger number of people irrespective of their language, gender, height or abilities, bringing the concerns subject within the reach of maximum number of people.

11.2.2 History of Assistive Technology

Assistive Technology is a tool or a device that help persons with disabilities in doing their activities and it enhance their capabilities, it can be a simple device or a technological tool that can help persons with disabilities. If we look into the history of development of assistive technology we can say that in 1808 Pellegrino Turri invented a typewriter to help his childhood friend Contessa Fantion in the early stages of blindness so that he can write with the help of it. Since then there have been many other such attempts to strengthen the assistance for persons with disabilities. Louis Braille developed a language based on tactile writing system for the blind in 1921 this language is called Braille. Braille has made a great impact on the lives of persons with disabilities and it has helped them tremendously.

The invention of telephone was also a big contribution for helping individuals to communicate with each other from a long distance. This device was combined with a text telephone known as telecommunication device for the deaf that enabled them for communication with the people from long distance. Televisions, remote controls, talking calculator, talking

watches, speech recognition system etc. have made the life of persons with disabilities easier.

11.2.2.1 Benefits of Information and Communication Technology (ICT)

The use of ICT has brought enormous change in the life of persons with disabilities because of the enabling effect of technology now people talk about the potentials of persons with disabilities instead of their limitations and they are seen as productive partners in every segment of society. Some of the benefits of ICT are following

- i. Promotion of equal opportunities
- ii. Improved communication
- iii. Movement and mobility is increased
- iv. Participation in community is enhanced
- v. Increased independence in various spheres of life like home, school, college, community, markets and work place etc.
- vi. Persons with disabilities become self reliant
- vii. Participation of persons with disabilities in the various activities at home, school and work place is increased and the full potential of persons with disabilities is utilized
- viii. Persons with disabilities feel self motivated
- ix. Persons with disabilities feel more accountable
- x. Persons with disabilities get more opportunities, interaction and communication with others
- xi. Self respect and confidence of persons with disabilities is enhanced
- xii. Use of technology help in improving writing and organizational skills
- xiii. Technology help them in learning through their preferred mode that is i.e. visually or auditory
- xiv. Technology facilitates sharing of resources, expertise and learning material among the users
- xv. The accessibility is higher when technology is used
- xvi. Employment opportunities for persons with disabilities are increased by the use of technology
- xvii. Persons with disabilities can participate in sports and recreation with the help of technology

Check Your Progress - 1

Note: 1) Use the space below for your Answers.

2) Compare your answers with those given at the end of this Unit.

1. Define Information and Communication Technology in your words.

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2. What is universal accessibility?

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3. Write the names of any two technologies developed to assist persons with disabilities in early years.

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4. List 5 benefits of ICT.

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11.3 PRESENT AND FUTURE OF ICT

In India we have adopted the rights based approach after signing the UN convention on the Rights of Persons with Disabilities in 2006. The Rights of Persons with disabilities Act 2016 has compulsorily adopted this approach and emphasized that the rights of persons with disabilities should be protected and they should be treated with equity and equality in each sphere of life. Consequently it has been envisaged that all measures should be taken for full and effective participation of persons with disabilities at various places. We need to respect their individual differences and accept them and provide equal opportunities to live a healthy life. Technology in a great leveler for providing equal opportunities to persons with disabilities, as appropriate assistive technology enables them to work effectively. Persons

with visual impairment can read with the help of JAWS software, they can access the online library through it and the online material available in accessible format enables them to do their studies or work. Similarly there are other technologies available for persons with other disabilities. We will discuss about them later in this unit.

11.3.1 The Present Scenario

Development of ICT for all kind of disabilities is a huge task that needs research and innovations. In India around 70% of the population lives in rural areas that makes the task of providing technological intervention for such a diverse group of people very difficult. After the enactment of Rights of Persons with Disabilities Act 2016, 21 types of disabilities have been identified and most of the persons having these disabilities require assistive device for helping them in their daily living skills or vocational skills. Various initiatives taken by government or non government organisations for research and development of assistive devices have contributed for improving the quality of life of persons with disabilities. They have not only developed the technology for persons with disabilities but they have also been able to adapt the technologies developed in other countries to suit the local needs of India. These technological devices are provided by Government to the eligible persons without any cost under a scheme called ADIP scheme, apart from this these devices are available in the market too.

Children with intellectual disabilities quite often like to use computers provided the software in the computer is suited to their slow pace, they enjoy working on it and the technology enhances their capacity by gainfully engaging them through various tasks or games. To provide them instructions there are several games available which provide them simulations, demonstrations, problem solving and discovery learning.

Persons with visual impairment find the use of technology very convenient as they can read, write, walk or do various activities with the help of technology. There are various technologies available for them to help them in their mobility, education or daily living activities i.e. smart cane, screen magnifier, screen readers, Braille printers, Braille embossors, talking diary, talking calculator, talking ATM etc.

Telephone is one of the first technological devices developed for persons for hearing impairment. Alexander Graham Bell invented the telephone for helping his wife who had a hearing disability. Individual FM system, Loop induction system, speech processing software, computer assisted remote transcription, captioning and various types of alerting devices are available for persons with hearing impairment.

Similarly there are numerous other devices to help persons with locomotor disability and cerebral palsy. For persons with autism communication skill is very important and there are few devices available to assist them. Now-a-days app based support is also provided to persons with disabilities, recently Sense International India and Samsung have developed a mobile app named

Good Vibes for persons having deaf blindness to help them to communicate with their caregivers and family members.

11.3.2 The Future

In last few years there is a revolution in the area of technology. Artificial intelligence has been a key for this sector, but when a technology is developed very few companies think about the accessibility of this technology to persons with disabilities. It is high time that as a country we think about universal accessibility of the technologies being developed for various areas of life, inclusiveness of the technologies will enhance the capabilities of persons with disabilities to a great extent. If we take the example of persons with deafblindness there is hardly any device developed in India for supporting them. The persons with deafblindness have a unique condition – a combination of visual and hearing impairment. Although the degree of deafness or blindness varies, the combination of dual sensory loss leads to unique problems in an individual's capability for communication, mobility and their ability to access information. The technological intervention with the help of an app can provide them ability to communicate with their care givers and family members. Keeping this in mind recently Sense International India joined hands with Samsung to develop a communication tool for the deaf blind. This is a two way communication app that allows the deaf blind to send and receive messages to friends, family or anybody else through their smart phone. More such initiatives needs to be taken to meet the needs of persons having various disabilities.

Recently the whole world has witnessed COVID 19 Pandemic and it has resulted that all the educational institutions are providing educational support to their students with the help of ICT. Mobile phones have been used extensively, the teachers are using various platforms to teach the children from their home. Although our educational system was not prepared to teach the students through mobiles or computers but despite all the difficulties they have been doing this for last few months. In this situation it is very difficult for persons with disabilities and their families to cope up with the lack of accessibility to suit the individual needs. This is a right time when as a country we think about the various needs of children/individual with or without disabilities, the pedagogy also needs to be aligned to suit the needs of all children.

There is a need to emphasise more on massive online open courseware (MOOCS) that can enable person with or without disability to learn at their own pace or place. Gaming has also be emerged as a powerful tool. Judicious use of accessible gaming will help the persons with disabilities for leisure, personalised virtual teacher, automated assessment and evaluation etc. Mobile technology is also helping the persons with visual impairment, hearing impairment and other disabilities to a large extent, more such initiatives needs to be taken for developing universally accessible technologies for persons with disabilities.

Check Your Progress – 2

Note: 1) Use the space below for your Answers.

2) Compare your answers with those given at the end of this Unit.

1. Rights based approach means

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2. Good Vibes app is developed by and
To help individuals with

3. Two technological devices beneficial for persons with visual impairment
are and

4. Loop induction system is beneficial for persons with

11.4 ICT FOR VARIOUS TYPES OF DISABILITIES

ICT is used for providing support to persons with disabilities, when it is used in educational institutions following the principles of universal accessibility then it helps students with disabilities tremendously and they are included in all the activities of that particular institution. Similarly when a website is designed following the universal accessibility then the needs of persons with disabilities are ensured. If at the time of planning of a course/ lecture/ discussion /visual aids/video tapes/printed material and practical/field work the accessibility for students with disabilities are kept in mind then it help in their inclusion and learning to a great extent. Distance learning programmes that incorporate universal accessibility features helps the students with diverse needs to learn at their own pace.

Use of technology for providing accessible education to students with disabilities is being done at institutions level as well as personal level. Means the technology is used by a bigger system i.e. university or a college to support the educational needs of students enrolled in various programmes including students with disabilities. On other hand the technology that helps an individual to compensate for his or her limitation or restriction in one or more areas is used at individual level. Let us discuss about this in brief.

11.4.1 Technology Used at Institution Level for Instruction

With the help of technology education can be more open and accessible to all the students enrolled in a particular programme specially the students with disabilities. With the help of these technologies support can be provided to the students with disabilities in their teaching learning process.

11.4.1.1 Online Education

Online education is very convenient for the students with disabilities as they can learn from the convenience of their home and use of accessible softwares

enables them to compensate for their inability. In online programmes there is a scope to learn at a flexible time and pace. If the students with disabilities are provided the content in accessible format then they benefit a lot from it.

11.4.1.2 Radio Programmes

Radio Programmes are being used by various educational institutes to provide education. Some of the institutions have their own community radio channels whereas other has access to FM channels or Gyanvani channels. The students with disabilities benefit from these programmes enormously. IGNOU has Gyanvani programme that offers interactive radio counseling to the students which enables them to interact with their teachers at the ease of their home. Radio programmes are not accessible to the students having hearing impairment as they will not be able to hear the discussions. The students with speech impairment will also not be able to participate in this because of their speech problem. Therefore while planning the educational support for a diverse group of learners, alternative mode for supporting students with other disabilities should be considered. In this case the students with speech and hearing impairment can be provided facility for live chats or support through telecommunication devices to the deaf students.

11.4.1.3 Teleconferencing

Teleconferencing facilities enrich the learning experiences of all students enrolled in any educational programme provided the needs of students with disabilities are considered before planning these programmes. To suit the needs of diverse group of learners, the teleconferencing programme can be made in universally accessible formats wherein the captioning and sign language interpretation is inbuilt into a programme along with the live discussions and powerpoint presentations.

11.4.1.4 Web Conferencing

Web conferencing can also be planned by adding sign language interpretation, captioning and audio recordings or descriptive captions/descriptive narrations etc. to suit the needs of individuals with various disabilities.

11.4.1.5 Mobile Phone Based Education

Smart phones have become an integral part of everyone's life in this technological era. Judicious use of mobile application can go a long way in providing quality learning experiences to students with disabilities as they can learn from the mobile application based contents provided to them by their educational institute. IGNOU has also developed a mobile application 'IGNOU e-Content' to enable the learners to access its learning material through their mobile phones. The learners can access their course material from anywhere at their convenience.

11.4.1.6 E-Resources

Availability of e-resources in accessible form are very beneficial to students with disabilities, Accessible libraries having content in e-Pub format or in

other formats suitable for persons with disabilities are providing enormous support to students with disabilities i.e. Sugamya Pustakalaya and Bookshare. IGNOU has also developed a digital educational resources repository of self learning materials of its programmes. The repository named as e-Gyankosh has all the instructional material and video programmes developed by IGNOU and it provides open access to all. E-Gyankosh is very popular among the students with disabilities irrespective of their enrolment in IGNOU.

11.4.1.7 Television

Television is very powerful tool for providing education to the learners with disabilities at their doorstep. There are several educational channels that provide facilities for learning in different subjects ranging from primary to higher education level. Gyan Dharshan is one of such channel in IGNOU that provides a variety of programmes across all disciplines to cater needs of wide range of viewers in higher education. It is beneficial for the learners of formal education system as well as other stakeholders. Learners with disabilities find it very usefull for their studies.

11.4.2 Technology used at Individual Level

Persons with disabilities use various technologies to accomplish various tasks as per their need they are discussed here for the benefit of our learners.

11.4.2.1 Technology for Persons with Intellectual Disability

Technology can compensate for the functional limitations of an individual. Persons with intellectual disability should be introduced to the technology as early as possible. The teachers need to provide them these devices in all settings including home, school, work and recreation. Because these children have limitation in their mental functioning therefore there should be a consistency in the kind of technology available, how it is used and instructional method for operating the particular device. When a child is being taught a new technology their previous learning needs to be considered. The purpose of instruction is to provide them interactive experiences to promote learning among them. Several instructional programme for children with intellectual disability are drill and practice, instructional games, tutorials, simulations, demonstrations, problem solving, discovery learning etc.

Usually the persons with intellectual disabilities are provided instructions with the help of technology. There are several technologies for daily living skills for persons with intellectual disabilities like electronic planners remind them about the various tasks that they need to do at a particular time. When the child feel lonely they can be given the talking doll or any other toy. Soothers are objects that help them to keep calm and engaged i.e. electronic devices that can make sounds or anything as simple as a small soft toy or a small pebble that can be kept in the pocket. Video based instructional system can help them in learning functional life skills such as grocery shopping, writing a cheque or using ATM etc.

Technology for assessment of children with intellectual disability has also been developed wherein integrated assessment in detail and records of each child can be kept in the assessment tool. Media Lab Asia in collaboration with C-dac has developed (Punarjjani) a software tool to equip the teachers for the progress assessment and evaluation of children with intellectual disabilities.

11.4.2.2 Technology for persons with Locomotor Impairment and Cerebral Palsy

Cerebral Palsy is a group of non-progressive condition of a person characterized with abnormal motor control posture resulting from brain injuries incurred during the prenatal parinatal or infant period of development. Due to problem in movement these children face many problems in their life. Many persons with cerebral palsy have slight impairment whereas others have serious problems that cause them to have difficulty in performing even the most common task. Technological intervention will help them in overcoming these problems and live independently as far as possible.

Persons with Cerebral Palsy with mobility impairment will need devices that can help them to go around they can use these devices for their studies or workplace. Wheelchair is the main device for mobility of children with cerebral palsy or locomotor disability. Now-a-days electronic wheelchairs are available at reasonable prices which are better than the manual wheelchairs. In case the individual is not able to use the wheel chairs they can be modified with a provision of switches that come in a wide variety. Sometimes they are shaped like a button, hand or foot operated or operated by the waving of hand etc. These switches can be selected depending upon the condition of the individual.

The most common form of human communication is speech. Children with Cerebral Palsy in some cases are totally unable to speak or in some cases they are not able to communicate effectively with their speech. In this case they may need a non speech mode of communication as an alternative of spoken language. They need alternative mode of communication therefore a few alternative and augmentative communication (AAC) devices have been developed for use of non speech mode to support these students. AAC is an integrated group of components including the symbols, aids, strategies and techniques used by individuals to enhance communication. In this system multiple components for communication are available. Some of these devices have been developed indigenously whereas others are adopted from other countries. The devices developed in foreign countries are - dedicated communication device, the alpha talker, the walker talker, the digital augmentative communicator, canon communicator, vocaid, board maker software, whereas Sanyog, Gup Shup, pictorial communication software, aditi, idraw, voice output communication aid are developed in India. These devices assist children with limited communication or no communication to communicate with their families and care givers effectively.

There are several other devices that help children with cerebral palsy and locomotor disability in their daily living activities these are computers, mobile phones, voice recognition, switches, adaptive key boards, touch sensitive screens, infra red sensors with pneumatic switches.

11.4.2.3 Technology for Persons with Hearing Impairment

Persons with Hearing Impairment are those who are having a hearing loss and because of that they are not able to process linguistic information through auditory channels with or without amplification. They may be able to hear some sounds but may not be able to distinguish words. Some other people may not be able to hear sounds at all. For these people prompts such as alarm, beep and spoken messages can be an issue of concern as they will not be able to hear. The devices that help to enhance a person's hearing capacity is called an assistive listening device. Apart from these devices telecommunication devices are developed to assist the person with severe hearing impairment. As mentioned earlier first technological device designed for persons for hearing impairment is telephone that was originally invented by Alexander Graham Bell for helping his wife who had a hearing disability. The advancement of technology has led to the development of a wide range of modern assistive listening and telecommunication devices that assist students with hearing impairment to participate more effectively in various areas of life.

Telecommunication devices allows the users to use a keyboard to type and receive messages over the phone. Mobile phones are widely used for communication through SMS or other forms of messages. For education of persons with hearing impairment individual FM system is used, it is an assistive listening device that improves the sound noise ratio for one person by using a remote microphone placed near the source of sound. A basic FM system consists of two units, a transmitter and a receiver and is like having an individual radio station that transmit and receive on a single frequency. These systems are useful in classroom lecture, in a restaurant, theaters, public meeting place, corporate conference rooms and other large areas for gathering.

There are sound enhancement technology devices that transmit the sounds from the source to the receiver by improving the signal to noise ratio. These are designed to deliver the sound directly to the listener who has direct control over intensity of sound. This technology is used to enhance the auditory signal during communication in the group, in one to one situation or audio video signals. Some examples of sound enhancement devices are FM systems, infrared system, hardware system, and induction loop system etc.

Hearing aid is an amplifier which helps the person to listen to a sound with minimum distortion by increasing the intensity of sound. The role of hearing aid is to increase the level of sound so that person with hearing impairment can detect and make use of auditory signals. We can say that hearing aid is an electronic device that amplifies sound to a degree and in a manner that will enable a person with hearing impairment to utilize remaining hearing

capacity effectively. The hearing aids are of two types one is individual hearing aid and another is group hearing aid.

There are technologies available for assessment of hearing impairment in the audio lab. The software packages allows the users to record the speech signal and graphically added the same to prepare the test words. Some of the devices used for assessment are speech processing software, visual reinforcement audiometry, pure tone audiometers, speech audiometry, speech trainer and visual aids.

There are several devices available for providing support services for daily life for persons with hearing impairment. Computer assisted remote transcription allows a stenographer to transcribe a meeting from a remote location. The facility of captioning means addition of text to a visual display that helps in conversion of spoken words into text. In many programmes on television facility of captioning is available, live speech captioning is another type of captioning that provides accessibility of lives programmes and speeches to the persons having hearing impairment. In educational setting this technology is very beneficial for students having hearing impairment as the speech is typed simultaneously by a stenographer and the text will be displayed on a screen. Alerting devices are those that listen to the sounds on behalf of the persons with hearing impairment and draw their attention to the sound source by generating a visual signal. Example of this is a door bell that makes low sound and a flash light, similarly in telephone vibration or flash light is used.

Telecommunication devices for deaf are widely used by them to make or receive a phone call. These devices generally attached with the telephones and they have a small key board for typing and a screen to display an incoming or outgoing messages. These devices can be attached with a printer to have a copy of conversation. To use the telecommunication devices the users have to type the messages that they want to convey, the written text will be automatically converted into speech and will be transmitted over the phone to another user. It converts the messages back into text form. These technologies are helpful for students with hearing impairment to interact with each other and other stakeholders.

11.4.2.4 Technology for Persons with Visual Impairment

ICT advancement has increased the quality of life of persons with visual impairment and their education is significantly enhanced by the application of technology. The modern technology has given amazing experiences to persons with visual impairment understand the unseen world through non-visual media. In this digital era mobile phones, computers, i-pad, scanner and internet has provided them opportunities for flying out of their boundaries and interact with the world. They can obtain information on any topic with the help of internet which was earlier difficult for them to get either in Braille or from other sources. Availability of e-books, e-newspapers and e-resources have helped them tremendously.

To reduce the limitations for students with disabilities several efforts are required like curriculum adaptation, training in plus curriculum, providing

modified teaching learning materials and access to technologies suitable for them. There are several technologies that help them in mobility and they can go at the desired places without any dependence on others, some of these are - white cane fitted with laser, sonic guide, touch traffic light signal, path sounder, mowat sensor, mobility assisting softwares and smart cane. All these devices help persons with visual impairments in moving around independently.

There are several technological solutions that help persons with visual impairment in their education these are - close circuit television, large print computer, screen magnifiers, screen readers, Braille embossers, referable Braille displays, optical character recognition, e-books, audio books, digitally accessible information system (DAISY), text browsers, voice browsers, audio devices, Braille note takers, talking calculator, electronic Braille, internet, mobile phones etc.

There are numerous technological devices that help persons with visual impairment for their life skills these are – Braille printing system, handy Braille, talking diary, talking watch, talking tool box, talking alarm clock, talking color detector, talking measuring tap, talking kitchen scale, talking microwave oven, talking ATM etc. With the help of these devices persons with visual impairment can undertake their daily living activities at home, workplace, market, recreation centres and in community at large. They do not need to be dependent on others for their routine activities related to various areas. The need is to provide them proper orientation and mobility training initially so that they are well aware about their surroundings and the places where they need to go frequently. The devices mentioned above will help them tremendously in various settings.

11.4.2.5 Technology for Persons with Autism

Technology plays a very important role for the benefit of persons with autism. Autism is a developmental disorder characterise by triad of impairments in social interaction, verbal and non verbal communication and repetitive interests or pattern of behavior. It is developmental disability with onset in early years and causing serious problems or delays in different areas of development of children. They are not able to relate to others and may show abnormal interests in objects, may not maintain eye contact with others, remain aloof and asocial, resist change and insist in sameness.

For children with autism intervention needs to be provided for enhancing their verbal and non-verbal communication, social interaction, leisure and play activities for their holistic development. With the help of technology they can become participative and enhance their adaptive skills. Devices like talk pad, language master, voice output communication aid, audio taping, sanyog, autism my voice communicator, first then visual schedule, my pictures talk, pictello, speech journal etc. are devices that help them in communication with their environment.

A person having autism find difficulty in focusing attention as a result learning become difficult for them. Use of technology helps them in learning as their often interested and attentive to the videos and use of computers.

Selection of appropriate technology will help in enhancement of their academic achievements, a few technology based devices are – video tapping, computers, LCD projector, autism bundle etc. there are various other softwares available for them for educational purposes.

The persons with autism have difficulty in social interaction and they show less attention to social stimuli, smile and do not look directly at other person. They have very less or no eye contact, use of appropriate technology can help them to enhance their social skills, a few of them are – bigmack, audio tapping, visual impact, symtrend ADL, tool factory beep, injini child development game suite, sound beginnings and touch it transport etc.

Check Your Progress – 3

- Note:** 1) Use the space below for your Answers.
 2) Compare your answers with those given at the end of this Unit.

1. How educational institutions can provide instructions to persons with disabilities by using technology?

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2. Write any two benefits of mobile phones for education of persons with disabilities.

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3. Name any two devices used by persons with hearing impairment?

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4. How video based instructional system will help persons with intellectual disability?

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11.5 LET US SOME UP

In this unit we discussed about the various technologies used for persons with disabilities. We have discussed various terminologies that are used interchangeably for technology. The benefits of technology were also discussed in this unit.

We traced the history of assistive technologies and discussed the present scenario regarding the technologies in the country. We also discussed the future of technology for our country.

Technologies are beneficial for persons with disabilities and these are being used by various educational institutions to provide effective support to students. We discussed the various types of technologies that the being used by various institutions for providing instructions to the students and how they can help students with disabilities.

There are several technologies that help persons with disabilities individually to accomplish various tasks. We discussed about such technologies available for persons with intellectual disability, persons with locomotor disability and cerebral palsy, persons with hearing impairment, persons with visual impairment and person with autism.

To some up we can say that technology plays very important role in the life of persons with disabilities and it offers immense possibilities for their education and daily living skills. Use of appropriate technology can empower the persons with disabilities and they can become the productive part of society.

11.6 REFERENCES AND FURTHER READINGS

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11.7 CHECK YOUR PROGRESS: POSSIBLE ANSWERS

Check Your Progress: 1

1. Information and Communication Technology can be defined as a set of technological tools that are used to communicate, create, spread, store and manage the information.
2. Universal Accessibility means a material website or building is made in way that can be used by a large no. of people without any hindrance and it will be equally useful for all
3. Typewriter and telephone.
4. Promotion of equal opportunities, improved communication, enhanced community participation, persons with disabilities become self reliant confidence of persons with disabilities increase.

Check Your Progress: 2

1. Persons with disabilities are treated with equity and equality in each sphere of life and their individual differences are respected
2. Sense International India and Samsung, deafblindness
3. Smart cane, Screen Readers
4. Hearing Impairment

Check Your Progress: 3

1. Educational Institutions can provide instructions to students with disabilities very effectively through the use of radio programmes, mobile apps, web conferencing , e-resources, teleconferencing and television programmes etc.
2. i) Study material can be accessed from anywhere
ii) Students can be provided continuous support by the teacher through smart phones
3. Hearing aid and induction loop system
4. It will provide them interactive experience and will enhance their functional limitations to some extent.



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