

# Information and Communication Technologies (ICTs) In Distance Education – Opportunities and Challenges

Ms Ila Rani

Research Scholar, IASE, Jamia Millia Islamia

## Abstract

*Quotation from Noam (1995), “In the past, people came to the information, and the information was at the university. In the future, the information will come to the people, wherever they are”.*

*ICTs and their utilization are increasingly becoming a part of everyday operational activity in learning institutions and their importance cannot be over emphasized. Information and Communication Technology (ICT) is playing a vital role in distance learning to meet the requirements and expectations of the learners’ in large scale. It is difficult to perform the same using any traditional institutional system due to its limited resources. ICT has various proven tools and technologies to meet the requirements of a learner at various phases of learning cycle viz the admission phase, the learning phase, the evaluation phase and finally the certification phase as a service. Due to heterogeneous requirements in distance learning, there are issues and challenges that are to be addressed in usage of the technology and the service(s) being provided through ICT. There are a number of challenges that may inhibit the use of ICTs in the delivering of teaching and learning materials to students. This paper discusses some of the challenges that may be hindering the adoption of ICTs tools in the teaching and learning of students through distance education. The paper also looks at the opportunities offered by using ICTs in teaching and learning for distance education in Delhi.*

*Distance education provides many advantages for adults who need to continue their education for career sustainability. Embedding ICT in teaching-learning process is a major initiative in all branches of education; ICT has a particularly important role to play in developing provision for bilingual learners. This is concerned with exploring new ways of working with bilingual learners as well as facilitating more established techniques. The increased use of ICT to deliver and enhance aspects of educational provision is now an emerging practice for all learners belonging to rural and geographically remote and mainly monolingual areas thus having advantages in overcoming geographical barriers.*

*For example video conferencing facilities developed to enable isolated learners to share learning with others in remote areas can also be used to reduce linguistic isolation by allowing same first language learners to discuss and communicate remotely.*

*Learners Support Services are an important part of Distance Educational system. Since the learners in distance learning system are not directly involved in the regular classroom teaching-learning process having direct interaction with the teachers regularly, they are provided with adequate Learners Support Services.*

*Empowering teachers and learners with ICT skills opens up a world of learning unavailable in the past and is crucial to achieving success in today's global knowledge economy. This paper will also discuss the concepts of technology integration and the precise roles that ICT could play in enhancing teaching and learning and the problems and challenges in implementing ICT in teaching & learning in distance learning.*

**Keywords:** *Information and Communication Technologies, Distance Education, Opportunities, Challenge*

## **Introduction**

Education is considered as the keystone in each and every society. The development of any country depends largely on the quality of education. India is no exception. The ancient education system of India was primarily based on the 'Gurukul System'. But now-a-days Indian education has undergone various stages from the Vedic age to the post independence period. Modern education is not restricted within the classroom. The recent development of technology has brought out the whole world outside the classroom. Information and Communication Technology (ICT) plays a crucial role in this respect. It is treated as the integral part for educational reforms and innovations at secondary and higher secondary level schools<sup>1</sup>. The National Policy on Education (1986), as modified 1992, stressed upon employing educational technology to improve the quality of education. The policy statement led two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and studies in School (CLASS) paving the way for a more comprehensive Centrally sponsored scheme- Information for a more communication Technology (ICT in short) of schools in 2004.

Distance learning pedagogical models have revealed themselves as a valuable teaching approach for attending geographically dispersed mass educational demands, even when located in remote regions where face-to-face (F2F) educational services are not frequently available and ICT resources are scarce

or eventually unavailable. Distance learning courses have faced serious challenges with respect to the adopted pedagogical model and ICT options when their target is focused on large audiences with diversified demands and high capillarity.

The National Policy on Education 1986, as modified in 1992, stressed the need to employ educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) paving the way for a more comprehensive centrally sponsored scheme – Information and Communication Technology @ Schools in 2004. Educational technology also found a significant place in another scheme on upgradation of science education. The significant role ICT can play in school education has also been highlighted in the National Curriculum Framework 2005 (NCF) 2005. Use of ICT for quality improvement also figures in Government of India's flagship programme on education, Sarva Shiksha Abhiyan (SSA). Again, ICT has figured comprehensively in the norm of schooling recommended by the Central Advisory Board of Education (CABE), in its report on Universal Secondary Education, in 2005. With the convergence of technologies, it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. The comprehensive choice of ICT for holistic development of education can be built only on a sound policy. The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving quality of education. This policy endeavors to provide guidelines to assist the States in optimizing the use of ICT in school education within a national policy framework.

ICTs and their utilization are increasingly becoming a part of everyday operational activity in learning institutions and their importance cannot be over emphasized. Information and Communication Technology (ICT) is playing a vital role in distance learning to meet the requirements and expectations of the learners' in large scale. It is difficult to perform the same using any traditional institutional system due to its limited resources. ICT has various proven tools and technologies to meet the requirements of a learner at various phases of learning cycle viz the admission phase, the learning phase, the evaluation phase and finally the certification phase as a service. Due to heterogeneous requirements in distance learning, there are issues and challenges that are to be addressed in usage of the technology and the service(s) being provided through ICT.

## **What is ICT**

Information and Communication Technologies are defined as all devices, tools, content, resources, forums, and services, digital and those that can be converted into or delivered through digital forms, which can be deployed for realising the goals of teaching learning, enhancing access to and reach of resources, building of capacities, as well as management of the educational system. These will not only include hardware devices connected to computers, and software applications, but also interactive digital content, internet and other satellite communication devices, radio and television services, web based content repositories, interactive forums, learning management systems, and management information systems. These will also include processes for digitisation, deployment and management of content, development and deployment of platforms and processes for capacity development, and creation of forums for interaction and exchange.

## **Major ICT Initiatives in Higher Education**

India has taken up major initiatives in terms of content delivery and furthering education through Information and Communication Technology. For instance Gyan Darshan was launched in 2000 to broadcast educational programs for school kids, university students, and adults. Similarly Gyan Vani was another such important step which broadcast programs contributed by institutions such as IGNOU and IITs. Under the UGC country wide classroom initiative, education programs are broadcast on Gyan Darshan and Doordarshan's National Channel (DD1) everyday. E-Gyankosh which aims at preserving digital learning resources is a knowledge repository launched by IGNOU in 2005, almost 95% of IGNOU's printed material has been digitized and uploaded on the repository. The National Programme for Technology Enhanced Learning (NPTEL) launched in 2001 is another joint initiative of IITs and IISc which promotes education through technology. Moreover, the ambitious National Mission on Education through ICT was launched by the government to harness ICT's potential throughout the length and breadth of the country. In 2009, the government approved the landmark "National Mission on Education through ICT" scheme. The National Mission on Education through ICT is centrally sponsored scheme submitted by the Ministry of HRD and approved by the Cabinet Committee on Economic Affairs (CCEA). The Mission has planned a variety of initiatives aimed at developing and standardizing digital content for Indian higher education segment. The Mission envisions catering to the learning needs of 500 million people in the country.

## **ICT Tools**

There are various ICT tools available which can be utilized for the knowledge creation and dissemination in the modern world. Tools include Radio, T.V, Internet, Mobile phone, Computer, laptop, tablets and many other hardware and software applications. Certain ICT tools like laptops, PCs, mobile phones, and PDAs have their own implication in Education. These devices can be used in imparting education and training for teachers and students. Many of the ICT tools are much hyped but have not given fruitful results till now. Use of radio for pedagogical practices has been very much popular in past and is still in use in India by IGNOU. But One-to-many broadcast technologies like radio and television are seen as less ‘revolutionary’ ICTs in education, as their usage is seen as reinforcing of traditional instructor-centric learning models, unlike computers, which many see as important tools in fostering more learner-centric instructional models [6]. Successful ICT initiatives meet three intertwined objectives: availability, access, and demand . Educational ICT tools are not for making educators master ICT skills themselves, but for making educators create a more effective learning environment via ICT. Teachers can utilize ICT tools to get benefits from using these tools in the areas of content, curriculum, instruction, and assessment. ICTs include fixed-line telephony, mobile telephony, newspapers, radio, television, radio trunking, very small aperture terminal (VSAT), computer, and internet must be accessible to rural public as per their demand.

## **ICT for bilingual Learners**

ICT literacy will become as important as literacy in language and mathematics.

**Rowe (1993)** asserts:

... like reading, writing and mathematics, computing gives the student a basic intellectual toolbox with innumerable areas of application. Each one of these tools gives the student a distinctive means of thinking about and representing a task, of writing his/her own thoughts down, of studying and criticizing the thoughts of others, or rethinking and revising ideas, whether they are embodied in a paragraph of English, a set of mathematical equations, the simulation of a social process, or the development of a computer programme. Students need practice and instruction in all these basic modes of expressing and communicating ideas. Mere awareness of these modes is not enough. (p. 71)

Embedding ICT in teaching and learning is a major initiative in all branches of education. ICT has a particularly important role to play in developing

provision for bilingual learners. This is concerned with exploring new ways of working with bilingual learners as well as facilitating more established techniques. Although the increased use of ICT to deliver and enhance aspects of educational provision is emerging practice for all learners, rural and geographically remote mainly monolingual areas may have advantages in that they may already have developed considerable experience in using ICT to overcome geographical barriers. Such areas will be able to build on this practice to meet the needs of isolated bilingual learners and may indeed lead developments nationally. For example video conferencing facilities developed to enable isolated learners to share learning with others in remote areas can also be used to reduce linguistic isolation by allowing same first language learners to discuss and communicate remotely.

ICT provides teachers in mainly monolingual areas with:

- zz Access to EAL pedagogy and expertise via the internet
- zz Opportunities to work collaboratively with EAL and bilingual specialists who may be geographically distant
- zz Opportunities to share good practice, resources and professional development remotely
- zz Access to resources which are culturally and linguistically diverse even if their settings are not
- zz Access to innovative tools to support the integration of language and curriculum

### **Challenges in implementing ICT in distance education**

Different from the traditional universities, where student population normally is concentrated in one place, in higher open and distance learning, students are scattered in many places. Challenges then are how to support students who are located in different places. Sometimes, location cannot be a problem if infrastructures, in terms of communication, and physical buildings equipped with internet connectivity, ICT equipment, relevant software and training opportunity are in place. Like other developing countries, problems of poor supply of power, lack of internet connectivity, and in some places lack of telephone and mobile-phone services are widely acknowledged. The most affected places are the rural areas. Learners in remote areas where they have no access to ICT equipments, have to travel long distances for the services. Where university try to reach students in their places through building centres and supply centres with ICT technologies, there are limitations, that include

low budgets, low capacity to purchase bigger digital bandwidth for ICT, most of the staff and students lacking skills in use of ICT, ICT technologies fast turnover, low economies of scales in purchasing ICT equipment within the learners, shortage of technical staff to ensure smooth running of ICT equipment in the regions, and that it is difficult to estimate the resource needed in each region. Such challenges are non-existent in the traditional mode of higher education.

Apart from flexibility in employing ICT, there are challenges in implementing it. The challenges are not only in the developing countries but also the developed countries. These challenges include reluctant of professors to put their courses online. The policies guiding promotion and work retention, skills in developing content that guides self learning, the technological turnover, skill training to both students and staff in managing and using ICT equipment and the shift of paradigm from teacher centred to learner centred need to be looked into diligently. In the case of developing countries other challenges include costs of digital bandwidth, availability of funds to purchase ICT equipments, costs of software, large number of students as compared to available human resources, after sales contracts on ICT equipment, availability of power, and infrastructure for ICT not well developed and limited choice of technology to use.

Certain challenges also exist for the ICT based teaching learning. One of the great challenge for quality control in education is lack of standards for parameters to measure the quality of education. For the solution of this all the accreditation bodies like NAAC,NBA,AICTE,CBSE and other authorities must sit together and circulate a standard list of parameters to decide the quality of education. Development of ICT has changed the epic centre of knowledge and hence in many of the cases student is more informed than the teacher. Teachers lack adequate qualification and training and their lesson plans are most often outdated or irrelevant. Setting up the ICT devices can be very troublesome. It is expensive to afford it is hard for teachers to use with a lack of experience using ICT tools. These reasons destroy the available quality of education. ICT enabled distance education, to a great extent, can combat this problem. One of the important barriers is lack of trained teachers to exploit ICT proficiently. Most of the teachers are not willing to introduce new technologies to themselves first and subsequently to their students. There is resistant from teachers, basically from older teachers as compared to younger ones, to apply ICT in their subject.. Hence teachers need to update their knowledge and skills as per change in the curriculum and technologies. At present, ICT in school education is strictly limited to

a handful of elite schools. Beyond that, it's just a computer lab that's held apart from the conventional educational process. Though computers came to Indian classrooms in the year 1984-85, the level of adoption of modern technology in the teaching and learning process has been limited and uneven. Various ICT tools must be available and it must be accessible at demand. Many schools have limited resources for buying books, stationery, furniture and other classroom materials. Role of private sector providing services in such sectors may be taken into account. Rural population may not be able to pay hefty amount to utilize such ICT resources for education. One of the major challenges in the implementation of ICT in education is the initial thinking that is based on the technology. ICT hardware and software are not designed as per educational purposes rather they are designed for general purpose. One first thinks about the available technology and then a try is being made to apply it into education field, but if we look at in reverse way then possible outcomes may be more useful and may give good results. As per latest tradition only special subject like IT or ICT is available and that is also optional one there is need for to have basic knowledge of computers and IT to utilize various ICT tools to be used for teaching learning. Only computer teachers would not be able to carry this important mission of being agents of change. To sort out infrastructure problems for providing ICT education in schools one can split the screen in half vertically and at two sets of an application can be displayed and used by two users (students) simultaneously. Because one student may use the keyboard and another may use mouse, each student can work independently of the other Curriculum development, Teaching and learning, Research and extension, Governance and leadership, infrastructural facilities and use of expert system in suggesting intelligent decisions to top management in policy making and other important areas in higher education.

## **Conclusions and Way Forward**

Contributions of ICT toward design, development and delivery of learning resources in higher Open and distance learning institutions cannot be underscored. Challenges of connectivity, ICT equipment, software, training, infrastructures, low budgets, scales of economies among learners and attitudinal factors among social members, are to be tackled while implementing. Information and Communication Technology has no doubt brought about tremendous change in education, but we are yet to achieve the desired level of IT adoption in higher education in the country. The optimal utilization of opportunities arising due to diffusion of ICTs in higher education system presents enormous challenge. Nonetheless, it has become an indispensable support system for higher education as it could address some



of the challenges facing higher education system in the country. Moreover, it can provide access to education regardless of time and geographical barriers. Similarly wider availability of course material in education which can be shared by means of ICT, can foster better teaching. Good quality content is one of the major issue and directly affects the standards of education and quality. By overcoming the certain challenges involved in the process of education can help a lot in this side. Conclusively a lot of quality improvement is possible after careful and planned implementation of ICT in education by various stakeholders. Research is needed in each case so that informed decisions are made in design, development and deployment of ICT components in supporting learners. Such research need to be carried periodically during implementation stages.

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