RECENT ADVANCES IN HIGHER EDUCATION: OPPORTUNITIES AND CHALLENGES POSED BY ICT

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ABSTRACT

A very good education system is required for overall development of a nation. Higher education in India is without further ado encountering a significant change as far as access, expense, quality and development. Presence of innovation in every part of our life offers us new decisions, opportunities and difficulties that has developed parallel and has made another worldwide economy fuelled by ICT and driven by learning. Presentation of ICT in higher education has significant effects on the whole training procedure. While the ideal usage of the opportunities offers multitudinous points of interest and a more prominent access to instruction, one must not just take after the "Everest Syndrome" which says PCs ought to be brought into training stadium basically 'in light of the fact that they are there'.

With the world moving towards propelled innovation, the part of ICT in higher education is getting to be more critical and this significance will keep on growing in the years to come. ICT serves to impart the accessibility of best practices and best course material in training far and wide. ICT based instruction is bound to change the educational goals. It permits the Educational Institutions to achieve the disadvantaged groups and new educational markets. This paper endeavors to highlight the part of ICT in higher education. It studies the opportunities and difficulties postured by the combination of ICT on higher education in the present situation. Therefore, the paper proposes that ICT in higher education is not a method for training advancement but rather likewise a method for socio-economic development of the country by empowering democratization of education.

Keywords: ICT, higher education, challenges, opportunities, disadvantaged groups, new educational markets.

Introduction:

Change has been happening at an uneven pace in any growth-oriented industry, and education sector is no exception to it. Rapid growth in the field of education and technological innovations has made the whole process of education a complex one. The 21st century has witnessed tremendous advancements in technology, which has had far reaching consequences. Practical innovation joined with adaptability in learning and managerial exercises is vital to improve effectiveness.

Use of ICT in education will empower teachers and learners, changing the traditional teaching and learning processes from being highly teacher dominated to student-centered, and this transformation will result in increased benefits for students, creating and allowing for opportunities for learners to develop their creativity and problem-solving skills, reasoning skills, communication skills, and other higher-order thinking skills.

The first section of the paper lays down the various research objectives. The second section briefly makes a review of literature of various works done in this regard and role of ICTs in higher education in India. The final section explores the challenges in expanding the role of ICTs for future development in higher education.

Objectives of the study:

The primary objective of the paper is to study the opportunities and challenges posed by ICT on higher education. The other objectives are:

- To understand concept and relevance of ICT in higher education.
- To make review of the various literature available in this regard.
- To study the pros and cons of using ICT in higher education.

To highlight the various new trends of ICT which can be used in higher education.

A review of research:

With the introduction of computers, the precursor of our modern-day ICT, and the promising potentials of computer-based instruction and learning, many researchers and funding agencies were led to invest much of their resources to investigate the possibility of computers replacing teachers in key instructional roles (Robyler, Castine and King 1988). Moreover, the “Everest Syndrome” (cited in Roblyer) also resulted in many believing that computers should be brought into the education arena simply “ because they are there” and the resultant perpetuation of the myth that students would benefit qualitatively from computers by simply providing them with software and hardware.

This definitely was one of the earliest works done on this regard, so it’s obvious that all the initial apprehensions of trying out something new are seen in it. The fear that computers might replace the teachers or the whole new technology is going to be used just 'because they are there' is seen here.

Reynolds (2001) in his keynote presentation on 'ICT in Education: The Future Research and Policy Agenda' lamented that

….We are trapped in a cycle of classic innovation failure- a low quality implementation of a not very powerful new technology of practice produces poor or no improvement in outcomes, which in turn produces low commitment to the innovation and a reluctance to further implement more advanced stages of the innovation…that are more likely to generate the improvement in outcomes that would produce the commitment to ICT utilization (Reynolds, 2001, p.2).

Reyonds, feared a low quality implementation of new technology in education will contribute to innovation failure. He feared that this kind of implementation will create resistance to adapt to new technologies in future as the stakeholders do not see any benefit in it.

"Information and Communication Technology considered the most powerful means of education in this century. This is as true that today it has opened a debate that it has changed the classical meaning of education. If not entirely, at least the conception of education, as a process, that cannot be limited to the classical form of knowledge, and its transmission within the classical institutions" (http:// www.mash.gov.al).

ICT can affect in the spread of education and to enable greater access to it. Moreover, they increase flexibility so that students can access educational resources regardless of time and geographical barriers.

Authors (Barolli et al., 2009) notes: "how much access students have today and how use of ICT could improve the process of teaching and learning, Realization of process of teaching and learning through ICT can be achieved inter alia through a series of factors as: The necessary infrastructure related to ICT together with relevant technologies. Preparation accompanied training of human resources that will work, with this technology and supported in this infrastructure".

Barolli observed that ICT enabled teaching and learning process requires the right infrastructure and trained human resource to work and use this infrastructure.

During their studies (Bates et al., 2000) cite: " offers four levels of supporting the human resources required to fully exploit the use of ICTS: infrastructure support staff of technology(technical support-installs, manages, updates and maintains networks and devices) technologies for support staff education (staff that supports the development and implementation of programs and educational materials using technology), design of teaching staff(staff that provides services and educational expertise, such as the design of instruction, professional development, project management, support for the use of technology for teaching) , and subject experts(those who create content, such as academic staff)

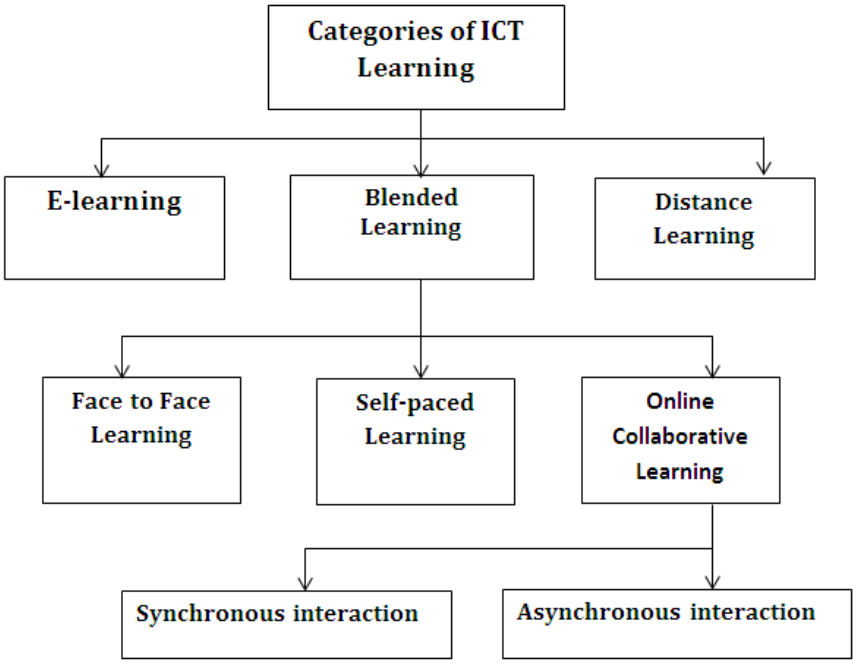
Bates, in his studies highlighted the different types of skilled staff required for the effective implementation of the ICT in higher education.

What is ICT?

The Information and Communication Technology (ICT) is a boundless term that incorporates any specialized gadget or application incorporating: radio, TV, mobile phones, PC, and system equipment and programming, satellite frameworks etc, and additionally the different administrations and application connected with them, for example, videoconferencing and distance learning.ICT can be considered as an important part of educational technology, when such technologies are used for educational purposes, namely to support and improve the learning of students and to develop learning environment. ICTs in higher education are being used for developing course material, delivering content and sharing content.

ICT, if used creatively, can make a big difference in the way teachers teach and students learn and can help students acquire 21st century skills like digital literacy, innovative thinking, creativity, sound reasoning and effective communication. ICT can help in enhancing the quality of education through blended learning by supplementing the traditional talk and chalk method of teaching. ICT-enabled education can also be a solution to the growing demands for enrolments in higher education in India and thus help increase the gross enrolment ratio (GER) which at present is very low (about 12%) as compared to the world average of 23%. In case of open and distance education (ODE) system where "Anyone, Anywhere and Anytime", that is, 3A's is the main philosophy, ICT- enabled education can do wonders that no one can imagine and help pave way for the creation of virtual universities in the long run. ICT can also significantly contribute in efficiently managing the governance in the universities and colleges.

In view of ICT, education can be classified in three main categories:



E-learning or electronic learning the universal term for computer-enhanced learning. It is associated with the field of Advanced Learning Technology (ALT), which deals with both the technologies associated methodologies in learning using network and/ or multimedia technologies. E-learning allows the delivery of concepts, discussions and regular feedbacks by the use of internet. It reaches out to many in terms of content and exams. E-education can provide access to the best expertise, best practices or knowledge available providing for higher participation and greater interaction. It challenges the concept of traditional education.

Blended Learning is the combination of multiple approaches to learning. It is usually used to define a situation where different delivery methods are combined together to deliver a particular course. These methods may include a mixture of face-to-face learning, self-paced learning and online class rooms.

Face to face learning refers to learning that occurs in a traditional classroom setting where a faculty member delivers instruction to a group of learners. This could include lectures, workshops, seminars, tutoring, conferencing and much more.

Self-paced learning provides the flexibility to learn according to the learners own pace, convenience and time. It can be done in a variety of ways such as: reading specific chapters from text book, studying course material presented through web-based or CD based course, attending pre-recorded classes, reading articles referred by faculty member, working on assignments and projects, and searching and browsing the internet.

Online Collaborative Learning involves interaction between learners and faculty members through the web, this interaction can occur in one of the following modes:

Synchronous interaction and Asynchronous interaction.

Synchronous, means 'at the same time', it involves interacting with a faculty member and other learners via the web in real time using technologies such as virtual classrooms and /or chat rooms. On the other hand, Asynchronous means 'not at the same time'; it enables learners to interact with their colleagues and faculty member at their own convenience, such as interacting through email.

Distance Learning it is type of education where students work on their own at home or at the office and communicate with faculty and other students via email, electronic forums , video conferencing, chat rooms, instant messaging and other forms of computer based communication . It is also known as open learning.

ICT and its relevance in the present age:

India has a billion-plus population and a high proportion of which is 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).

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

Access to education- There exist infrastructure, economic, social, 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 dropout rate. (UNESCO,2002).

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 and Law,2007) . In such a scenario, education which 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 his 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 (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 (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 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))

Advantages of using ICT in higher education to the major stakeholders:

In order to use technology to help achieve the goals of education in a better and more effective way, one has to be first of all clear about what our expectations are from the education system, what and how do we want our students to learn and what type of individuals our classrooms should produce - rote learners or those with an analytical mind having an in-depth understanding of the subject.

Table 3: Advantages of ICT to major stakeholders:

Stakeholder	**Benefits**
Students	Increased access, Flexibility of content and delivery Combination of work and education Learner-centered 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 Developing 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.
Society	ICT allows the academic institutions to reach disadvantaged groups and new international educational markets It facilitates democratization of education.

Source: UNESCO, 2002.

Challenges of using ICT in higher education:

The development and increasing use of ICT in education is however likely to be accompanied with a bitter contradiction–the digital divide which refers to the digital gap between people with effective access and knowledge of ICT and those with limited or no access at all. This gap includes the imbalances in physical access to ICT (whether at home, college, work place or cyber café) and the resources and knowledge needed effectively to use the full capabilities of ICT. Major factors contributing to this digital divide include quality, access and cost of physical infrastructure, lack of knowledge about full capabilities of ICT and lack of availability of high quality material uniformly across the country. One can convert this digital divide into a digital opportunity by giving top priority to the improvement of ICT and telecommunication infrastructure (computers with internet access and broadband connectivity) in order to provide universal and affordable access to information to people and institutions in all over the country.

Table 4: Common Mistakes in ICT implementation in teaching

- Installing learning technology without reviewing students 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 appropriately.

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

Source: UNESCO, 2009

Table 5: Potential drawbacks-cum- challenges to using ICT in Education:

Stakeholders	Drawbacks
1. Students	▪ 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. ▪ They need to be self-disciplined and self-reliant to succeed at online education. ▪ Limited teacher interaction. ▪ Limited social interaction. This eliminates opportunities for networking and group study. ▪ Feedback bottlenecks. When you have a question, you're trapped waiting for answers via e-mail or student forums. ▪ Technological challenges: if the student is not tech-savvy or does not have an computer and internet setup, the technical aspects of participation may prove frustrating. ▪ Mandatory self disciple: there is nobody to keep the student from falling behind with the course work.
2. Society	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
3. Teachers	It may shift the attention from the primary goal of the learning process to developing ICT skills, which is the secondary goal. Since not all teachers are experts with ICT there may be delay in updating the course content online which can slow down the learning among students
4. Government/Employers	The cost of hardware and software can be very high. Training of all stakeholders may be high.

Role of ICT in higher education:

Laudon and Laudon(2010) state that the most important drive behind globalization has been the explosion in information and communication technologies(ICT) sectors. The recent advancements in technology are responsible for these developments:

Table 6: New advancements in ICT learning:

Concept	Characteristics
1. Edublog	It is a blog created for the educational purposes. It can be a useful tool for providing information to students.
2. Teach with tablets	While the teachers should take the lead on developing and driving the overall plan for tablets in the classroom, it will also encourage student's creativity and engagement.
3. Video Conferencing	It enhances the education experiences in numerous ways by helping to connect with experts, experience of working together, providing virtual field trips, and teaching the teachers.
4. Mobile Learning	New advances in hardware and software are making mobile "smart phones" indispensable tools.
5. Cloud Computing	The implication of this trend for education system are huge, they will make cheaper information appliances available which do not require the processing power or size of the PC
6.One-to-one Computing	The trend in class rooms around the world is to provide an information appliances to every learner and create learning environment that assume universal access to the technology.
7.Ubiquitous technology	School system around the world are developing the ability to provide learning opportunities to students "anytime anywhere "
8.Gaming	The phenomenal success of games focus on active participation, built -in incentives and interaction suggest that current educational systems are not falling short and that educational games can more interestingly attract the attention of the learners.
9. Personalized Learning	Education systems are increasingly investigating the use of technology to understand the student's knowledge base from prior

	learning to tailor teaching to both address learning gaps as well as learning styles.
10.Redifinition of learning spaces	Schools around the world are rethinking the most appropriate learning environment to foster collaborative, cross-disciplinary and student centered learning.
11.Teacher -generated open content:	OECD schools systems are increasingly empowering teachers and network of teachers to both identify and create learning resources that will be effective in class room teaching. Many online text allows teachers to edit, add to or customize the material for their own use and give it in the tailored form to the students to suit the style and pace of their course
12. Smart portfolio assessment	The collection, management, sorting and retrieving the data related to learning will help the teacher to better understand learning gaps and customize content and pedagogical approaches.
13.Teacher/managers and mentors	The role of teachers in class room is being transformed from that of font of knowledge to that of an instructional manager to help the students in individualized learning pathways

Conclusion:

ICTs are indispensable to the functioning of modern societies; these same technologies are equally indispensable to the learning institutions. Traditional forms of teaching and learning are increasingly being converted to online and virtual environments. Students and professors should address the change in our society as a change to improve our educational practices in order to achieve an education with quality. The changing role of teacher as we saw before is an essential part of the changing process. Their role should turn into a 'facilitator of learning' better than 'epitome of knowledge'. As ICTs are incorporated in education, the trend of a class room and text book based educational system is becoming more and more outdated.

It can clearly be seen that the education system should change to adapt to modern requirement and should integrate new technologies. ICT implementation will lead to change by empowering teachers not only in effective delivery of course material but also by improving the relationships with students. It is not all about acquiring computer skills or purchasing latest computer gadgets, rather it is about using technology to make teaching-learning process an effective one. By incorporating these technological trends into the educational system a high quality education can

be provided at a cheaper cost and spread over a larger segment of the population. ICT enabled education will ultimately lead to the democratization of education and thus leads to socio-economic development of the country.

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