Information and Communication Technology in Higher Education in India: An Overview

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Abstract

Education is the major backbone of a country's growth and the maturity of the nation is understood from the quality of educations it imparts to its population. The education sector in India has come across many stages of development as well as faced crisis and challenges over the period. Hence, the sector received high attention from the successive governments since independence to date. The higher education sector of India has undergone major interventions by the government with introduction major governing institutions, implementing and monitoring bodies from central to the local level, prioritising the use of Information Technology and Information and Communication Technology (ICT) for dissemination of educational information and better governance of the sector. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour within business and governance. This paper attempts to highlight the role of ICT in higher education in India and development vis-a-vis challenges it has been interfacing is discussed in the article.

Keywords: Information and Communication Technology, Scientific Education, Information Dissemination, Avaibility-Accessibility-Cost Effectiveness, etc

Introduction

The Information and Communication Technology[1] (ICT) is widely used in improving the governance of higher education in India with efficient technology uses for better management of higher education institutions. While the society is moving rapidly towards digital technology, the role of ICT in higher education has become increasingly important and now mere a necessity. India has a long history of organised and qualitative education system which believes in all round human development including physical, mental and spiritual. The uses of technology are required for bringing this qualitative education to the door step of population who have difficulty in accessing it.

Going back to the history of India's education system, the leaders of independence movement including Mahatma Gandhi, Rabindranath Tagore, Jawaharala Nehru, Maulana Abul Kalam Azad, etc realized and acted on the fundamental role of education and stressed the importance of education in national development. Moreover, Mahatma Gandhi stressed making education directly relevant to the life of the people and it should reach to the people without any type discrimination-socio, economic and cultural. Moreover, thorough and unified attempts to centralize and standardize the Indian education system were emphasised and made after India's independence in 1947.

Hence, the post- independence period observed concerns of the central government as well government of states in making education as a factor vital to national progress and human development. Problems of educational reconstruction were also viewed and reviewed by several committees and commissions[2] so as to make dynamic education policies. Steps were taken to implement the recommendations of these Commissions[3] and resolutions on

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[1]ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning. Source: search cio-midmarket.techtarget.com/definition/ICT.

[2] The University Education Commission of 1948-49, Secondary Education Commission of 1952-53, National Education Commission/ Kothari Commission 1964-66, University Grants Commission, etc. Government of India, *Report of*

scientific policy under the leadership of Nehru incorporated with special emphasis on the development of science, technology and scientific research in higher education.

Emphasizing Quality Education: Envisioning the Independence Dream

Post independent India of 1947 first visualised the establishment of University Education Commission in 1948 to analyse the university education system and make recommendations regarding university (higher) education. The commission chaired by Dr Radhakrishnan recommended higher education should be philosophical, scientific, moral, cultural and vocational. The recommendations provided an insight for qualitative affair in higher education in that the wisdom, knowledge and skills of the glorious past were to guide actions in the present and the present way to provide roadmap to the future. Again in 1952, the Union Government appointed Secondary Education Commission to develop proposals to modernise education system. Dr Mudaliar, the chairman of the Commission stressed on the main objectives of the education is develop democracy, efficient and knowledgeable citizens, vocationally efficient youth, and qualitative leaders for governing the nation.

The resolution on scientific policy was adopted by Government of India and Nehru as first Prime Minister of India, emphasized upon the high-quality scientific education institutions such as the Indian Institute of Technology, National Council of Educational Research and Training (NCERT), various autonomous educational and research organisations. Further, the Education Commission (Kothari Commission) chaired by Prof D. S. Kothari suggested a number of recommendations while addressing various aspects of education system. The commission stated that "the most important and urgent reform needed in education is to transform it and to endeavour to relate it to the life, needs and aspirations of the people and thereby make it a powerful instrument of social economic and cultural transformation necessary for the realisation of the national goals."[4]

However, it is pertinent to mention it here that higher education received attention from the successive government in post- independence India in bringing quality, inclusiveness as well as transformation. The scope of transformation later emphasized through an unprecedented growth in the use of Information and Communication Technologies in teaching, research and extension activities so as to cope up with fundamental aspects of education system. Technology intervention was required in understanding how knowledge is disseminated, multiple languages are incorporated, geographical distances reduced with better and frequent interaction. One of the major changes it 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 acted as a saviour during the crisis of COVID-19.

ICT in Higher Education: A Paradigm Shift

Being an effective communication platform, ICT reduces the traditional physical barriers and backwardness in education practices with its reliable, good and cost-effective communication platform involved in the strengthening the education extension to the target groups. Secondly, ICT is realised to strengthen the current ongoing educational extension reforms in bridging gaps in accessing global markets and having a fair competition. Not only this, ICT also includes a number of components including skills of accessing, recording, arranging, manipulating and presenting data or information using tools and software and most importantly includes telecommunication tools used to disseminate and access information. However, ICT facilitates in

- ✓ Improving the educational and occupational wellbeing of students,
- ✓ Increasing and improving the community participation in achieving the targets and fulfilling the nation's goal in the context of education,

Attaining higher levels of efficiency in the scientific education and research, and attaining national security, etc.

Classification of Technology used in Higher Education

While developing ideas on information dissemination, ICTs are categorised into various clusters. The broad clusters are Push, Pull and both. Under Push technology, radio technology, television, etc are included whereas under Pull technology, mobile technology/ internet technology/Internet Kiosks, Web Portal/ Common Service Centres are included and these technologies are widely used to disseminate information to the target group in simple, quicker way as compared to traditional system of education.

Education Commission, 1964-66, Ministry of Education, Vol-1, National Council of Educational Research and Training, New Delhi, May 1970, p-8.

[3] Abdul Mannan Bagulia, *Kothari Commission,* New Delhi: Anmol Publications, 2004, p-196.

[4] Government of India, Education Commission, 1964, Report-1, New Delhi: Ministry of Education, 1964, p-1.

The emancipatory and transformative potentials of ICT in higher education in India has helped increase the country's requirement of higher education through part-time and distance-learning schemes. These technologies are used as a tool to overcome the issues of cost, a smaller number of teachers, and poor quality of education as well as to overcome time and distance barriers.

- ✓ **Push Technology**: Radio, Television, Mobile
- ✓ **Pull Technology**: Internet
- ✓ **Push and Pull Technology**: Radio &Internet, TV & Internet, Mobile & Internet

Different technology-based ICT education is expected to provide greater reliability, validity, and efficiency of data collection and greater ease of analysis, evaluation, and interpretation at any educational level. While the world is moving rapidly towards digital media, the role of ICT in education has become increasingly important and viable. It has transformed the way how knowledge is disseminated today in terms of how teachers interact and communicate with the students and vice-versa.[5]

Preparedness of Higher Educational Institutions in Adopting ICTs:

Based on various studies on higher education and the challenges it has been facing, it is observed that certain factors are identified to strengthen ICTs and its effective uses for growth in higher education institutions. It has been observed that policy framework is carefully planned at the level of the Planning Commission, Ministry of Human Resource Development and University Grants Commission. However, the policies are not fully implemented mostly because of faulty management of the institutions of higher education.

The administrative structure of the universities, which was devised in the pre-independence period seems to be still continuing. The new challenges facing the system of higher education in the country cannot be met without a total overhaul of the structure of management of higher education institutions.[6] This has become all the more necessary because of globalization, which requires talent, competence, drive, initiative and innovation at several levels and most importantly knowledge and information dissemination.

India in its post-independence era

a. *Accessibility of ICT*

- ✓ Availability of all-around outfitted Information Technology lab in college/university.
- ✓ Availability of high-speed internet for IT lab and for personal devices via Wi-fi.
- ✓ Availability of online multimedia/video-conferencing during lectures in the smart classroom.

- ✓ Availability of advanced library in IT Labs and availability of fully digitized library.
- ✓ Availability of IT lab for 24×7 access within the institute premises or outside through smartphone apps

b. *ICT Uses:*

- ✓ Usage of most recent innovation of ICT in college/university.
- ✓ Use of sight and sound gadget instead of Chalk and Board.
- ✓ Usage of internet for doing assignments and other academic activities.
- ✓ Usage of Wi-fi in university/colleges to access information.
- ✓ Usage of video-conferencing for live class lectures for the students who are not able to attend the physical classes.
- ✓ Usage of video-conferencing for monitoring the activities of the students and teacher during the class.
- ✓ Usage of ICT for attendance recording system.

c. *Obtaining knowledge from ICT:*

- ✓ ICT in advanced education framework gives data to work diverse gadgets.
- ✓ ICT in advanced education framework gives learning that would be useful at the expert level.
- ✓ ICT produces the gainful information to understudies identified with their investigations.

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[5] Mooij, T. (2007), 'Design of educational and ICT conditions to integrate differences in learning: Contextual learning theory and a first transformation step in early education', *Computers in Human Behaviour*, Vol-23, No-3, Pp.1499--1530.
[6] Higher Education in India: Issues, Concerns and New Direction, Recommendations of UGC Golden Jubilee Seminars, 2003, source: www.ugc.ac.in

- ✓ ICT provides guidelines for the students who are visually and hearing impaired to use the lab facilities concerned.
- ✓ Announcement regarding examination, form fill-up or other upcoming events can be prompted to the incumbents via smartphone apps.

d. Cost effectiveness of ICT:

- ✓ IT Lab offices to the understudies bears ostensible charges as a piece of educational cost expenses.
- ✓ Purchase of personal computing and mobile gadgets for the students is mandatory for 24×7 access within the institute premises or outside.
- ✓ No additional charges to be paid or no special device need to be purchased by the students who are visually and hearing impaired.
- ✓ Availability of laptops, notebooks, smartphones, tablets at affordable price.
- ✓ For mobile internet attractive offers for 3G/4G data pack.
- ✓ Nominal operation and maintenance cost of IT labs.

e. Effectiveness of ICT:

- ✓ Due to ICT, the students/teachers can upgrade their learning abilities.
- ✓ ICT gives huge online learning storehouse to officeholders by means of digitizing library and web.
- ✓ Use of sight and sound frameworks helps the understudies for better learning.
- ✓ Use of video-conferencing system for monitoring the student-teacher activities in the class and generate feedback at personal level.
- ✓ ICT can be utilized to upgrade instructive productivity at the nearby, territorial and national level.

Recommendations and Conclusion

The increasing use of information and communication technologies has brought changes to teaching and learning at all levels of higher education systems (HES) leading to quality enhancements. Traditional forms of teaching and learning are increasingly being converted to online and virtual environments. There are endless possibilities with the integration of ICT in the education system. ICT enabled education will ultimately lead to the democratization of education. The essence of imparting education through gadgets in the age of world-wide pandemic situation, the uses of ICT is seen and accepted as a major means to overcome various challenges.

A new era of education has been started which necessarily demands a new role of teacher, students, administrators and overall education system while promoting and accepting ICT tools in higher education. One of the strategies is adopted in this regard is the production of teachers who have developed competencies for the successful instructional use of ICT in education. Teachers are trained to possess the technological, pedagogical, and social competencies in them so as to shape the personality of their pupils on constructivist level. Keeping the global situation and demand of the market, few recommendations are provided for application of ICT in higher education institutions. They are as follows.

- ✓ ICT should be a compulsory course in all teacher preparation institutions. Teacher preparation should not be based on training for "Computer Literacy" but should prepare teachers for using technologies to construct, represent and share knowledge in real life authentic contexts
- ✓ Sufficient facilities and resources should be provided to teachers to practices the ICTs in teaching-learning process. They should be provided with environment in which they develop their ICT based competencies.
- ✓ Compulsory training on the use of ICT should be provided to the Professionals of higher education.

Administrators must be competent in the use of technology, and they must have broad understanding of the technical, curricular, administrative, financial and social dimensions of ICT use in education

Works Cited

ICTs for Higher Education, Background paper from the Commonwealth of Learning, UNESCO World Conference on Higher Education, 2009, Vol-5, No-8. Source: http://unesdoc.unesco.org

Bhowmick Debashis . ICT in Education in India, Edutracks, Neelkamal Publications Pvt Ltd. 2014, p-4.

Sing Kamal Deep, Kaur Daljeet . ICT Mediated Education. Dhanpat Rai Publishing Company Pvt Ltd . 2013.

Justice Mohd. Shamim, Importance of Value – Based Education, UGC Golden Jubilee Lecture Series, UGC, December 2003, p-3.

Prof. V. R. Mehta, The Killing of Higher Education, Golden Jubilee Lecture Series, UGC, December 2003, p-17.

Higher Education in India: Issues, Concerns and New Directions, UGC, New Delhi, December 2003, p.iii.

Inclusive and Qualitative Expansion of Higher Education: Compilation Based on the Deliberations of the Working Group for Higher Education in the 12th Five-Year Plan (2012-17), University Grants Commission, New Delhi, November 2011, p-9.

Prof. Ram Takwale, Challenges and Opportunities of Globalization for Higher Education in India-Alternative through e-Education, Golden Jubilee Lecture Series, UGC, December 2003, Pp.3-4.

Mooij, T. (2007), 'Design of educational and ICT conditions to integrate differences in learning: Contextual learning theory and a first transformation step in early education', Computers in Human Behaviour, Vol-23, No-3, Pp.1499-1530.

Government of India, Education Commission, 1964, Report-1, New Delhi: Ministry of Education, 1964, p-1.

Higher Education in India: Issues, Concerns and New Direction, Recommendations of UGC Golden Jubilee Seminars, 2003, source: www.ugc.ac.in

Bagulia, Abdul Mannan, Kothari Commission, New Delhi: Anmol Publications, 2004, p-196