

Digitalization and Transformation of the Higher Education System in India Through the New Education Policy 2020 for Enhanced Quality Education

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Abstract: *The National Education Policy (NEP) 2020 outlines a plan for overhauling the Indian educational system, with a focus on experiential learning, integration of technology, and holistic development. According to NEP 2020, a holistic and multimodal education would seek to integrate the development of all human capacities, including intellectual, artistic, social, physical, emotional, and moral. The development of humanistic, ethical, constitutional, and universal human values—such as truth (Satya), righteous behavior (dharma), peace (shanti), love (prem), nonviolence (ahimsa), scientific temper, citizenship values, and life skills—as well as lessons in seva/service and community service programs are all considered essential components of value-based education. The objectives of this paper are to find out about initiatives for digitization in educational institutions, examine the effects of the New Education Policy 2020 on higher education, and highlight the changes in India's higher education system. The data is collected through a structured questionnaire served to students and faculty in universities and colleges in the states of Assam, Meghalaya, Nagaland, and Arunachal Pradesh. A primary tool, a structured questionnaire, was administered to 350 students and 150 teachers from colleges and universities.*

Keywords: *Digitalization, Transformation, NEP2020, Quality Education, Value Added Education, Skill enhancement, Multidisciplinary Education, Experiential Learning.*

Abbreviations:

NEP: National Education Policy
NETF: National Educational Technology Forum
HEIs: Higher Education Institutions
ABC: Academic Bank of Credits
NTA: National Testing Agency
UDISE: Unified District Information System for Education

I. INTRODUCTION

In India, the educational system has undergone significant change.

A structured educational system that encompasses primary, secondary, senior secondary, and university-level education, as well as digital and AI-based learning, evolved from the teachings of a guru at a Gurukul. Our fast-paced lifestyle makes us vulnerable to numerous global issues, which we can address by embracing new developments across various fields. We greatly benefit from science, which has led to the development of multiple technologies that adapt to their surroundings. Among them is the digitalization process. In every aspect of life, it has gained pace, and when it comes to education, it has given it new vitality.

NEP 2020 places significant emphasis on utilising technology to provide students with an excellent education, regardless of their geographical location. This is particularly important for distant learners who need access to a top-notch education. To give every student a similar educational opportunity, the strategy recommends utilising digital platforms, including online courses and e-learning materials. The primary objectives of this policy are to develop human resources, promote entrepreneurship, and create employment opportunities. It is founded on granting liberty, equality, and strength to the disadvantaged segments of society. Higher Educational Institutions are given a framework for success by the National Education Policy. Reforms to teacher education and training have been proposed to raise the standard of instruction in institutions of higher learning. It aims to enhance the quality of Indian educational institutions, promote interdisciplinary learning, support research and innovation, and align higher education with the evolving demands of society.

The digitalisation of higher education is also referred to as online education. In India, the use of online education is expected to earn US\$7.57 billion by 2025 [1].

Manuscript received on 07 August 2025 | First Revised Manuscript received on 14 August 2025 | Second Revised Manuscript received on 19 September 2025 | Manuscript Accepted on 15 October 2025 | Manuscript published on 30 October 2025.

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Table-I: Revenue in USD for Online Education in India

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Online learning platform	0.94	1.12	1.50	2.23	3.07	3.86	4.73	5.50	6.20	6.81	9.79
Online university education	0.16	0.19	0.24	0.33	0.43	0.54	0.69	0.83	0.96	1.10	1.23
Professional certificate	0.18	0.19	0.22	0.24	0.27	0.31	0.34	0.38	0.42	0.45	0.48
Total	1.29	1.51	1.95	2.81	3.78	4.71	5.76	6.71	7.57	8.36	11.50

Source: Statista Market Insights

The table above shows that the total revenue from online education in India in 2024 was \$6.71 billion and is expected to increase to \$11.50 billion by 2027.

Table-II: Users of Online Education in India in Millions

	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Online learning platform	26.8	34.2	45.1	67.8	93.0	117.6	146.4	173.9	200.8	224.5	244.0
Online university education	1.7	2.1	2.7	3.7	4.7	5.8	7.1	8.3	9.6	10.9	12.2
Professional certificate	3.1	3.5	4.0	4.5	5.2	5.9	6.7	7.5	8.4	9.2	9.8
Total	31.6	39.8	51.7	76.0	102.2	129.2	160.2	189.8	218.8	244.5	266.0

Source: Statista Market Insights

The table above shows that the number of online education users in India has increased from 31.6 million in 2017 to 189.8 million by 2024. Approximately 7.5 million users in India have obtained professional certificates through online education.

Table-III: Time Spent on Educational Apps in India 2022 (in Million Hours)

S.N.	Educational Apps	Time Spent(in Million Hours)
1.	Primary and Secondary education	951.3
2.	Learning Management	795.89
3.	Higher Education	681.49
4.	Professional Education	655.67
5.	Language learning	186.91
6.	Early childhood learning	83.76
7.	Parent-Teacher communication	71.1
8.	other education	16.48
9.	children companionship	8.13
10.	Educational Hobbies	2.99

Source: Statista Market Insights

The table above shows that 951.3 million hours were spent on education apps for primary and secondary education in India in 2022. In 2022, 795.89 million hours were spent on education apps for learning management in India. In 2022, 681.49 million hours were spent on education apps for higher education in India. In 2022, 655.67 million hours were spent on education apps for professional education in India. In 2022, 186.91 million hours were spent on education apps for language learning in India. In 2022, 83.76 million hours were spent on education apps for early childhood learning in India. In 2022, 71.1 million hours were spent on education apps for Parent-Teacher communication in India.

II. REVIEW OF LITERATURE

A new policy for education. According to market demands, 2020 introduced new aspects of education that placed less emphasis on memorisation and more on self-directed learning [2]. Nordic nations publicly funded higher education systems provide strong empirical evidence of how digital transformations gained traction both before and during the COVID-19 pandemic, as well as how global trends in digitalisation, such as the EdTech sector, have impacted the core operations of HEIs [3]. It is well-established that to transform the educational environment, instructors must become more digitally literate and proficient in digital improvement techniques related to the digitisation of the educational process. According to research, digital literacy is becoming increasingly important for all parties involved in the learning process. As a

collection of skills, digital literacy serves as the foundation for both the teacher's personal full participation in the knowledge society and the students' engagement, showcasing their abilities. Therefore, the digital literacy and abilities of all participants form the foundation for such transitions [4]. The Industrial Revolution 4.0, an ongoing process of digitising every aspect of human activity, directly impacts how the educational system and learning management are evolving to meet the demands of lifelong learning and adapt to the constantly shifting needs of the global labour market. More important to instructors are common objectives and concerns regarding the digitalisation of scientific, methodological, and organisational support for lifelong learning. To ensure the digitalisation of school administration, teachers' professional development and digital competency are crucial [5]. The COVID-19 pandemic, which led to the widespread closure of colleges and universities and the introduction of online and remote learning, further intensified this digital surge, often referred to as a digital revolution. All things considered, it appears that numerous barriers still exist to the digital transformation of educational systems, which may be inherent in the design and scope of current educational institutions. The requirement to digitise training and education procedures promptly, combined with the fact that many academics lack the necessary technical capabilities for online learning, is driving a radical transformation in universities and other higher education institutions today [6]. To address the issues and inconsistencies of the shift to digital education

and boost economic growth, a comprehensive social and philosophical understanding of the cultural revolution of Russian education is required [7]. The issue of digitalisation in higher education institutions (HEIs) is a concern for a significant number of stakeholders in education. Digital skills are becoming increasingly important in all contexts, particularly in the business world. As a result, one of the primary goals of colleges has shifted to equip aspiring managers with the knowledge and skills necessary to address challenges and find solutions, including information literacy. With a variety of initiatives, strategies, and policies being proposed, the study of educational technology advancements in higher education is currently being explored and disputed. Children today have been surrounded by digital technology since birth. The younger generation and their digital futures are impacted by several forms of digital divisions that still exist in our society. Students nowadays are not as well-prepared for the technologically advanced world of the future. For universities and education to meet the needs of the current generation and the fully digitalised environment they will inhabit, a substantial digital transformation is necessary. In a swift and surprising move, the COVID-19 pandemic forced HEIs and the educational system to make this change [8]. There was a discernible impact of globalisation processes on the issue of education, particularly the system of higher education. Both the positive and negative aspects of this impact can be considered, as digitalisation has the potential to transform higher education institutions and create uncertain situations in the way that the subjects of the new educational reality interact with one another. The roles of the teacher and the student are evolving because of globalisation, and the field of digitalisation in the technological and management domains is growing. Digitalisation offers the potential for educational flexibility, encourages transparency, boosts student engagement, enhances university-to-university connections, and accelerates innovation [9]. The success of the HEI's transition to a digital university is closely correlated with the effectiveness of digitalisation project management procedures. This necessitates the adoption of a problem-oriented project management methodology, the establishment of a dedicated HEI digitalisation division, and the advancement of technology and structure for populating and utilising a higher education institution's digital environment. The application of the HEI digitalisation concept has led to the development of a project management methodology specifically focused on the digital transformation of a higher education institution [10]. Qualitative technological advances are the driving force behind social digitalisation. Globally, the emergence of a new digital lifestyle and the rise of generations born and raised in this environment are closely linked to the digitisation of education [11]. In a time of rapid change, disruptive technological advancements, and digital transformation, the university system must adapt to overcome these circumstances to remain competitive and offer high-quality education [12]. The growing number of IT solutions being deployed is causing changes in the higher education sector. At the organizational, technological, legal, and regulatory levels of management, transformation changes occur. Every direction has an impact on the

characteristics of the higher education system's growth and operation. There are also aberrations and hazards during their implementation process that must be reduced, if not eliminated. Considering digitalisation as a tool rather than a catalyst for systemic changes in all areas of activity is one of the major issues highlighted during the analysis of advancements in the field of digital transformation of the educational system [13]. Digital education is essentially a relatively recent invention, although it has existed in various forms before its current form. A portion of the educational system is being digitalized. The way academics communicate and work together has undergone significant changes due to the advancement of internet technologies. Globally, the digital revolution promoted unfettered access to information. Almost all teachers have made significant progress in integrating digital technology to improve learners' access to understanding and possibilities for cooperative learning. There are numerous ICT tools available in classrooms today. Due to disruptive technological advancements, rapid change, and digital transformation, the higher education system needs to focus on leveraging the potential of ICT to remain competitive and deliver high-quality instruction [14]. The emergence of the concept of "Education 4.0" has led to the growing use of augmented and artificial intelligence to transform higher education [15]. Numerous aspects of modern society are being impacted by the rapidly evolving processes that are shaping the digital economy, which will inevitably alter the educational landscape. In the present world, the digital economy is developing at a speedy rate, which shortens the lifespan of many professions and leads to changes in work that create new ones. As a result, it is essential to comprehend the primary paths of higher education growth, as one of the most crucial aspects of the economy's digitalization is employee training. Higher education is just one of the many areas of human activity that have undergone substantial changes due to the proliferation of digital and information technology. Due to the highly mobile nature of the digital economy, certain specialities will become more popular, while others will become less significant and eventually disappear. Additionally, due to these ongoing and relatively rapid changes, training requirements will also change. Educational curricula must be continuously adjusted to account for ongoing changes, given the high mobility and variety of the contemporary situation in both the economy and higher education. Several factors, including the rapid emergence of new information and technologies, have led to significant changes in higher education institutions worldwide. It is currently challenging to evaluate the full spectrum of issues and challenges facing the higher education sector; however, given the rate of development [16]. The fundamental issues facing India's higher education system include students' technical capabilities, motivation levels, resistance to change, comprehension of technology, and performance evaluation. To manage the transformation resulting from the systematic creation of vast amounts of information, a modern approach to education is necessary. Technology, electronic materials, and pedagogy are all utilised in digital education

within the educational system to make things more effective and efficient than the traditional education system previously in place [17]. The National Knowledge Commission (2006) recommended that the focus be on the quantity and quality of higher education. Technological, sociological, and political changes have created a perceived need for educational reforms. In this regard, India's higher education system is undergoing significant changes in terms of structural, institutional, transactional, and evaluation reforms. The Indian government has also taken a major lead in the digitalisation of higher education. Over the past 20 years, the system has undergone significant advancements in several areas to meet societal demands and address global challenges [18] (Walia, Manju, 2021).

III. OBJECTIVES OF THIS STUDY

- A. To find out about initiatives for digitization in educational institutions,
- B. To examine the effects of the New Education Policy 2020 on higher education,
- C. To highlight the changes in India's higher education system.
- D. To explain how digitalization is being implemented or has impacted one specific institution or region under NEP 2020.
- E. To describe observed or anticipated challenges in adopting these new educational practices or technologies.
- F. To analyze how the universal entrance exam or the ABC system has been received or is expected to affect students' educational pathways.
- G. To discuss briefly how the policy ensures or plans to ensure that these reforms lead to tangible improvements in educational quality and employability.

IV. RESEARCH METHODOLOGY

The data is collected through a structured questionnaire served to students and faculty in universities and colleges in the states of Assam, Meghalaya, Nagaland, and Arunachal Pradesh. A structured questionnaire was administered to 350 students and 150 teachers of colleges and universities in Assam, Meghalaya, Nagaland, and Arunachal Pradesh. The random sampling method is used to collect primary data. Secondary data for the research are collected from books, research papers, and new websites related to the study. The research design is descriptive, and the effect of digitalisation, as well as the challenges to digitalisation in higher education, is analysed through simple statistical methods.

A. Initiatives for Digitization in Educational Institutions

The following are some of the primary steps the Indian government has taken to digitize higher education: The three pillars of education—access, equity, and quality—form the foundation of SWAYAM, which was introduced on August 15, 2016. By bringing about a digital revolution and enhancing the e-learning platform, it aspires to bridge the digital divide and provide the best education possible to all groups, particularly the most disadvantaged ones. With

about 20 lakh students enrolled in nearly 392 courses across multiple disciplines, NPTEL is the biggest online resource in the technical industry. Using the GSAT-15 satellite, SWAYAM PRABHA is a 32 DTH channel program that operates continuously, with the goal of broadcasting high-quality educational programming. NME-ICT (National Mission on Education through ICT) is the organisation responsible for the e-PG PATHSHALA project. A web-based substitute for e-pathshala is called e-Pathya. For students who are pursuing higher education remotely, it is advantageous. A platform called e-Adhyayan offers e-books for undergraduate and graduate courses. The National Digital Library is a project sponsored by the Government of India's Ministry of Education under NMEICT, with coordination from IIT Kharagpur. In addition to providing students with convenient access to books, NDL aims to collect, preserve, and distribute e-books. It supports students at all academic levels, including researchers and lifelong learners, and offers e-content in various fields across multiple Indian languages. The Government of India's Ministry of Education launched the NAD project to facilitate the online storage of all academic records by universities. It is a reliable platform for securing our papers and providing us with quick and straightforward access to them. The INFLIBNET Centre established Shodhganga, a repository for Indian theses and dissertations. It ensures that dissertations and e-theses are accessible online, making it easier for students at all academic levels to access them. INFLIBNET oversees e-ShodhSindhu. E-Yantra is a platform that uses the skills of young Indians to build robots. For students in engineering, science, and polytechnic colleges, it hosts the e-Yantra Robotics competition and offers them internship opportunities at the e-Yantra lab. The goal of Virtual Labs is to encourage remote experimentation among undergraduate and graduate students, as well as researchers and scholars in various engineering, scientific, and technological fields. It makes it simple for many students to share expensive and scarce resources and equipment.

B. The Effects of the National Education Policy 2020 on Higher Education

The Higher Education Commission of India would be the only regulating agency for education outside of law and medicine, according to the National Education Policy 2020. Those who wish to leave the course early have several options for entry and departure. Through the Academic Bank of Credits, their credits will be transferred. High-quality technology-based choices for adult education are being developed, including apps, online courses and modules, satellite-based TV channels, online books, and libraries, as well as Adult Education Centres equipped with ICT. Training for teachers, schools, and students, as well as planning, teaching, learning, and assessment, all involve the use of technology. Beginning with eight primary languages—Kannada, Odia, Bengali, and others—the e-content is available in regional languages. Hindi and English are also available for the e-courses. By 2025, more than 50% learners will have some kind of vocational education.



It also promotes greater institutional autonomy while promoting multidisciplinary education. By 2030, all standalone professional educational institutions are expected to become multidisciplinary in nature. One of the most significant impacts will be seen in the curriculum, which

becomes more flexible. Research receives additional focus with the involvement of the National Research Foundation. It will be at the centre of coordinating research funding for peer-reviewed projects.

Table-IV: The Effects of the National Education Policy 2020 on Higher Education

S.N.	Effects	on Students		on Teachers		Total
		No.	%	No.	%	
1	A flexible curriculum and an interdisciplinary approach to education	63	18	30	20	93
2	Focus on research to foster innovation	35	10	21	14	56
3	increased accessibility and equity in higher education	35	10	21	14	56
4	increased transparency and accountability	49	14	33	22	82
5	the availability of skill-based education	21	6	12	8	33
6	industry-relevant skills through Value Added Programs	14	4	15	10	29
7	The creation of the Higher Education Commission of India (HECI), which serves as a single regulator and performs several duties, including funding, accreditation, and academic standard setting	7	2	6	4	13
8	The establishment of Research and Development Cells and Incubation Cells	56	16	16	4	72
9	multiple entry and exit points, providing students with new dynamic learning opportunities at their own pace	63	18	30	20	93
10	Practical experience and hands-on learning through internships, short-term skill certificates, research-based curricula, etc.	63	18	12	8	75
	Total	350	100	150	100	500

Source: data collected by the author from the field

The table above shows that 18% of students and 20% of teacher respondents believe that the National Education Policy 2020 has introduced a flexible curriculum and an interdisciplinary approach to education. Ten per cent of students and 14% of teacher respondents believe that the National Education Policy 2020 has focused on research to foster innovation. Ten per cent of students and 14% of teacher respondents believe that the National Education Policy 2020 has increased accessibility and equity in higher education. Fourteen per cent of students and 22% of teacher respondents believe that the National Education Policy 2020 has increased transparency and accountability. Six per cent of students and eight per cent of teacher respondents believe that the National Education Policy 2020 has increased the availability of skills-based education. Four per cent of students and 10% of teacher respondents believe that the National Education Policy 2020 has introduced industry-relevant skills through Value Added Programs. Two per cent

of students and four per cent of teacher respondents believe that the National Education Policy 2020 has led to the creation of the Higher Education Commission of India (HECI), which serves as a single regulator and performs various duties, including funding, accreditation, and setting academic standards. Sixteen per cent of students and 4% of teacher respondents believe that the National Education Policy 2020 has promoted the establishment of Research and Development Cells and Incubation Cells. Eighteen per cent of students and twenty per cent of teacher respondents believe that the National Education Policy 2020 has provided multiple entry and exit points, offering students new, dynamic learning opportunities at their own pace. Eight per cent of teacher respondents and 18% of student respondents consider that the National Education Policy 2020 has helped students by providing practical experience and hands-on learning through internships, short-term skill certificates, and research-based curricula.

Table-V: The Changes in India's Higher Education System

S.N.	Changes	Students		Teachers		Total
		No.	%	No.	%	
1	The new curriculum places a strong emphasis on practical knowledge and skill development.	35	10	21	14	56
2	Programs and course selection are encouraged to be flexible under NEP 2020.	49	14	30	20	82
3	Universities have been encouraged to collaborate more closely with foreign organisations to enhance the quality of research and instruction.	21	6	12	8	33
4	Interdisciplinary studies and research-driven education are becoming more prevalent.	56	16	16	4	72
5	Universities are adopting online learning platforms and technology.	56	16	25	16	93
6	The policy promotes an adaptable undergraduate curriculum	49	14	12	8	61
7	Credit-based systems are encouraged under the policy.	7	2	4	3	11
8	By establishing the National Research Foundation, the policy encourages innovation and research.	14	4	12	8	29
9	The policy encourages the setting up of interdisciplinary institutions.	7	2	6	4	13
10	Provide a backend technological support system for the industry 4.0 revolution and provide top-notch possibilities for international students who want to study in India.	56	16	12	8	72
	Total	350	100	150	100	500

Source: data collected by the author from the field

The above table shows that 10% of students and 14% of teacher respondents believe that NEP 2020 has brought about a change in India's higher education system, as the

new curriculum, according to NEP 2020, places a strong emphasis on practical

knowledge and skill development. 14% of students and 20% of teacher respondents believe that NEP 2020 has changed India's higher education system, as Programs and course selection are encouraged to be flexible under NEP 2020. Six per cent of students and eight per cent of teacher respondents believe that NEP 2020 has brought change to India's higher education system. Universities have been encouraged to collaborate more closely with foreign organisations to enhance the quality of research and instruction. 16% of students and 4% of teacher respondents believe that NEP 2020 has brought about change to India's higher education system, as Interdisciplinary studies and research-driven education are becoming more prevalent. 16% of students and 16% of teacher respondents hold the opinion that NEP 2020 has brought about a change in India's higher education system, as Universities are adopting online learning platforms and technology. 14% of students and 8% of teacher respondents hold the opinion that NEP 2020 has brought about a change in India's higher education system, as the policy promotes an adaptable undergraduate curriculum. Two per cent of students and three per cent of teacher respondents believe that NEP 2020 has brought about a change in India's higher education system, as Credit-based systems are encouraged under the policy. Four per cent of students and eight per cent of teacher respondents believe that NEP 2020 has brought about a change in India's higher education system by establishing the National Research Foundation, which encourages innovation and research. Two per cent of students and four per cent of teacher respondents believe that NEP 2020 has changed India's higher education system, as the policy

encourages the establishment of interdisciplinary institutions. 16% of students and 8 % of teacher respondents believe that NEP 2020 has changed India's higher education system, as it provides a backend technological support system for the industry 4.0 revolution and top-notch possibilities for international students who want to study in India

C. Digitalization has Impacted Institutions and Regions Under NEP 2020

Achieving a GER of 50 per cent by 2035, as set by NEP-2020, requires both online education and digital empowerment. Higher education is significantly impacted by digital innovations in various ways, with new areas such as robotics, artificial intelligence, machine learning, and virtual reality having a profound effect on institutions and other stakeholders, while also creating numerous new opportunities. Due to the significance of technology and digitisation in higher education, the National Educational Technology Forum (NETF) was proposed by the NEP-2020 to facilitate the free exchange of ideas on a range of topics related to online learning and digitisation, with a focus on areas such as administration, planning, and assessment. According to NEP-2020, digitisation can play a crucial role in supporting instructors, students, and the learning process in new and creative ways. Digital technology has also had a significant impact on how institutions are managed and governed, as well as how to utilise digital resources to enhance learning opportunities for a broader audience in a manner that is egalitarian, cost-effective, and focused on lifelong learning.

Table-VI: How Digitalization is Being Implemented or has Impacted one Specific Institution or Region Under NEP 2020

S.N.	Impact	Students		Teachers		Total
		No.	%	No.	%	
1	Students who participate in digital education have more flexibility with their learning schedule.	63	18	30	20	93
2	Digital education provides a platform for globalised learning, enabling teachers and students to connect appropriately and globally.	35	10	21	14	56
3	Digital learning platforms readily capture young learners' attention and engagement by making instructional pedagogy more engaging	35	10	21	14	56
4	Digital education addresses the issues of gender inequality in education and the disparity between rural and urban areas, thereby promoting inclusive education.	49	14	33	22	82
5	The employability quotient can increase due to the benefits of digital education in enhancing skills and specialisation.	21	6	12	8	33
6	The rate of illiteracy can be decreased with the use of digital education.	14	4	15	10	29
7	E-learning offers high-quality content created by professionals, enabling students to specialise in a particular field of study.	63	18	12	8	75
8	In addition to being cost-effective, online education saves time through the rapid, efficient, and sophisticated transfer of information.	63	18	30	20	93
9	A sizable portion of the population may access digital education without being limited by time or location.	63	18	12	8	75
	Total	350	100	150	100	500

Source: Data Collected by the Author from the Field

The above table shows that 18% of the students and 20% of the teacher respondents believe that students who participate in digital education have more flexible learning schedules. Ten per cent of the students and 14% of the teacher respondents consider that digital education promotes a platform for globalised learning, allowing teachers and students to be appropriately and globally connected. Ten per cent of the students and 14% of the teacher respondents believe that digital learning platforms effectively capture young learners' attention and engagement by making instructional pedagogy more engaging. Fourteen per cent of

the students and 22% of the teacher respondents believe that digital education addresses the problems of gender inequality in learning and the gap between rural and urban areas, thereby promoting inclusive education. Six per cent of the students and eight per cent of the teacher respondents believe that the employability quotient can increase due to the benefits of digital education in enhancing skills and specialisation. Four per cent of the students and 10% of the teacher respondents believe that digital education can



decrease illiteracy. Eighteen per cent of the students and eight per cent of the teacher respondents believe that E-learning offers high-quality content created by professionals, which enables students to specialise in a particular field of study. Eighteen per cent of the students and twenty per cent of the teacher respondents believe that online education saves time through rapid, efficient, and sophisticated information transfer, in addition to being cost-effective. Eighteen per cent of the students and 8% of the teacher respondents believe that a sizable portion of the population may access digital education without being limited by time or location.

D. The Academic Bank of Credits (ABC)

Higher education is being transformed by the Academic Bank of Credits (ABC), a crucial endeavor aligned with the National Education Policy 2020. ABC's "Credit Transfer" method, which gives students unmatched flexibility in determining their academic path, is its central engine. Central Universities, State Universities, Deemed Universities, Private Universities, Institutions of National Importance, Autonomous Colleges, and other educational organizations make up ABC's extensive network of 1,720 registered institutions as of January 2024. Because of this teamwork, 10.42 Crore unique learner IDs have been successfully registered, 2.08 Crore from HEIs.

Table-VII: Total Students Registered for the ABC ID

S.N.	Institution Type	Total Institutions	Institutions Registered so far	Total Students Registered
1	Central Universities	56	53	39,35,518
2	State Universities	481	400	1,35,05,037
3	Deemed to be Universities	127	117	6,49,544
4	Private Universities	458	395	11,38,707
5	Institutions of National Importance	156	120	1,20,206
6	Autonomous Colleges	893	388	7,53,583
7	Other Institutions (Standalone, Councils, Technical & School Boards, etc.)	555	247	7,01,187
	Grand Total	2725	1720	2,08,03,782

Source: <https://www.education.gov.in>. Ministry of Education_2023-24_AR_Cover.cdr. pp.161

- **Unique Learner IDs:** The ABC method has been widely accepted and used, as seen by the more than 10 crore unique learner/student IDs registered.
- **Integration with NTA:** The smooth integration with the National Testing Agency (NTA) enables students to register successfully for various exams, providing them with more opportunities to receive academic recognition.
- **Cooperation with Swayam:** ABC is now integrating with Swayam to streamline credit accumulation further and provide students with a more seamless educational experience.
- **Partnership with Skill India Digital:** ABC's dedication to coordinating academic endeavours with the development of practical skills, which equips students for the ever-changing demands of the workforce, is exemplified by its ongoing integration with Skill India Digital.
- **Samarth and ERP Vendor Interface:** A successful interface with Samarth and other ERP suppliers guarantees real-time result processing, improving the effectiveness of credit accumulation procedures.
- **Creation of APAAR IDs:** ABC has developed APAAR IDs for schoolchildren in partnership with the Unified District Information System for Education (UDISE) to facilitate data sharing and guarantee thorough academic tracking.

Table-VIII: The ABC System has Been Received or is Expected to Affect Students' Educational Pathways

S.N.	Expected to Affect Students' Educational Pathways	students		Teachers		Total
		Number	percentage	Number	percentage	
1	The creation of the ABC mobile application is a notable achievement that provides students with an easy-to-use platform for tracking their academic progress.	49	14	33	22	82
2	making education more adaptable and student-centred so that students can follow their academic interests	21	6	12	8	33
3	permitting the accumulation and transfer of credits for students	14	4	15	10	29
4	Learning occurs both within and outside the classroom, and all types of learning must be respected and acknowledged.	63	18	12	8	75
5	Students can transfer credits from one school to another, and vice versa.	63	18	30	20	93
6	Freedom to select their own educational path and the capacity to transfer between colleges without forfeiting credits acquired.	63	18	12	8	75
7	By improving accessibility, elevating quality, and fostering lifelong learning, ABC's implementation has benefited the educational system.	63	18	30	20	93
8	Students have the option of earning credits toward a degree, certificate, or diploma, and they can withdraw at any time without penalty.	35	10	21	14	56
9	Designed as a national facility, ABC promotes a flexible curricular framework that fosters academic mobility across disciplines for students at higher education institutions.	35	10	21	14	56
	Total	350	100	150	100	500

Source: Data Collected by the Author from the Field

Data collected from the field survey show that 14% of the students and 22% of the teacher respondents considered

creating the ABC mobile application a noteworthy

accomplishment. The application gives students an easy-to-use platform for tracking their academic progress. Six per cent of the students and eight per cent of the teacher respondents considered that it makes education more adaptable and student-centred, allowing students to follow their academic interests. Four per cent of the students and ten per cent of the teacher respondents considered that it permits the accumulation and transfer of credits for students. Eighteen per cent of the student respondents and 8% of the teacher respondents considered that it facilitates learning to occur both within and outside the classroom, and that all types of learning must be respected and acknowledged. Eighteen per cent of the students and twenty per cent of the teacher respondents considered it possible for students to transfer credits from one institution to another and vice versa. Eighteen per cent of the students and eight per cent of the teacher respondents considered that it provides freedom to select their own educational path and the capacity to transfer between colleges without forfeiting the credits they have acquired. Eighteen per cent of the students and 20 per cent of the teacher respondents considered that by improving accessibility, elevating quality, and fostering lifelong learning, ABC's implementation has benefited the educational system. Ten per cent of the students and 14 per cent of the teacher respondents considered that students can earn credits toward a degree, certificate, or diploma, and they can withdraw at any time. Ten per cent of the students and 14 per cent of the teacher respondents considered it to be designed as a national facility. ABC promotes a flexible

curricular framework that fosters academic mobility across disciplines for students at higher education institutions.

E. Impediments to the Current Uptake and Application of Educational Technology

- i. *Financial Capabilities:* Budget constraints and restrictions are the most significant obstacles preventing educators and administrators from effectively implementing educational technology in their classrooms.
- ii. *Inadequate Network Configuration:* Fast, reliable WiFi at home and school, data security and privacy, access to digital resources, and many other things are necessary for a robust network infrastructure. There are frequent power outages and network problems nationwide, particularly in rural areas. A solid and dependable digital infrastructure is essential for seamless technology integration.
- iii. *Ethical Issues:* Controlling unethical behaviors in the digital sphere, such as plagiarism and cheating, is challenging to do to preserve academic integrity.
- iv. Digitally competent instructors are desperately needed to meet the needs of the changing educational landscape. Teachers should be proficient in both teaching and learning with technology.
- v. *Digital Resources:* Using digital resources to teach many subjects has limitations. One difficulty that needs to be addressed is creating complete digital resources for every discipline.

Table-IX: Observed or Anticipated Challenges in Adopting These New Educational Practices or Technologies

S.N.	Challenges	Students		Teachers		Total
		Number	%	Number	%	
1	Inadequate internet, technology, and electricity infrastructure are the primary impediments to India's digitalisation of education.	35	10	9	6	44
2	Learners still lack access to technology and reliable internet service.	49	14	12	8	61
3	In addition to the gender digital divide, which is a concern in India, girls also have less or no access to technology than boys, particularly in rural areas.	21	6	6	4	27
4	Students are often unable to use technology effectively, even though they may have access to it; their inexperience and unwillingness to handle it frequently hinder their progress.	63	18	12	8	75
5	Virtual platforms that connect teachers and students are used to deliver digital education. This has led to a lack of control over the classroom environment and the teachers' ability to monitor student behaviour.	63	18	30	20	93
6	One obstacle to digitalization is the lack of qualified teachers to lead online courses.	35	10	21	14	56
7	India's linguistically diverse culture necessitates e-learning materials and pedagogy in multiple languages; however, technological constraints make this a challenging task to achieve.	49	14	33	22	82
8	Evaluating pedagogy and class effectiveness in a virtual classroom can be a challenging task.	21	6	12	8	33
9	Technology must be available and functional for digital learning to include underprivileged students.	14	4	15	10	29
	total	350	100	150	100	500

Source: Data Collected by the Author from the Field

Data collected from the field survey show that 10% of the students and 6% of the teacher respondents considered inadequate internet, technology, and electricity infrastructure the main impediments to India's educational digitalisation. Fourteen per cent of the student respondents and eight per cent of the teacher respondents considered that learners still lack access to technology and reliable internet services. 6 % of the student respondents and 4 % of the teacher respondents considered that, in addition to the gender digital divide, which is a concern in India, girls also

have less or no access to technology than boys, particularly in rural areas. Eighteen per cent of the student respondents and eight per cent of the teacher respondents considered that Students are unable to use technology effectively; even though they may have access to technology, their inexperience and unwillingness to handle it frequently obstruct their progress. Eighteen per cent of the student respondents and twenty per cent of the teacher

respondents considered that Virtual platforms connecting teachers and students are used to deliver digital education, which has led to a lack of control over the classroom environment and the ability of teachers to monitor student behaviour. Ten per cent of the student and 14 per cent of the teacher respondents considered that one obstacle to digitalisation is the lack of qualified teachers to lead online courses. 14% of the student and 22% of the teacher respondents considered India's linguistically diverse culture to need e-learning materials and pedagogy in multiple languages. Still, technological constraints make this difficult. Six per cent of the student and eight per cent of the teacher respondents considered assessing pedagogy and class effectiveness in a virtual classroom to be challenging. Four per cent of the students and 10 per cent of the teacher respondents considered that technology must be available and functional for digital learning to be inclusive for underprivileged students.

V. DISCUSSION

NEP 2020 places significant emphasis on utilising technology to provide students with an excellent education; its strategy suggests leveraging digital platforms, including online courses and e-learning materials. The total revenue from online education in India in 2024 was \$6.71 billion, and it is expected to increase to \$11.50 billion by 2027. The number of online education users in India has increased from 31.6 million in 2017 to 189.8 million by 2024. In 2022, 951.3 million hours were spent on education apps for primary and secondary education in India. In 2022, 795.89 million hours were spent on education apps for learning management in India. According to research, digital literacy is becoming increasingly important for all parties involved in the learning process. As a collection of skills, digital literacy serves as the foundation for both the teacher's personal full participation in the knowledge society and the students' engagement, showcasing their abilities. Therefore, the digital literacy and skills of all participants form the foundation for such transitions. By bringing about a digital revolution and enhancing the e-learning platform, it aspires to bridge the digital divide and provide the best education possible to all groups, particularly the most disadvantaged ones. With about 20 lakh students enrolled in nearly 392 courses across multiple disciplines, NPTEL is the biggest online resource in the technical industry. The National Education Policy 2020 has introduced a flexible curriculum and an interdisciplinary approach to education, along with multiple entry and exit points, providing students with new, dynamic learning opportunities at their own pace. NEP 2020 has transformed India's higher education system, as Programs and course selection are encouraged to be flexible under this new framework. Universities are adopting online learning platforms and technology. Students who participate in digital education have more flexibility with their learning schedule, and online education saves time through rapid, efficient, and sophisticated information transfer, in addition to being cost-effective. Central Universities, State Universities, Deemed Universities, Private Universities, Institutions of National Importance, Autonomous Colleges, and other educational organizations make up ABC's

extensive network of 1,720 registered institutions as of January 2024. Because of this teamwork, 10.42 Crore unique learner IDs have been successfully registered, 2.08 Crore from HEIs. The creation of the ABC mobile application is a notable achievement that provides students with an easy-to-use platform for tracking their academic progress. Students can transfer credits from one school to another, and vice versa. By improving accessibility, elevating quality, and fostering lifelong learning, ABC's implementation has benefited the educational system. There are many challenges in adopting these new educational practices or technologies. Virtual platforms that connect teachers and students are used to deliver digital education. This has led to a lack of control over the classroom environment and the teachers' ability to monitor student behaviour. India's linguistically diverse culture necessitates e-learning materials and pedagogy in multiple languages; however, technological constraints make this a challenging task to achieve.

VI. CONCLUSION

The roles of the teacher and the student are evolving as a result of globalisation, and the field of digitalisation in the technological and management domains is growing. Digitalisation offers the potential for educational flexibility, fosters transparency, enhances student engagement, strengthens university-to-university connections, and accelerates innovation (Karpov, 2022). The success of the HET's transition to a digital university is closely correlated with the effectiveness of its digitalisation project management procedures. This necessitates the adoption of a problem-oriented project management methodology, the establishment of a dedicated HEI digitalisation division, and the advancement of technology and structure for populating and utilising a higher education institution's digital environment. The three pillars of education—access, equity, and quality—form the foundation of SWAYAM, which was introduced on August 15, 2016. By bringing about a digital revolution and enhancing the e-learning platform, it aspires to bridge the digital divide and provide the best education possible to all groups, particularly the most disadvantaged ones. By 2025, more than 50% learners will have some kind of vocational education. It also promotes greater institutional autonomy while promoting multidisciplinary education. By 2030, all standalone professional educational institutions are expected to become multidisciplinary in nature. In this way, the National Education Policy 2020 is ensuring the enhancement of quality education in India.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

- **Conflicts of Interest/ Competing Interests:** Based on my understanding, this article has no conflicts of interest.
- **Funding Support:** This article has not been funded by any organizations or agencies. This independence ensures that the



research is conducted with objectivity and without any external influence.

- **Ethical Approval and Consent to Participate:** The content of this article does not necessitate ethical approval or consent to participate with supporting documentation.
- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Author's Contributions:** The authorship of this article is contributed solely.

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