

A Study of Information and Communication Technology in Higher Education for the 21st Century in India

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ABSTRACT

ICT will become a strong agent for change in the middle of several educational practices. Information and communication technologies (ICT) have become everyday entity in every one aspects of life. Across the past twenty years the use of ICT has basically changed the practices and procedures of nearly all forms of Endeavour inside business and governance. Within education, ICT has begun to have a presence but the impact has not been as extensive as in other fields. Education is a very socially oriented action and quality education has conventionally been related with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to additional student-centered learning setting and frequently this creates some tensions for a few teachers and students. But with the world moving fast into digital media and information, the role of ICT in education is becoming additional and extra important and this significance will continue to raise and expand in the 21st century. This paper highlights the various impacts of ICT on modern higher education and explores possible future developments. The paper argues the role of ICT in transforming

teaching and learning and seeks to explore how this will impact on the way programs will be offered and delivered in the universities and colleges of the future.

KEYWORDS: ICT, Education, Socio-Economic Development, Online learning, constructivism

INTRODUCTION

ICT is an acronym that stands for “Information Communication Technologies”. Information and communication technologies are an umbrella term that includes all technologies for the manipulation and communication of information. ICT consider all the uses of digital technology that already exists to help individuals, business and organization. It is difficult to define ICT because it is difficult to keep up the changes they come about so fast. ICT is concern with the storage, recovery, manipulation, communication or receiving of digital data. The definition taken from the direction in the ICT is an „electronic means of capturing, processing, storing, communicating information. The use of ICT in the classroom teaching-learning is very



important for it provides opportunities for teachers and students to operate, store, manipulate, and retrieve information, encourage independent and active learning, and self-responsibility for learning such as distance learning, motivate teachers and students to continue using learning outside school hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice. This versatile instrument has the capability not only of engaging students in instructional activities to increase their learning, but of helping them to solve complex problems to enhance their cognitive skills.

Ensuring universal service and access to information and communication technology is a top national objective in many countries, often enshrined in laws that govern the sector. One of the distinctive features of human beings is their ability to acquire knowledge, and what makes this knowledge an ever-thriving entity is man's ability to 'impact' this knowledge to others. Transfer of knowledge, which is one of the foundations of learning, is among the most fundamental social achievements of human beings. Building strong relationships with students is something that frequently explains why faculty takes pleasure in the challenge of working at a small university. The concept of moving the traditional classroom of desks, notebooks, pencils, and blackboard to an online forum of computers, software, and the Internet intimidates many teachers who are accustomed to the face-to-face interaction of

the traditional classroom. In the past 10 years, online instruction has become extremely popular as is evident in the rise of online universities,

NEED AND SIGNIFICANCE OF THE STUDY:

The situation of the classroom is change. There is a technological break among the progress of the culture and instructional activities of the teacher in the classroom. If we see in our society on the one hand technology has revolutionized our the social order and on the extra hand the teaching learning activities at school stage have remain so far away from technology. In our classroom the knowledge is imparted by the teacher in an ancient way, a teacher centric form which is the majority of the time boring and not to gain interest to the student. But present 21st Century's education is student centric education. Students learn from multi sources and for this reason use of ICT & Multimedia is very more necessary in educational field and concurrently teacher's information of ICT and Multimedia also required.

OBJECTIVE OF THE STUDY: - The objective of the present study is-

1. To find out the roles of ICT in 21st Century's Education.
2. To find out the role of ICT in the teaching and learning of history in the 21st century

METHODOLOGY: This present study is based on secondary sources like books,



Articles, Journals, Thesis, University News, Expert opinion and websites etc.

WHAT IS ICT?

The concept of a “Digital Divide” has been around almost as long as ICT has been publicly available. While traditionally it has come to mean a division in society, based on socio-economic factors, this does not ‘paint the entire picture’ Introducing ICT as a tool to support the education sector has initiated substantial discussions since the late 1990s. A decade ago the emphasis was on Technical and Vocational Education and Training and training teachers. During the last few years an increasing number of international development agencies have embraced the potential of ICT to support the education sector.

Information and Communication Technologies (ICTs) are referred to as the varied collection of technological gear and resources which are made use of to communicate. They are also made use of to generate, distribute, collect and administer information. ICT is a force that has changed many aspects of the way we live. Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services. ICTs can be divided into two components, Information and Communication Infrastructure (ICI) which refers to physical telecommunications systems and networks (cellular, broadcast,

cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and Information Technology (IT) that refers to the hardware and software of information collection, storage, processing, and presentation.

HISTORY OF ICT

To understand the processes and impacts of a globalizing technology like the Internet, one must account for the historical development of that technology, the process of technology transfer in general, and the local cultural dynamics in unique regions. The Internet will diffuse differently in different regions and among different sectors within those regions. Chile, for historical and cultural factors, should demonstrate a different diffusion and use pattern than India or Kenya. This leads to different definitions of how Internet technologies are constructed within distinct regions and poses challenges for the development of a symmetrical global scientific community fueled by new ICTs. This last statement often weaves itself into the “taken for granted” rhetoric found in multi-lateral conferences like the World Summit on the Information Society (WSIS). It is simplistic to assume that the Internet will resolve inequities in social, political, economic and even scientific terms. It is a noble perspective, but the last 50 years of development failures based on other western technologies and protocols does not provide much optimism. The following session review highlights the complex factors involved in Internet diffusion, post war

history, technological culture, case studies in the developing world, and innovations in technology research and development. The session on History of ICT reflected many of the temporal, transnational and developmental dimensions of research in the information society. American scholars Martin Collins and Janet Abbate retraced the

historical contexts of cellular and Internet technology research and development in the post war era. Collins discussed the ways Motorola's transnational Iridium project was constructed by both Cold War political culture and post Cold War market culture notions of the global.

ICT FOR EDUCATION

Many educators saw in ICT the potential of raising the quality of teaching and learning. Here is what it can offer to education:

- **Universal access to high quality education.**
- **Teachers' professional development.**
- **Efficient education management in terms of governance and administration.**
- **Promotion of equity in education.**

For teachers, ICT offers a mine of content, material, and ideas.



What can ICT offer to teachers?



ICT TOOLS

ICT can offer different Web tools:

- websites
- wikis
- blogs
- forums
- applications

ICT AND HIGHER EDUCATION

The major teaching and learning challenges facing higher education revolve around student diversity, which includes, amongst others, diversity in students' academic preparedness, language and schooling background. Education is perhaps the most strategic area of intervention for the empowerment of girls and women in any society and the use of information and communication technologies (ICTs) as an educational tool in the promotion of women's advancement has immense potential. The application of ICTs as a tool for effective enhancement of learning, teaching and education management covers the entire spectrum of education from early childhood development, primary, secondary, tertiary, basic education and further education and training.

The Information and Communication Technology (ICT) curriculum provides a broad perspective on the nature of technology, how to use and apply a variety of technologies, and the impact of ICT on self and society. Technology is about the ways things are done; the processes, tools and techniques that alter human activity. ICT is

about the new ways in which people can communicate, inquire, make decisions and solve problems. It is the processes, tools and techniques for:

- **Gathering and identify information**
- **classify and organize**
- **Summarizing and synthesizing**
- **analyze and evaluate**
- **speculate and predict**

Enhancing and upgrading the quality of education and instruction is a vital concern, predominantly at the time of the spreading out and development of education. ICTs can improve the quality of education in a number of ways: By augmenting student enthusiasm and commitment, by making possible the acquirement of fundamental skills and by improving teacher training. ICTs are also tools which enable and bring about transformation which, when used properly, can encourage the shift an environment which is learner-centered.

ICT IN RESEARCH



Applications of ICTs are particularly powerful and uncontroversial in higher education's research function. Four areas are particularly important:

The steady increases in bandwidth and computing power available have made it possible to conduct complex calculations on large data sets. Communication links make it possible for research teams to be spread across the world instead of concentrated in a single institution. The combination of communications and digital libraries is equalizing access to academic resources, greatly enriching research possibilities for smaller institutions and those outside the big cities. Taking full advantage of these trends to create new dynamics in research requires national policies for ICTs in higher education and the establishment of joint information systems linking all higher education institutions.

GLOBALIZATION OF THE 21ST CENTURY EDUCATION

Educational technology gives teachers the affordances of connecting the local classroom to global places. The global world can be opened up in the classroom. Through visual conferencing English school boards have the opportunity to communicate with people from all around the world. In that way, global connections increase and richer learning opportunities are available to students including more collaborative learning opportunities. One participant mentioned the delight of the students when they met with the author of a book they were

reading by a video conferencing interview. "One of the things that we did recently was that we had a Skype session with an author and that went very well. The kids were really excited".

ICT IN TEACHING

Academics have taken to the use of computer in teaching much more readily than they adopted earlier audio-visual media. This is because the strength of computers is their power to manipulate words and symbols - which is at the heart of the academic Endeavour. There is a trend to introduce eLearning or online learning both in courses taught on campus and in distance learning. Distance education and eLearning is not necessarily the same thing and can have very different cost structures. Whether eLearning improves quality or reduce cost depends on the particular circumstances. ICTs in general and eLearning in particular have reduced the barriers to entry to the higher education business. Countries and those aspiring to create new HEIs can learn from the failures of a number of virtual universities. They reveal that ICTs should be introduced in a systematic manner that brings clarity to the business model through cost-benefit analyses.

The constitution of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was adopted by 20 countries at the London Conference in November 1945 and entered into effect on 4 November 1946. The main objective of UNESCO is to contribute to peace and

security in the world by promoting collaboration among nations through education, science, culture and communication in order to foster universal respect for justice, the rule of law, and the human rights and fundamental freedoms that are affirmed for the peoples of the world, without distinction of race, sex, language or religion, by the Charter of the United Nations. UNESCO's principles on ICT in education can be summarized as follows:

- Meeting the international education goals by 2015 will require huge investments in teacher training institutions.
- The demand for higher education cannot be met in both the developed and developing world without distance or virtual modes of learning.
- Vocational training needs cannot be met without virtual classes, virtual laboratories, etc.

RISING ACCESS TO EDUCATION

ICTs are a prospectively prevailing tool for developing educational opportunities, both prescribed and non-prescribed.

1. One important characteristic of ICTs is their capability to go beyond time and space. ICTs make it feasible to achieve learning which is exemplified by a time delay involving the deliverance of instruction and its receipt by students which is termed as

asynchronous learning. Course materials can be retrieved and used 24 x 7. An example that can be discussed here is that of Hughes Net Global Educations Interactive Onsite Learning platform which strives to characterize the future level of education which is called as Real Time Interactive education.

2. The internet and the World Wide Web, it is now possible to gain access to an unlimited amount of data and educational materials. Data in almost any subject and in diverse forms of media can be accessed from any place at different times of the day and by an unrestricted number of individuals.

ROLE OF ICT IN HIGHER EDUCATION:

- i. To raise diversity of educational services & medium.
- ii. To promote equal opportunities to obtain education & information.
- iii. To develop a system of collect & disseminate educational information.
- iv. To promote technology literacy.
 - a- To support "Distance Learning"
To support "Distance Learning".
 - b- To support sharing experience & information with others.

BENEFITS AND CHALLENGES OF ICT

Research Tools are now available on the Internet to assist both teachers and students to manage writing assignments to detect and avoid the pitfalls of plagiarism and copyright violations. One of the great benefits of ICTs in teaching is that they can improve the quality and the quantity of educational provision. For this to happen however, they must be used appropriately.

While using ICTs in teaching 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.

The four most common mistakes in introducing ICTs into teaching are:

- ✓ Installing learning technology without reviewing student needs and content availability.
- ✓ Imposing technological systems from the top down without involving faculty and students.
- ✓ Using inappropriate content from other regions of the world without customizing it appropriately.

- ✓ Producing low quality content that has poor instructional design and is not adapted to the technology in use.

The innovations that ICT has brought in teaching-learning process in higher institutions of learning in it was found that most of the respondents strongly agreed that ICT is necessary in teaching-learning process and identified are some of the innovations brought by ICT in teaching-learning process in higher institutions which include the following:

- ICT has introduced new method of learning called E-learning (Electronic learning) where students study while' they are at home or work place without going to the school. This makes many workers or employees to enroll and upgrade themselves easily. It has also made communication easy through the internet e.g.mail, chatting, Skype, teleconferencing, video' conferencing, etc.
- ICT also exposed teachers and administrators to modern world through searching, reading and connecting with' resourceful people throughout the world with the help of the internet. It has also improved quality of work in the office since most of the teachers and administrators use software and' management information systems to do most of their work.

CONCLUSION

The 21st century, many factors are bringing strong forces to bear on the adoption of ICTs in education and contemporary trends suggest will soon see large scale change in the method education is planned and deliver as a outcome of the opportunities and affordances of ICT. It is believed that the use of ICT in education could increase access to learning opportunities. It be able to help to enhance the quality of education with Modern teaching method, improve learning outcomes and enable reform or better management of education systems. Extrapolating current activities and practices, the continued use and development of ICTs within education will have a strong impact on:

- ✓ *What is learned?*
- ✓ *How it is learned?*
- ✓ *When and where learning takes place.*
- ✓ *Who is learning and who is teaching.*

The continued and increased use of ICTs in education in years to come, will serve to increase the temporal and geographical opportunities that are currently experienced.

ICTs in the form of Management Information system are more and more worldwide. The power of computers in teaching is their power to manipulate words and symbols which is at the heart of the academic Endeavour. ICT has too leaded to the emergence of Open Educational Resources. Governments and higher

education institutions will need to develop strategies for effective ICT and media deployment and sustainability.

RECOMMENDATIONS

From research findings and discussions on the role of ICT to make teaching-learning effective in higher institutions of learning in India, the following recommendations can be made for future actions in both areas of teaching and learning in higher institutions of learning: Plan for transformation and for ICT Support, Education should be free from political factors, Include new competencies in the curricula and in assessment schemes, Implementing new forms of continuous professional development in a workplace environment and as part of a culture of lifelong and peer learning, Building up a clear political will and invest in ICT consolidation.

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