

Information and Communication Technologies (ICT): A Way of Changing India's Higher Education

P. Shailaja

Research Scholar Department of Public administration Osmania University, Hyderabad

Abstract

Technology is crucial to the development of civilization in the twenty-first century. Members of the new generation find it impossible to envision their lives without the latest technology advances. It has established its hegemony in every aspect of human life, and this extends to education as well. ICT, or information and communication technology, is a significant part of it. Each country's progress depends greatly on higher education. By extending the knowledge-capable people, higher education should increase the multifarious development of HR (human resources), which will provide peace, socioeconomic growth, and social advancement. In most developing nations, ICT adoption benefits the goal for educational reform. Information and communication technology (ICT) in education is one of the most practical approaches to revolutionise higher education in India. In this essay, we covered how ICT influences and improves higher education in India.

I. Introduction

Many studies have shown that education is the only means of shaping people into responsible citizens and bringing about good change in their lives (Idris F. et al 2012). A community built on values, knowledge, cultural empowerment, and peace may benefit much from higher education and move the country in the correct way. Making India a powerful country is also beneficial. ICT and the digital revolution over the last two decades have significantly changed how education is transmitted and received. ICT, which is three words in one, opens the door to sophisticated information capabilities. As a technology for gathering, storing, processing, transmitting, and disseminating information and data utilising computers and telecommunications, ICT in education may be defined as (Mbakwem, 2006). The potential and potential benefits of information and communication technology (ICT) for improving educational quality have been highlighted in a number of research and papers. ICT is seen by UNESCO (2003) as a key instrument for understanding societies, and in particular, as a tool for rethinking and rebuilding educational structures and practises that would result in high-quality education for everyone. These studies' authors' work is based on ICT practises that have been adopted in higher education, and they also contrast the features of a virtual educational system with those found in a traditional educational system.

According to Blachowicz et al. (2009), the bulk of research is focused on how the education system has changed, accessibility, the use of technology, and how technology might provide a student more control. In the early stages of the study, it was shown that students' attitudes about ICT and education technology improved the learning activities and had a significant impact on their interest in the subject, their motivation, and their willingness to engage in active learning. Also, it enhances academic achievement (Ciampa 2014, Joosten 2010).

It has been observed that instructors might disregard motivational enhancement in favour of instructional design, mistakenly thinking that the novelty impact of mobile technology is sufficient to engage students, according to Huett et al. (2008) and Jones et al. (2006). Several researchers conducted their studies on the characteristics of certain instructors, such as their views and attitudes outside the constraints of the environment, after the introduction of ICT in developed nations (Hermans et al., 2008; and Mueller et al., 2008). The majority of instructors have good views about ICT, and they review students' learning outcomes and pinpoint areas in which ICT may help students learn (Jones, 2004).

Cox (2008) has made an effort to pinpoint and quantify the variables that influence teachers' perceptions of the value of ICT in topic instruction. Mumtaz, 2000 discovered in a meta-analysis that instructors were excited about integrating ICT in the classroom and even generated new theories for doing so with their core teaching philosophies. Numerous studies and education specialists have proposed and advised that hurdles to ICT integration in education may be caused by teachers' educational ideas. According to Chen (2008) and Mueller et al. (2008), active computer users seem to take a constructivist perspective despite contradictory results. ICT technologies unify the whole globe on a single stage and contribute to the idea of the global village, where individuals are closely linked to one another beyond international borders (Salawu, 2008; Spence & Smith, 2009). India still has a lot of work to do in the areas of ICT and education as a growing nation because of the increasing level of education and the need of bridging social, economic, and political mobility for this goal (Amutabi&Oketch, 2003). Those who desire to access education face several difficulties in the form of

infrastructure, social development, language, and some physical impediments. While the United States has the biggest higher education system in the world, India is second. In India, there are many colleges and universities (both national and state-run), yet there is still a huge waiting list for admission to higher education, particularly professional education. While there has been a significant expansion of the private sector's capacity to educate the nation's children, the expense of private education is too expensive and the majority of institutions fall short of the standards for excellent instruction. The truth of the day is that fresh breakthroughs, cutting-edge technology, a growing economy, and competitiveness. With this intensifying global rivalry, India is seeking to position itself as a knowledge-driven economy. Particularly in terms of how instructors interact and communicate with students, ICT has fundamentally changed how knowledge is produced and transmitted in India. The emergence of Technology in higher education in India has boosted demand for distant learning and part-time learning programmes.

ICT-based education has overcome significant obstacles including expense, a lack of instructors, poor educational quality, and constraints like time and distance. The purpose of this essay is to examine the role that information and communication technology (ICT) plays in higher education and to list Indian government efforts that support ICT in this sector. This essay also tries to explain how ICT is changing India's higher education system.

ICT's Role in India's Higher Education

System of Traditional Education:

Education is considered to be a crucial component in the advancement of human civilization. Throughout the beginning of time, learning strategies have evolved over time and continue to alter as a consequence of technology breakthroughs. Conventional class rooms are built with furniture and instructional aids including a podium, board, and projectors, among other things. Education has always been centred on daily attendance, but more recently, individuals have realised that school environments may affect how well students learn. In a typical classroom, learning is primarily centred on the teaching methodology, which often places more emphasis on the curriculum than on the capacities and talents of the students.

In addition, students must balance their individual learning styles and tactics. Conventional classroom settings really encourage repeated learning rather than energising the intellect or the soul. It is evident from the above that there are two types of educational delivery: traditional and virtual. Traditional education refers to a body of knowledge that all adhere to a predetermined fundamental framework for education. In the conventional educational system, a student was expected to match his learning methods and tactics to those of the instructors. Traditional teaching techniques are well known to us all; they include instructors instructing a small group of pupils in a conventional classroom setting. Nowadays, traditional education consists of lectures and seminars, with a professor from a higher education institution deciding on the topic of initiation and regulation. As a consequence, a foundation for educational communication is built that does not meet the development standards of contemporary higher education.

Governmental Programs for ICT in India's Higher Education

Taking into account how crucial Technology is to higher education In order to successfully implement ICT in higher education, the Ministry of Human Resources and Development (now the Ministry of Education) of the Government of India has established many national and state-specific programmes and projects. Government funds are made up annually for the construction of ICT infrastructure in this respect.

The national mission for information and communications technology in education (NMEICT)

The National Mission on Education through Information and Communication Technologies (NME-ICT) was introduced by the Ministry of Human Resources and Development in 2015. It targets everyone in the neighbourhood, including younger students, undergrads, working experts, experts who have quit their jobs, instructors, mentors, research researchers, programming customers, and engineers. More than 12 lakh pupils have received education via the Speaking Tutorial Initiative. Also, students may use Spoken Tutorial to take online tests and earn certifications. In its eleventh five-year plan, the National Mission on Education through Information and Communication Technology suggested expanding ICT exposure to all higher education institutions in India (378 Universities & 18064 Institutions). This mission's key objectives are the digitization and networking of all educational institutions, the creation of more consuming and accessible technology, and the development of a transmission capability for educational purposes.

Digital literacy

One of the basic tenets of Digital India is that all ministries and departments must provide their own services to the public education system. The Ministry of Communications and Technology will be in charge of the advisory committee for this programme. To achieve completely electronic colleges and digital campuses,

institutions including the Ministry of Education and the Department of Information Technology and Telecom (DoT) would work together. Yet, only a small number of universities will have cutting-edge computing resources. With more than 70 million students enrolled, Indian higher education has expanded significantly to become the biggest in the world. Such expansion would not have been achieved without the intensive use of IT resources.

National Digital Library (NDL)

As part of its NME-ICT programme, the Ministry of Human Resource Development (MHRD) announced the National Digital Library of India (NDL India) project to develop a system for a virtual repository of educational materials with a single window search capability. In order for students to find the right resource with the least amount of effort and time, targeted searching is encouraged and supported by the use of filtered and unified search. The NDL framework preserves the fundamentals of all languages and provides students with interface assistance in widely used Indian dialects. All academic levels, including researchers and lifelong learners, as well as all fields, common access devices, and students with disabilities, will be catered to. It is being developed to help students prepare for entrance exams and other competitive exams, to enable people to learn from the best practises throughout the globe and become ready for them, and to inspire researchers to conduct interconnected research from many sources. For the pilot project, the Indian Institute of Technology in Kharagpur is engaged. In this pilot project, a framework is being created that will be expanded in terms of material volume and variety to suit students of various levels and disciplines.

A. E PG Pathshala -Third project of MHRD the E-PG Pathshala project is being run by the UGC's NME-ICT programme). Three distinct ICT platforms are being used under this scheme.

B. More than 700 E-Books are available for PG Courses on the E-Adhyayan platform.

The E-PG Pathshala courses serve as the basis for all of the E-Books. Students are assisted at this platform by a video playlist as well.

C. The UGC-MOOCs, SWAYAM, is one of the verticals for producing courses in Post Graduate topics. As a national coordinator and technical partner, UGC is active.

D. One of the platforms for E-PG Pathshala is E-Pathya. It offers software-driven course materials that support graduate students who are pursuing their education both online and on-campus. Also, it is made available offline.

Shodhganga platform

The database of electronic theses and dissertations in India is called Shodhganga Platform. The purpose of this platform is to improve research quality while facilitating quick access to and availability of electronic theses for students. According to the 2016 Regulation, which requires students to submit their electronic theses and dissertations to centrally managed digital repositories. A centre for the information and library network (INFLIBNET) was constructed at this location. INFLIBNET's duty is to host, create, and manage a digital repository for electronic theses and dissertations that is open to all academic institutions. This platform offers a server for universities and other organisations to utilise in order to access the database from all electronic theses and dissertations (ETD), in addition to maintaining the ETD repository.

E-ShodhSindhu Platform

In essence, it is the merger of three government initiatives, namely the Indian National Digital Library in Engineering Sciences and Technology (INDEST) consortium, the National Library and Information Service Infrastructure for Scholarly Content (NLIST), and the UGC INFONET Digital Library Consortium. The E-ShodhSindhu Platform is a library of journals and online learning materials that gives academics and researchers from many sectors access to 15,000+ articles (core and peer-reviewed). This portal offers a sizable amount of bibliographic, reference, and factual data from several Publishers, research centres, and universities across numerous fields. The E-ShodhSindhu Platform's goal is to increase standard eresource availability at a minimal subscription fee.

E-Yantra

Engineering education at Indian engineering institutes is mostly focused on embedded systems and robotics by E-Yantra. For instructors and students, E-Yantra conducts a variety of seminars and training programmes to teach them the fundamentals of embedded systems and programming. EYantra holds competitions and use a range of cutting-edge techniques to involve instructors and students in practical activities. Moreover, E-Yantra encourages organisations and universities to build robotics laboratories on their campuses so that it may be included into their regular training schedule. Roughly 275 colleges are benefitted with this initiative throughout the India.

FOSSEE

The "free and open-source software for education" (FOSSEE) project's goal is to encourage the use of FLOSS technologies to improve the quality of higher education in India. Also, this effort lessens the reliance on a single piece of software across several institutions of higher learning. This project engages in a number of actions to encourage the adoption of FLOSS tools and attempt to replace commercial software with FLOSS tools that are functionally equal. New FLOSS tools were created as part of this project to suit the demands of academics and researchers.

Spoken Tutorial Portal

A multilingual online learning platform called Speaking Tutorial offers a variety of courses in several languages. Anybody may access the courses provided by this platform via the internet. Everyone may learn about the numerous free open source software using this site. The information on this website has been published by this portal with permission and under a CC BY SA licence.

To accommodate the increasing demand from students, this site provides courses from the fundamental level to the specialised level. This website offers software training programmes for all academic fields, including management, business, engineering, and the arts. Also, this site offers pupils software for academic areas like science and math. Teachers may utilise this to improve their instructional techniques. This site is used by several universities to educate their students a specific software course throughout the whole semester. Also, these portals provide a variety of software certificate programmes to help students develop their abilities.

Virtual lab project

A project using ICT called "Virtual Labs" was started by MHRD as part of NME-ICT. Under the coordination of IIT Delhi, twelve universities are taking part in this platform for group interaction. The research and educational paradigms were altered by this initiative, which places a greater focus on ICT-based education. This is a pioneering effort in remote experimentation, consisting of more than 100 Virtual Laboratories and more than 700 web-enabled experiments designed for distant operation. The project's targeted beneficiaries are students and instructors with backgrounds in engineering and science.

VIDWAN Portal

The teachers, scientists, and researchers who run academic institutions and research institutes are profiled in the database and national network of research called VIDWAN Portal. For the assistance of students and instructors, this site offers specialists' biographies, contact information, publications, and other information on a single platform. The Information and Library Network Centre manages the VIDWAN Portal, which is supported by NME-ICT.

II. Conclusion

ICT is becoming more prevalent in both our personal and professional lives. The whole globe is embracing information and communication technology and taking use of its advantages. ICT is also a key factor in education, which is another area. Those who are unable to enrol in the courses they want to take are increasingly turning to higher education, particularly in the distant learning format. Technology helps ordinary people access and afford these courses at a very cheap cost. Also, it can effectively provide live lessons to students.

Yet, there are several difficulties that the pupils must face at the beginning of class. While the traditional education system was effective, there were several barriers preventing it from reaching the average person. Both teachers and students relied on in-person interactions to exchange information about the teaching and learning process. Everyone found time management to be a major difficulty. It was impossible for a student to make up a missed class. Another difficulty they faced was a lack of adequate teaching and learning resources. ICT deployment in higher education has transformed the system as a whole. Now that everything is done online, anybody may access the educational materials whenever they choose. Time management may be done without any difficulty. Working folks may enrol in higher education as well and improve their future prospects. Students and teachers are more at ease with one another when it comes to the teaching and learning process. It is beneficial for the nation's development of a robust and skilled labour force. The quantity of students enrolled demonstrates how successfully ICT in higher education functions and advances the field of education. The system of higher education has been altered by IT, and its future is extremely promising, one may conclude as a last observation.

References

- [1]. All India Survey on Higher Education, 2010- 2020, Department of Higher Education, Ministry of Human Resource Development, Govt. of India.
- [2]. Idris, F., Hassan, Z., Ya'acob, A., Gill, S. K., &Awal, N. A. M. (2012). The role of education in shaping youth's national identity. *Procedia-Social and Behavioral Sciences*, 59, 443-450
- [3]. M. S. Ananth, "National Programme on Technology Enhanced Learning (NPTEL): The Vision and the Mission," 2011 IEEE International Conference on Technology for Education, Chennai, India, 2011, pp. 8-8, doi: 10.1109/T4E.2011.9.
- [4]. RitimoniBordoloi, (2018) "Transforming and empowering higher education through Open andDistance Learning in India", *Asian Association of Open Universities Journal*, Vol. 13 Issue: 1, pp.24-36, <https://doi.org/10.1108/AAOUJ-11-2017- 0037>
- [5]. Bordoloi, R. and Das, P. (2012), "Effectiveness of open and distance education and the relevance of ICT:a north East Indian perspective", *International Journal of Information and KnowledgeManagement*, Vol. 2 No. 1, pp 38-45.
- [6]. Bhushan, S., &Verma, A. (2017). *Quality Assurance in Higher Education—An Indian Experience*. In *The Rise of Quality Assurance in Asian Higher Education* (pp. 51-66). Chandos Publishing.
- [7]. Silin, Y., & Kwok, D. (2017). A study of students' attitudes towards using ICT in a social constructivist environment. *Australasian Journal of Educational Technology*, 33(5).
- [8]. Commonwealth of Learning (2017), *Open Educational Resources: Global Report 2017, Learning for Sustainable Development*, Barnaby, British Columbia, available at: http://oasis.col.org/bitstream/handle/11599/2788/2017_COL_OER-GlobalReport.pdf
- [9]. Davis, G. (Ed.) (2008), *Quality Education, Prospects and Challenges*, A.P.H. Publishing Corporation, New Delhi.
- [10]. Gough, S. and Scott, W. (2007), *Higher Education and Sustainable Development, Paradox and Possibility*, Routledge, London.
- [11]. Lockywood, F. and Anne, G. (2006), *Innovation in Open and Distance Learning*, Routledge, Kogen Page, London.
- [12]. Mishra, S. (2017), *Open Universities in the Commonwealth: At a Glance*, Commonwealth of Learning, Brnaby, available at: http://oasis.col.org/bitstream/handle/11599/2786/2017_Mishra_Open-Universities-in-theCommonwealth_.pdf?sequence=3&isAllo wed=y
- [13]. Philip, E. (2008), "Producing workers: employability and quality in higher education", in George, D. (Ed.), *Quality Education, Prospects and Challenges*, A.P.H. Publishing Corporation, New Delhi.
- [14]. Prakash, V. (2011), *University and Society, Issues and Challenges, Some Ideas from LeadingPractitioners of Higher Education*, UGC, New Delhi.
- [15]. Srivastava, M., Kurup, J.M. and Nembiaakkim, R. (2007), "Reaching out to the un-reached through ODL: role of IGNOU in the North East Region", *Indian Journal of Open Learning*, Vol. 16 No. 2.
- [16]. Sukhadeo, T. (2006), *Higher Education in India, Emerging Issues Related to Access, Inclusiveness and Quality*, Nehru Memorial Lecture, New Delhi.
- [17]. Tanaka, A.C. and Tabucanon, M. (Eds) (2014), *Transforming Higher Education and Creating Sustainable Societies*, United Nations University and Institute for the Advanced Study of Sustainability, Tokyo.
- [18]. Tilak, J.B.G. (2015), "Higher education in South Asia: crisis and challenges", *Social Scientist*, Vol. 43 No. 112, pp 43-59. UN (2015), *transforming our World: The 2030 Agenda for Sustainable Development*, New York, NY, available at: www.un.org/pga/wpcontent/uploads/sites/3/2015/08/120815_outc