

# **Role of National Education Policy in IT Education**

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**Abstract:** *The Indian Government launched the National Education Policy (National Education Policy) 2020 to improve the quality of education across the country and make it more inclusive, flexible and future ready. This policy emphasizes the role of technology, especially information technology (IT), in enhancing learning and education in all contexts – classrooms, online and corporate. With the rapid advancement of digital tools and IT solutions, students are using technology to access education in new, innovative and more engaging ways. The National Education Policy stresses on using digital learning resources, e-learning platforms and innovative technological tools to provide students with flexible, personalized and efficient learning opportunities. Also, the policy highlights the need for practical hands-on training in areas like IT, Artificial Intelligence and Data Science so that students can acquire the skills required for future job prospects in a digital economy. It also aims to bridge the digital divide by making education more accessible, equitable and affordable to students from all socio-economic backgrounds. By integrating technology in education, the National Education Policy 2020 wants to transform India's learning ecosystem, prepare students for 21st century workforce and build a culture of innovation and lifelong learning.*

**Keywords:** Digital Learning Advanced Skill, Technologies, AI Base Education

## **I. INTRODUCTION**

The current period of time is called science and technology. There is no aspect in which the impact of technology cannot be felt. Education is the important field of human life. In the field of education, technologies are involved due to various reasons. As a result, in case of teaching and learning a revolutionary change has come. Now education has emerged in a new way by releasing a traditional method. So, the role of teacher is social engineer. From the 21<sup>st</sup> century, an extremely large change has come in the way of lifestyle.

The new education policy in India emphasizes the importance of technology in education, recognizing the possible use of digital tools to enhance teaching and learning outcomes. The policy aims to leverage technology to improve access to education, promote collaborative learning, and develop digital literacy skills among the skill development of students. With the vision to make the youth self-reliant through skill-based education and in a view to make the country self-reliant Bharat, the National Education Policy 2020 crafted consequently. Thrust to vocational education in the policy by launching the vocational subjects and training at school level and higher education level is highlighted by our education minister at every platform.

National Education Policy 2020, the first education policy of the twenty-first century, asks for a thorough reform of the governance and structure of the educational system in order to support India's cultural values and achieve sustainable development goals. In order to ensure that kids receive high-quality education, National Education Policy supports the professional development and welfare of teachers, who are essential to these reforms. To provide fair access, special consideration is given to underprivileged and excluded populations.

## **II. LITERATURE REVIEW**

Role of National Education Policy in IT Education 2020 says institutions should integrate IT in curriculum so that students get relevant digital skills. Studies show how blended learning models; coding workshops and online resources



lead to better learning outcomes. Smith, J., & Brown, L. (2020). Blended Learning and Digital Transformation in Education. *Journal of Educational Technology*, 45(3), 223-245. Retrieved from. Rao, N. (2021). The Role of Online Resources in Enhancing IT Education. *Journal of IT and Education*, 14(3), 201-220. Retrieved from Challenges in Implementing IT in Education: Despite National Education Policy 2020's vision, several challenges are hindering the effective adoption of IT in education - lack of infrastructure, lack of teacher training and digital divide. Gupta, A. (2019). Challenges in Implementing IT in Schools: A Policy Perspective. *Education Policy Journal*, 34(2), 87-102. Retrieved from. Verma, P. (2020). Bridging the Digital Divide: Strategies for Inclusive IT Education. *Educational Policy Review*, 8(4), 199-215. Retrieved from. Benefits of IT in Education: IT education promotes interactive learning, personalized education and accessibility to educational resources. Patel, S., & Sharma, R. (2018). E-Learning and Digital Classrooms: The Future of IT Education. *Journal of Modern Education*, 26(5), 33-50. Retrieved from. Kumar, P. (2021). Benefits of Digital Education: Enhancing Learning through Technology. *Digital Learning Review*, 9(3), 77-89. Retrieved from Accessibility to educational resources can boost student engagement and motivation and hence a better learning experience. But we need to address the existing challenges so that all can benefit from these technological advancements.

### **III. METHODOLOGY**

The foundation of IT education is research methodology, which offers the structure for gathering, interpreting, and reporting data. The revolutionary approach of National Education Policy 2020 affects IT students' study methodology in multiple ways: The National Education Policy encourages the development of research skills-focused curricula, especially in data-driven approaches and quantitative research. This includes an emphasis on teaching procedures that are crucial for IT research, such as survey research, experimental designs, statistical analysis, and qualitative. For instance, students learn how to create surveys to collect information on user behaviour, utilize statistical methods to analyses the data, and present their findings in a research paper or presentation National Education Policy 2020 places a strong emphasis on problem-solving, critical thinking, and evidence-based decision-making. These abilities are crucial to IT research methods, particularly when creating new technological applications, system designs, or algorithms. The ability to critically assess research articles, data sets, and experimental findings is taught to IT students. National Education Policy 2020 encourages the employment of state-of-the-art software tools and technologies. This encompasses IT tools for data collecting (such as web scraping and survey platforms), data analysis (such as R, SPSS, and Python), and data presentation (such as Tableau and power). These tools enable researchers to work with enormous datasets and conduct intricate analysis, and they are essential to quantitative research methodologies. This policy encourages the use of online materials such as e-books, e-journals, and other digital resources to enhance traditional classroom instruction. Students would be able to participate in self-paced study and access top-notch educational resources. National Education Policy-2020 suggests using online assessments to gauge students' learning outcomes. It will allow teachers to provide pupils with immediate feedback on areas in which they need to improve. This policy highlights how crucial teacher training is to the efficiency educational technology. According to National Education Policy-2020, teachers should receive frequent training and assistance so they can utilize digital tools and resources. In order to provide students with hands-on learning experiences in science, engineering, and other subjects, this education policy encourages the usage of virtual labs. Without the need for tangible equipment, it will aid students in better understanding difficult concepts and honing their practical skills. National Education Policy-2020 encourages the use of blended learning, which combines online learning resources with conventional classroom instruction. Teachers would be able to provide each student with a customized learning experience. Technology Integration's Particular Function in the National Education Policy (National Education Policy) 2020: Digital Infrastructure and Connectivity: The National Education Policy 2020 acknowledges the significance of digital infrastructure and seeks to offer high-speed internet connectivity, technology-enabled learning environments, and universal access to digital resources. In order to facilitate technology integration, it places a strong emphasis on the creation of digital infrastructure in educational institutions such as colleges and schools. Digital Literacy and Skills Development: The policy places a strong emphasis on helping educators, administrators, and students develop their digital literacy. It promotes the use of digital tools and resources to improve ICT (information and communication technology) and digital literacy, empowering students to efficiently



explore, assess, and produce digital content. Technology-enabled Teaching and Learning: The National Education Policy 2020 encourages the application of technology to improve educational opportunities. In order to enable interactive and learner-centered pedagogies, it promotes the integration of digital tools, instructional software, and online resources. The policy highlights the value of blended learning strategies, in which technology enhances in-person training to provide individualized and flexible learning opportunities. Assessment and Evaluation: National Education Policy 2020 acknowledges that technology has the ability to revolutionize assessment and evaluation procedures. It promotes the use of computer-based tests, online assessments, and automated grading systems, among other technology-enabled assessment techniques. In order to give prompt feedback and customize learning experiences, the policy encourages formative evaluation techniques aided by technology. Teacher Professional Development: The National Education Policy 2020 places a strong emphasis on the necessity of teachers' on-going professional development in the integration of technology. It promotes the supply of training courses and materials to improve educators' pedagogical practices, digital literacy, and efficient use of technology in the classroom. The policy emphasizes how crucial it is to increase educators' ability to use technology to enhance their instruction and enhance student learning results. National Forum for Educational Technology (NETF) The National Educational Technology Forum (NETF) will be created as an independent organization to promote the efficient use of technology in education at all levels, according to the Ministry of Human Resource Development (2020). The primary objective of NETF is to assist central and state educational institutions in making decisions on the adoption and use of educational technology by offering leadership, expertise, and best practices. NETF will carry out a number of vital tasks: Offer government agencies unbiased, fact-based advice on technological solutions. Build the infrastructure and intellectual capacity to incorporate technology into the classroom. Determine the most important areas for technology development. Provide fresh avenues for innovation and research. Assure a consistent supply of trustworthy data from specialists in educational technology, and work together on data analysis.

In order to build a strong body of knowledge, NETF will also host conferences, workshops, and seminars to get opinions from practitioners and scholars. Enhancing learning opportunities, assessments, and the quality of instruction will be the main goals, along with assisting instructors' professional growth. With assistance from CBSE, NCERT, and NOS, states will produce regional e-content, and educational software will be developed in all major Indian languages, especially for children with impairments. This content will be available on websites such as Diksha and SWAYAM. The use of artificial intelligence (AI) in education is also highlighted by National Education Policy 2020, which envisions virtual smart classrooms that promote international cooperation and dialogue. Online tests, quizzes, and other learning resources will be available in these classes. The National Research Foundation (NRF) will lead the charge in developing AI technology to tackle issues in climatic change, health, and agriculture. Researching disruptive technologies, providing advanced degrees in subjects like machine learning, and developing e-learning courses will all be made possible by Higher Education Institutions (HEIs).

Pilot studies are being carried out by respectable organizations like IITs, NETs, and NITs to assess the advantages and disadvantages of online learning. Making investments in open, reachable, and future-ready digital infrastructure. Developing e-learning platforms such as SWAYAM and Diksha to provide extensive resources for online tests. Developing user-friendly apps that display Indian art and culture in several languages, as well as high-quality digital resources, libraries, coursework, learning games, and simulations. Addressing the digital divide by broadcasting instructional information in multiple Indian languages via conventional media outlets like radio and television. Creating virtual laboratories using SWAYAM and Diksha platforms to guarantee all students have access to high-quality learning opportunities. Researching cutting-edge applications of educational technology and putting into practice online examinations and assessments created by organizations such as NAC, PARAKH, NTA, and school boards. Endorsing blended learning strategies that incorporate online lab teaching, rotation, flex, and in-person instruction. Creating guidelines for methodology and content for online learning that states, school boards, and universities must adhere to. Technology is essential to raising the standard of education in India. Therefore, addressing the educational demands of the twenty-first century requires strengthening institutional capacities, developing compelling e-content, and constructing a strong digital infrastructure.



**Occupational training in IT education:** IT education training is necessary to equip students with industry skills, enhance employability and meets the digital economy demands. National Education Policy 2020 emphasizes skill-based learning and vocational training to prepare students for various IT careers.

**Coding and Software Development:** Python, Java, C++ training is basic for software development, web development and mobile app creation. Many institutes offer specialized boot camps and certifications.

**Data Science and Artificial Intelligence:** With AI and big data on the rise, data analytics, machine learning and AI driven solutions courses are must for business intelligence and automation.

**Cybersecurity and Ethical Hacking:** As cyber threats increase, cybersecurity, network security and ethical hacking training is a must for IT security professionals.

**Cloud Computing and Networking:** Cloud platforms like AWS, Microsoft Azure and Google Cloud training helps students to gain expertise in managing digital infrastructure, a key skill in modern IT careers.

**Digital Marketing and E-Commerce:** SEO, social media management and digital branding training is valuable for marketing, online business and entrepreneurship.



**Lifelong learning in National Education Policy-2020:** In the context of National Education Policy 2020 (India's national education policy), learning refers to the lifelong to the continuous, voluntary and self-inspired discovery of knowledge for personal or business development in a person's life. Politics emphasizes that education should not be limited to the traditional years of school education, but should expand throughout the life. It is important for personal development and changed social and technical needs. Here is described how learning for life is integrated in National Education Policy 2020: Flexibility and multiple inputs/output: Politics introduces flexible roads in education so that students can come in and leave different stages of their academic journey (e.g. after completing certificates, diplomas or degrees).

It provides individuals in their careers at different points or racing opportunities, and promotes life learning. After a few years in the workforce, for example, individuals can return to education to pursue studies or explore new areas. Online and digital education: The ` 2020 recognizes the role of online education in learning facilities in life. It encourages the use of online platforms and open education resources (OES) to enable students to reach education when appropriate.

This is especially important for adults who want to learn while balanced work or personal obligations. Platforms such as online courses, virtual classrooms and Swayam (an initiative from the India government) support continuous learning for individuals in all stages of life.

**Vocational education and skill development: From sixth grade onward:** According to National Education Policy, vocational education should be introduced in schools starting in Class 6 with an emphasis on real-world experience and practical skills. In addition to their academic topics, students will have the chance to acquire skills like carpentry, plumbing, coding, agriculture, etc., so they may make well-informed professional options.

**Combining the Academic Curriculum with Integration:** In order for students to choose academic and vocational subjects concurrently and receive a comprehensive education, vocational education will be merged with mainstream education. The policy suggests a "5+3+3+4" educational framework in which vocational education will be incorporated into the final two years of secondary school. National Education Policy 2020 asks for more emphasis on vocational education, which will be equipped with the practical skills required for specific businesses





Justification for Researching Technology's Role in National Education Policy 2020: Recognizing the substantial influence that technology can have on education is the justification for researching its position in the National Education Policy (National Education Policy) 2020. Technology has the power to improve educational outcomes, increase access to educational resources, and change teaching and learning methods as it develops quickly. Examining its function is essential given the National Education Policy 2020's emphasis on technological integration for the following reasons: Conformity to Policy Goals: The National Education Policy 2020 recognizes the value of technology in education and emphasizes how it can advance access, equity, and quality. Examining the policy's use of technology aids in determining how well technology integration fits with its goals and how It may help them achieve their goals. Potential for Pedagogical Transformation: By facilitating creative teaching strategies, individualized learning experiences, and interactive learning settings, technology has the power to completely transform pedagogical practices. Teachers can investigate how technology can support pedagogical transformation and encourage student-cantered and inquiry-based learning by comprehending its position in National Education Policy 2020. Effect on Learning Outcomes and Student Engagement: Technology can improve students' motivation, engagement, and active involvement in the educational process. Researchers can investigate how technology integration affects learning outcomes, including enhanced academic performance, critical thinking abilities, and creativity, by looking at how technology functions in the National Education Policy 2020. Access to Resources and High-Quality Education: Technology can overcome regional limitations and offer access to high-quality educational opportunities and resources to students, regardless of their socioeconomic status or place of residence. Analysing how technology might enhance access to education, digital literacy, and information resources thereby fostering inclusivity and mitigating educational disparities is made easier by looking at its position in the National Education Policy 2020. Capacity Building and Teacher Professional Development: The National Education Policy 2020 places a strong emphasis on the value of professional development and training for teachers. Examining the policy's use of technology allows one to look at how it might help improve teacher capacity, enabling teachers to successfully incorporate technology, and promote ingoing professional development. Implementation Challenges and Best Practices: Infrastructure constraints, the digital divide, and guaranteeing fair access are just a few of the issues that must be resolved for technology integration in education to be successful. A study of the difficulties and the discovery of best practices for putting technology efforts in line with the goals of the policy are made possible by researching the role of technology in National Education Policy 2020. All things considered, researching technology's role in National Education Policy 2020 is crucial to assessing its possible effects and addressing implementation challenges, and provides evidence-based recommendations for effective technology integration that supports the policy's vision of transforming education in India.

#### **IV. DISCUSSION AND CONCLUSION**

In order to guarantee that information technology (IT) plays a crucial role in forming contemporary education, National Education Policy 2020 promotes its integration into the educational system. In order to promote improved learning experiences and increase accessibility and inclusivity in education, the policy promotes the use of digital tools and technologies. National Education Policy 2020 guarantees that lifelong learning becomes a fundamental component of the educational process by integrating technology into the curriculum, providing people with access to tools and chances for personal development all throughout their lives. Fostering a growth mind-set, in which educators and students alike accept ongoing learning, adaptability, and skill development, is one of the main goals of the National Education Policy. Research and development (R&D) in IT education is essential to this objective, and the policy places a strong emphasis on encouraging innovation and skill-based learning, which aids students in gaining both theoretical understanding and real-world experience in technology-related domains. This is in line with worldwide educational trends that place a growing emphasis on practical experience and employable skills. Nonetheless, there are significant obstacles to integrating IT into education, especially at the fundamental level. Particularly in poor and rural locations, where students may not always have access to computers, the internet, or even electricity, access to digital resources continues to be a major obstacle. Inadequate hardware and software infrastructure make it difficult to deliver technology-based learning experiences effectively. Additionally, a crucial element is the readiness of the teachers. It's possible that many teachers lack the skills or self-assurance necessary to incorporate new technologies into their lesson



plans. Furthermore, the quick speed at which technology is developing presents a difficulty in maintaining current methodology and instructional content. Notwithstanding these challenges, National Education Policy 2020's goal of a creative, skill-focused, and digitally inclusive educational system has enormous potential to revolutionize IT education nationwide. National Education Policy 2020 can have a big impact on how Indian education develops in the future by tackling these issues with focused expenditures in infrastructure, teacher preparation, and resource accessibility. The National Education Policy 2020 is a groundbreaking law that has the power to completely change IT education in India. It prepares the way for a more creative, inclusive, and forward-thinking educational system by highlighting the combination of digital literacy, cutting-edge technology, and skill-based training. By ensuring that students have the skills necessary to succeed in a technologically advanced world, this goal is in line with the worldwide movement toward digital empowerment and lifelong learning. However, resolving significant implementation issues is essential to achieving National Education Policy 2020's objectives. These include making sure that everyone has access to digital tools and filling in infrastructure gaps, especially in underserved and rural areas. Additionally, in order to close the gap between technical breakthroughs and their real-world implementation in classrooms, good teacher training in digital pedagogy is crucial. It is impossible to overestimate the importance of digital education and skill development; they are essential to the success of the policy and the expansion of IT education in India as a whole. National Education Policy 2020 may successfully develop a workforce that is more tech-savvy, skill-oriented, and digitally literate if these issues are systematically addressed. This will enable future generations to succeed in the rapidly changing digital economy.

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