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# EXPERIMENTS OF ICT ESTABLISHED EDUCATION IN INDIA

**Manjunath. B**

Department of Journalism and Mass communication, Gulbarga University, Gulbarga- 585 106, Karnataka, INDIA.

**Abstract:**

The present paper reveals about ICT based education in India and 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.

**Key words:** Education, India, ICT & country.

## 1.INTRODUCTION:

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 (Agarwal, 2006). There exist socio-economic, cultural, time and geographical barriers for people who wish to pursue higher education (Bhattacharya and Sharma, 2007). 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 (Cholin, 2005;Mehta and Kalra, 2006). 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 (UNESCO, 2002; Bhattacharya and Sharma, 2007; Chandra and Patkar, 2007). Internet usage in home and work place has grown exponentially (McGorry, 2002). 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 (McGorry, 2002). 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 (Amutabi and Oketch, 2003).

## 2. EXPERIMENTS OF EDUCATION IN INDIA

**Access to education-** There exist infrastructure, socio- economic, linguistic and physical barriers in India for people who wish to access education (Bhattacharya and Sharma, 2007).
**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, 2007).

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.

**Table 1: Participation of Indian students in education.**

| Stage of education | Gross Enrolment Ratios (2003-04) |
|---|---|
| Elementary | 85% |
| secondary | 39% |
| tertiary stages of education | 9% |

(*Source*: Department of Higher Education, 2007)

Thus, the participation rates of the Indian population in education, and especially in higher education are quite low. 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 (Plomp, Pelgrum & Law, 2007). 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 wellbeing as well as capacity to absorb new ideas, increases his social interaction, gives access to improved health and provides several more intangible benefits (Kozma, 2005). 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 (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007).

**Table 2: The four main 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 (Kozma, 2005). 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.

## 3. WAYS OF ICT TOOLS USED IN THE EDUCATION:

- **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, and real-time moving images combined with audio conferencing.
- **Print** – instructional print formats that include textbooks, study guides, workbooks and case studies. (Bhattacharya and Sharma, 2007; National Programme on Technology Enhanced Learning, 2007**).**

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 (Bhattacharya and Sharma, 2007; Cholin, 2005). Such facilities allow the networking of academics and researchers and hence sharing of scholarly material. This avoids duplication of work (Cholin, 2005). Use of ICT in education develops higher order skills such as collaborating across time and place and solving complex real world problems (Bottino, 2003; Bhattacharya and Sharma, 2007;Mason, 2000; Lim and Hang, 2003). 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 (Kozma, 2005).

## 4. E LEARNING HAS THE FOLLOWING ADVANTAGES:

- Eliminating time barriers in education for learners as well as teachers (Sanyal, 2001; Mooij, 2007; Cross and Adam, 2007; UNESCO, 2002; Bhattacharya and Sharma, 2007);

- Eliminating geographical barriers as learners can log on from any place (Sanyal, 2001;Mooij, 2007; Cross and Adam, 2007; UNESCO, 2002; Bhattacharya and Sharma, 2007);
- Asynchronous interaction is made possible leading to thoughtful and creative interaction(Sanyal, 2001; UNESCO, 2002; Bhattacharya and Sharma, 2007);
- Enhanced group collaboration made possible via ICT (Plomp et al., 2007; Sanyal, 2001; Bhattacharya and Sharma, 2007);
- New educational approaches can be used. (Sanyal, 2001);
- It can provide speedy dissemination of education to target disadvantaged groups (UNESCO, 2002; Chandra and Patkar, 2007);
- It offers the combination of education while balancing family and work life (UNESCO, 2002; Bhattacharya and Sharma, 2007);
- It enhances the international dimension of educational services (UNESCO, 2002);
- It allows for just in time and just enough education for employees in organizations(UNESCO, 2002).
- It can also be used for non-formal education like health campaigns and literacycampaigns (UNESCO, 2002).

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 (Chandra and Patkar, 2007).

## 5. FACTORS AFFECTING ADOPTION OF ICT IN EDUCATION

There is a worldwide need felt for integrating ICT into education in order to improve the pedagogy to reflect the societal change (Plomp et al, 2007). The main goals of ICT adoption in the education field are reducing costs per student, making education more affordable and accessible, increasing enrollments, improving course quality, and meeting the needs of local employers (Ozdemir and Abrevaya, 2007). Low overheads and cost efficiency are attracting many private players in the field of Internet enabled education. This is also being driven by technological advances, competitive pressures and the positive experiences of many early adopters (McGorry, 2002). The main factors that affect the adoption of ICT in education are the mission or goal of a particular system, programs and curricula, teaching/learning strategies and techniques, learning material and resources, communication and interaction, support and delivery systems, students, tutors, staff and other experts, management, housing and equipment, and evaluation (UNESCO, 2002). National vision, supported by coherent strategies and actions is the most important factor in integrating ICT in education.

## 6. POTENTIAL DRAWBACKS OF USING ICT IN EDUCATION

Although ICT offers a whole lot of benefits there are some risks of using ICT in education which have to be mitigated through 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.

- 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.

## 7. CONCLUSION

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.

Similarly wider availability of best practices and best course material in education, which can be shared by means of ICT, can foster better teaching. However there exist some risks and drawbacks with introducing ICT in education which have to be mitigated. 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. Also proper controls and licensing should be ensured so that accountability, quality assurance, accreditation and consumer protection are taken care of. ICT enabled education will ultimately lead to the democratization of education.

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