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Use of Technology in Higher Education

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Abstract

Changes in the economic and social fundamentals call for transformation in the skills, Capabilities and attitudes of the masses. This requires a shift in the delivery and pedagogy used in the current education system. The purpose of this paper is to promote integration of Information and Communication technologies (ICT) in higher education for imparting easily accessible, affordable and quality higher education leading to the economic upliftment of India. The focus of the paper is on the benefits that ICT integration in education can provide, right from breaking time and distance barriers to facilitating collaboration and knowledge sharing among geographically distributed students. The findings reveal that it also facilitates sharing of best practices and knowledge across the world. 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. This in turn would better prepare the learners for lifelong learning as well as to contribute to the industry. It can improve the quality of learning and thus contribute to the economy. It provides several tangible and intangible benefits for all stakeholders involved in the economic growth of the country. Thus, ICT enabled education will ultimately lead to the democratization of education. Especially in developing countries like India, effective use of ICT for the purpose of education has the potential to bridge the digital divide.

Key Words: *Technology, Higher Education*

India, like any other knowledge economy, depends on the development of its educational sector. Higher education drives the competitiveness and employment generation in India. However, research findings have shown that the overall state of higher education is dismal in the country. There is a severe constraint on the availability of skilled labor. There exist socio-economic, cultural, time and geographical barriers for people who wish to pursue higher education. Innovative use of Information and Communication Technology can potentially solve this problem. Education is the driving force of economic and social development in any country. Considering this, it is necessary to find ways to make education of good quality, accessible and affordable to all, using the latest technology available. The last two decades have witnessed a revolution caused by the rapid development of Information and Communication Technology (ICT). ICT has changed the dynamics of various industries as well as influenced the way people interact and work in the society. Internet usage in home and work place has grown exponentially. ICT has the potential to remove the barriers that are causing the problems of low rate of education in any country. It can be used as a tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers. India has a billion-plus population and a high proportion of the young and hence it has a large formal education system. The demand for education in developing countries like India has skyrocketed as education is still regarded as an important bridge of social, economic and political mobility.

The challenges before the education system in India can be said to be of the following nature**:**

Access to education- There exist infrastructure, socio- economic, linguistic and physical barriers in India for people who wish to access education

Quality of education- This includes infrastructure, teacher and the processes quality.

Resources allocated- Central and State Governments reserve about 3.5% of GDP for education as compared to the 6% that has been aimed (Ministry of Human Resource Development, There exist drawbacks in general education in India as well as all over the world like lack of learning materials, teachers, remoteness of education facilities, high dropout rate etc

In the current Information society, there is an emergence of lifelong learners as the shelf life of knowledge and information decreases. 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 earning power. It gives him a sense of well being as well as capacity to absorb new ideas, increases his 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 counseling, interactive voice response system, audiocassettes and CD ROMs etc have been used in education for different purposes

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 can teach students to be participants in the growth process in this era of rapid change.

ICT can be used as a tool in the process of education in the following ways:

- **Informative tool:** It provides vast amount of data in various formats such as audio, video, documents.
- **Situating tool:** It creates situations, which the student experiences in real life. Thus, simulation and virtual reality is possible.
- **Constructive tool:** To manipulate the data and generate analysis.
- **Communicative tool**: It can be used to remove communication barriers such as that of space and time (Lim and Chai, 2004).

The following mediums are used for the delivery and for conducting the education process:

- Voice – Instructional audio tools that include interactive technologies as well as the passive ones.
- Video - Instructional video tools that include still images, prerecorded moving images, andreal-time moving images combined with audio conferencing.
- Print – instructional print formats that include textbooks, study guides, workbooks and case studies.

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. This avoids duplication of work. Use of ICT in education develops higher order skills such as collaborating across time and place and solving complex real world problems. It improves the perception and understanding of the world of the student. Thus, ICT can be used to prepare the workforce for the information society and the new global economy.

Advantages of ICT using in education

- Class work can be scheduled around work and family
- Reduces travel time and travel costs for off-campus students
- Students may have the option to select learning materials that meets their level of knowledge and interest
- Students can study anywhere they have access to a computer and Internet connection
- Self-paced learning modules allow students to work at their own pace
- Flexibility to join discussions in the bulletin board threaded discussion areas at any hour, or visit with classmates and instructors remotely in chat rooms
- Instructors and students both report eLearning fosters more interaction among students and instructors than in large lecture courses
- eLearning can accommodate different learning styles and facilitate learning through a variety of activities
- Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers

- Successfully completing online or computer-based courses builds self-knowledge and self-confidence and encourages students to take responsibility for their learning
- Learners can test out of or skim over materials already mastered and concentrate efforts in mastering areas containing new information and/or skill

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. All the above components create a digital identity of the student and connect all the stakeholders in the education. It also facilitates inter disciplinary research. Plomp et al (2007) state that the experience of many teachers, who are early innovators, is that the use of ICT is motivating for the students as well as for the teachers themselves. Bottino (2003) and Sharma (2003) mention that the use of ICT can improve performance, teaching, administration, and develop relevant skills in the disadvantaged communities. It also improves the quality of education by facilitating learning by doing, real time conversation, delayed time conversation, directed instruction, self-learning, problem solving, information seeking and analysis, and critical thinking, as well as the ability to communicate, collaborate and learn. Casal (2007) mentions that ICTs also provide a platform for sharing information and knowledge. This can be used for the betterment of program delivery in terms of replication of best practices. It also helps researchers by provision of information, networking, online journals, libraries and data. The possibility of real time interaction in all the different aspects of the education system like teaching, collaboration, debates etc hold great promise for the future.

ICT enabled distance education provides environmental benefits, as there is a major reduction in the amount of student travel. Economies of scale in utilisation of the campus site are generated. Student housing is not needed which further saves costs. However, cost of providing the distance education depends on several factors, which include: geography and communities targeted, breadth of courses and class size. It also depends on the technology used; amount of resources deployed in producing course materials as well as how frequently they are updated.

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. 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. 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. It also puts forth the view that ICT-based registration, evaluation, and administration helps 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 parents in a

flexible and convenient way. The globalization process has also created a large market of offshore students.

To summarize, the following table shows the main benefits of using ICT in education to the various stakeholders:

Benefits of ICT in education to the main stakeholders.

Stakeholder	Benefits
Student	• 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, • Development of a new learning culture, • Sharing of costs and of training time with the employees, • Increased portability of training.
Governments	• Increase the capacity and cost effectiveness of education and training systems, • To reach target groups with limited access to conventional education and training, • To support and enhance the quality and relevance of existing educational structures, • To ensure the connection of educational institutions and curricula to the emerging networks and information resources, • To promote innovation and opportunities for lifelong learning

India is making use of powerful combination of ICTs such as open source software, satellite technology, local language interfaces, easy to use human-computer interfaces, digital libraries, etc. with a long-term plan to reach the remotest of the villages. Community service centers have been started to promote e-learning throughout the country

Draw Back of Using ICT in education

- Learners with low motivation or bad study habits may fall behind
- Without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines
- Students may feel isolated from the instructor and classmates
- Instructor may not always be available when students are studying or need help
- Slow Internet connections or older computers may make accessing course materials frustrating

- Managing computer files and online learning software can sometimes seem complex for students with beginner-level computer skills
- Hands-on or lab work is difficult to simulate in a virtual classroom

Conclusion

Changes in the curriculum do support fundamental economic and social transformation in the society. Such transformations require new kinds of skills, capabilities and attitudes, which can be developed by integrating ICT in education. The overall literature suggests that successful ICT integration depends on many factors. National policies as well as school policies and actions taken have a deep impact on the same. Similarly, there needs to be an ICT plan, support and training to all the stakeholders involved in the integration. There needs to be shared vision among the various stakeholders and a collaborative approach should be adopted. Care should be taken to influence the attitudes and beliefs of all the stakeholders. ICT can affect the delivery of education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. It would enable development of collaborative skills as well as knowledge creation skills. This in turn would better prepare the learners for lifelong learning as well as to join the industry. It can improve the quality of learning and thus contribute to the economy.

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