UNIT 7: INFORMATION AND COMMUNICATION THECHNOLOGY IN DISTANCE EDUCATION

UNIT STRUCTURE

7.1 Learning Objectives

7.2 Introduction

7.3 What is ICTs?

- 7.3.1 Growth of ICTs
- 7.3.2 Application of ICTs

7.4 Role of of ICTs in Open and Distance Education

- 7.4.1 Advantages of ICTs
- 7.4.2 ICT-Based Learning: Different Evolving Areas
- 7.4.3 Institutes offering ICT-based Education

7.5 Challenges of ICTs in Educational Use

7.6 Adopting Strategies for Effectiveness of Distance education

7.7 Use of ICTs in the North East of India

7.8 Let Us Sum Up

7.9 Further Reading

7.10 Answer to Check Your Progress

7.11 Possible Questions

7.1 LEARNING OBJECTIVES

After going through this unit, you will be able to:

- explain the meaning of Information and Communication Technology (ICT)
- discuss the role and usefulness of ICT in Distance Education
- trace the growth and application of ICT in Distance Education
- find out the challenges of ICT in educational use
- develop strategies for effectiveness of ICT in Distance education

7.2 INTRODUCTION

Information and Communication Technology, commonly known as

ICT, has opened up new avenues in the field of education in today's world. Information and communication technologies (ICTs)-which include radio and television, as well as the latest digital technologies such as computers and the Internet-have been hailed as potentially powerful tools for educational change and reform. When used appropriately, different ICTs are said to help expand the reach of education, strengthen the relevance of education in increasingly digital workplace, and raise educational quality by helping to make teaching-learning an interesting and engaging (innovative) process. Because of ICTs, students are no longer isolated but are actually connected with each other and with teachers in an electronically supported community. The use of ICTs in both school and higher education has developed greater self-direction and motivation in the learners. This has helped them move away from teacher-centric approach to self-learning approach. Instead of receiving information or knowledge from the teacher who is traditionally seen as the 'knowledge bank', students can now derive information at any time from anywhere and develop their understanding of the course-content without any external help with the use of ICTs. This unit will not only help you to explain the meaning of ICTs but will also encourage you to examine how ICTs have brought in a remarkable change in the various processes of educational transactions through open and distance learning in which the tools of ICTs have been best exploited.

7.3 WHAT IS ICTs?

ICTs stand for Information and Communication Technologies and are commonly defined as a 'diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information.' These technologies include print media, computers, broadcasting technologies like radio and television, telephony, and the internet, teleconferencing, web-technology etc. In recent years, there has been a worldwide interest in examining how computers, internet and web-technology can be used to improve the efficiency and effectiveness of education in both formal and non-formal settings. But, ICTs are more than

just these technologies. For instance, till other day when we talk about the second generation of distance education, radio and television have been abundantly used in both open and distance learning. However, print still remains the cheapest and most accessible medium and the most dominant delivery mechanism in the education system of both developed and developing countries. In a developing country like India, the use of computers and the internet is yet to gain momentum in the remote areas due to limited infrastructure and the high costs of access. Hence, still there is a scope of discussing the usefulness of ICTs in diverse situations.

However, different technologies are typically used in combination rather than as the sole delivery mechanism to enhance the effectiveness. For instance, if we take the example of the Kothmale Community Radio Internet in Sri Lanka, we find that it uses both radio broadcasts and computer and Internet technologies to facilitate the sharing of information and provide educational opportunities in a rural community in Sri Lanka. The Open University of the United Kingdom popularly known as UKOU, established in 1969, which is also the first educational institution in the world wholly dedicated to open and distance learning, still relies heavily on print-based materials supplemented by radio, television. Recently, they have also introduced online programmes to facilitate effective learning. The secret of the success of U.K.Open University lies in clearly identifying the needs of students, providing a strong student support service; and combining conventionally taught components with the use of latest technology including videotapes, audiotapes, television, e-conferencing, and discussion groups. Similarly, the Indira Gandhi National Open University (IGNOU) in India combines the use of print, recorded audio and video, broadcast radio and television, and audio conferencing technologies as tools of education. So, ICTs are extensively used for educational purpose all over the world and it is in the field of open and distance education that the resources of ICTs are best exploited.



CHECK YOUR PROGRESS

Q 1: What is the meaning of ICTs?

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Q 2: What are the Characteristics of Property rights? (Answer in about 40 words)

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7.3.1 Growth of ICTs

The growth of communication technologies has a long history. You perhaps know that communication is fundamental to the human civilization. It is because, a society can function only when communication is made possible among its members. In ancient times, human beings communicated through writings on stone or wood and communication was limited only to a small area. But, along with the advancement of civilization, other means of communication were also tried and invented. For example, the invention of the printing press revolutionized the processes of communication to a larger group. However, it took a lot of time to transform our society from symbols, gestures, signals to printed forms of communication system. Today however, we have the most sophisticated processes of communication, in print and non-print forms which have enabled increased ability to share experiences and information with each other in a much productive manner. The non-print communication technologies mainly include important media like audio, video, telecommunication and multimedia communication. Subsequently, more emphasis is given on the manufacture, storage, processing, editing and transmitting of

information to be used by everyone. So, with the advancement of ICTs human beings have moved towards an information-based or knowledge-based society. Following are the different stages in the growth and development of information and communication technologies.

- **Audio Media:** The growth of Radio took place mainly around 1920s and 1940s. Since then, Radio has transformed our society like never before. With the development of new broadcasting facilities like FM Radio audio media has established itself as a powerful tool for entertainment as well as information. The use of radio for education came later. For accessing a large number of persons at the same time, radio was realised to be a potential medium for enhancing and exchanging knowledge. Apart from Radio, the development of technologies like gramophone records and cassettes can be seen as the most popular and easily accessible medium for the public. Although used mostly for entertainment, the audio tape has tremendous educational value. However, the idea of audio media has been given another boon with the invention of Compact Disk (CD) and DVD (Digital Versatile Disk) as they give better voice and sound quality.
- **Audio-Visual Media:** Along with the radio there emerged television in the late 19th and early 20th century. Subsequently, audio visual technologies rapidly expanded all over the world. This technology that began with broadcast television mainly in the developed first world countries now embraces video cassettes, cable TV, computers, video texts, video disks etc. The reach of TV is also increasing day by day as both the public and the private providers are offering programmes of all kinds according to the requirements of the target audience. It was on the basis of the effectiveness of the audio-visual media that it began to be used in a large scale for educational purpose.
- **Telecommunication:** Telecommunication technologies began with the transmission of telegraphic signals over wires. With

the invention of Grahame Bell's telephone set in 1876, telephony or long distance voice transmission became a popular word. Bell almost changed the way human beings communicate. The invention of fax machine further intensified the processes of exchanging communication. The latest avatar of telephone is the mobile phones. This mobile technology which started as a medium to transmit audio at a distance can now transmit full media like audio, video, picture, text etc. The latest invention of 2G and 3G technologies have changed the entire experience of mobile telephony and internet connectivity which you all must be well aware of.

- **Multimedia Communication:** Multimedia is a type of media and content that uses a combination of different forms of communication. As the term itself suggests, it is used in contrast to the traditional idea of media which only use traditional forms of printed or hand-written material. Multimedia includes a combination of text, audio, still images, animation, video, and other interactive contents. Multimedia is usually recorded and played, displayed or accessed by information content processing devices. But they can also be part of a live performance. Multimedia also describes electronic media devices used to store and experience multimedia content. The emergence of satellite technologies, Internet and Intranet technologies since 1990s onwards has changed the ways of exchanging information. Consequently, multimedia technologies have tremendous potential as means of exchanging educational content. You pause for a while and try to think how computers and internet have changed your life-style in the last four or five years.



CHECK YOUR PROGRESS

Q 3: How did the prehistoric people used to communicate?

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Q 4: What are the different stages in the growth and development of information and communication technologies?

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7.3.2 Application of ICTs

Perhaps the most important point to remember while using technologies for educational purpose is to see if the resources of ICTs are actually used according to the requirements of different target audience. This means that the proper use and application of ICTs can still be considered a serious issue. There are two possible ways to see the application of ICTs in our society. ICTs have given us various efficient and worthwhile tools of communication. It has, at the same time, also widened and enlarged the horizon of human beings. The application of ICTs in education can be briefly understood in terms of the following two points: Access and Teaching.

- **Access:** The desire to access more and more people at the same time has made human beings invent ways of faster communication processes. Thanks to modern communication technologies, it has been possible to reach out to a large number of people effectively in no time. For example, with the help of transmission networks and satellite based communication systems people have accessed a large section of the population. After telephones, fax machines and mobile phones, and now computers have brought new technologies to access people.

This becomes possible because a huge amount of information can be stored and exchanged with a stroke in the computer key board. However, the latest trends in teleconferencing which includes audio conferencing, video conferencing and computer conferencing,have made the application of ICTs much more productive and efficient. Subsequently, there emerged various other technologies to suit the requirements of the content being used for teaching.

The idea of access has changed drastically with the development of Internet and the World Wide Web. Electronic mail or E mail is cheap and instantaneous and has become the order of the day. Of late, Web 2.0 technologies have greatly transformed the educational environment with various tools like Blogs, Wikis and Rich Site Summary (RSS) as student support services irrespective of the mode in which one is conducting the teaching. Nowadays, E-portals and Social Networking Sites within the educational institutions are gaining tremendous popularity in bringing together all those concerned with a meaningful educational interaction. You may stop for a while at this time and try to see how SMS and Social Networking sites like ORKUT and FACEBOOK have changed today's world and how the sharing of information has become so instant and easy in the present context.

- **Teaching:** Till the other day, education was considered to be a one-man-show played by the teacher in a conventional, face-to-face setting. Moreover, people believed that learning takes place only inside the four walls of a classroom. But, thanks to ICTs, this proposition does not fit into the present context of teaching learning. The emergence of distance education has proved that learning can be made available anytime anywhere. Communication technologies have replaced both the teacher and the text books and have made teaching learning an enjoyable activity by placing the learners at their own in the learning

process.

In Open and Distance Learning, we often talk of a strong learner support service. And most interestingly, the distance education systems of the whole world have responded positively and quickly to the revolution in ICTs. This has happened mainly because of three reasons-(a) ICTs have reduced the cost of education, (b) ICTs have enabled a large number of learners to enroll in need-based educational programmes, and (c) ICTs have reduced the time and space required for introducing newer programmes of studies by adopting new flexible means. For example, video conferencing facilities are developed to enable isolated learners to share learning with others in remote areas. Other than these, the ICT-enabled support services include the pre-admission counselling, admission process, delivery of study materials both in print media and audio visual forms, provision for subject specific academic counselling, audio visual viewing facilities, participation in teleconferencing and ICT-based e-learning. Very Small Aperture Terminal (VSAT) satellite systems are increasingly seen as a powerful distribution mechanism for Internet based resources, with ready access to interactive learning tools and e-mail.

In India too, Indira Gandhi National Open University (IGNOU) provides multi-channel, multiple media teaching-learning packages for instruction and self-learning. The different components used for teaching/learning include self-instructional print and audio-video materials, radio and television broadcasts, face-to-face counseling/tutoring, laboratory and hands-on experience, teleconferencing, video conferencing, interactive radio counseling, interactive multimedia CD-ROM and Internet -based learning, and the use of mobile phones for instant messaging. The university is developing interactive multimedia content and learner support through video-conferencing and

web-based platforms by utilising both the Edu Sat and the Internet. Other than these, the Electronic Media Production Centre (EMPC) in the IGNOU campus, is entrusted with the task of production of audio and video educational programmes. EMPC coordinates the educational radio and television channels like Gyan Darshan and Gyan Vani, for enhancing and supplementing the teaching-learning process. The example of IGNOU shows that the application of ICTs is really effective in enhancing the learners support services above the conventional means and methods of learning. (adapted from http://www.digitallearning.in)



CHECK YOUR PROGRESS

Q 5: What do you mean by the word 'access' in educational use? How have ICTs enabled a better access?

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Q 6: How have ICTs revolutionized the world of education?

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7.4 ROLE OF ICTs IN OPEN AND DISTANCE EDUCATION

You must note that for the developing countries of the world, the potentials of ICTs have enabled more access and delivery of quality secondary as well as higher education. ICTs have offered the developing countries unprecedented opportunities to enhance educational systems, improve policy formulation and execution, and widen the range of opportunities for all especially the unreached. However, as I have already told you, the benefits of ICTs can be best seen through its use in Open and

Distance Education. Open and Distance learning is defined by the Commonwealth of Learning as "a way of providing learning opportunities that is characterized by the separation of teacher and learner in time or place, or both time and place; learning that is certified in some way by an institution or agency; the use of a variety of media, including print and electronic; two-way communications that allow learners and tutors to interact; the possibility of occasional face-to-face meetings; and a specialized division of labour in the production and delivery of courses." This means that both ICTs and the ODL mode of education should adopt an integrated approach to enhance a more meaningful teaching-learning process. In the following subsections you will read more about the role and use of ICTs in open and distance education.

7.4.1 Advantages of ICTs

The advantages of ICT can be understood through the following headings:

- **Easy Access to Education:** One of main features of ICTs is the ability to transcend time and space. ICTs make room for asynchronous learning often characterized by a time lag between the delivery of instruction and its reception by the targeted learners. For example, Online Learning and E-Learning facilities provide course materials that may be accessed online 24 hours a day, 7 days a week. ICT-based educational delivery also dispenses with the need for a physical location for interaction to take place. Of late, teleconferencing and video conferencing technologies have enabled instruction to be received simultaneously by multiple, geographically dispersed learners. Thus, by using ICTs, it is possible to ensure global learning of education.
- **Access to Remote Learning Resources:** Because of ICTs, both teachers and learners no longer have to rely solely on printed books and other such materials for their educational needs. With

the Internet and the World Wide Web, a huge amount of information on almost every subject can be accessed from anywhere at anytime of the day, and by an unlimited number of people. This has gained tremendous popularity in the schools of both the developed and the developing countries. ICTs also have facilitated access to resource persons, mentors, experts, researchers, professionals, business leaders, and peers from all over the world.

- **Learner-Centered Learning Environment:** Appropriate use of ICTs has brought in a paradigm shift in both the pedagogical aspect of teaching and content delivery of contemporary education. When used appropriately, computers and Internet technologies enable new ways of teaching and learning rather than simply allow teachers and students to do what they have done before in a better way. These new ways of teaching and learning have constituted a shift from a teacher-centered pedagogy, characterized more by rote learning to one that is fully learner-centered.



LET US KNOW

Teleconferencing refers to "interactive electronic communication among people located at two or more different places." In open and distance learning, teleconferencing has been a useful tool for providing direct instruction and learner support.

The nature and extent of interactivity and the sophistication of the technology:

1) Audio conferencing: It involves the live exchange of voice messages over a telephone network.
2) Audio-graphic conferencing: It involves the exchange of text and still images such as graphs, diagrams or pictures along with voice messages.
3) Video conferencing: It allows the exchange not just of voice and

graphics but also of moving images. Videoconferencing uses either a satellite link or television network.

4) Web-based conferencing: It involves the transmission of text, graphic, audio and visual media via the Internet. It requires the use of a computer with a browser and communication can be both synchronous and asynchronous.

7.4.2 ICT-Based Learning: Different Evolving Areas

In today's context, there is no doubt about the fact that ICTs are a potentially powerful tools for extending educational opportunities to the marginalized groups. These groups include-ethnic minorities, girls and women, disable persons, elderly people who are traditionally excluded from formal education due to cultural or social reasons. Following the usefulness of ICTs, various buzzwords in the education sector have been introduced all over the world. These are as follows

- **Active Learning:** Learners learn as they do and work on real-life problems, making learning less abstract and more relevant to the learner's needs and real life situation. In this way ICT-enhanced learning promotes increased learner engagement. ICT-enhanced learning is also "just-in-time" learning in which learners can choose what to learn when they need to learn it.
- **Collaborative Learning:** ICT-supported learning encourages interaction, cooperation and collaboration among students, teachers and experts regardless of where they are. ICT-supported learning provides learners the opportunity to work with people from different cultures, thereby helping to enhance learners' communicative skills as well as their global awareness.
- **Creative Learning:** ICT-supported learning promotes the manipulation of existing information and the creation of real-world products rather than the re-production of received information.
- **Integrated Learning:** ICT-enhanced learning promotes a thematic, integrated approach to teaching and learning. This

approach eliminates the artificial separation between the different disciplines and between theory and practice that characterizes the traditional classroom approach.

- **Evaluative Learning:** ICT-enhanced learning is directed towards students. Unlike the static, text or print-based educational technologies, ICT-enhanced learning recognizes that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and evaluate their own learning rather than merely listen and remember.
- **E-learning/Online Learning/Web-based Learning:** Although most commonly associated with higher education and corporate training, e-learning, online learning and web-based learning encompass learning at all levels, both formal and non-formal. Such learning uses information networks-the Internet, an intranet (LAN) or extranet (WAN)-whether wholly or in part, for course delivery, interaction and facilitation.
- **Blended Learning:** Another term that is gaining currency is blended learning. This refers to the learning models that combine traditional classroom practice with e-learning solutions. For example, students in a traditional class can be assigned both print-based and online materials. There may be online mentoring sessions with their teacher through chat, and are subscribed to a class email list. Or a Web-based training course can be enhanced by periodic face-to-face instruction.
- **M-Learning:** The term M-Learning, or "mobile learning", primarily focuses on learning across contexts and learning with mobile devices. One definition of mobile learning is-any sort of learning that takes place when the learner is not at a fixed, predetermined location, or learning that takes place when the learner takes advantage of the learning opportunities offered by mobile technologies. M-Learning also means learning with portable

technologies like MP3 players, notebooks and mobile phones. M-learning focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population. (Extracted from http://en.wikipedia.org/wiki/MLearning)



LET US KNOW

Community Radio is a type of service that offers radio broadcasting through community radio stations that serve geographic communities and communities of interest. Since Community Radio reflects the activities of the Community, the broadcasting jurisdiction is small usually covering a radius of 15 km.They broadcast relevant and popular content to a local/specific audience, which may often be overlooked by commercial or mass-media broadcasters. Community radio stations are operated, owned, and driven by the communities they serve. Community radio is not-for profit system and provides a mechanism for facilitating individuals, groups, and communities to tell their own diverse stories, to share experiences, and in a media rich world to become active creators and contributors of media. Community radio has developed differently in different countries and thus the term has somewhat different meanings in the United Kingdom, Ireland, the United States, Canada, and Australia. Even in India, more than 300 CR stations have been established. CR has also proved to be an important means of imparting education. We should know that the first community radio of the North East of India "Gnan Taranga" has been established under the auspices of KKH State Open University, Guwahati. This is followed by "Radio Luit" the second CR of the NE established by Gauhati University under the Institute of Distance and Open Learning.



CHECK YOUR PROGRESS

Q 7: What are the three advantages of the use of ICT in education?

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Q 8: Name the new concepts of learning that are increasingly being used in modern times?

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Q 9: What is M-learning?

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Q 10: Mention some institutes of the world which have used ICTs as the means of imparting contemporary education.

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7.4.3 Institutes Offering ICT Based Education

Many higher educational institutions around the world are offering courses through ICT -enhanced open and distance learning. The Virtual University of the Monterrey Institute of Technology in Mexico uses a combination of print, live and recorded broadcasts, and the Internet to deliver courses to students throughout Mexico and in several Latin American countries.

The African Virtual University, which was established in 1997 with funding support from the World Bank, uses satellite and Internet technologies to provide distance learning opportunities to individuals in various English-speaking and French-speaking countries throughout Africa.

At the Philippines Open University, course materials are still predominantly print based but online tutorials are becoming a convenient alternative to face-to-face tutorials especially for students. Internet and Web-based initiatives have also been developed at the secondary education level. The Virtual High School is a result of efforts of a nationwide consortium of school districts in the United States to promote the development and sharing of Web-based courses. In Canada, Open School offers a wide range of courses and resources to grades K-12 teachers and students that meet the requirements of the British Columbia curriculum. Most importantly, course delivery is done through a mix of broadcast and video, while some courses are delivered totally online.

Over the last years many corporate universities have come into existence in the world. Corporate universities are primarily in-house organizations in large multinational companies that make use of videoconferencing and the Internet for the training of employees. If this growth continues, the number of corporate universities will exceed the umber of traditional universities by 2015.

In Asia, the 44 radio and TV universities in China (including the China Central Radio and Television University), Universities Terbuka in Indonesia, and Indira Gandhi National Open University have made extensive use of radio and television, both for direct class teaching and for school broadcasting, to reach more of their respective large populations. For these institutions, broadcasts are often accompanied by printed materials and audio cassettes.

Japan's University of the Air was broadcasting 160 television and 160 radio courses in 2000. Each course consists of 15 to 45-minute lectures broadcast nationwide. Courses are aired over University-owned stations from 6 am to 12 noon. Students are also given supplemental print materials, face-to-face instruction, and online tutorials. Large broadcasting corporations that provide school broadcasts include the British Broadcasting Corporation Education

Radio TV in the United Kingdom and the NHK Japanese Broadcasting Station.

South Korea has one of the most advanced ICT infrastructures in the world. The frequency of ICT use in South Korean society has changed the Korean higher educational system. South Korea currently has around 15 single-mode virtual universities that offer only ICT-based courses. Among these are the Korea Cyber University, the Korea Digital University, and the Open Cyber University. These universities specialize in lifelong learning and vocational education. Courses offered cover a wide range of fields, including technology, management, law, languages, social sciences, education, and theology. Online courses are also offered by more than 100 South Korean dual-mode universities. It began with the launch of the Virtual University Trial Project (VUTP) in 1998.

In developing countries, school broadcasts are often a result of a partnership between the Ministry of Education and the Ministry of Information. General educational programming consists of a broad range of programme types-news programmes, documentary programs, quiz shows, educational cartoons, etc.-that afford non-formal educational opportunities for all types of learners. Even India is also not lagging behind. In India also more reputed institutes like the IITs and open universities like IGNOU, New Delhi, YCMOU, Maharastra, conventional universities like Jadavpur University, Kolkata are far ahead of other educational institutes, in applying the benefits of ICTs in imparting education.

7.5 CHALLENGES OF ICT IN EDUCATIONAL USE

Use of ICTs is not free from problems. One common challenge is bridging the gap between those who have access to technology and those who do no have. Because of this gap the introduction and integration of ICTs at different levels and in various types of education will be a most challenging undertaking. The failure to meet the challenge would mean a

further widening of the gap and the increasing of existing economic and social inequalities between the rich and the poor. However, it is commonly accepted that there are four major challenges that an institute must try to cope with while introducing ICTs. These are in respect of effectiveness, equity, cost and sustainability. Let us have a closer look at them.

- **Effectiveness:** The effectiveness of ICTs mostly depends on how and for what purpose they are used. Moreover as a mode of educational delivery, ICTs may not work for everyone, everywhere in the same way. Consequently, one of the most difficult problems in trying to assess the effectiveness of ICT is that standardized tests cannot capture the kinds of benefits that are expected to be derived in a learner-centered environment. The impact of educational radio and television broadcasts on the quality of basic education still remains an under-researched area.
- **Cost:** Broadly speaking ICT enhanced teaching-learning processes is more expensive. For example, educational television broadcasts and computer-based online-learning programmes are more expensive than radio broadcasts. Heavy expenses on ICT infrastructure is a hurdle for the developing countries to make a meaningful shift towards ICT-enhanced learning.
- **Equity:** Given the wide disparities between rich and poor countries and between different groups in gaining access to ICTs, it is argued that the use of ICTs in education will widen the existing divisions among the people. This will also intensify economic, social, cultural, geographic and gender-related problems. So, the use of ICTs in education, when done without careful considerations, may result in the further marginalization of those who are already disadvantaged or underprivileged. For example, women have less access to ICTs and fewer opportunities for ICT-related training compared to men mainly because of illiteracy and lack of education and mobility. Equal attention must be paid to ensuring that the technology is actually being used by the target learners.
- **Sustainability:** There is no one-to-one formula for determining the

success rate of ICT integration in the educational system. The various challenges that policymakers and planners, educators, education administrators and other stakeholders need to consider include educational policy and planning, infrastructure, language and content development, capacity building, and financing. Attempts to enhance and reform education through ICTs require clear and specific objectives, guidelines and time-bound targets, the mobilization of required resources and the commitment at all levels to see the initiative begin.

7.6 ADOPTING STRATEGIES FOR EFFECTIVENESS IN ODL

However, the experience of introducing different ICTs in the classroom and other educational settings over the past several decades suggests that the full realization of the potential educational benefits of ICTs is not regular. Instead, the effective integration of ICTs into the educational system is a complex, multifaceted process that involves not just technology but also curriculum and pedagogy, institutional readiness, teacher competencies and long-term financing, among others. This briefing is intended to help policymakers define a framework for the appropriate and effective use of ICTs in the educational systems by first providing a brief overview of the potential benefits of ICT use in education. Secondly, it addresses the four broad issues in the use of ICTs in education-effectiveness, cost, equity, and sustainability.

The policy makers and stakeholders of education must, first of all, be clear about the outcomes of ICT based education. They should choose an appropriate technology but should also see the potentials of such technology. The potentials of each technology vary according to how it is used. ICTs like print, audio/video cassettes, radio and TV broadcasts, computers or the Internet may be used for presentation and demonstration. On the other hand, the full potential of networked computers and internet as educational tools will remain unrealized if they are used merely for presentation or demonstration.

Radio and television have been used widely as educational tools since the 1920s and the 1950s, respectively. There may be three possible approaches to the use of Radio and TV broadcasting in education-a. Direct Class Teaching where broadcast programming substitutes the teachers on a temporary basis; b. School Broadcasting where broadcast programming provides complementary teaching and learning resources not otherwise available; c. General Educational Programming Over Community which are national and international stations which provide general and informal educational opportunities.

Besides the above mentioned recommendations measures must be taken in terms of Education administrators, Technical Support Specialists, Teacher Professional Development. In this context, leadership plays a vital role in the integration of ICTs with education. Content development is another crucial area that is too often overlooked. The bulk of the existing ICT-based educational material is likely to be in English or of little relevance to education in developing countries especially at the primary and secondary levels. There is a need to develop original educational content in the vernacular languages too. Radio Programs, Interactive Multimedia Learning Materials on CD-ROM or DVD, Web-based courses etc. adapt existing content, and convert print-based content to digital media. These are the tasks for which educational content development specialists such as instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia course authors, course editor and web-developers are needed.

A rigorous analysis of the present state of the educational system is a must before the introduction of ICT. ICT-based interventions must take into account the current institutional practices and arrangements. Specifically, the barriers to ICT use need to be identified, including those related to curriculum and pedagogy, infrastructure, capacity-building, language and content, and financing. The specification of educational goals at different levels as well as the different modalities of the use of ICTs that can best be employed in pursuit of these goals. This requires of the policymaker an understanding of the potentials of different ICTs when applied in different contexts for different purposes.

7.7 USE OF ICTS IN THE NORTH EAST OF INDIA

In an economically underdeveloped and educationally stagnant Indian region like the North East where ODL still needs expansion, ICT-enabled education may be considered a solution to the various problems of outreaching. As we all can see, the growth and penetration of digital technologies in recent years have greatly influenced the educational practices in North East India as well. Of late, the North-East, like the other parts of India, has experienced tremendous growth in the use of technology to enhance learning through the distance mode. In the context of entering into ICT-based learning in Assam, Krishna Kanta Handiqui State Open University (KKHSOU), Guwahati as well as the Institute of Distance and Open Learning (IDOL), Gauhati University have taken a number of visionary initiatives. IDOL, GU has launched the first e-portal of the North-East namely www.bodhidroom.idolgu.org on November 13, 2009. The new portal has thus become a key tool for the delivery and development of educational contents to be used by teachers, experts and students not only in the North-East but also in the other parts of the world. Similarly, K. K. Handiqui State Open University has earned a distinction in the North East region by promoting the use of ICTs in higher education through its initiative to produce audio and audio-visual materials for the learners. It has also launched its web portal shortly. Rightly proposed to be name this portal as e-dristi, this portal is intended to provide a number of facilities like provision of audio book and e-radio service, audiovisual programmes and so on. Besides various online social networks (such as www.snkkhsou.org, facebook, twitter, idolgu etc)have been launched and regularly conducted in KKHSOU as well as in IDOL, Guwahati for the purpose of fulfilling the various educational needs of the learners. Of late, in Guwahati, Assam Community Radio has gained tremendous popularity. You have already come to know the first Community Radio Station of the North East of India "Gnan Taranga" has been set up under the auspices of KKH State Open University, Guwahati. This is followed by "Radio Luit", which has so far been the second CRS of the NE set up by Gauhati University under the Institute of Distance and Open Learning (IDOL).

The Community radio of KKHSOU has been connected to Internet radio so that anybody from any part of the globe can listen to “Jana Taranga” not to speak of the learners spreading over Assam. You should note that such marked developments bear testimony to Assam's emergence large as a 'knowledge community' in a technology-driven world. Other institutes, as far as the latest information goes, are also making their own web-based systems for use very shortly. Such initiatives are sure to have a direct impact on the quality of education as well as on the increase of Gross Enrolment Ratio in the North Eastern Region.

While dealing with the issue of quality assurance in Open and Distance education, one cannot but refer to what the National Knowledge Commission of India has stated: "The biggest challenge in higher education, therefore, is the provision of quality higher education to the greatest number, at the lowest possible cost to the learner" (NKC, 2009, page 5). But, it is also important to note that the National Knowledge Network (NKN) project also aims at establishing a strong and robust internal Indian network which will be capable of providing secure and reliable connectivity. Using NKN, all vibrant institutions of India with vision and passion will be able to transcend space and time limitations in accessing information and knowledge, and derive the associated benefits for themselves and for the society. If NKN becomes a reality, it would be considered a significant step towards ushering in a knowledge revolution in the country with connectivity to more than 1500 institutions from which the NE would be one of the most benefitted regions in India.



7.8 LET US SUM UP

- The meaning of ICTs and its educational use. Information and communication technologies (ICTs)-which include radio and television, as well as the latest digital technologies such as computers and the Internet-have been hailed as potentially powerful tools for educational change and reform.
- Open University of the United Kingdom popularly known as UKOU,

established in 1969, which is also the first educational institution in the world wholly dedicated to open and distance learning, still relies heavily on print-based materials supplemented by radio, television. Recently, they have also introduced online programmes to facilitate effective learning.

- The growth of communication technologies has a long history. Now there is a system of multimedia communication. It is quite situational and based on changing time and explosion of innovative thoughts and ideas.
- In open and distance learning, ICT is very useful for making education self-instructional learning. Thus, the both ICTs and the ODL mode of education should adopt an integrated approach to enhance a more meaningful teaching- learning process.
- Various education open and distance learning institutions or universities of the world or in India as well as in Northeast, have their own design of technology to be applied in their educational purposes.
- Effectiveness, sustainability or longevity, cost and equity are some of the challenges that should be taken into account while introducing the ICTs in the educational programmes of the institutions.

7.9 FURTHER READING

1) Victoria L. Tinio: ICT in Education
2) Communication Technology for Distance Education (ES-318) of Staff Training and Research Institution of Distance Education, IGNOU
3) NKC Brochure in Website: http://www.knowledgecommission.gov.in/
4) NKN Brochure in Website: www.nkn.in

7.10 ANSWERS TO CHECK YOUR PROGRESS

Ans to Q N. 1: ICTs stand for Information and Communication Technologies. ICTs refer to the various set of technological tools and resources that help communicate, create, disseminate, store, and manage information of various kinds. These tools mainly include print media, computers,

broadcasting technologies like radio and television, telephony and the internet. The use of ICTs has improved the efficiency and effectiveness of education in both formal and non-formal settings.

Ans to Q N. 2: The Open University of the United Kingdom popularly known as UKOU, is the first open university in the world. It was established in 1969. Although they still rely heavily on print-based materials supplemented by radio, television, they have also utilized the resources of ICTs by introducing online programmes to facilitate effective learning.

Ans to Q N. 3: In that time, human beings communicated through writings on stone or wood and communication was limited only to a small area. They made extensive use of symbols, gestures, signals to communicate among themselves. Gradually, other means of communication were also tried and invented. For example, the invention of the printing press revolutionized the processes of communication to a larger group.

Ans to Q N. 4: The different stages of the growth of communication technologies can be seen through Audio Media, Audio-Visual Media, Telecommunication, Multimedia Communication.

Ans to Q N. 5: Access in educational use means to be able to reach out to a large number of students. The invention of telephones, fax machines and mobile phones, and now computers have revolutionized the world of communication. However, the latest trends in teleconferencing like audio conferencing, video conferencing and computer conferencing, have made access much more efficient. The idea of access has further undergone drastic change with the development of Internet and the World Wide Web.

Ans to Q N. 6: ICTs have changed the educational sector in three possible ways: a) ICTs have reduced the cost of education, (b) ICTs have enabled a large number of learners to enroll in need-based educational programmes, and (c) ICTs have reduced the time required for introducing newer programmes of studies by adopting new flexible means.

Ans to Q N. 7 : Anytime, Anywhere and Anyhow, Access to Remote Learning Resources, and Learner-Centered Learning Environment

Ans to Q N. 8: Active Learning, Collaborative Learning, Creative Learning, Integrated Learning, Evaluative Learning, E-learning/Online Learning/ Web-based Learning, Blended Learning and M-Learning

Ans to Q N. 9: The term M-Learning, or "mobile learning", primarily focus on learning across contexts and learning with mobile devices like MP3 players, notebooks and mobile phones. M-learning focuses on the mobility of the learner and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population.

Ans to Q N. 10: Monterrey Institute of Technology in Mexico, The African Virtual University, Philippines Open University, Universitas Terbuka in Indonesia, Indira Gandhi National Open University, New Delhi, Japan's University of the Air, Korea Cyber University, YCMOU, Maharastra.

7.11 POSSIBLE QUESTIONS

A. Very Short Questions (Answer each question in about 50 words)

Q 1: What is the meaning of ICTs?

Q 2: How have ICTs affected the processes of education?

Q 3: What are the evolving areas in ICT based learning?

Q 4: Why is ICT important in open and distance learning?

B. Short Questions (Answer each question in about 150 words)

Q 1: What are the different stages in the growth and development of information and communication technologies?

Q 2: What is basic role of community radio in the society? Why is it used for the educational purposes? Explain.

Q 3: Name the new concepts of learning that are increasingly being used in modern times? Explain.

C. Long Questions (Answer each question in about 300-500 words)

Q 1: Do you feel that ICTs are advantageous tools for modern day education? If yes, please explain with detail.

Q 2: Make a brief review of the challenges that the higher education system might have faced while upgrading the traditional education

to ICT based one.

Q 3: Give a brief overview of the use of ICT in the North Eastern educational system.

Q 4: Make a survey of the use of ICTs in the North East of India.

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