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Evolving And Transformation Of Technological Pedagogies In Teacher Education Post-NEP 2020

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Abstract

In India, the National Education Policy (NEP) of 2020 represents a turning point in the development of teacher education by highlighting the use of technology to improve pedagogical practices, particularly during the pandemic, when people were looking for quick changes. This was the most significant technology use period, and users increased to a greater extent after the pandemic. The NEP 2020 was unveiled at a moment when the general public began to recognize the significance of technology. This chapter discusses the technology pedagogies that have changed in teacher education beyond NEP 2020. The NEP promotes a learner-centric approach and calls on educators to modify and create new teaching strategies. This change calls for investigating and putting into practice a variety of digital tools and platforms that promote inclusive and individualized learning settings, also looks at how teacher preparation programs are changing to adapt to the needs of the digital era, with a particular emphasis on integrating new technologies like digital simulations, augmented reality, and artificial intelligence. It looks into how these technologies affect the way teacher preparation courses are designed, how they teach, and how they assess students. Furthermore, the possibilities involved in using technology in teaching methods, such as faculty development, digital literacy, and access concerns are discussed. In addition, to develop a generation of educators prepared to successfully navigate and prosper in an increasingly digital educational landscape, it also highlights the significance of ongoing transformations and adaptation in determining future directions for technological pedagogies in teacher education beyond NEP 2020. Finally, the discussions elaborate that it will also benefit all stakeholders in reorganizing and modernizing teacher education as an entire sector, possibly bringing about groundbreaking alterations to the field of education nationwide and equipping upcoming educators with the critical ICT competencies they need to compete with current educators'. The government also has initiated aggressive steps to include relevant parties and familiarize them with the goals and objectives of the NEP 2020. The policy's objectives and guiding principles have been widely understood by all parties involved as a result of this proactive engagement, which has generated a great deal of interest and participation from all stakeholders.

Keywords
NEP 2020, Technology, Teacher Education, Educators.

Introduction

Teacher Education

'Future educators are shaped by their teacher education, which necessitates the development of trans disciplinary knowledge, beliefs, and practices. In addition to staying current with the most recent developments in pedagogy and education, educators must to have a solid foundation in Indian values, dialects, and customs'. 'High-quality material and interdisciplinary inputs are necessary for teacher education, necessitating the execution of all programs within composite multidisciplinary institutions. The goal of multidisciplinary colleges and universities is to create education departments that work with other departments to provide B.Ed. programs and carry out research. In order to provide a four-year integrated teacher training program, stand-alone Teacher Education Institutions (TEIs) must transform into interdisciplinary institutions by 2030'. 'A comprehensive strategy to improve India's educational system, NEP 2020 emphasizes technological integration, flexibility, and trans disciplinary learning at all educational levels'. 'Technological approaches refer to techniques that make use of digital tools and software as well as other educational technologies to improve learning outcomes and experiences'. 'The skillful application of digital tools and technology in teacher education, known as digital literacy, improves problem-solving, communication, cooperation, and information retrieval in the classroom. Through the integration of online materials and traditional in-person instruction, blended learning provides a customized, adaptable education that meets the requirements and preferences of a wide range of learners'. 'Artificial Intelligence (AI) is the programming of robots to mimic human thought processes and learning, finds use in education through data-driven insights, individualized tutoring systems, and adaptive learning platforms'. 'By customizing information and pacing to each student's unique answers, performance, and preferences, adaptive learning systems maximize learning results and improve the overall learning experience. Virtual classrooms are online learning environments that allow educators and students to interact remotely through video conferencing, collaboration platforms, and digital resources. Students who are not physically present in the same area as the teacher can get education through remote teaching, which makes use of digital communication tools'. 'Professional development for educators includes chances for lifelong learning to enhance their practices, knowledge, and abilities' pp.4 [5] this includes teaching in instructional design, technology, instructional methodologies, and educational research'. 'Through the use of digital tools, software, and resources—such as learning management systems, interactive applications, and virtual reality simulations—educational technology enhances the processes of teaching, learning, and evaluation. Digital assessment technologies, such as online tests, formative evaluations, and peer review platforms, are used in teacher education to assess students' learning and development and provide timely feedback to improve learning outcomes. In educational technology, research and innovation entail working together with educators, developers, researchers, and policymakers to create and apply novel solutions to problems and improve student learning'.

According to NEP 2020 Role of an Educator

According to NEP, 2020, 'it emphasizes the value of education in India while also stressing the need for better hiring of effective educators, deployment, working conditions, empowerment, and teacher preparation. It highlights the important it is for educators to foster critical thinking, creativity, problem-solving skills, and digital literacy in addition to advancing Indian values, ethics, and customs through instruction'.pp.21 (NEP, 2020)

Review of related literature

Karmakar (2020), 'by 2035, the NEP intends to see over 50% of students enrolled in higher education. The main purposes of this research were to highlight the possibilities for professional education as anticipated in NEP 2020 and investigate the viability of online and digital learning as a substitute mode of high-quality education as suggested by NEP 2020 itself. NEP 2020 comes to the conclusion that while the end point of the program is rather obvious, it is unclear how to get there and how long it will take'. Bhatt (2023), 'India's National Education Policy, 2020, which emphasizes curricular changes and pedagogical innovations to address the changing demands of students and society, marks a dramatic shift in the country's approach to higher education. The study uses a qualitative research methodology, collecting data through conceptual analysis and literature reviews, among other techniques. The report concludes with a discussion of the implications for higher education policy and practice, suggestions for further research, and thoughts on how NEP 2020 will affect curricula and pedagogy in Indian higher education'. Dhokare, et al. (2022), 'the research evaluates the policy's consequences in several dimensions and looks at how it is being implemented. The research investigates how educational institutions are modifying their curriculum, delivery strategies, and methods of evaluation to conform to the objectives of the policy. The research also evaluates how autonomy and regulation interact at universities, exposing the challenges of upholding standards while encouraging creativity. The study concludes with an assessment of the unintended implications that have surfaced since the implementation of NEP 2020. These include issues with practical knowledge testing, the flexibility of specialties to accommodate broad approaches, and the requirement for educators to continue their professional development'. Umachagi, et al, (2022), 'the emphasis of this theoretical piece is higher education (HE), and it is based on NEP 2020. The purpose of the essay is to address the following topics: context and origin; vision, focal drive regions, and principal rules; and, of course, attributes, influence areas, and possibilities for participants. Lastly, they are stressing the importance of implementing the policy in a stated, methodical, and cautious manner'. Ambar, et al, (2021), 'this theoretical study focuses on higher education (HE) and is based on NEP 2020. The article also plans to address the article's background and emergence, as well as its goal, subject matter, and principles of direction, attention to the article's features, impact areas, and possibilities for stakeholders. Lastly, highlights the necessity of the policy's planned, methodical, and cautious application'. Kumari, (2020), 'by 2030, the initiative seeks to reform India's educational system. Teacher education will progressively shift into multidisciplinary colleges and universities. These institutions will strive to house exceptional education departments that offer B. Ed., M. Ed., and Ph.D. degrees in education. Educators will need training in both high-quality content and pedagogy. By 2020, teaching a variety of subjects and pedagogies, including a robust internship through student instruction in a nearby school, will constitute the essential requirement for educators. The goal of the policy is to guarantee that all students get instruction from highly qualified, enthusiastic, and fully furnished educators at all educational levels. In conclusion, the National Education Policy (NEP) stipulates that the nation's subpar independent Teacher Education institutions would face severe consequences, up to and including their closure'. Maseeh, (2023), 'the pool of future educators who will mold the next generation depends on teacher education. Innovations in teacher education aim to provide educators with the skills, information, and attitude they need to influence the direction of education in India, not only adapt to changes in policy. Its goals are to create more skilled and committed experts in the industry and to completely reform the Indian system of teacher education. By 2030, the current teacher education institutes are to become interdisciplinary institutions, according to the 2020 New Education Policy vision. To provide excellent materials, pedagogy, training, and academic experience to aspiring educators. The current study explores the dynamic growth of teacher development and training, emphasizing the urgent need for novel strategies to equip educators to handle the particular difficulties of the twenty-first century. Following the National Education Policy 2020, this document provides an overview of the potential breakthroughs, changes, and new reforms that may occur in the area of teacher education soon'. Dar, (2023), 'Today, the teacher education program needs to be examined, analyzed, changed, reconsidered and refocused. One of the main

goals of the Indian government is to promote quality and excellence in the field of education. This article centers on how the role of teacher educators is evolving in light of NEP 2020. It also emphasizes the many duties that NEP2020 assigns educators to fulfill in the classroom. The study included recommendations for resolving many issues with teacher education. The current work is analytical. By the requirements of the study, data, and information have been gathered from appropriate sources. This work has used an interpretive approach. Teaching abilities plus theories of instruction and professional competencies is teacher education'. Korada, (2023), 'the pool of educators who will mold the following generations depends heavily on teacher education. Professionals in education and related fields will be readily available, along with specialized courses, according to Higher Education Institutions that offer teacher education programs. Educators will need instruction in both pedagogy and high-quality material, therefore by 2030, teacher education will progressively migrate into interdisciplinary colleges and universities. The way a measure is implemented determines how effective it is'. Kumar, (2022), 'although digital education has been around for a while in various forms, it is largely a recent concept. The educational system is about to undergo significant changes as a result of the digitization of some system components. These adjustments will aid in preventing pandemics like COVID-19 in 2020, both naturally occurring and man-made. The advent of the internet and other electronic media makes it all feasible. Numerous platforms, including MOOCs, YouTube, social media, Telegram, and others, offer online learning. This essay will examine digital education in India, focusing on its objectives, viewpoints, and challenges associated with shifting paradigms. It will also address the issues that may arise from its inclusion in the NEP-2020'. Ghosh, (2023), 'the National Education Policy 2020 recognizes both the possible hazards and difficulties that come with using technology in the classroom in addition to its many advantages. To guarantee that everyone receives an inclusive, high-quality education, this article tries to give a thorough study of how technology may be used in education, solving challenges and extending the reach of already-existing digital platforms and ICT-based educational programs. The researcher in this article looked at the goals that technology can achieve in the field of education as well as the suggestions that NEP 2020 offered for integrating technology into the classroom. It also focuses on the difficulties in putting NEP 2020's suggestions about the instructional application of technology in the classroom into practice'. Mir, (2023), 'the implementation and adoption of technology in education, both in the classroom and at higher education institutions, is emphasized in National Education Policy 2020. This will help India reach the 21st-century SDGs for excellent education. The extent and importance of technology in NEP 2020 are highlighted in this report, which is based on secondary data. Technology in educational settings will improve student learning and instructional approaches. The National Educational Technology Forum (NETF) should be established, under NEP 2020, to promote candid discussions on the integration of technology in higher education and classrooms'. Dhillon, (2022), 'the integration of ICT into our educational process is a journey that has the potential to significantly accelerate our country's advancement. The teaching-learning process has changed from a face-to-face to an online one as a result of the new COVID-19. Educators that possess ICT competences are able to successfully use ICT into their teaching and learning process. NEP 2020 also suggests promoting ICT integration through a number of initiatives, such as the creation of NETF and NRF and the promotion of online portals like SWAYAM and SWAYAM PRABHA, where teacher educators can upload their digital learning resources to deliver high-quality instruction to students living in the most remote areas of the nation by enrolling them in e-Pathshala's MOOC courses and programs. The nation's future rests on reforming the whole higher education system, which will definitely benefit from all of these initiatives to restructure and revolutionize teacher education'.

Elaboration of the provision in NEP 2020

'Technology interventions aim to streamline educational planning, management, and administration, improve teaching-learning and evaluation processes, support professional development, and improve access. Successful online educators require proper training and growth, ensuring a distinct strategy for online examinations and incorporating social, affective, and psychomotor aspects into online learning'. 'The policy highlights how digital technologies are becoming increasingly important for teaching and learning at all levels of education and suggests significant steps to improve the educational process and encourage responsible technology use'. 'Relevant organizations are utilized in pilot studies to assess the advantages of combining traditional classroom instruction with online instruction. These studies will investigate fields like student device addiction and popular e-content formats, ensuring the use of online education and minimizing drawbacks for further development. In order to make sure that technology-based solutions stay relevant in the face of fast technological breakthroughs, the Indian education sector is utilizing digital infrastructure to improve its digital capabilities. This improves the overall effectiveness and accessibility of the educational system'. 'Educators can utilize an extensive array of online tools to track students' progress, including two-way video and audio interfaces, which are essential for conducting online lessons, enhancing the effectiveness of their teaching methods'. 'The digital repository will house coursework, learning games, simulations, augmented reality, and virtual reality. Student-appropriate tools, such as gamifying Indian art and culture, will be developed for enjoyable, hands-on learning'. 'A clear public grading system will evaluate content quality, and a reliable fallback method will provide access to electronic information'. 'The digital divide is being reduced by utilizing existing mass media like radio, television, and community radio for educational programs'. 'These programs will be offered in multiple languages, with a focus on providing material in all Indian languages, and digital content should reach educators and learners as much as possible. Virtual laboratories will be created using existing e-learning platforms like DIKSHA, SWAYAM, and SWAYAMPRABHA to provide equitable access to hands-on, practical experiment-based learning experiences, with SEDG instructors and students utilizing digital devices with pre-loaded information'. 'Teacher training will focus on learner-centric pedagogy and online teaching platforms, aiming to enhance proficiency in developing high-quality online material. Emphasis will be placed on instructors' role in encouraging active student engagement. Organizations like School boards and the National Assessment Centre (PARAKH) will develop online assessments frameworks including competencies, portfolios, rubrics, standardized tests, and analytics, while conducting research to test innovative 21st-century assessment methods'. 'The recognition of the importance of in-person instruction alongside the promotion of digital learning has led to the development of successful blended learning models across various subject areas. NETF and other agencies will establish content, technological, and pedagogy standards for online and digital teaching and learning, which will guide policies for e-learning across various entities'. pp.57-61 (NEP, 2020)

Futuristic aspects

'In the context of NEP 2020 recognizes the possible advantages of technology in education as well as the hazards that might arise, including network and unethical behavior'. 'The guidelines of NEP 2020 also suggest actions to guarantee an equitable utilization of technological devices and online venues for innovation'. 'The increasing need for flexible and interactive learning experiences coupled with digital improvements has led to a growing popularity of technology integration in higher education. Mobile applications, VR, LMSs, and multimedia materials are examples of educational technology that improve accessibility, customization, and engagement'. 'Flipped classroom models also employ interactive multimedia and web videos to offer material outside of the classroom. Studies demonstrate that pedagogies augmented by technology yield better results for students, raise their level of satisfaction, and enrich the educational process in general'. [7] 'In light of the

diversity, complexity, size, and accessibility of devices in India's education sector, NEP highlights the necessity of an open, public digital infrastructure to guarantee that technology-based solutions remain applicable in the face of swift technological progress'. 'Educators may use online teaching systems such as SWAYAM and DIKSHA to oversee student progress and conduct virtual courses'. 'Agencies such as NETF, CIET, NIOS, IGNOU, IITs, NITs, and National Education Policy 2020 may carry out pilot research under NEP 2020 to assess the advantages of combining traditional classroom instruction with online instruction, with an emphasis on learners tablet attachment and favored e-content forms'. 'Online learning is vital, but in-person instruction is also important. Effective blended models need to be found to balance this'. 'To give everyone equitable access to high-quality practical and hands-on learning, virtual laboratories may be developed using already-existing e-learning platforms like DIKSHA, SWAYAM, and SWAYAMPRABHA'. 'Establishing guidelines regarding pedagogy, technological advances, and the material in online/digital teaching-learning, NETF aims to address the growing reliance on distance education. States, schools, and higher education entities may use the criteria to inform e-learning policies'. pp.9-10 [7]

Discussion and Conclusion

'An ambition to revolutionize higher education by 2030 is outlined in the newly released NEP. Its adoption in higher education presents cutting-edge ideas and recognizes the role of technology in growing education, particularly in improving teaching and learning'. 'It also holds both assurances and obstacles for the transformation of India's educational surroundings. During epidemic has sped up the process of integrating technology into our everyday teaching and learning practices'. 'The post-NEP 2020 evolution and change of technology pedagogies in the Indian teacher education setting portend a bright future characterized by creativity and flexibility'. 'A thorough reorganization of educational procedures has been made possible by the NEP of 2020, especially regarding the training and assistance provided to educators in the efficient use of technology'. 'The transition to blended and online learning requires instructors to become adept in the use of digital resources for instruction, evaluation, and collaboration. Sufficient professional development and support systems are necessary for this shift to provide instructors with the confidence and empowerment to implement new teaching strategies'. 'Teacher education programs have the potential to improve the quality of instruction and encourage a higher level of involvement with the subject by utilizing technologies like virtual reality, artificial intelligence, and personalized educational environments. Accessibility to technology, instructors' digital literacy, and fair application across a range of socioeconomic groups continue to be major obstacles, nevertheless'. 'To promote equitable and environmentally friendly practices, legislators, educational institutions, and technology suppliers must work together to address these issues. It aims to give educators the skills and resources they need to fully realize technology's promise to improve student success and foster innovative teaching techniques by placing it at the core of pedagogical change'. 'It is expected that these initiatives will transform India's educational system into one that is flexible and dynamic as it advances. The role of technology in the lives of educators, students, parents, and other stakeholders has grown. As a result, integrating technology in the classroom is becoming a necessary aspect of daily life'. 'NEP 2020 acknowledges that many technological developments, including responsive computer testing, artificial intelligence, block chain, and educational software, will significantly alter the content and methods that students learn in the classroom. Significant progress has been made in this direction by NEP-2020, which has strengthened the technology infrastructure and created an environment in which ICT plays a key role via the implementation of several projects such as teacher education and school education, in addition to SWAYAM, SWAYAM PRABHA, and so on. Incorporating ICT into teacher education will not only improve educational results but also contribute to the long-term growth of the country'. 'It will also benefit all stakeholders in reorganizing and modernizing teacher education as an entire sector, possibly bringing about groundbreaking alterations to the field of education nationwide and equipping upcoming educators with the critical ICT competencies they

need to compete with current educators'. 'In addition, the government has initiated aggressive steps to include relevant parties and familiarize them with the goals and objectives of the NEP 2020. The policy's objectives and guiding principles have been widely understood by all parties involved as a result of this proactive engagement, which has generated a great deal of interest and participation from all stakeholders'.

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