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**Jyoti Sheokand**  
Research Scholar, Department  
of Education, Kurukshetra  
University, Haryana, India

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## ICT and education in India

**Jyoti Sheokand**

### Abstract

Technology is becoming central point in our society. Technology is all around us. Promotions are being made and new innovations are being exposed every day in field of information and communication technology (ICT). ICT had a main influence on our school systems. ICT empowers all students to master new subjects via rich connections with resources outside of classroom walls just as geographically distributed labours create, share and master knowledge. Technology is impacting the young mind to a great range.

India, an effective ICT powered nation, had always placed a lot of intonation on the use of ICT, not only for good governance but also in various sectors of the economy such as health, agriculture and education etc. Education, undoubtedly, is one of the main investments in building human capital in a country. India's need for education is diversified and wide-ranging. It requires not only basic education but also complete continuing education programmes to upgrade the skills in line with development necessities and technological improvements.

Higher education organizations have also exploited the possibility of new information and communication technologies to improve new approaches to distance education, in business, management and computing.

**Keywords:** Technology, India, Education, ICT

### Introduction

Information and Communication Technologies (ICTs) which include television, digital technologies such as computers and internet are impressive tools for educational change and improvement. Information and Communication Technology (ICT) used in teaching and learning includes the computer hardware, computer software, and telecommunication facilities. It includes the full variety of display and projection devices used to view computer output. It includes the local area (LAN) and wide area networks (WAN) that admit computer systems and user to communicate with each other. ICT includes digital cameras, computer games, CDs, DVDs, cell phones, telecommunication satellites, fibre optics, computerized instruments and computerized machinery.

The internet World Wide Web (www) has provided a low-cost system for delivery of education contents. India is in a position to achieve this as its educational IT environment has the flexibility and the capability to support the modern information and communication technology initiatives. Indian education system has been working in the direction of informing the need based technical education from early 90s.

Programmers, audio and video tapes provided to students as part of a learning kit and current time, multimedia content such as lessons which are delivered off line, i.e., deliver to students. These include programs audio and video such as radio and television on CDs. This is also called multimedia education, where several media are used to support learning.

**Correspondence**  
**Jyoti Sheokand**  
Research Scholar, Department  
of Education, Kurukshetra  
University, Haryana, India

### ICT in Education

ICTs have brought an extreme transformation in the educational system. Information and communication technology (ICTs) and their increasing approval and acceptance by society have provided unique chances to promote education on a large scale. It is assumed that in diverse socio-economic and cultural contexts ICTs are possibly a great tool for extending educational opportunities, both formal and non-formal, to previously underserved communities – rural populations, groups traditionally excluded from education due to cultural or social reasons such as cultural minorities, girls and, persons with disability and the elderly, as well as all others who for reasons of cost or because of time restrictions unable to enrol on campus.

### Aims of ICT implementation in Education

- To increase variety of educational facilities.
- To increase the literacy rate by encouraging education in rural sectors.
- To encourage and develop distance education.
- To provide equal chances to obtain education and information.
- To help in improving the knowledge base of teachers and increase student interaction.
- To improve a system of collecting and spreading educational information.

### Efficiency of ICTs in education

#### Availability

One important feature of ICTs is their ability to surpass time and space. ICTs make thinkable asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its reaction by learners. Online course materials, for example, may be accessed 24 hours a day, 7 days a week. ICT-based educational delivery (e.g., educational programming broadcast over radio or television) also distributes with the need for all learners and the instructor to be in one physical location. Moreover, positive types of ICTs such as teleconferencing technologies, let the instruction to be received simultaneously by multiple, geographically dispersed learners.

#### Preparing peoples for the workplace

One of the most prominent reason for using ICTs in education is getting ready for the workplace. The modern organizations are furnished with high-tech devices and technology is essential in their organizational structure. Technological literacy and the ability to use ICTs effectively and efficiently, is seen as representing a competitive authority in an increasingly globalizing career market.

#### Access to varied and distance learning resources

Teachers and learners no longer have to trust exclusively on published books and other resources in physical media housed in libraries for their educational needs. With the Internet and the World Wide Web (www), a wealth of learning resources in almost every subject and in a diversity of media can now be accessed from anywhere at any time of the day and day abound less number of people.

#### Improving Teacher Training

ICTs have also been used to recover access to and the quality of teacher training. For example, At IGNOU, satellite-based one-way video and two-way audio

conferencing was held in 1996, supplemented by print-materials and recorded video, to train 910 primary school teachers and facilitators from 20 district training institutes in Karnataka State. The teachers interacted with remote lectures by telephone and fax.

### Impact of Using ICTs in Education

In the world of knowledge explosion, there is a concept of lifetime learners as the shelf life of knowledge and information is minimized. ICT is the new slogan of change in the way the world works today. Through E-learning we can keep a step with modern progresses in various fields of knowledge and so education will need to make use of ICT revolution and invest strongly into it by integrating it in all its core processes – teaching, learning, evaluation, research and administration. Cross and Adam (2007) proposed the four rationales for introducing ICT in education:

#### Foundation Source

**Social:** Perceived role that technology now plays in society and the need for familiarizing students with technology.

**Vocational:** Preparing students for jobs that require skills in technology.

**Catalytic:** Utility of technology to improve performance and effectiveness in teaching, management and many other social activities.

**Pedagogical:** To utilize technology in enhancing learning, flexibility and efficiency in curriculum delivery.

### The impact of ICTs in different domains of education can be summarized as under

- 1 **Turn in learning Approaches:** Use of ICTs in education has personalized learning. This means that persons learn as individuals and not as a homogeneous group. ICT permit each individual to relate to the medium and its content. An individual can go forward or backward in the content, start at any point depending upon previous knowledge in its place of always in a successive way. Computers and internet based teaching can be valuable tool and training; to help in identify and solve problems, for get into information and knowledge about several related themes. Furthermore, the use of ICTs in education also changes the learning approaches.
  - (a) **Cooperative learning:** ICT supported learning encourage cooperation among students, teachers and experts regardless of where they are. Apart from showing real world interactions, ICT-supported learning offers chance to work with students from different cultures, thereby helping to improve learners teaming and communication skills as well as their global consciousness. It models learning done throughout the learner's lifetime by growing the learning step to include not just peers but also teachers and experts from different fields.
  - (b) **Innovative Learning:** ICT supported learning encourages the manipulation of existing information and the creation of real world products rather than the repetition of received information.
  - (c) **Integrative learning:** ICT improved learning encourages a thematic integrative approach to teaching and learning. This approach removes the artificial separation between the different disciplines and

between theory and practice, which describes the traditional approach.

- 2 **Effect on pedagogical Approaches:** ICTs in education has improved the flexibility of delivery of content. Now the learners have right to use the knowledge anytime from anywhere. It has also influenced the way students are taught and how they learn as now the methods are more learner-driven. Online education and smart schools are a norm now in developing nations also.
- 3 **ICT and Distance Education:** A huge number of distance education campuses and programmes use ICT to support the print content that they deliver to students. These contain broadcast audio and video such as radio and television programmes, audio and video tapes provided to students as part of a learning kit and in more recent times, multimedia content such as lessons which are provided off line, i.e., on CDs. This is also called multimedia education, where multiple media are used to support learning.
- 4 **ICT and Research:** The application of ICTs in educational research has grown gradually in the past 10 to 15 years in both developing and developed countries, although there are wide differences in usage both within and between countries and zones. The straight-forward use of ICTs in research is in data processing. The extraordinary growth in bandwidth and computing power offer opportunities for analysing huge amount of data and performing complex computations on them in a manner that is extremely fast, truthful and consistent. Computer data processing not only frees researchers from the clumsy task of manually analysing data but more significantly facilitates quick and accurate analysis of huge amounts of data. Another significant dimension of ICTs in research is the use of online full text databases and online research libraries which are the direct consequence of the growth in telecommunications networks and technology. These databases and libraries offer researchers with online access to the contents of thousands of books from main publishing and peer-reviewed articles in e-journals.

### Challenges while using ICTs in Education

Considering the influence of ICT-enhanced education, it can be said that ICT enhanced education is better than a simple education, but there many challenges, which hamper the evaluation and misuse of its opportunities. In the opinion of the using ICTs in education following are the underlying challenges:

- 1 **ICT Organization:** The key challenge for ICT-enhanced education is the accessibility of information and communication technologies infrastructure. Before any ICT-based program is launched policy-makers and planners must confirm the obtainability of the following: appropriate rooms or building to house the technological tools, computers as well as affordable Internet service for online book learning and accessibility of electricity and telephony.
- 2 **Professional Development of the Teachers:** Teachers should be provided pre-service and in-service exercise in the use of ICTs in education and special focus of this exercise should be on:

- (a) Improvement of skills to use particular applications
- (b) Ability of integrating the ICT into present curricula
- (c) Curricular changes as linked to use of ICT
- (d) Modification in teacher's role and knowledge of new pedagogical approaches

- 3 **Content Improvement:** Content development is the important part that is often overlooked. The majority of existing ICT-based educational material is likely to be in English and English is the leading language of the internet also. 80 percent content is in English. A large percentage of the educational software produced in the world marked is in English. For developing countries in the Asia-Pacific where English language skill is not high, especially outside metropolitan areas, this represents a barrier to maximizing the educational benefits of the World Wide Web (www). So, there is a need to progress original educational content (e.g., radio programs, interactive multimedia learning materials on CD-ROM or DVD, Web-based courses, etc.), adapt present content and change print based content to digital media. These are task for which content development specialists such as instructional designers, scriptwriters, audio and video production specialists, programmer, multimedia course authors and web-developers are required.

- 4 **Management of Educational Administrators:** Management play a very important role in integration of ICT in education. Many teacher or student introduced ICT projects have been challenged by lack of support from above. For ICT integration programs to be effective and sustainable, administrators themselves must be capable in the use of the technology and they must have a wide understanding of the technical, curricular, administrative, financial and social dimensions of ICT use in education.

### Prospective drawback of using ICT in Education

Although ICT offers a lot of welfares but there are some dangers of using ICT in education which need to be mitigated through proper mechanism. They are: -

1. It may generate a digital divide within class as students who are more familiar with ICT, will earn more benefits and learn faster than those who are not as technology understanding.
2. It may change the attention from the major goal of the learning process to developing an ICT skill which is the minor goal.
3. It can adopt the bonding procedure between the teacher and a student as ICT becomes a communication tool rather than face to face conversation.
4. All teachers are not experts with ICT, they may be careless in updating the course content online which can slow down the learning among students.
5. The possibility of plagiarism is high as student can print information rather than learning and developing their own skills.
6. Implementation of ICT in the education sector can be moderately costly regarding updating existing infrastructures, training teachers and developing quality course material.

7. The existence of multimedia games by internet has been another problem that should be wisely handled by the educational organizations.

### **Conclusion**

The present era is era of technology, whereby technology plays an important role in daily lives; this also includes the education system. There are endless opportunities with the integration of ICT in the classroom teaching learning process, but also provides the capability of e-learning.

ICT has improved the quality of education with advanced teaching methods, improved learning outcomes and empowered better management of educational systems. The web and internet is providing a platform for sharing information and awareness through digital libraries and on-line learning.

The advanced use of ICT is defined as the use of ICT applications that support the educational purposes based on the needs of the current knowledge society. The effective and efficient use of ICT depends mainly on technically skilled teachers and learners. Experience has exposed that the ICT reinforce the hands of the teachers makes his or her teaching more effective. But teaching in the classroom does not automatically guaranteed better effect for the student, unless it is planned designed and applied effectively. It is the responsibility of everyone to use ICT in education, training and research and earn the profits out of it.

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