Possibilities And Opportunities In Indian Higher Education Through The Digital Shift

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Abstract : India has come a long way in the field of education, from the mediaeval "Guru-Shishya" technique of learning under the shade of a tree to becoming the world's second largest higher education system. With the advancement of Information technology, a massive transformation has taken place in the fields of education, services, work and business practices. In the field of education, the incorporation of ITC (Information, Technology and Communication) in the learning process has led to a situation where access of learning materials, knowledge and information is no more an issue. The Covid-19 pandemic further intensified the use of ITC as face to face teaching was replaced by remote learning modalities during lockdown. While the expansion of ICTs in the higher education system has advantages and potentials, there are also some challenges that come with it. In this context, the study discusses the opportunities and challenges presented by the current state of ICT integration in several facets of higher education.

Keywords: ITC, higher education, remote learning, access.

I. INTRODUCTION

The rapid evolution of information technology, including computers, telecommunications, and network technologies, is currently reshaping our society and social structures. In reality, technology has penetrated every aspect of modern life. Nowadays, technology is applied in all fields. Modern technologies have greatly improved our quality of life by enhancing our ability to learn, to do things, communicate and collaborate with others that was formerly restricted to the privileged.

Higher education institutions (HEIs) are educational institutions, such as universities, colleges, or polytechnics that award degrees to students after they complete their secondary education. HEIs have already undergone major transformation as a result of information technology but this subject has gained increasing attention since the start of the COVID-19 epidemic. In reality, digitalization has been a constant in HEIs for decades. Like many other industries, HEIs have been using contemporary technologies for academic and administrative purposes for many years to improve performance and adapt to a society that is growing more and more dependent on technology. Educational institutions are implementing technologies like Big Data analytics, Internet of Things, Cloud Technology, Cyber Security, and Artificial Intelligence to achieve greater efficiency. The traditional curriculum, which consists only of a list of topics to be taught, cannot adequately prepare students for the digital age. Today's knowledge is more interdisciplinary, complicated, and rapidly evolving. Given the profound changes in access to and acquisition of knowledge, the educator no longer holds a monopoly on its transmission. [2]. Digital learning has widespread effect at the global as well as the local level and it has become a more desirable way of learning among the learners. Students and universities across the world are not relying on the age-old, one-dimensional, chalk and board methods of learning anymore. Instead, they have started to embrace a variety of online tools in order to facilitate, simplify and contextualize the entire learning process like bringing in e-learning in higher education.

The inculcation of technology in HEIs becomes more imperative considering the present uncertain times and also to meet the demand of the present generation of learners who demand new approaches to teaching and learning. Moreover, the COVID-19 pandemic's impact on digital transformation (DT) has caused educators to reassess the value and necessity of teaching students how to use emerging technologies. While the widespread use of technology in educational institutions opens up tremendous prospects for students, it also highlights the weaknesses of traditional faculty members and the inadequate infrastructure of higher education institutions.

II. RESEARCH METHODOLOGY

The present study is descriptive in nature and is supported by secondary data obtained from various sources like research journals, publications from the government of India, different newsletters of UGC, and some credible websites.

III. REVIEW OF LITERATURE

Higher education institutions (HEIs) have been permeated by the technological advancement that the Industrial Revolution 4.0 brings with it and forces institutions to deal with a digital transformation in all dimensions. Applying the approaches of digital transformation to the HEI domain is an emerging field that has aroused interest during the recent past, as they allow us to describe the complex relationships between actors in a technologically supported education domain [1]. E-education formats and the associated pedagogical ideas and techniques have been the focus of educational innovation and research over the past three decades [10]. The emergence and ongoing advancement of digital technology have fundamentally changed how knowledge is produced and disseminated. In response to the significant shift toward the use of new technology, several universities are adopting specialised digital strategies; yet, they lack the vision, capacity, or commitment to carry them out effectively [5]. In this regard, it is critical to have a broad perspective on all aspects of DT in HEIs in order to have an overview of the current status of the field and identify its unique dimensions, actors, and implementations that have occurred during the process of digital transformation within HEIs [1]. In the case of Indian HEIs, commercial players adopted substantial ICT use for educational purposes whereas the majority of the

government-owned HEIs operate primarily using a traditional form of instruction. The Covid-19 pandemic has forced the entire educational system to step outside of its comfort zone and get ready to adopt current technology for a fresh approach to teaching and learning. However, this shift has not been a smooth process. During this shift, a number of challenges and difficulties emerged [6]. In the modern world it is essential for both the competent educators and learners to possess the ability to use current technological tools for teaching and learning. Additionally, all educational institutions must implement pertinent technologies to enhance staff and students' digital literacy skills so they may compete favourably in the workforce. This is due to the demand for technology in various areas of the labour market and professions [7].

IV. HIGHER EDUCATION SCENARIO IN INDIA

When India gained independence in 1947, the nation had a total of 241,369 students registered across 20 universities and 496 colleges. In 1948, the Indian Government established the University Education Commission to oversee the growth and improvement of higher education [3]. As of August 2022, the University Grants Commission (UGC) reported that India had one of the largest higher education systems in the world, with around 1053 universities.

Table: 1 Registered Number of Institutions with their data uploading response

	Universities	Colleges	Stand Alone Institutions
Listed for AISHE 2019-20	1043	42343	11779
Actual Response in AISHE 2019-20	993 (95.2%)	38102 (90.0%)	8631 (73.3%)
Total number of Institutions after pooling data from AISHE 2017-18 to AISHE 2018-19	1019 (97.7%)	39955 (94.4%)	9599 (81.5%)

Source: All India Survey of Higher Education Report (AISHE 2019–20)

The state of higher education in India is a mix of advancement and challenges. Its scope is enormous; the most recent All India Survey of Higher Education Report (AISHE 2019–20) lists 11,779 standalone institutions, 1,043 universities, and 42,343 colleges as making it one of the world's largest higher education sectors. *Reviving Higher Education in India*, a significant 2019 report from the Brookings Institution, finds that the number of HEIs has expanded by more than 400 percent since 2001 to accommodate the country's sizable youth population, with much of the growth taking place in the private education sector. The Ministry of Human Resource Development has been working to make education available in every part of the nation over the past few years. However, despite the increase in numbers, the quality of higher education in the nation has not much improved.

Due to significant change in technological advances and the globalization trends in higher education, new methods and approaches have come up to teaching process such as the use of ICT's which removes all the boundaries among learners. Moreover the NEP, 2020 unveiled by the MHRD, too lays emphasis on the *'extensive use of technology in teaching and learning, removing language barriers, increasing access as well as education planning and management'*. The experience of the recent past conveys positive and encouraging suggestions that the use of various digital learning platforms enhances student engagement in the course, provides barrier-free access to learning materials and the use of adaptive technology in digital content improves their performances significantly. As educators and educational planners have learnt more about the potential functions of ICT in education, [2] has recognised that ICT is both a motivator and a facilitator of the expanding globalisation of education. It serves as a motivator because educators are aware that the use of ICT with a digital foundation offers more powerful options for enhancing teaching and learning than any previous educational technology, from the chalkboard to the television. The Internet acts as a facilitator since it is such a fantastic tool for the wide-scale, low-cost distribution of educational content. Because it is now a platform for involvement as well, the Internet's potential for education has grown.

In this context, a new dimension in digital learning is also being added by the rising number of EdTech startups. EdTech, or educational technology, is the integrated use of computing tools, apps, educational theory, and educational practice to enhance learning. These virtual classroom-style cloud-based portals make it simple for students and teachers to access course content. The learning environment for students in schools is compromised in India by a skewed pupil-to-teacher ratio that is still increasing. To counter this skewness, technology driven apps are used by EdTech companies to enhance the learning process of the students. Important participants include Microsoft Teams, Google Classroom, Moodle, and Blackboard. BYJU's, toppr, Coursera, cuemath, Next.Education, Trainer Central, upGrad, CAMPK12, unacademy are some of the emerging EdTech startups that are redefining the process of learning in India.

V. POSSIBILITIES AND OPPORTUNITIES OF DIGITAL LEARNING IN HIGHER EDUCATION

- One of the most significant benefits of e-learning in higher education is that it is geographically independent. It gives students access to a class regardless of their physical location. For example E-learning allows students to take courses from prominent universities from around the world such as Oxford and Havard. It is no longer necessary to be in close distance to either the university or the teacher. The greater accessibility of E-learning gives ample possibilities and opportunities to the higher education institutions to offer more digital content course in the coming days. Moreover, students and teacher can access their work and interact from anywhere and anytime using Learning management system (LMS) such as Moodle, Blackboard, Piazza etc. Visme, Google classroom and Zoom are online interactive teaching tools available. Skype is also a video conferencing tool for effective communication and learning. Slideware is a tool that is used to create slides for presentations. Online discussion Forum (ODF) is a supportive tool for interactive learning [9].
- Digital learning is comparatively affordable so it enables institutions to save great amount of money and time. The initial expense of putting up a learning platform and stocking it with learning content is usually the most expensive part of digital learning. They are not required to spend any money on recruiting instructors, purchasing equipment, or other resources. Instead, they might put up these resources toward improving the overall learning experience. It is also less expensive for the students because they don't

have to move abroad to pursue their preferred higher education, which saves them the money associated with relocating and living in another country.

- In higher education, digital learning has been shown to increase engagement, productivity, improve focus and thus improve academic performance. The use of technology in digital learning has an appeal in terms of presentation and content which improves learner's ability to grasp and remember information. The findings of [4] suggest that online learning may be more effective for students who have difficulty participating actively in traditional classroom settings, such as those who are reluctant to speak out in seminars. Additionally, the gross enrollment ratio has improved thanks to distance learning in a variety of courses at various levels.
- Another reason why technology plays a key role in improving learning is that it is becoming an increasingly important part of our daily lives. Most jobs today demand some kind of technological proficiency. Furthermore, both children and adults use technology on a daily basis to communicate and gather information in a variety of ways. It is incredibly relevant for learners from across formats to use technology as it provides a connection that will greatly benefit student learning and also when they join the workforce in future. Three major factors are causing today's technology advancements to have an impact on the future of work: human capabilities are being scaled up and accelerated; labour is being replaced by machines; and new methods of accessing and supplying labour are being made possible.
- The widespread availability of digital learning resources gives an opportunity to collaborate and connect with diverse learners and teachers from different parts of the world. To benefit students, scholars, instructors, and lifelong learners in their academic pursuits, MHRD, India has launched a number of projects. These initiatives address the educational needs of students at all levels, from elementary school to postgraduate study. Some of the initiatives introduced are SWAYAM, SWAYAMPRABHA, National Digital Library (NDL), e-Yantra, Free/Libre and Open Source Software for Education (FOSSEE), Virtual labs, e-gyankosh, Gyan Darshan, Gyan Vani, DIKSHA, EPathshala, e-PG Pathshala, e-ShodhSindhu, Shodhganga, Shodh Shudhhi, VIDWAN, Spoken Tutorial, NEAT, SAKSHAT, etc. Collaborative learning has been found to improve student's confidence and self esteem while also developing higher-level thinking skills. In addition to being cost-effective, using open source software can also satisfy regional needs for India's enormous linguistic diversity.
- The use of technology in educational learning also helps in upgrading the faculties of higher institutions. In most of the cases the up gradation of teachers becomes a challenge because of various reasons like social perception, no possible disruption in responsibilities shouldered by them, lack of time etc. Teachers can use digital learning resources without hesitation for professional development and advancement, and they can continue to learn at any age, which increases their teaching quality.
- Technology can provide new learning opportunities for children with disabilities, who are more likely than other children to miss out continuing with their higher education. Using ICT, teachers can adapt their lessons and present information in accessible formats that best suit each learner's needs so that every student can take part equally.

VI. CHALLENGES OF DIGITAL SHIFT IN HIGHER EDUCATION

The idea that ICTs can change India and make it a knowledge society is gaining traction, but can technology alone improve the standard of higher education in the country? Whereas digital technologies have the ability to offer new and more complex learning activities in higher education, they may also disconnect teachers and students from the learning process. Firstly, in a developing country like India there is a huge digital divide. According to a 2017–18 National Sample Survey Office (NSSO) estimate, only 15% of rural families in India have access to the internet, compared to 42% of urban households. That demonstrates unequivocally that there is a lack of proper infrastructure in Indian education that would enable the teaching of all children via a digital platform, particularly in the rural areas. Despite the fact that NEP 2020 places a lot of focus on technology-enabled education, many Indian institutions lack the requisite infrastructure needed for online learning. According to the National Education Policy (NEP), public spending on education should account for 6% of GDP by 2020. But India's education spending has never reached this level. Based on the Economic Survey that Union Finance Minister of India, Nirmala Sitharaman released on January 31, 2022 the GDP share of education spending was as follows:

Table: 2 GDP spending on education (%)

Financial Year	GDP share of education spending (%)
2019-20	2.8
2020-2021	3.1
2021-2022	3.1

Source: Economic Survey report

For DT in HEIs to penetrate in every corner of the country the government must allocate sufficient funds to the education sector. The government must give top priority to the education sector as the development of this sector is directly related to the country's development. Investment in Education is one of the important factors for the creation of human capital. But in practice, spending on education as a proportion of GDP is still much lower than what the NEP has recommended. Moreover, NEP 2020 has been officially in existence for almost two years now, but its execution is only partially evident.

Table: 3 Report 'Household Social Consumption: Education in India'

	Rural Area/households	Urban Area/households
Access to Secondary Schools	38%	70%
Literacy rate among those aged 7 & above	73.5%	87.7%
Having access to computers	4%	23%

Annual average expenditure/ student (In Rs)	secondary level	5,856	17,518
	Sr. Secondary Level	9,148	23,832

Source: NSO report (2017-18) on 'Household Social Consumption: Education in India'

According to a 2017–18 NSO study on 'Digital Education Divide', there is a significant digital gap among the many states, cities and towns, and socioeconomic classes in the nation. Nearly 4% of rural households and 23% of urban households possessed computers. Nearly 24% of people in rural regions and 56% of people in cities between the ages of 15 and 29 were computer literate. The findings of the survey suggest that online education has not yet become a public good, and if it is relied upon too heavily, it will only be accessible to a privileged few.

Internet connectivity cost of internet data, availability of smart devices are still some of the restrictions that are experienced on the part of the learners. The institutions also faces obstacles in the successful implementation of digital technology like the shortage of effective computers and their interfaces, the threat of viruses, the absence of educational software, and the limited availability of broadband internet. Although during the lockdown period the loss of full time offline learning was compensated by the online mode of learning through emergency remote education particularly in colleges and universities. But still a section of the learners had to face loss of learning because of the unavailability of required infrastructure. At present the teaching professionals are not prepared for digital shift in higher education as most of the teachers, especially the senior teachers lack the competency required to impart learning through digital mode. In the majority of institutions, it has been noticed that teachers who are close to retiring are reluctant to use electronic tools for teaching objectives.

India's linguistic diversity necessitates the development of content in multiple languages to increase ICT applications [8]. Therefore, it is even more crucial to create material in all of India's official languages. The lack of standardised script and fonts makes local language computing difficult but not impossible, and there are several difficulties in developing local language content. This uniformity is even more challenging in a multilingual nation like India. Educational institutions must place a high priority on the seamless integration of education and technology and offer faculty and students ICT support tools that help them efficiently manage classroom activities. It has also been observed that all HEIs are not equipped with digital infrastructure that enables them to conduct large-scale online admission tests.

VII. CONCLUSION

India, which has a diverse population in terms of geography and culture, suffers from a wide economic gap, as is well known. Due to a wide range of constraints, including power supply, internet connectivity, and the cost of necessary gadgets, access to online education continues to be a challenge for many. No doubt incorporation of technology in higher education will definitely improve the quality and productivity of both the learners and the teachers but at first proper infrastructure set up at the institution level, training of teachers on digital competence and resolving the concerns of the learners should be the priority. Furthermore, the DT dimensions within HEIs do not just refer to technological advancement; rather, they are more multidimensional and produce changes in meaning that affect the university's culture, its administrative procedures, its teaching, research, extension, and administrative processes, as well as the people who work there. Given all of these, an institutional level approach that is both robust and comprehensive is urgently needed to address these issues. The proper execution of the NEP, 2020 will be crucial for finding solutions to the majority of these problems. India has the largest youthful population in the world, and technology will be crucial in helping HEIs accommodate everyone. The government must enhance funds in accordance with NEP, 2020's visions.

References:

1. Benavides, L. M. C., Tamayo Arias, J. A., Arango Serna, M. D., Branch Bedoya, J. W., & Burgos, D. (2020). Digital transformation in higher education institutions: A systematic literature review. *Sensors*, *20*(11), 3291.
2. Butcher, N. (2014). Technologies in higher education: Mapping the terrain. *M.: UNESCO Institute for Information Technologies in Education*.
3. Jayaram, N. (2007). "India". *International Handbook of Higher Education*. Springer International Handbooks of Education. Vol. 18. Springer, Dordrecht. pp. 747–767.
4. Khalili, M., & Ostafichuk, P. M. (2020). ONLINE INTERACTION TOOLS: IMPACTS ON STUDENTS'PARTICIPATION AND LEARNING. *Proceedings of the Canadian Engineering Education Association (CEEA)*.
5. McCusker, C., & Babington, D. (2015). The 2018 digital University: Staying relevant in the digital age. *PWC: Talking Points*.
6. Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, *1*, 100012.
7. Onyema, E. M., Deborah, E. C., Alsayed, A. O., Noorulhasan, Q., & Sanober, S. (2019). Online discussion forum as a tool for interactive learning and communication. *International Journal of Recent Technology and Engineering*, *8*(4), 4852-4859.
8. Pegu, U. K. (2014). Information and communication technology in higher education in india: Challenges and opportunities. *International Journal of Information and Computation Technology*, *4*(5), 513-518.
9. Shrivastava, S. K., & Shrivastava, C. (2022). The Impact of Digitalization in Higher Educational Institutions. *International Journal of Soft Computing*, (2), 7-11.
10. Weiss, J., Nolan, J., Hunsinger, J., & Trifonas, P. (Eds.). (2006). *The international handbook of virtual learning environments* (Vol. 14). Dordrecht, Netherlands: Springer.