Use of ICT in Higher Education in India

Bhavna Dubey
Research Scholar, School of Humanities & Arts,
MUIT, Lucknow, U.P.

Dr. Sita Devi
Professor
School of Humanities and Arts
MUIT, Lucknow, U.P.

Abstract

Higher education has been one of the key sectors, which provide direction to the national development. In the new millennium, higher education receives greater priority in the national development and efforts are being made to enlarge the educational network of the colleges, universities and institutions of national importance along with the strengthening of the staff, faculty and infrastructure for quality education. The increasing use of information and communication technologies has brought changes to teaching and learning at all levels of higher education systems to improve the quality. Traditional forms of teaching and learning are increasingly being converted to online and virtual teaching and learning. There are endless possibilities with the integration of ICT in the higher education system. The use of ICT in higher education not only improves classroom teaching learning process, but also provides the facility of e-learning. ICT has enhanced distance learning too. Present paper purports to review the use of ICT in higher education in India.

 Introduction: The higher education system in India has significantly expanded in recent years, both in terms of the number of institutions as well as the student enrollment. India has network of more than 700 universities and over 35,000 colleges. Out of them almost half were set up in the last decade. Indian higher education has grown by 20 per cent in one year and added more than 5,000 colleges to the system. National University of Educational Planning and Administration (NUEPA) has indicated that the investment required in higher education is more than 9 lakh crore to achieve 30 per cent GER. This covers the cost

of setting up more institutions , educational infrastructure and salaries. In China, government spends more than 1.5 per cent of its GDP on higher education while India spends less than 0.5 per cent. There has been significant growth in universities in India. During 2015-16, 799 universities were reported and out of them, 41 per cent universities were categorized as state public university while state private universities constituted 24.66 per cent. There has been increase of 126.44 per cent in state private universities over the period of 2010-11 to 2015-16. There has been growth of 76.97 per cent in the number of universities in India during the period of 20-0-11 to 2015-16. In most of the states, there has been increase in the number of universities over the period; however, there has been decline in the number of universities in Andhra Pradesh and Tamil Nadu. UGC has already issued orders to close a number of deemed universities as they are not fulfilling the UGC norms. Thus, it is likely to further decline in the number of universities in India.There are 268 affiliating Universities and they have 39071 colleges. There are 17 Universities with 500 or more colleges. ChatrapatiSahujiMaharaj Kanpur University, Kanpur has the maximum number of colleges (1177). Majority of the colleges (78 percent) are privately managed; 64 percent are Private unaided and 14 percent are Private aided. There are wide variations among states in number of private colleges. Majority of colleges are smaller in terms of enrolment. About 22 percent of the colleges are having enrolment less than 100 and 40.7percent of the colleges have student strength 100 to 500 which means 62.7 percent of the colleges enroll less than 500 students. Only 4.3 percent Colleges have enrolment more than 3000.

There has been significant growth in technical institutions imparting technical education in undergraduate courses in India during the period of 2006-07 to 2014-15. However, higher growth was recorded in engineering institutions as compared to other institutions (124.28 per cent).There has been increase in the number of technical institutions imparting education in postgraduate courses in India during the period of 2006-07 to 2014-15. However, higher growth was recorded in engineering and technology institutions (134.93 per cent) as compared to other institutions. There has been increase of 90.23 per cent in the engineering and technology institutions providing diploma courses in India during the period of 2006-07 to 2014-15. Similarly, the technical institutions providing diploma courses in architecture has increased by 26.53 per cent and pharmacy increased by 21.67 per cent during the corresponding period.

Use of ICT: ICT and communications technology are the infrastructure and components which enable modern computing. ICT encompasses both the internet-enabled sphere as well as the mobile one powered by wireless networks. It also encompasses antiquated technologies, such as landline telephones, radio and television broadcast -- all of which are still widely used today alongside cutting-edge ICT pieces such as artificial

intelligence and robotics. E-learning is fast becoming a major form of learning. Computer multimedia offers ideal opportunities for creating and presenting visually enriched learning environments. The latest technologies connected with virtual reality will also play an important role in not too distance future. The rapid development of Information and communication technology, particularly the Internet, is one of the most fascinating phenomena characterizing the information age. ICT powers our access to information, enables new forms of communication, and serves many on-line services in the spheres of commerce, culture, entertainment and education.

Integrating ICT in teaching and learning is high on the educational reform agenda. ICTs can improve the quality of education in a significant ways. ICTs are also tools which enable and bring about transformation. ICTs which can be in the form of videos, television and also computer multimedia software, that merges sound, transcripts and multicolored moving imagery, can be made use of so as to make available stimulating, thought provoking and reliable content that will keep the student interested in the learning process. There is increasing trend to introduce e- learning or online learning both in courses taught on campus and in distance learning. Distance education and e-Learning is not necessarily the same thing and can have very different cost structures.

The use of ICT is a symbol of a new era in education. Besides, ICT alters thought patterns, enriches existing educational models and provides new training models. These models shares features of a technology-based training and suggest new learning methods in which the learner plays an active role and also emphasizes self-directed, independent, flexible and interactive learning (FarajAllahi&ZarifSanayei, 2009).In this condition, combination of the Internet and computer has created a kind of training called e-learning. In this method, teaching and learning methods move from content-centered to competency-based curricula and they also move away from teacher-centred forms of delivery to student-centred forms (Alestalo&Peltola, 2006; Attaran, 2007). In order to acclimatize the advantages of e-learning possibilities and also condense limitations of this type of training, it is essential to examine thoroughly the features of e-learning for

ICTs are being used in many areas such as: developing course materials; delivering content and sharing content; communication between learners, teachers and the outside world; creation and delivery of presentation and lectures; academic research; administrative support and student enrolment (Mandal& Mete, 2012). When applying ICT in higher education, learning is no longer confined within schedules and timetables (Hattangdi&Ghosh, 2008). The use of ICT as an instructional medium is increasing and might likely continue to modify strategies which are employed by both teachers and students in learning process (Oliver, 2003). One of the most important features of e-learning is the

Corresponding author: **Bhavna Dubey and Dr. Sita Devi**

students' interaction with learning materials and learning environment. ICTs can improve the quality of education in a number of ways (Behnam, 2012). E-learning is emerging as an important strategy to provide widespread and easy access to high quality education. On the other hand, it is said that the educational effectiveness of ICTs depends on how they are used and for what purposes. And like any other educational tool, ICTs do not work for everyone or everywhere in the same way (Sarkar, 2012). Learners and teachers can be connected together via chatting, voice and video conferences, interactive TV, virtual classes and eliminate physical separation simultaneously. In this way, learners are active in learning and interactive processes (FarajAllahi&ZarifSanayei, 2009). Learners are able to find out the required information in their field by using ICT and the obtained data is not only limited to information on Persian Language but also in English (Khaleghi, 2010). Nowadays learners can interact and cooperate well together using information and communication technologies (Behnam, 2012; Yadegarzadeh&Rahimi, 2002). Nonetheless because of the nature of agricultural education, there seems necessary for someone who can master practical courses and supervise students and their operation. The Internet provides a wonderful opportunity to get all kinds of information back and forth, but it also makes it harder to assess some types of students' feedback and knowledge (James, 2002). The learner with Internet access is able to access online libraries, journals, conferences and online virtual classrooms, and through this will achieve a high volume of the latest information (FarajAllahi&ZarifSanayei, 2009; Markovic, 2010; Sarkar, 2012).. Learning is conveying information directly to the learner instead of the other way around (James, 2002). Karimi (2007) states this decrease in travel costs ultimately lead to a gradual reduction in the cost of education. The use of ICT is a symbol of a new era in education. Besides, ICT alters thought patterns, enriches existing educational models and provides new training models. These models shares features of a technology-based training and suggest new learning methods in which the learner plays an active role and also emphasizes self-directed, independent, flexible and interactive learning. Educational effectiveness of ICTs depends on how they are used and for what purposes (Talebian, .Sogolet. al , 2014) .

Multimedia is the media that uses multiple forms of information content and information processing (e.g. text, audio, graphics, animation, video, interactivity) to inform or entertain the user. Multimedia also refers to the use of electronic media to store and experience multimedia content. MIDI (Musical Instrument Digital Interface) is a communication standard developed for electronic musical instruments and computers. MIDI files allow music and sound synthesizers from different manufacturers to communicate with each other by sending messages along cables connected to the devices. Animation is the rapid display of a sequence of images of 2-D artwork or model positions in

Corresponding author: **Bhavna Dubey and Dr. Sita Devi**

order to create an illusion of movement (Gunjan, 2014) .

Ministry of Human Resource Development (MHRD) under its National Mission on Education through Information and Communication Technology (NMEICT) has initiated the National Digital Library of India (NDL India) pilot project to develop a framework of virtual repository of learning resources with a single-window search facility. e-PGPathshala is an initiative of the MHRD under its National Mission on Education through ICT (NME-ICT) being executed by the UGC. e-Adhyayan is a platform to provide 700+ e-Books for the Post-Graduate Courses. All the e-Books are derived from e-PG Pathshala courses. e-Pathya is one the verticals of e-PG Pathshala which is software driven course / content package that facilitates students pursuing higher education (PG level) in distance learning as well as campus learning mode. it also facilitate offline access. "Shodhganga" is the name coined to denote digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre. Shodhganga stands for the reservoir of Indian intellectual output stored in a repository hosted and maintained by the INFLIBNET Centre. The MHRD has formed e-ShodhSindhu merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. The e-ShodhSindhu will continue to provide current as well as archival access to more than 15,000 core and peer-reviewed journals and a number of bibliographic, citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions including centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act. VIDWAN is the premier database of profiles of scientists / researchers and other faculty members working at leading academic institutions and other R & D organization involved in teaching and research in India. It provides important information about expert's background, contact address, experience, scholarly publications, skills and accomplishments, researcher identity, etc. e-GyanKosh is a National Digital Repository to store and share the digital learning resources which is developed by the Open and Distance Learning Institutions of India. Items in eGyanKosh are protected by copyright, with all rights reserved by Indira Gandhi National Open University (IGNOU).Gyandarshanis a web basedTV channel devoted to educational and developmental needs for Open and Distance Learner. A web-based TV channel devoted to educational and developmental needs of the societyGyandharais an internet audio counseling service offered by IGNOU. It is a web radio where students can listen to the live discussions by the teachers and experts on the topic of the day and interact with them through telephone, email and through chat mode. Swayamprovides Massive Open Online Courses (MOOCs) with 140 universities approved credit transfer feature. SwayamPrabha provides high quality educational programs through 32 DTH channels transmitting educational contents. e-PGPathshala is for postgraduate

students. Postgraduate students can access this platform for e-books, online courses and study materials. The details of these three digital platforms are described by the author (Jena , 2020).e-Adhyayan(e-Books) is a platform that provides 700+ e-Books for the Post-Graduate courses. All the e-Books are derived from e-PG Pathshala courses. It also facilitates play-list of video content. e-Pathya(Offline Access) is one the verticals of e-PG Pathshala which is software driven course/content package that facilitates students pursuing higher education (PG level) in distance learning as well as campus learning mode. It also facilitates offline access.e-Yantraprovides hands on experience on embedded systems. It has about 380 Lab and made 2300+ colleges benefited.SAKSHATis one Stop Education Portal for addressing all the education and learning related needs of students, scholars, teachers and lifelong learners. The portal provides the latest news, press releases, achievements etc related to Ministry of Human Resources Development (Jena, 2020) .

Conclusion: Use of ICT in higher education has become integral part of education; however variations in purpose and frequency its use are seen among students. This may depend upon various factors including existence of ICT equipped labs, workshops, classroom and library; student's their socio-economic status, nature of subject studying of users and non- users of ICT services. Despite government's initiative to achieve excellence in technical education and its investment in developing and supporting ICTs infrastructure in institutions of higher learning, it has been observed that all students do not have equal access to ICT. Today, ICT acquisition and implementation is facing a lot of problems. Present research work will also be conducted to expose some of the inhibiting factors that are acting as barriers in the use of ICT in technical educational institutions. Lack of search skills, automation at infancy level, consistent power supply, and technical know - how are some of the problems encountered by the technical educational institutions specially engineering and management courses in Lucknow and nearby by area.

References:

1. Alstalo, M., &Peltola, U. (2006). The problem of a market-oriented university. Journal of Higher Education, 52, 81-251.

2. Attaran, M. (2007). Virtual university: Re-reading existing narration. Quarterly Journal of Research Planning in Higher Education ., 13(1), 53-73

3. Behnam, A. (2012). The Effect of information and communication technology on learning level, improvement of teaching-learning process and information literacy.

4. FarajAllahi, M., &ZarifSanayei, N. (2009). Education based on information and communication technology in higher education Journal Of Education Strategies, 4(2), 167-171

5. Gunjan, Nishant (2014)   ICT Based Education: A Paradigm Shift in India, Techno Learn: 4(1), PP. 15-26, June

6. Hattangdi, A., &Ghosh, A. (2008). Enhancing the quality and accessibility of higher education through the use of information and communication technology Paper presented at the 11th annual convention of the strategic management forum (SMF), Kanpur, India.

7. James, G. (2002). Advantages and disadvantages of online learning.Retrieved 5/18/2014 *http://www.comminit.com/ict-4-* development/node/210058.

8. Jena, Pravat Kumar (2020) Impact of Covid-19 on higher education in India, International Journal of Advanced Education and Research, Volume 5; Issue 3PP. 77-81

9. Jena. Pravat Kumar (2020) Impact of Pandemic COVID-19 on Education in India.Purakala. 31(46):142-149.

10. Karimi, A. (2007).Studying factors influencing the use of information technology in scientific and practical education. (Master's thesis). University of Tehran, Iran.

11. Khaleghi, E. (2010). E-learning. Retrieved 05/18/2014, from http://www.guilan.ac.ir/news/index.php?a=00040

12. Mandal, A., & Mete, J. (2012). ICT in higher education: opportunities and challenges. Retrieved 04/27/2014 Bhatter College http://bcjms.bhattercollege.ac.in/ict-in-higher-education-opportunities-and-challenges/

13. Markovic, M. (2010). Avantages and disadvantaged of e-learning in comparison of traditional forms of learning. Annals of the University of Petrosani, Economics, 10(2), 289-298.

14. Oliver, R. (2003). The role of ICT in higher education for the 21st century: ICT as a change agent for education. Paper presented at the Higher education for the 21st century conference

15. Sarkar, S. (2012). The role of information and communication technology (ICT) in higher education for the 21st century.The science probe, 1(1), 30-41.

16. Talebian, .Sogolet. al , (2014) Information and communication technology (ICT) in higher education: advantages, disadvantages, conveniences and limitations of applying e-learning to agricultural students in Iran, Procedia - Social and Behavioral Sciences 152 (2014) 300 – 305

17. Yadegarzadeh, G., &Rahimi, H. (2002). Higher education in information society: challenges, developments, opportunities and threats. Paper presented at the Development based on knowledge conference, Iran, Tehran

Corresponding author: **Bhavna Dubey and Dr. Sita Devi**