



## ICT enabled Education: An overview

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### Abstract

The Information and Communication Technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer, and network hardware and software, satellite systems. It also includes the various services and applications associated with them, such as video conferencing and distance learning. When such technologies are used for educational purposes, namely to support and improve the learning of students and to develop learning environments, ICT can be considered as a subfield of Educational Technology. ICTs in higher education are being used for developing course material; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support, student enrolment etc.

**Keywords:** ICT, Academic, Higher Education etc

### 1. Introduction

In the current society of information, people have to access knowledge via ICT to keep pace with the latest developments. In such a scenario, education, which always plays a critical role in any economic and social growth of a country, becomes even more important. Education not only increases the productive skills of the individual but also his/her earning power. It gives them a sense of well being as well as capacity to absorb new ideas, increases their social interaction, gives access to improved health and provides several more intangible benefits. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audiocassettes and CD ROMs have been used in education for different purposes (Bhattacharya and Sharma, 2007) <sup>[1]</sup>.

**Table 1:** The Four Rationales for Introducing ICT in Education

Rationale	Basis
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.

**Source:** Cross and Adam (2007)

Today ICTs – including laptops wirelessly connected to the Internet, personal digital assistants, low cost video cameras, and cell phones have become affordable, accessible and integrated in large sections of the society throughout the world. It can restructure organizations, promote collaboration, increase democratic participation of citizens,

improve the transparency and responsiveness of governmental agencies, make education and health care more widely available, foster cultural creativity, and enhance the development in social integration. It is only through education and the integration of ICT in education that one teaches students to be participants in the growth process in this era of rapid change. ICT also allows for the creation of digital resources like digital libraries where students, teachers and professionals can access research material and course material from any place at any time (Bhattacharya and Sharma, 2007) <sup>[1]</sup>. Such facilities allow the networking of academics and researchers and hence sharing of scholarly material. This avoids duplication of work.

In view of ICT, education can be classified in three main categories:

1. E-learning
2. Blended Learning, and
3. Distance Learning

### 1. E-Learning or Electronic learning

It is a general term used to refer to computer-enhanced learning. It is commonly associated with the field of advanced learning technology (ALT), which deals with both the technologies and associated methodologies in learning using networked and/or multimedia technologies. It is also known as online learning. Distance education provided the base for e-learning's development. E-learning can be 'on demand'. It overcomes timing, attendance and travel difficulties. E-learning allows delivery, dialogue and feedback over the internet. It allows mass customization in terms of content and exams. E-education can provide access to the best gurus and the best practices or knowledge available (UNESCO, 2002) <sup>[6]</sup>. It is possible to leverage the online environment to facilitate teaching techniques like role-play across time and distance. It can also facilitate the development of scenarios, which can be rarely witnessed in practice. ICT can play a valuable role to monitor and log the

progress of the students across time, place and varied activities.

E-learning allows higher participation and greater interaction. It challenges the concept that face-to-face traditional education is superior to it (Bhattacharya and Sharma, 2007) <sup>[1]</sup>. The web and the internet is the core ICTs to spread education through e-learning. The components include e-portfolios, cyber infrastructures, digital libraries and online learning object repositories. All the above components create a digital identity of the student and connect all the stakeholders in the education.

**2. E-learning has the following advantages**

- Eliminating time and geographical barriers in education for learners as well as teachers.
- Enhanced group collaboration made possible via ICT.
- New educational approaches can be used.
- It can provide speedy dissemination of education to target disadvantaged groups.
- It offers the combination of education while balancing family and work life.
- It enhances the international dimension of educational services.

**3. Blended Learning**

It is the combination of multiple approaches to learning. It is usually used to define a situation where different delivery methods are combined together to deliver a particular course. These methods may include a mixture of face-to-face learning, self-paced learning and online classrooms.

1. Face to face Learning refers to learning that occurs in a traditional classroom setting where a faculty member delivers instruction to a group of learners. This could include lectures, workshops, presentation, tutoring, conference and much more.
2. Self-paced Learning provides the flexibility to learn according to the availability of learners’ own time and pace, it occurs in a variety of ways such as: reading specific chapters from text book, studying course material presented through web-based or CD based course, attending pre-recorded classes or sessions, reading articles referred by faculty member, working on assignments & projects, and searching & browsing the internet.
3. Online Collaborative Learning involves interaction between learners and faculty members through the web.

**4. Distance Learning**

It is a type of education, where students work on their own at home or at the office and communicate with faculty and other students via e-mail, electronic forums, videoconferencing, chat rooms, instant messaging and other forms of computer-based communication. It is also known as open learning. Most distance learning programs include a computer based training (CBT) system and communications tools to produce a vital classroom. Because the Internet and World Wide Web are accessible from virtually all computer platforms, they serve as the foundation for many distance learning systems.

ICTs also allow for the creation of digital resources like digital libraries where the students, teachers and professionals can access research material and course material from any place at any time. Such facilities allow the networking of academics and researchers and hence

sharing of scholarly material and leads to quality enhancement in teaching and learning.

**Table 2:** Benefits of ICT in education to the main stakeholders

Stakeholder	Benefits
Students	Increased access, Flexibility of content and delivery, Combination of work and education, Learner-centred approach, Higher-quality of education and new-ways of interaction.
Employers	High quality, cost effective professional development in the workplace, Upgrading of employee skills, increased productivity, Developing of a new learning culture, Sharing of costs and of training time with the employees, Increased portability of training.

Source: UNESCO, 2002 <sup>[6]</sup>.

In absence of ICT, most of the responsibility of teaching and learning lies on the teachers. ICT-based education system including registration, evaluation, and administration help to link different levels of information and facilitate an overall view of the whole educational setup. It facilitates the evaluation and examination of the learning process and results by the students and the parent’s in a flexible and convenient way. The globalization process has also created a large market of offshore students. To reach them, information technology is the only convenient medium, which can offer education as a service (Bhattacharya and Sharma, 2007) <sup>[1]</sup>. It increases education provision substantially and can contribute to mass education. It also creates competition among the institutions for providing education and hence improves the quality (Cross and Adam, 2007).

**Role of ICTs in Pedagogy for Quality Teaching Learning**

Another most important dimension of ICT integrated higher education sector is improving quality of teaching-learning. The changes also taking place due to globalization add on to knowledge and information therefore it also help in developing so called knowledge societies. The need of the hour is to provide education for everyone, anywhere, and anytime. Life-long learning has become a necessity to sustain in the existing competitive environment. Therefore to strengthen this knowledge-driven growth, new technologies, skills and capabilities are needed to learn and implement.

Conventional teaching-learning processes are undergoing a paradigm shift. Focus of instruction is now on education programs/practices that promote competency and performance. Such curricula tends to require access to variety of information sources, information forms and types; student centred learning settings based on information access and inquiry; learning environments centred or problem-centred and inquiry-based activities, authentic settings and examples; and teachers as coaches and mentors rather than content experts (Neeru, 2009) <sup>[4]</sup>. The shift towards development of educational programs is well supported by and encouraged by the emerging instructional technologies.

Apart from enhancing student’s learning experience, role of ICTs in capacity building/training of educational personnel has very large potential. National level institutes can provide

leadership role in enhancing technical and professional manpower in different disciplines through ICT networks and collaborations. Technology facilitated learning would result in preparation of staff regarding innovative pedagogic methods, new ways of learning and interacting, easy sharing of new practices among teaching community and result in widening the opportunities for their participation. The capabilities of competent and trained teachers/academic experts can be made available to larger audiences/students through flexible and virtual settings.

ICT tools have the potential to bring innovative and effective ways of teaching and learning. The use of learning tools, multimedia etc would generate possibilities which were otherwise not possible. The possibility to diffuse these innovations and complement the learning content to improve quality in higher education is high.

### **Conclusion**

Quality enhancements can be visible at all levels of higher education systems due to increased use of information and communication technologies (ICTs). Traditional forms of teaching and learning are integrated with online and virtual classrooms. The use of ICT enhanced distance learning for sure. The teaching community is able to reach remote areas and learners are able to access quality learning environment from anywhere and at any time. It is important for teachers or trainers to adopt technology in their teaching to implement ICT tools. Successful implementation of ICT would change the scenario of education system of any level (Basic/ Intermediate/ Higher Education). It would also be influencing and empowering teachers and supporting them in their engagement with students.

### **References**

1. Bhattacharya I, Sharma, K. India in the knowledge economy – an electronic paradigm, *International Journal of Educational Management*. 2007; 21(6):543-568.
2. Cross M, Adam F. ICT Policies and Strategies in Higher Education in South Africa: National and Institutional Pathways', *Higher Education Policy*. 2007; 20(1):73–95.
3. Mishra S, RC Sharma. Development of e-Learning in India. *University News*. 2005; 43(11):14–20.
4. Neeru S. ICT in Indian Universities and Colleges: Opportunities and Challenges, *Management and Change*. 2009; 13(2):231–244.
5. UGC. Annual Report 2009 – 10, New Delhi, UGC, 2011.
6. UNESCO. Open and Distance Learning Trends, Policy and Strategy Considerations, UNESCO, 2002.
7. UNESCO. ICTs for Higher Education – Background Paper Commonwealth of Learning, Paris, UNESCO, 2009.