Digitalization Of Higher Education In India: Opportunities And Challenges

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Abstract

India's higher education system is the world's third-largest, following the US and China. Digital technology has improved education quality by supporting computer-assisted learning, allowing teachers to assist students in exploring relevant resources. The Indian government has implemented initiatives like Swayam, Swayam Prabha, NDLI, NAD, and E-PG Pathsala, which have drastically changed the country's higher education system. However, some barriers have hindered the successful implementation of digital programs and schemes. This paper uses secondary sources from websites and research papers to explore the major opportunities and challenges in the digitalization of India's higher education system. The paper aims to provide a comprehensive understanding of the challenges and opportunities in the digitalization process.

Key Words – Digitalization, Higher Education, Swayam, Swayam Prabha, NDLI , NAD

Introduction

Bill Gates: "*The use of technology coupled with bold decisions can help India leapfrog into inclusive growth and improve the quality of health and education*."

India is the seventh biggest nation by land. It has made magnificent progress in science and engineering and is progressing on the international platforms as one of the robust economies. India's higher education system is the world's third, after the United States (US) and China. India will be one country of the most important educational hubs in the coming days and years (Gawande, 2020). The document of the World Bank on higher education (1994) "The Lessons of Experience" justifies that "Higher education is of permanent importance for economic and social developments." This depicts that the importance of higher education is recognized

and identified as for national development (Kaur, 2019). The digital technology has uplifted the quality of education by supporting teachers in computer assisted learning. The teacher helps students in surveying various resources on relevant topic for their innovative and collaborative learning. The digitalization of education helps in the establishment of virtual university, smart university, digital university, e-university, agile university, university 4.0 and so on. Students as well as teachers can access their work and interact from any place and any moment 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 .In India more than 70% teachers feels that teaching and learning process is easier with digital tools and almost 60% teachers using it in their teaching and research work (Srivastav and Srivastav, 2022). The Internet has changed the education system over the last few years and decades. Digitization has transformed the education sector and modern classrooms with smart boards, virtual classroom and e-text books have taken over blackboards, chalks and dusters. The 21st century is well known as the digital era. Internet is bringing a substantial change in our lives and life style as we are completely depending on the usage of technology to even complete simple tasks. According to world economic forum the demand for technology and computational thinking skills will enhance by about a fifth percent by 2025. It is very much important to incorporate digital in the learning process which will help students in critical thinking, innovation, collaboration and problem solving. The National Mission on Education through Information and Communication Technology (NMEICT) Scheme meanwhile aims to leverage the potential of ICT for teaching and learning processes. The Mission comprises major two components i.e. content generation and providing connectivity along with provision for access devices to the institutions and learners (Rani, 2019). The people of India are among the most aggressive users of the massive open online courses (MOOCs). In March 2014, total 2.9 million people were registered in Coursera, where more 250,000 were from India. In this the Indian registrations was second followed by the USA registrations (Rani, 2019). So it very important concern to know about digitization of our higher education as well as what major steps have taken out till now by government of India. Here we will know about the meaning of digital education as well as opportunities and challenges of digital education in Indian higher education.

Meaning of Digital Education

Digitalization is the conversion of information into digital or electronic formats, enabling easier access and sharing. For instance, historical documents or monuments can be made accessible globally by digitalizing their content, images, video clips, or recordings, allowing them to be shared and preserved for those who visit their physical location (Kaur, 2019).

Opportunities of Digitalization of Higher Education in India

1. Major government initiatives have been taken for digitalization of higher education in India. A brief description of some of the digital initiatives so far have been taken by government of India in higher education are as follows:

A) SWAYAM : SWAYAM is an Indian government portal that offers free open online courses (MOOC) for university and college students across the country. Launched by the Minister of Education, Pranav Mukherjee, on 9th July 2017, the platform aims to provide a coordinated stage and free entry to web courses covering advanced education, high school, and skill sector courses. It was developed cooperatively by MHRD and AICTE (All India Council for Technical Education) with Microsoft. The platform currently facilitates 2,000 courses, offering free access to everyone and hosting courses from class 9 to post-graduation. It enables professors and faculty of centrally funded institutes like IITs, IIMs, and IISERs to teach students. All courses offered by SWAYAM are recognized by the government of India and valid in the country. Learning is delivered in four quadrants: e-Tutorial, e-Content, discussion forums, and self-assessment. e-Tutorial includes teaching videos, animations, PowerPoint presentations, podcasts, and more. e-Content includes e-books, illustrations, case studies, open-source content, reference links, and further reading sources (Wikipedia).

B) SWAYAM PRABHA : The Ministry of Education is launched Swayam Prabha initiative to provide 80 high-quality educational channels through Direct to Home (DTH) channels across the country on a 24x7 basis. The channels are using the GSAT-15 satellite for programme telecasts and are an education learning platform available through 34 DTH channels. The channels offer educational programs on television, such as Wikipedia, with new content every four hours, repeated five times a day. The channels are uplinked from BISAG, Gandhinagar, and are provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT, and NIOS. The INFLIBNET Centre maintains the web portal. The channels cover various activities, including higher education, school education, curriculum-based courses, life-long learning, and competitive exam preparation. It is an educational counseling platform, started broadcasting educational counselling in Meitei language (officially called Manipuri language) on behalf of the Indira Gandhi National Open University (IGNOU) in Imphal from 2023. Live sessions for lectures are archived on YouTube, enriching resources for learners in various languages (Wikipedia).

C) National Digital Library of India (NDLI) :

The National Digital Library of India (NDLI) is a virtual repository of learning resources, offering a wide range of services including textbooks, articles, videos, audiobooks, lectures, simulations, fiction, and more. It is a project under the Ministry of Education, Government of India, through its National Mission on Education through Information and Communication Technology (NMEICT). The NDLI collects metadata and provides full text index from various national and international digital libraries. It provides free access to many books in Indian languages and English, and offers interface support for 10 most widely used Indian

languages. Launched in pilot form in May 2016, the library was dedicated to the nation on June 19, 2018 (Wikipedia).

D) National Academic Depository (NAD) : The National Academic Depository (NAD) is an online storehouse of academic awards, including certificates, diplomas, degrees, and mark-sheets, launched by the Indian government in July 2017. Launched by the then-president, NAD ensures easy access, retrieval, and validation of these awards, ensuring their authenticity and safe storage (Wikipedia).

E) E- PG Pathshala : The Indian government launched E-PG Pathshala in 2015, a portal to host high-quality curriculum-based interactive e-contents in Indian languages like Hindi, English, Sanskrit, and Urdu. The portal covers various disciplines including social science, arts, fine arts, humanities, natural and mathematical sciences, linguistics, and languages. The Ministry of Education (MoE) has assigned work to the UGC for the development of e-content in over 68 postgraduate subjects. The content and quality are key components of the system, with each subject having a team of principal investigators, paper co-ordinators, content writers, content reviewers, and language editors (Inflibnet).

F) E- ShodhSindhu: The Ministry of Education has formed e-ShodhSindhu, merging three consortia initiatives in December 2015. The e-ShodhSindhu will provide access to over 10,000 core and peer-reviewed journals and various databases across various disciplines to member institutions, including centrally-funded technical institutions, universities, and colleges. The main objective is to offer access to qualitative electronic resources, including full-text, bibliographic, factual, and legal databases, at lower subscription rates, as recommended by an Expert Committee (Inflibnet) **.**

G) E- Yantra: It is a robotics-focused educational outreach initiative at the Indian Institute of Technology, Bombay, funded by the Ministry of Education. It aims to enhance engineering and robotics higher education systems globally by developing engineers capable of solving local problems in various industries. The project aims to create the next generation of engineers with practical skills for real-world problems, providing hands-on learning infrastructure to engineering students with limited access to labs and mentors (Wikipedia).

H) E- VIDWAN: It is a database that provides profiles of scientists, researchers, and faculty members at leading Indian academic institutions and R&D organizations. It includes information about their background, contact address, experience, scholarly publications, skills, accomplishments, and researcher identity. The database is developed and maintained by INFLIBNET with financial support from the National Mission on Education through ICT (Inflibnet).

I) Virtual Labs: It is a project by the Ministry of Education, Government of India, under the National Mission on Education through Information and Communication Technology. It provides remote access to laboratories in science and engineering disciplines for students at all levels, including undergraduate,

postgraduate, and research scholars. The project offers a learning management system with web resources, video lectures, animated demonstrations, and self-evaluation. It complements physical labs and requires only one computer terminal with broadband internet connectivity for remote experimentation. The project offers quality simulation-based labs to engineering colleges lacking these facilities, a complete learning management system around these labs, and teacher-training and skill-set augmentation through workshops and on-site training. The intended beneficiaries include students and faculty members, high school students, researchers in different institutes, and different engineering colleges benefiting from the content and related teaching resources. (Wikipedia).

J) **Annual Refresher Program in Teaching (ARPIT):** The National Testing Agency (NTA) is a premier, autonomous, and self-sustaining testing organization established by the Government of India to conduct entrance examinations for admission and fellowship in higher education institutions. The NTA aims to assess candidates' competence in terms of research-based international standards, efficiency, transparency, and error-free delivery. The Ministry of Education launched the online ARPIT in 2018, a unique initiative for online professional development of 15 lakhs higher education faculty using the MOOCs platform SWAYAM. The first ARPIT Test was conducted in 66 disciplines in 2019. Currently, 48 discipline-specific National Resource Centres (NRCs) are identified by the Ministry of Education, where course coordinators prepare online training material focusing on the latest developments in the discipline.

K) **Digilocker:** It is a Digital India initiative by the Ministry of Electronics and Information Technology (MeitY) that aims to empower citizens by providing access to authentic digital documents. It provides cloud-based accounts for Aadhar holders to access digital certificates like driving licenses, vehicle registrations, and academic mark sheets. Each account has 1 GB of storage for uploading scanned copies of legacy documents. DigiLocker's web/mobile application serves as the student-facing interface for NAD, allowing students to access their digital academic certificates and share them with other DigiLocker partner organizations (Wikipedia).

L) **National Digital Educational Architecture (NDEAR):** Hon'ble India's Prime Minister, Narendra Modi, launched NDEAR on 29 July 2021, aiming to unify national digital infrastructure and catalyze the education ecosystem. The policy aims to enable all ecosystem players to develop innovative, inclusive, and contextual solutions, acting as a key enabler of NEP 2020 and acting as a super connector to cross-leverage ecosystem capabilities. (Wikipedia).

2. With digital education, classroom teachings have become more fun and interactive.
3. Children tend to be more attentive. They are not only listening but also viewing it on the screen which makes their learning all the more effective.
4. It has helped in increasing their interest and curiosity level.

5. Using tabs, laptops or notepads, instead of pens and pencils, motivates children to complete their tasks quickly.

6. It has also improved student familiarity and comfort with technology.

7. The digitally interactive environment encourages even shy or hesitant students to participate better in classroom discussions.

8. Active online screen time helps students develop language skills.

9. Technology enables a student to learn at his own pace.

10. The best thing about digital education is that it is user-friendly.

11. Online study materials are easily available.

12. With online education, students can even further connect with distant counsellors and faculty to seek guidance or resolve queries.A remote area students can get enrolled and study through online courses due to digitalization of high education .

13. It has made the examination process very easy and convenient for both teachers and students. These are also called E-Exams or E-Assessment. For instance, UGC-NET, IELTS and many more exams are being taken with the help of computers only.

14. E-textbooks/e-texts/digital textbooks provide the students with text, images or other content such as hyperlinks, etc., readable on the mobiles and laptop or computer.

15. It offers a visual representation of the topic through which the students learn in a better way. Hardest content learning becomes easy and interesting through this technique

Challenges in Digitalization of Higher Education in India

The implementation of digital technology in higher education faces several significant barriers, including:

1. The lack of efficient computers and its peripherals, virus threat, scarcity of educational software and insufficient broadband internet accessibility.

2. Teachers find it a challenge to go with dynamic teaching techniques and use of technology.

3. In India, higher education teachers are hardly getting any training or workshops to develop their digital literacy.

4. Different languages spoken in different states across the country and the translation of all digital contents in all these regional languages sometimes becomes difficult for the agencies.

5. Data security is the major challenge in higher education.

6. It is expensive**.**

7. It needs proper infrastructure not only at schools but also at homes, particularly affordable broadband.

8. Online learning requires much better management and rigid schedules.

9. Parents usually condemn digital education as going online does not mean that children are only looking for study materials as there are many things which are restricted for children to watch.

10. Continuous dependence to seek information. To complete the assignments and homework online, to prepare the notes and to submit them to the evaluator for evaluation is very harmful to the health of students due to being attached with electronic gadgets.

Conclusion

Digital portals have revolutionized education, allowing students to access knowledge anytime and anywhere. This has improved efficiency and cost-effectiveness, but challenges remain unspecified. Digitalization is crucial in addressing the impacts of internationalization in higher education. To integrate ICT in education, quality, accessibility, and affordability must be ensured for remote areas. While it disrupts traditional teaching methods, it is necessary for sustainability. To promote digitalization, educators must be trained in digital literacy skills. Government funding, mass internet access, lower gadget costs, quality content development, and expert mentoring can help achieve successful outcomes. The National Education Policy (NEP)-2020 prioritizes digitalization of education as a top priority. Despite challenges, digitalization is essential for the quality, efficiency, innovation, positioning, and visibility of higher education.

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