



## QUALITY ENHANCEMENT IN HIGHER EDUCATION THROUGH ICT

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### ABSTRACT

*In this era of globalization and hyper-competition, the concept of teaching has undergone sea change, learning and dissemination of information are becoming more important. It lies in effectiveness of transmitting knowledge and skill, the authenticity, content, coverage and depth of information, availability of reading/teaching materials, help in removing obstacles to learning, applicability of knowledge in solving the real life problems, fruitfulness of knowledge in personal and social domains, convergence of content and variety of knowledge over space (countries and regions) and different sections of the people, cost-effectiveness and administrative efficiency. Information technology has progressed very fast in the last three decades, it has produced equipments at affordable cost and it has now made their wider application feasible. This technology has made a search, gathering, dissemination, storing, retrieval, transmission and reception of knowledge easier, cheaper and faster. Side by side, a vast virtual library vying with the library in prints has emerged and continues growing rapidly. One may hold that the e-libraries are the libraries of tomorrow when the libraries in prints will be the antiques or the archival objects of the past Information and Communication Technology (ICT) increases the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. It can improve the quality of learning and thus contribute to the*

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*economy. Especially in developing countries like India, effective use of ICT for the purpose of education has the potential to bridge the 'digital divide' This paper highlights in detail how ICT can be applied to enhance the quality of higher education at affordable cost. It also discusses the major obstacles to optimal utilization of this technology and measures to remove them.*

**Key words:** ICT, E-Learning, Higher Education, Blended Learning, Distance learning etc.

## **Introduction**

The quality of higher education is a multi-dimensional concept. Higher education system has grown exponentially in the last five decades to meet the demands of quality education for all. This aspect has further gained momentum due to swift in advancements in Information and Communication Technology (ICT). Demand for skilled and competent labour is ever increasing in the contemporary globalised society. In this backdrop, access to quality in higher education for all has emerged as determining factor of economic growth and development. In order to increase the access to higher education and improving its reach to the remotest parts of the country contribution of open and distance learning facilities is on the increase. In addition, it is catering to life-long learning aspirations and that too at affordable cost. The last two decades have witnessed the inclusion of developments in ICTs in higher education systems around the world. Even then the challenge to develop a higher education system that is flexible and dynamic so as to holistically integrate the technology in the management and delivery of learning programmes is daunting. The first section presents briefly the present profile of higher education in India. Role of ICTs in higher education and the areas in which they can be integrated to play prominent role are discussed in the second section. The final section explores the challenges in expanding the role of ICTs for future development in higher education.

## **Objectives & Methodology for the Study**

The present paper aims at presenting an overview of ICT enabled education and rationale for introducing ICT in education. It also highlights on the aspects like E-Learning, Blended learning, Distance learning and role of ICT in higher education. The data and information is collected form various secondary sources like published journals, research articles, official websites for the present work.

## ICT enabled Education: an Overview

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 and so on, as well as the various services and applications associated with them, such as videoconferencing 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.

In the current information society, 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).

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

<b>Rationale</b>	<b>Basis</b>
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). 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:

- E-learning
- Blended Learning, and
- Distance Learning

**E-Learning** or Electronic learning 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). 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). 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.

E-learning has the following advantages:

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

**Blended Learning** 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.

- **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.
- **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.
- **Online Collaborative Learning** involves interaction between learners and faculty members through the web; this interaction can occur in one of the following modes:
  1. Synchronous interaction.
  2. Asynchronous interaction.

Synchronous, means 'at the same time', it involves interacting with a faculty member and other learners via the web in real time using technologies such as virtual classrooms and / or chat rooms.

On the other hand, Asynchronous means ‘not at the same time’; it enables learners to interact with their colleagues and faculty member at their own convenience, such as interacting through email.

### **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.

In absence of ICT, most of the responsibility of teaching and learning lies on the teachers. However, with the help of ICT one can transfer the responsibilities to the students so that they can self manage. It helps to individualize the teaching or guidance method as per the student’s need. It also boosts the confidence level and the self-esteem of the students who acquire the ICT skills through the process of being exposed to such kind of learning also puts forth the view that ICT-based registration, evaluation, and administration help to link different 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). 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 ICT in Higher Education**

Swift growth of ICTs is taking place all over the world. They have emerged as powerful tools for diffusion of knowledge and information. Their introduction and unprecedented use in the higher education has generated varied response. The opportunities

can be categorized as the aspects relating to role of ICT for access and equity in education, their role in pedagogy for quality learning and teaching at higher education level and in inducing innovations in approaches and programmes.

### **Access and Equity in Higher Education**

Presence of ICT in education sector is increasing steadily. In spite of the fact that education is a social enterprise and teachers are the traditionally mainstay of teaching learning process, ICTs are very powerful tool for diffusing knowledge and information, a fundamental aspect of the education process. ICTs can play enormous role for improving access and equity in education sector in general and higher education sector in particular.

11th Plan proposed to achieve the target of 15 percent GER by 2012 through the increase in institutional capacity and increase in 'intake capacity' of existing educational institutions. These efforts are also experiencing the push created in this direction through the consistent rise in enrolment at elementary level and secondary level. The demand for higher education is expected to rise steeply in the forthcoming years under these influences. ICTs lend themselves as an ideal mechanism to bridge this gap by complementing both formal education system as well as distance learning systems (Neeru, 2009).

E-learning is emerging as an important strategy to provide widespread and easy access to quality higher education. E-learning is a generic term referring to different uses and intensities of uses of ICTs, from wholly online education to campus-based education and through other forms of distance education supplemented with ICTs in some way. Although, presently the initiatives for development of e-learning in India are continuing in a sporadic manner, UGC is advocating and making efforts to enhance the quality of higher education by framing policy guidelines for their integration in classroom and other activities.

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

Another most important dimension of higher education sector influenced by ICT integration is improving quality of teaching-learning. Also, the changes taking place due to globalization and internationalization attach premium to knowledge and information. Therefore, the integration of ICTs would not only help in promoting personal growth but also in developing "knowledge societies". The call of the hour is the need to provide education for everyone, anywhere, and anytime. Life-long learning has become the driving force to sustain in the contemporary competitive environment. Therefore to strengthen and / or advance this knowledge-driven growth, new technologies, skills and capabilities are needed.

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.

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 managerial 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.

### **Potential Drawbacks-cum-Challenges to Using ICT in Education**

While using ICTs in education has some obvious benefits, ICTs also bring challenges. First is the high cost of acquiring, installing, operating, maintaining and replacing ICTs. While potentially of great importance, the integration of ICTs into teaching is still in its infancy.

Introducing ICT systems for teaching in developing countries has a particularly high opportunity cost because installing them is usually more expensive in absolute terms than in industrialized countries whereas, in contrast, alternative investments (e.g. buildings) are relatively less costly (UNESCO, 2009).

The four most common mistakes in introducing ICTs into teaching are i) installing learning technology without reviewing student needs and content availability; ii) imposing technological systems from the top down without involving faculty and students; iii) using inappropriate content from other regions of the world without customizing it appropriately; and iv) producing low quality content that has poor instructional design and is not adapted to the technology in use (UNESCO, 2009). Although ICT offers a whole lot of benefits there are



some risks of using ICT in education which have to be mitigated proper mechanisms. They are:

- It may create a digital divide within class as students who are more familiar with ICT will reap more benefits and learn faster than those who are not as technology savvy.
- It may shift the attention from the primary goal of the learning process to developing ICT skills, which is the secondary goal.
- It can affect the bonding process between the teacher and the student as ICT becomes a communication tool rather than face to face conversation and thus the transactional distance is increased.
- Also since not all teachers are experts with ICT they may be lax in updating the course content online which can slow down the learning among students.
- The potential of plagiarism is high as student can copy information rather than learning and developing their own skills.
- There is a need for training all stakeholders in ICT.
- The cost of hardware and software can be very high.

## **Conclusion**

The increasing use of information and communication technologies (ICTs) has brought changes to teaching and learning at all levels of higher education systems (HES) leading to quality enhancements. Traditional forms of teaching and learning are increasingly being converted to online and virtual environments. There are endless possibilities with the integration of ICT in the education system. The use of ICT in education not only improves classroom teaching learning process, but also provides the facility of e-learning. ICT has enhanced distance learning. The teaching community is able to reach remote areas and learners are able to access qualitative learning environment from anywhere and at anytime. It is important that teachers or trainers should be made to adopt technology in their teaching styles to provide pedagogical and educational gains to the learners. Successful implementation of ICT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skills and obtaining software and equipment. ICT enabled education will ultimately lead to the democratization of education.

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