

Improving the Quality of Higher Education using Information and Communication Technologies- Changing Paradigm Shifting

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ABSTRACT

Within a very few years, Information and Communication Technology (ICT) has turned out to be an effective educational technology which promotes some dramatic changes in teaching and learning processes. Technologies allow students to work more productively than in the past, but the teacher's role in technology rich classrooms is more demanding than ever. ICT has the potential to transform the nature of education (improving teachers' design work, enhancing the roles of students and teachers in the learning process and helping to create a collaborative learning environment, etc). Although ICT has the potential to improve the educational system to a great extent. The focus of this paper is to examine the improvement of ICT in higher education in India. The emergence of ICT has fundamentally changed the practices of not only business and governance but education as well. While the world is moving rapidly towards media, the role of ICT in education has become increasingly important. There has been an unprecedented growth in the use of ICTs in teaching, research and extension activities. The sudden boom in Information Technology has transformed the way how knowledge is disseminated today. One of the changes it has brought about is the way how teachers interact and communicate with the students and vice-versa. Given the fact that higher education in India is plagued by the challenges of inadequate technology access and inequity coupled with economic considerations and technological know-how, it remains to be seen how Information and Communication Technology can actually burgeon the students and how it can foster change in this aspect. 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. Moreover, this paper explores the emancipatory and transformative potentials of ICT in higher education in India.

Keywords: Educational Technology, ICT, Improvement, Role of ICT, ICT Implementation

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Objectives of the paper

The core aim of this paper titled ‘Improving the Quality of Higher Education using Information and Communication Technologies-Changing Paradigm Shifting’ are as following –

- ❖ To evaluate the importance of ICT in higher education.
- ❖ To analyze the government initiatives for development of ICT in higher education.
- ❖ To focus the role of ICT in communication between learners and teachers.
- ❖ To examine the benefits and drawbacks of ICT in higher education.

What is Information and Communication Technology?

Information and Communication Technologies (ICTs) refer to 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. 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 Teachers Training. During the last few years an increasing number of international development agencies have embraced the potential of ICT to support the education sector. UNESCO has played a major role in spearheading the Education for All initiative to harness the potential of ICT. The widely subscribed Dakar Framework for Action recognizes that, ‘these technologies (ICTs) have great potential for knowledge dissemination, effective learning and the development of more efficient education services’. When looking at the integration of ICT to support the achievement of educational objectives, it can be found that after almost a decade of using ICT to stimulate development, it is not yet fully integrated in development activities and awareness building is still required. The main objectives of the paper are to evaluate the importance of ICT in higher education and to analyse the government initiatives for development of ICT in higher education.

New and Emerging Educational Technology

With the Advancement in the technology now a days educational tools are enhancing the capabilities of Education system. Some tools that emerge new era for Education are:

Collaborative learning

Computer-supported collaborative learning uses instructional methods designed to encourage or require

students to work together on learning tasks. Computer-supported collaborative learning is similar in concept to the terminology. Collaborative learning is distinguishable from the traditional approach to instruction in which the instructor is the principal source of knowledge and skills

Social networks

Group web pages, blogs, and wikis allow learners and educators to post thoughts, ideas, and comments on a website in an interactive learning environment. Social networking sites are virtual communities for people interested in a particular subject or just to “hang out” together. Members communicate by voice, chat, instant message, video conference, and blogs, and the service typically provides a way for members to contact friends of other members. Social networking can be used as a motivational tool to promote self-efficacy amongst students. . In a study Facebook was used as an academic motivation tool for students in a developmental reading course.

Whiteboards

Interactive whiteboards and smartboards allow learners and instructors to write on the touch screen. The screen markup can be on either a blank whiteboard or any computer screen content. Depending on permission settings, this visual learning can be interactive and participatory, including writing and manipulating images on the interactive whiteboard.

Screen Casting

Screen Casting allows users to share their screens directly from their browser and make the video available online so that other viewers can stream the video directly. The presenter thus has the ability to show their ideas and flow of thoughts rather than simply explaining them as simple text content. Combination with audio and video, the educator can mimic the one-on-one experience of the classroom and deliver clear, complete instructions. Learners have an ability to pause and rewind, to review at their own pace.

Virtual classroom

A Virtual Learning Environment also known as a learning platform simulates a virtual classroom or meetings by simultaneously mixing several communication technologies. WebEx Training or Adobe Connect enables students and instructors to communicate with each other via webcam, microphone, and real-time chatting in a group setting. Students are able to whiteboard and screen cast when given rights by the instructor, who sets permission levels for text notes, microphone rights and mouse control.

ICT in Teaching and Learning: the changing scenario

While for Higher Education sector is planned to build a knowledge repository of multidisciplinary subjects, as a strategy to counter the shortage of faculty in higher education, EDUSAT will be used to share the available expertise through modular programmes. This will be done by networking institutions, creation of virtual laboratories, creation of database, access to expert lectures and technological developments in Industries and Research organizations etc. Teaching and learning can further be improved by replacing of conventional teaching instead of the usual age old method of chalk and talk for teaching by innovative

methods like Power point presentations and animations, modeling and simulations, video clips and using AV aids, LCD projectors etc. This enhances the learning ability of the student and also helps the teacher to elaborate the difficult concepts effectively within a short time span. Seminars of the students can also be arranged allowing the references to be done using internet and the presentations using high tech display devices as LCD projectors. Different online courses of the foreign universities are made available for the students in the internet centre in collaboration with the universities. ICT in higher education change the view of learning from teacher centered to student centered learning system and the teachers are the facilitators, coaches and mentors. Some of the supporting environments are as follows—

Tele-Education System

It is the application of space technology in education. An integrated network system comprising of EDUSAT, Broadband and V-SAT networks 27 helps in bringing virtual class rooms in a multi class environment with seamless two-way interaction between the teachers and students in a collaborative environment.

Virtual Learning Campus (VLC)

Virtual Learning Campus or VLC is an approach that divides the responsibility of building, commissioning and running the different systems and Information Infrastructure for education like Broadband, EDUSAT and ERNET services, Synchronous class room environment, Asynchronous knowledge interaction environment, Servers and Portals, E-learning & Digital library, ERP management solutions etc. under centers of specializations in different Institutions in different disciplines. Students in any college may access the services over the web. The college itself needs to maintain basic e-learning and library portals for convenience and providing convenient access to information.

Virtual libraries and digital learning

Teachers and students must be able to get information quickly and conveniently. Distance education requires virtual libraries. It provides text, video, audio, and other formats for teaching and learning and support digital learning. They collect and organize information and help the users to use the right information at the right time. (Schmitz, 2004) Digital education creates changing patterns for students, teachers, librarians, and others. This new pattern will increase the role of curators in this process. In a virtual library, librarians become curators who do not merely collect, organize, and lend material, but are also leaders, researchers, information gatherers and information analyzers. A virtual library curator is a powerful person in managing a great volume of data Husler 1996).

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, video conferencing, 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 virtual classroom.

Wireless connectivity (Wi-Fi)

Wireless campus benefit both students and teachers. Wireless environment will help faculties to mould the future workforce, improve campus efficiency, streamline operations and enable real time connectivity through any device. Students will benefit through exposure to technology and expect services such as video conferencing, virtual class rooms and social media access through high speed internet connections. Furthermore the students adopting tablets and other devices, many educational institutions are embracing the concept of bring your own device to enhance learning and teaching. Going wireless helps as it address the need to be connected constantly and provide seamless networking, ensuring improved student engagement with technology.

ICT in Administration

ICT in administration of educational institutions play a major role in efficient utilization of existing resources and simplifies the administration tasks by reducing the paper work and replaces the manual maintenance of record keeping to electronic maintenance of records which helps in easy retrieval of any information of students, staff with in a fraction of seconds can access the required information. In administration ICT helps in three ways.

In student administration

ICT helps to maintain the students personal profile, academic track record, placement participation, student alumni record, student assessment etc. And it helps in student learning activities like assignment uploading and course material downloading, attending quiz, online test and preparing classroom and project presentations and access the information for career enhancements, attendance record in some institutions biometric attendance facilities, communicating academic details of students to parents via mail and sending text message ,availability of time tables and course schedules in electronic form, etc

In staff administration

ICT helps in maintaining the staff personal profile like personal details , pay scale , grade, performance record common for teaching and nonteaching staff and for teaching administration, ICT plays a role in assessment of teaching performance , research work , preparation and presentation of learning materials, duties and responsibilities etc.

In general administration

ICT helps in office administration and managerial administration like maintaining financial records of the institutions social networking with other institutions, companies and agencies for business transactions and dealings, issue notifications, facility of fee payments on online, scheduling of examinations, and allocation of e-hall tickets to students online student admissions process and communicating people for events and programs etc.

Emerging ICT applications in Research activities

Integration of ICT in higher education promotes research to move forward, as known to all that Indian research work is lagging behind and very less percentage of initiatives in research field due to lack of supporting systems and the quality of the research also not at par with other nations. With the integration of ICT in Indian higher education enhances the quality of research work and more number of individuals enrolled in the research work in various fields. ICT facilitates the links to across the world in all subject matter and made social networking. It saves time, money and effort to the researchers in their research studies like they can collect a data of large population with a single e-mail and retrieve data in a fraction of seconds and through the availability of various software the analysis of the research work become much easier to the researcher. The unprecedented growth in bandwidth and computing power provide opportunities for downloading huge amount of data and can perform complex computations on them in a fast manner to get a accurate and reliability of data. The researchers have a provision of online access to thousands of journals, articles, e-Books and publications etc. for their research work, and researcher has a provision to submit online publications.

Technology Trends in Indian Universities

Technology will play a bigger role in transforming higher education imparted by universities to the next level. The tools help to create a social, highly collaborative and personalized environment with innovative solutions that will enhance the way students learn, communicate, collaborate and study both on and off campus. Some of the exciting Technology trends in Indian Universities are:

Digitization of Books (E-Text Books)

There is an increased trend towards creation of a digital repository of books to create a digital learning environment for students. The digital version of the books embedded with text, pictures along with video, simulations and visualizations help students learn the concepts in an interactive way. The National mission on Education through ICT plans to generate new online course content for UG, PG and Doctoraleducation. Efforts are already underway to prepare course content for 130 courses (UG and PG).

Content Delivery using IT/ICT

Higher Education is purely a content driven play where educational content is delivered through innovative use of ICT. There is an increased trend in higher education institutes to render content through Radio, TV and Satellite.

Open Education Resources

Many Indian universities are contemplating Technology enabled free access of education resources. AICTE – Indian National Digital Library in Engineering & Technology (AICTE – INDEST) is a consortium set up by the Ministry of Human Resource to enhance greater access and generate annual savings in access of bibliographic databases. UGC has also launched its Digital Library Consortium to provide access to peer reviewed journals and bibliographic databases covering subjects such as arts, humanities, technology and sciences.

Virtual Technical University

The National mission on Education through ICT is working on a war foot to establish a virtual technical university to impart training to UG/PG students along with new teachers. National mission on Education through ICT

Mobility

With the proliferation of mobile phones on campus, colleges everywhere are compelled to capitalize on feature-rich phones that are capable of much more than just voice calls. Adoption of the BlackBerry, iPhone and other smart devices that have Internet access allows students and faculty to perform a wide range of assignments. Tasks like administration, sharing class notes, downloading lectures, instant messaging, etc., are possible anywhere cell phone service is available. Mobile phones are also being used to access computer files from remote locations. With services like “Soonr”, students who have forgotten to bring an assignment to class can use their cell phone to access the completed work on their home computer and show it to the professor.

Social Learning

The emergence of Web 2.0 and social networking such as blogs and wikis, as well as new online video repository and delivery websites such as YouTube, iTunes U and Big Think is influencing a new trend in higher education. The emergence of smartphones such as the iPhone and other intelligent devices has enhanced mobile learning (referred to as m-learning). These technologies create new channels for content delivery, online video expansion and podcasting. Also, the adoption of virtual reality websites such as “Second Life” has provided higher-education institutions with new venues for class gatherings and learning. IT Adoption, Challenges, Benefits and our offerings to universities A combination of Web 2.0 tools viz., Blogs, Wikis, Podcasts, Mashups, and Social Networking Communities are transforming the traditional learning environment into something more social and personalized. While traditional Learning Management Systems (LMS) like Blackboard, Sakai, Moodle or Web CT are course-centered and driven by faculty, the new trend in education is to create a “learner-centric” system.

CONCLUSION

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. ICT also facilitates interdisciplinary research. 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. 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 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 traditional distance is increased.

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