



Role of Digital Technologies in Transforming Teacher Education (NEP 2020 Context): A Survey-Based Study

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Abstract

The shift to using digital technologies in teaching and learning has greatly changed how teachers teach. Particularly, this has had a huge impact on Teacher Education in India considering the National Education Policy (NEP) 2020. In this paper we show how digital technology and platforms are changing how teacher education takes place in India. In order to do this, we analyze data derived from 145 surveys completed by various participants. This paper examines how teachers use digital technology; whether they are aware of the NEP 2020; how effective online learning has been; and what challenges they experience while using digital technology. The major findings of this study indicate that digital technology provides increased accessibility, flexibility and engagement in teacher education. However, there continue to be challenges to using these technologies; these include the digital divide between urban and rural areas; inadequate training for teachers; and lack of infrastructure. Consequently, this study concludes that while the NEP 2020 presents a progressive vision for achieving educational reform; the final outcome will depend on successful implementation by way of adequate funding, training, and equitable access to digital resources.

Keywords: NEP 2020, Teacher Education, Digital Technology, Digital Learning, Blended Learning, Online Education, Educational Technology, Digital Pedagogy, E-learning.

1. Introduction

Advances in technology have changed the way we learn; therefore, educators will need to be trained to use technology effectively in their classrooms. The NEP 2020 has encouraged this shift by providing educators with guidelines about implementing technology in the classroom and providing them with training to help prepare them to teach effectively with digital methods.

Preparing educators to effectively use digital teaching methods is critical to creating the future of education. The expectation will be that educators have the ability to provide students with more innovative methods of delivering instruction, as well as developing interactive classrooms by effectively using technology in their classroom instruction. Digital tools such as multimedia, online learning platforms, AI, and virtual classrooms will become standard practices in 21st century education.

This research investigates the impact of digital technology on teacher preparation and the role of the NEP 2020 in supporting this transition.

2. Objectives of the Study

- To analyze the effect of digital technology within teachers' training programs.
- To study the impact of digital platforms on teaching and learning.
- To assess awareness of NEP 2020 among respondents.

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- To identify challenges in digital education.
- To provide suggestions for improvement.

3. Research Methodology

- Research Design:** Descriptive
- Data Type:** Primary Data
- Data Collection Tool:** Structured Questionnaire (Google Form)
- Sample Size:** 145+ respondents
- Sampling Method:** Convenience sampling

The collected data was analyzed using descriptive methods to identify patterns and trends.

4. Literature Review

NEP 2020 includes technology as part of the Framework for reforming Education. Research shows that teacher education must change by integrating digital literacy, blended learning, and using AI tools in addition to traditional Teacher Education methods.

A Technology Integration Study supports the fact that NEP 2020 encourages an experiential and inquiry-based approach to learning and that technology plays a crucial role in supporting student engagement and increasing access to those engaging in that process. Research also indicates that although digital platforms such as DIKSHA and NISHTHA

have been developed and they are considered widely to be useful, there is still inconsistency with regards to their use in the field due to lack of infrastructure and insufficient training of teachers who are utilizing these platforms.

Technology has been shown to positively impact student outcomes by providing opportunities to innovate with pedagogically sound practices and using interactive environments to engage students in learning and improve student outcomes. The successful integration of technology into the classroom is dependent on the teachers' ability to incorporate technology successfully, teachers have access to digital infrastructure, and teachers are provided with permanent professional development opportunities.

5. Role of Digital Technologies in Teacher Education

i). Digital Learning Platforms

Digital platforms like:

- DIKSHA
- SWAYAM
- NISHTHA

These platforms provide:

- Online course offerings
- Teaching materials
- Professional development modules

These digital platforms support teachers in their efforts to enhance their skills through the ability to learn at their convenience.

ii). Blended Learning and Online Education

The National Education Policy (NEP) 2020 supports a blended approach of combining both online and offline forms of instruction.

Some of the advantages of a blended approach to education include:

- Greater flexibility in how students learn
- Opportunities for self-paced learning
- Increased availability of high quality instructional materials
- Access to interactive and experiential teaching methods

iii). Artificial Intelligence and Smart Technologies

AI technologies will:

- Create individualized learning experiences for students
- Automate student assessments
- Provide data-driven performance evaluations for teachers

All of this will help to develop better teaching techniques and improve student results.

iv). Digital Pedagogy and Innovative Teaching

Digital technology provides:

- Interactive classrooms,
- Multi-media learning,
- Simulated teaching
- The use of games as a method of instruction.

These types of teaching and learning methods will help improve student engagement and student comprehension.

v). Professional Development of Teachers

Through technology, teachers can further their CPD through access to:

- Online workshops
- Certifications
- Webinars
- Training

Teachers can continuously upgrade their skills.

6. Benefits of Digital Technologies in Teacher Education

- i). Accessibility:** Providing access to Education in Remote and Rural Areas
- ii). Flexibility:** Providing Learning 24/7
- iii). Personalized:** Providing teaching that is designed for the Individual based on the needs of that individual.
- iv). Engagement:** Providing learning that is Interactive and Multimedia Based.
- v). Efficiency:** Providing Faster 2-way Communication and Evaluation

The National Education Policy 2020 acknowledges that Technology is a tool for Inclusion and Quality Improvement for Teacher Preparation.

7. Challenges in Implementation

Despite its advantages, several challenges exist:

i). Digital Divide

- Lack of internet access in rural areas
- Inequality in device availability

ii). Lack of Training

- Teachers lack digital skills
- Limited exposure to digital pedagogy

iii). Infrastructure Issues

- Poor connectivity
- Limited digital resources

iv). Resistance to Change

- Traditional mindset
- Hesitation in adopting new technologies

8. Survey Data Analysis and Interpretation

i). Demographic Analysis

Age Distribution: Most of the respondents are in the 18-25 age group; most of the remaining respondents are in the 26-35 age group and then in some of the other categories.

Explanation: Younger people tend to use digital areas more often than older people making them the best group to respond to digital education trends.

Gender Distribution: The majority of the respondents were female while there were only a couple of male participants.

Explanation: The results suggest that, on average, the participation of female students compared to that of male students in academic surveys, as well as digital learning is significantly greater than that of males.

Occupation

- Students – Majority
- Employed – Moderate
- Self-employed – Some
- Unemployed – Few

Explanation:

Students form the largest group, reflecting the relevance of

digital education in academic environments.

ii). Usage of Digital Technologies

Q1: Do you use digital platforms for learning?

Responses:

- Yes – Majority
- No – Very few

Explanation:

This shows that digital platforms have become an essential part of education.

Q2: Which platforms do you use most?

Responses:

- YouTube – High
- Google Classroom – Moderate
- Zoom/Meet – Moderate
- Educational Apps – Some

Explanation:

YouTube is preferred due to free access and diverse content, while platforms like Zoom are used for live classes.

Q3: Daily Time Spent on Digital Learning

- 1–3 hours – Most common
- 3–5 hours – Second highest
- More than 5 hours – Some users
- Less than 1 hour – Few

Explanation:

Moderate to high usage shows dependence on digital tools for education.

iii). Impact of Digital Technologies

Q4: Do digital technologies improve learning?

Responses:

- Yes – Majority

Explanation:

Digital tools make learning interactive, flexible, and engaging.

Q5: Benefits of Digital Technologies

- Easy access to information

- Flexible learning
- Interactive content
- Time-saving

Explanation:

Digital education allows students to learn at their own pace with better resources.

Q6: Challenges Faced

- Poor internet connectivity
- Lack of technical knowledge
- Distractions
- Limited resources

Explanation:

Despite benefits, technical and infrastructural issues remain major barriers.

iv). Awareness of NEP 2020

Q7: Are you aware of NEP 2020?

- Yes – Majority
- No – Some

Explanation:

Awareness is growing but still not universal.

Q8: Does NEP 2020 promote digital education?

- Yes – Majority

Explanation:

Respondents recognize NEP's focus on technology integration.

v). Suggestions by Respondents

- Improve internet access
- Provide teacher training
- Increase digital resources
- Promote practical learning

Explanation

Respondents emphasize infrastructure and training as key improvement areas.

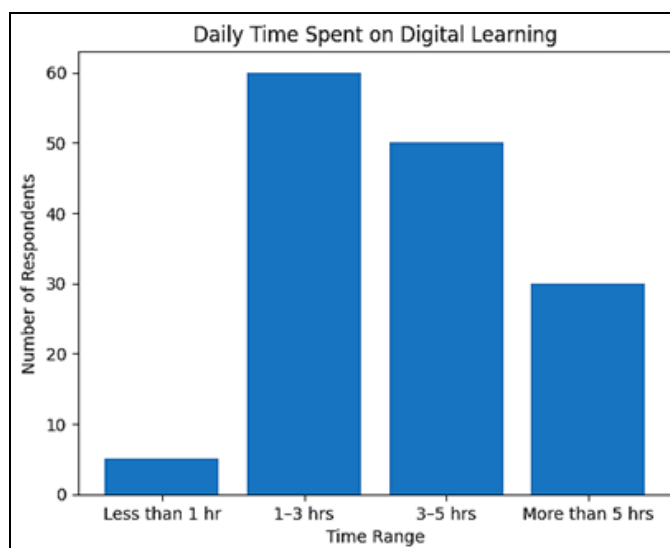
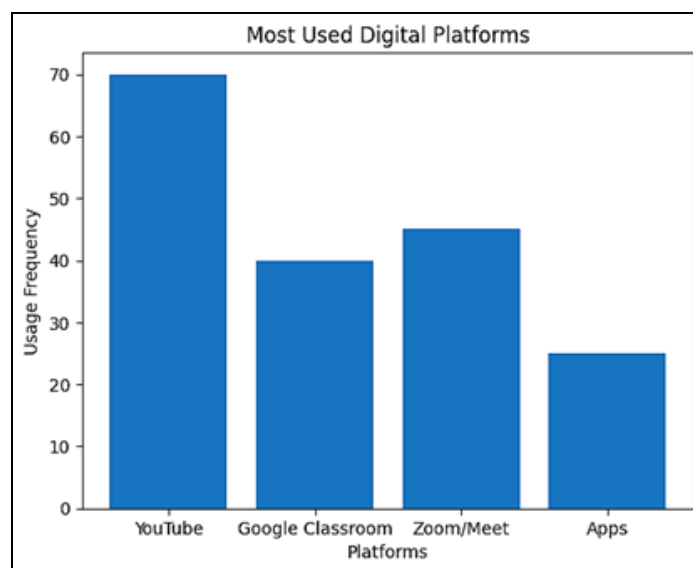


Chart 1: Daily Time Spent on Digital Learning

Insight:

- Majority of respondents fall in 1–3 hours
- Followed by 3–5 hours

- Shows moderate to high dependency on digital learning

**Chart 2:** Most Used Digital Platforms**Insight:**

- YouTube is the most used platform
- Followed by Zoom/Meet and Google Classroom
- Educational apps are used but less frequently

9. Discussion

The studies indicate that digital technologies have become an integral part of today's educational systems specifically within the context of teacher preparation in accordance with NEP 2020. The majority of survey respondents indicated they regularly utilize digital platforms like online educational tools, virtual classrooms, and multimedia resources in their curriculum delivery. Widespread adoption implies that digital technologies are now essential rather than ancillary to effective teaching/learning. Moreover, survey respondents indicated these types of technologies enhance learning outcomes through creating a more interactive, flexible, and accessible learning environment. The use of features such as recorded lectures, real-time communication, and access to an array of different types of learning materials is attributed to improved understanding and retention of knowledge.

Despite the numerous advantages offered by digitally transforming education, many obstacles still exist which limit full realization of the potential of digital technology within education. A major obstacle is the lack of adequate infrastructure (e.g., reliable internet connectivity) particularly in rural and economically disadvantaged communities. This digital divide creates significant disparities between student/teacher educational opportunities. A second obstacle is that many educators are not adequately trained or digitally literate making it difficult to effectively integrate technology into their teaching practices. A third challenge to adopting digital innovations is the resistance to change and reliance on traditional instructional methods.

10. Conclusion

Through this Research project, I will critically evaluate how digital technology is contributing to teacher education reform, regarding the National Education Policy (NEP) 2020. Results of this research indicate that Digital Technology has been one

of the core principles of contemporary education, resulting in a movement away from traditional, teacher-centred pedagogy to dynamic, student-centred pedagogy. Utilising Online Learning platforms, Virtual Classrooms, Multimedia resources and Interactive Apps have all increased access, flexibility, and responsiveness in the curriculum delivery process.

Results collected through questionnaires showed that the majority of respondents were actively using digital platforms, and they believed that using digital platforms improved learning outcomes. Digital technology enables learners to learn at their own rate; provides learners with access to various educational materials; and facilitates innovative pedagogical advances including: Blended Learning, Flipped Classroom Models of Education, etc. The research findings reflect the NEP 2020's goals of integrating technology into a system of education designed to provide Inclusive, Equitable, and Quality educational experiences for all learners.

11. Recommendations

- Provide digital training programs for teachers.
- Improve internet and infrastructure in rural areas.
- Encourage blended learning models.
- Promote AI and innovative teaching tools.
- Ensure equal access to digital resources.

12. Survey Questionnaire

- What is your age group?
- What is your gender?
- What is your occupation?
- Do you use digital platforms for learning?
- Which platforms do you use most?
- How many hours do you spend on digital learning daily?
- Do digital tools improve learning?
- What benefits do you experience?
- What challenges do you face?
- Are you aware of NEP 2020?
- Does NEP promote digital education?
- What improvements are needed?

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