

# Information Technology and Higher Education

## Abstract

21<sup>st</sup> century is an era of information Technology .It has brought revolutionary changes in various aspects of human life. Education is not untouched with it. Information Technology improves the quality of education by facilitating learning in classroom and outside the classroom.In higher education, which affects the economic growth of a country, Information Technology plays an important role. It leads to influence and empower teaches and support them in their engagement with student in learning and provide platform for sharing information and knowledge. . Information Technology enabled education will lead to the democratization of education.

**Keywords:** Driving Force- Motivation, Plagiarism-Act of Copying Another's Ideas.

## Introduction

"The empires of the future will be the empires of the mind. With great power comes great responsibility."

The words of the Sir Winston Churchill, on the 6<sup>th</sup> of Sep. 1943 when the Europe was on the threshold of the second world war, in a speech delivered in Harvard university, was the forecasting as he foresaw the far reaching changes that the world had to see in the second half of the 20<sup>th</sup> century.

The advancement in the science and technology has affected every aspect of human life. We have begun our journey in the 21<sup>st</sup> century, where the society will be a knowledge society in which the knowledge will be the source and knowledge workers will be the dominant work force. One of the drives behind this phenomenon is globalisation, the movement of the people, business, industry and skill in the global market place. This has been made possible by the advances in information communication and technology. Education is the driving force of economic and social development in any country (Cholin, 2005 Mehta and kabe 2006). Considering this, it is necessary to find ways to make education of good quality, accessible and affordable to all by using the latest technology.

New technology like web based PC's, mobile phone, Satellite and wireless technology and internet etc. are being used in higher education. These technologies are helping the teachers and students together and disseminate information which is normally not possible with any other means. Due to global competition, the society has accepted the new information technologies for faster growth and development. Today higher education is considered as an important form of investment in higher resource development. Youth with high end scientific and technological specialization is considered the first rate human capital for economic growth of the nation (Murahari & Kumar,2006)

## Concept of Information

The concept of information, popularly used as of knowledge, communicated plays a central role in today's society. The word information particularly predominant since the end of World War II with the wide spread use of computer network. The rise of information science in the middle of 1950 is a testimony of this. This word information was originated from the Latin word 'informetio'. Schutz (1958) explained 'informatio' in the sense of providing something with a form in the pedagogical sense of education or instruction. Thomas Aquines defines Information as the action of informing with some active or essential quality. Rifkin (2000) said, the information age is called the age of access information, production distribution and access is at the heart of new economy. The terminological shift from information society to knowledge society signals that the content and not the information technology is the main challenge for economy as well as for society in general. From the perspective of knowledge management, information is used to designate isolated pages of meaningful data within a context, constitute knowledge (Gundry, 2001, Probt Rauls & Rombard,

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1999). This systematic concept of information, located between data and knowledge is not consistent with the view that equates information (management) with information technology. According to Monaka and Takeuchi (1995), distinction between tacit and explicit knowledge only explicit knowledge can be managed.

Information can be defined as data processed for some purpose. It can only be considered to be real information if it meets certain criteria i.e.

1. It must be communicated to the recipient
2. It must be in a language that is understood
3. It must be in the suitable form
4. It must be relevant for achieving some purpose

Thus information is any form of communication that provides understandable and useful knowledge for the person receiving it.

**Concept of Technology**

It is a science of techniques i.e. methods of doing or getting things done related to a particular profession. It is a scientific way of developing new techniques. A systematic way of evolving and applying these techniques can be termed as technology. Technology is a methodology of designing new techniques. These techniques may go on changing as the science provides us with more and more information. (Kulkarni, 1989)

**Information Technology in Higher Education**

The techniques used in the dissemination of information are called information technology. India like any other knowledge economy depends on the development of its educational sector. Higher education drives the competitiveness and employment generation in India. Research findings have shown that there is a severe constraint on the availability of skilled labour (Agrawal 2006). Moreover there are socio economic culture and geographical barriers for people who wish to pursue higher education (Bhattacharya & Sharma 2007). Use of information technology can potentially solve this problem. After independence India has made great strides in the growth and development of higher education. The successive Education Commissioners piloted by Dr. Radha Krishnan, Dr. DS Kothari and other eminent educationalist have recommended to make education accessible to all sections of our society i.e. rich and poor , men and women, rural and urban, backward and weakest of the weaker section. There has been an impressive growth of colleges from 700 to 16885, universities from 25 to 371 and students enrolment from one lakh to one crore. However the literacy rate is 65% (census, 2011). Further only 12 to 14% of the population in the relevant age group is enrolled in higher education. It is grossly inadequate to meet the huge magnitude of demand in any meaningful way for a developing nation like India. India's growth prospects will depends on the ability to make available the latest and useful knowledge and skills to our youth.

The challenges before the Higher Education System in our country are as follows

**Access to Education**

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

**Quality of Education**

This includes infrastructure, teacher and processes quality.

**Resources Allocated**

Central and state government invest about 3.5% or less than that of GDP for education as compared to the 6% that has been aimed(MHRD, 2007)

Today, in the information society, emphasis is on lifelong learning as the shelf like of knowledge and information is reducing. People have to access knowledge via information technology to keep pace with the latest developments. Thus education plays an important role in the economic and social development of a country. If not only increases the productive skills of an individual but also his earning powers. It gives him sense of wellbeing as well as capacity to absorb new ideas, increases his social interaction, awareness to improve health and provides many intangible benefits (Kozma, 2005).

Introducing IT in education has become compulsory for happy and prosperous life style. It can be characterised in following ways

Rational	Basic
Social	Perceived role that technology plays in society and the need for familiarizing students with technology.
Vocational	Preparing skilled man power for job
Catalytic	To improve performance and effectiveness in teaching, management and other social activities
Pedagogical	To utilize technology in enhancing learning flexibility and efficiency in curricular delivery

Source: Cross and Adam 2007

Information technology includes laptops, Wi-Fi, internet connections, personal digital assistants, low cost video cameras and cell phone. These are easily affordable, accessible and integrated in large sections of the society throughout the world. It can restructure organisations collaborations increase participation of citizens, improve the transparency in educational system and enhances the development in social integration (Kozma, 2005). It is only through integration of information technology and education that one can teach students to be participants in the growth process of the society

Information technology can be used as a tool in education process in many ways as has been written by R. Kozma

1. **Informative Tool:** It provides a large amount of data in various formats such as audio, video and documents.
2. **Situating Tool:** It creates situations which the students experience in real life. Thus simulation and virtual reality is possible.
3. **Constructive Tools:** It manipulates data in many ways and analyses it in as many ways as possible.
4. **Communicative Tool:** It can be used to remove communication barriers as that of space and time benefits (Lim and Chai, 2004)

It has many advantages like-

Digital libraries can be accessed by students, teachers and professional for research materials and course materials from any place and at any time.

(Bhattacharya and Sharma, 2007; Cholin,2005). These facilities allow the networking of academics and researches and hence sharing of scholarly materials becomes easier.

Information technology in education develops higher order skills such as collaborating across time and place and solving complex problems of the society. It improves the perception and understanding of the world of the students. Thus it can be used to prepare the work force for the information society and the new global economy. (Kozmo,2005) E-learning allows higher participation and greater interaction. The web and internet is the core of Information Technology to spread education through e-learning. The components include e-portfolios, cyber-infrastructures, digital library and online learning object repositories. All these create digital identity of the students and connect all the stake holders in the education. It also facilitates interdisciplinary research. (Chandra and patkar, 2007). Use of Information Technology can improve performance, teaching administration and develop relevant skills in the disadvantaged communities. (Sharma 2003). It also improves the quality of education by facilitating learning by doing real time conversation, delayed time conversation, direct instruction, self-learning problem solving, information seeking and analysis and critical thinking, as well as ability to communicate, collaborate and learn (yuen et al 2003). Information Technology provides platform for sharing information and knowledge.

UNESCO (2002) in open and distance learning trends, Policy and strategy consideration, has mentioned following advantages of e-learning-

1. It eliminates barriers in education for learners as well as teachers
2. It eliminates geographical barriers as learner can log on from any place.
3. A synchronous interaction is made possible leading to thoughtful and creative interaction.
4. New education approaches can be used.
5. It can provide speedy dissemination of education to target disadvantaged groups.
6. It offers the combination of education while balancing family & work life.
7. It enhances the interaction dimensions of educational services.
8. It allows for just in time and just enough education for employees in organizations.
9. It can also be used for non-formal education like health campaigns and literacy campaigns.

The main benefits of using Information Technology in education to the various stake holders can be summarized in the following ways-

#### **For Students**

1. Increase access
2. Flexibility of content and delivery
3. Combination of work and education
4. Learner centre approach
5. Higher quality of education
6. New ways of interaction

#### **Teachers**

1. High quality cost effective professional development in the work place
2. up gradation of skills, increased productivity
3. Development of a new learning culture

4. Increased portability of training

#### **Policymakers**

1. Increase the capacity and cost affectivities of education and training system
2. To reach the target group with limited access to conventional education and training.
3. To suppose and enhance the quality and relevance of existing educational structure
4. To promote innovations and opportunities for lifelong learning

In India open source software satellite technology, local language interface digital libraries etc. are used effectively with a long term plan to reach the remotest of the villages. Community services centres have been started to promote e-learning through the country (Bhattacharya & Sharma 2007)

#### **Notable Initiatives of the Use of Information Technology in the Country Include**

1. Indira Gandhi National Open University (IGNOU) uses Radio, Television and Internet technology to facilitate distance learning programs.
2. National Program on Technology enhanced learning: a programme similar to open course were seen by the initiation of MIT. It uses internet and television technologies
3. Eklavya initiative uses internet and television to promote distance learning (Eklavya technology channel India 2007)
4. IIT Kanpur has developed Brihaspati, as open source e-learning platform
5. Premier institution like IIM- Calcutta have entered into a strategic alliance with NIIT for providing programmes through virtual classroom
6. Jadavpur University is using a mobile learning centre
7. IIT Bombay had started the program of CDEEP (Centre for Distance Engineering Education Programme) as emulated classroom interaction through the use of real time interactive satellite technology (Centre for Distance Engineering Education Programme India 2007)
8. One laptop per child (OLPC) in Maharashtra (One laptop per child 2007) is also on-going project.

#### **Potential Drawback of Using Information Technology in Education**

Although Information Technology provides a whole lot of benefits there are many drawback of using Information Technology in education which have to be mitigated through proper mechanism. They are mentioned as follows:

1. It may create a digital divide within class as students who are more familiar with IT will get more benefit and learn faster than those who are not as technology savvy
2. It may shift the attention from primary goal of learning process to developing IT skill, which is secondary goal
3. It can affect the bonding process between the teacher and the students as Information Technology becomes a communication tool rather than face to face conversation and thus the transactional distance is increase
4. Since all teacher are not expert in using IT, they may be lax in updating the course contents online which can slow down the learning among students

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5. The potential of plagiarism is high as students can copy information rather than learning and developing their own skills
6. There is a need for training of all stake holders in Information Technology
7. The cost of hardware and software can be very high, thus a few learners can afford to it.

**Conclusion**

The education is one of the most important inputs that influence the all-round development of any nation-economic, physical, social, cultural, ethical and spiritual. With General Agreement on Trade in Services (GATS) becoming fully operation under WTO regime it will be difficult for India to survive as nation without developing our intellectual knowledge through diligent monitoring expansion, strengthening with new technologies and reorientation of our educational system as per the ever increasing demands of the market, is really a time reminder that cannot go unnoticed.

Changes in curriculum support fundamental economic and social transformation in the society. Such kind of transformation requires new kinds of skill, capabilities and attitudes which can be developed by integrating Information Technology in education.

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Successful implementation of IT to lead change is more about influencing and empowering teachers and supporting them in their engagement with students in learning rather than acquiring computer skill and obtaining software and equipment. Information Technology enabled education will lead to the democratization of education.

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