

Original Research Article

Digital Pedagogy Fostering Learning Motivation in Teacher Education: Challenges and Opportunities

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Abstract: Digital pedagogy has become an essential tool in the education sector, offering opportunities to enhance student engagement, creativity, and access to knowledge. This study has investigated the use of digital pedagogy in teacher education programmes, focusing on its potential to boost learning motivation among prospective teachers, thereby creating more dynamic and personalized learning environments. The study has analysed digital pedagogy and teacher education documents, emphasizing its growing importance for adapting to technological advancements, enhancing learning opportunities, supporting personalized learning, developing digital literacy, preparing educators for remote teaching, and promoting global learning. The findings of the study have been disclosed that digital pedagogy significantly enhances learning motivation among prospective teachers by offering engaging, flexible, and meaningful learning experiences. Interactive tools such as gamification, virtual simulations, and collaborative platforms allow learners to actively participate and experience the practical relevance of what they are studying. Personalized learning paths, access to diverse resources, real-time feedback, and innovation and creativity support both professional growth and student engagement. Digital pedagogy can transform teacher education by fostering motivation and innovative teaching approaches. However, challenges include unequal access to technology, lack of digital literacy, inadequate support, and challenging assessments. A balanced approach, including technology investment, professional development, and self-directed learning can prepare future educators.

Keywords: Digital Pedagogy, Learning Motivation, Challenges, Opportunities, Teacher Education.

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1. INTRODUCTION

Digital pedagogy has become a crucial element in transforming teaching and learning processes, offering new opportunities for student engagement, creativity, and knowledge access. As the world becomes increasingly digitalized, it is essential to explore how digital tools can be used effectively to promote learning motivation, especially in teacher education. The digital revolution is rapidly transforming education, making it more affordable and accessible, thereby enhancing the learning experience for students (Cañas, *et al.*, 2003; Qureshi *et al.*, 2021; Yordanova, 2007; Haleem, 2022). Future teachers need not only subject knowledge but also pedagogical skills to engage students in the digital age. They are tech-savvy, utilizing new technologies like the internet, video games, and mobile devices, demonstrating a distinct approach from their predecessors to processing information and thinking

(Bolton, *et al.*, 2013; Prenksy, 2001; Venter, 2016; Sailin & Mahmor, 2018). Digital pedagogy, which blends traditional teaching methods with technological advancements, can enhance teacher education programmes by providing dynamic, interactive, and personalized learning experiences. In contrast, integrating digital pedagogy in teacher education presents challenges.

This study aimed to explore the opportunities and challenges associated with implementing digital pedagogy in teacher education. This research explored the use of digital pedagogy in teacher education programmes, focusing on its impact on pre-service teachers' learning motivation. It aimed to identify best practices and insights for integrating digital resources into curricula. The study also addresses potential obstacles, such as technological, institutional, and

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pedagogical barriers, and proposes solutions. The research contributes to the ongoing discourse on the role of technology in education and provides a roadmap for improving teacher education through the effective use of digital pedagogy.

2. Research Questions

Following research questions have been formulated on the basis of objectives of the study –

- i. Why is digital pedagogy important in teacher education?
- ii. How can digital pedagogy foster learning motivation among prospective teachers?
- iii. What are the challenges of digital pedagogy fostering learning motivation in teacher education?

- iv. What are the opportunities of digital pedagogy fostering learning motivation in teacher education?

3. DESIGN AND METHODOLOGY

This study adopted a qualitative approach supported by survey method to explore the key challenges and opportunities of digital pedagogy fostering learning motivation in teacher education. To conduct in-depth study in real life situation, data have been collected from key respondents like teacher educators and prospective teachers of teacher education institutions where digital pedagogy is implemented to teaching education.

Study Area

The study area chosen for the present study is Nadia district of West Bengal, India.

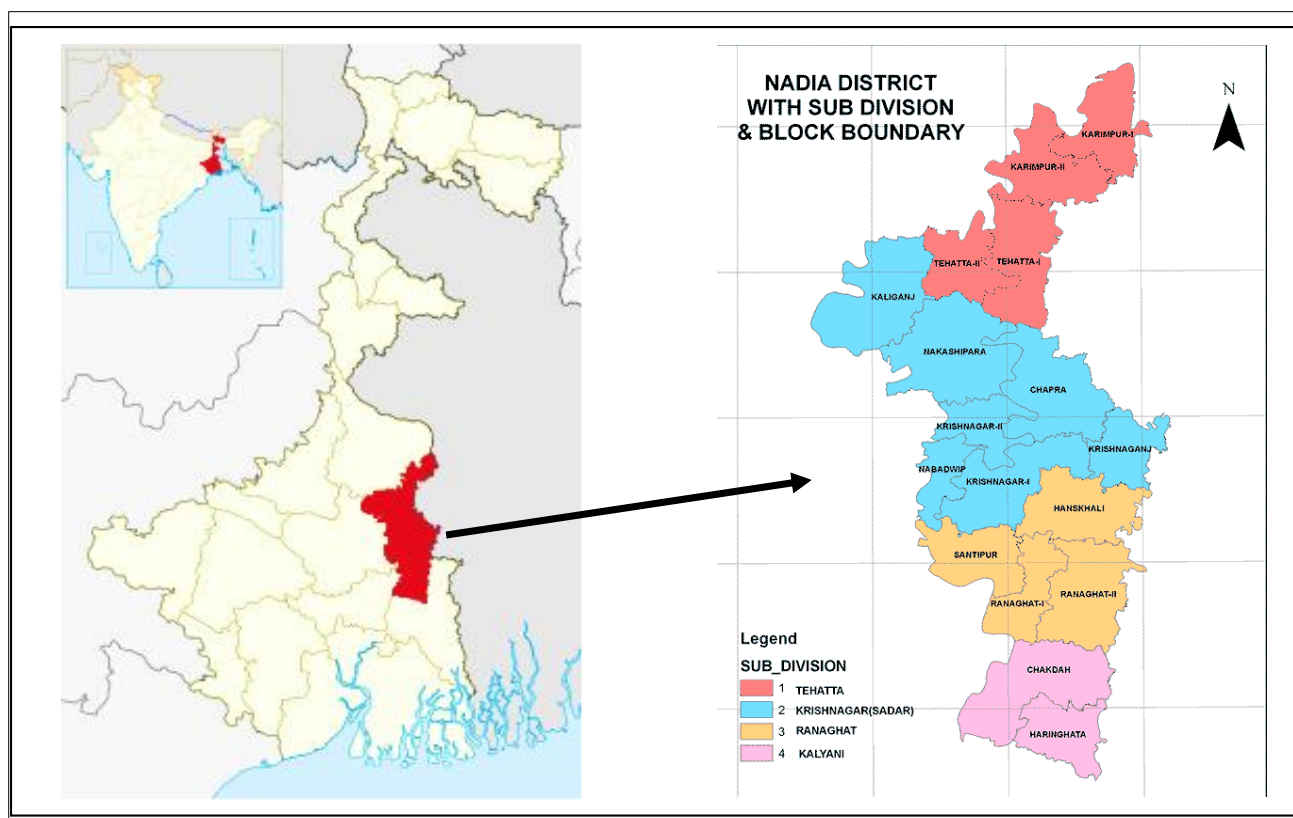


Figure 1: Map of Nadia District, West Bengal

Source: <https://www.spadeglobal.org/about-us/history/map-nadia/>

Data Sources

- **Key Participants-** The study has involved ten (10) teacher educators and sixty-eight (68) prospective teachers by using a purposive sampling technique from two (02) teacher education institutions of Nadia district, West Bengal, where digital pedagogy techniques are implemented during teaching to the pupils/students.

Tools Used

- i. **Observation**—Real classroom practices using digital tools were observed.
- ii. **Survey Questionnaire** – Two open-ended questionnaires were developed to collect data from teacher educators and prospective teachers.

4. Data Collection Method

Data collection for this study followed a structured process. *Firstly*, using purposive sampling

technique, ten (10) teacher educators and sixty-eight (68) prospective-teachers were selected from two (02) teacher education institutions of Nadia district, West Bengal. Two open-ended questionnaires and one observation schedule were developed to gather qualitative data. Field visits were conducted to administer the survey and observation schedule use to observe real life classroom practices using digital technology to assess the key challenges and opportunities in implementing digital pedagogy in teacher education. In this situation, field notes were kept confidential and used only for research purpose.

Ethical considerations included informed consent, participant confidentiality, voluntary participation, and institution anonymity.

5. Data Analysis Technique used

In this study, researchers have employed survey and observation techniques to gather data, which were subsequently analysed using thematic analysis to uncover patterns and themes within the qualitative data. The data were meticulously organized and refined through coding and categorization, leading to the identification of key themes associated with various dimensions such as the importance, role, challenges, and opportunities of digital pedagogy to fostering learning motivation within teacher education. Additionally, cross-case analysis was conducted to discern patterns and differences, while the triangulation method was utilized during the data analysis process to ensure robustness and validity of the findings.

6. FINDINGS AND DISCUSSION

6.1 Importance of Digital Pedagogy in Teacher Education

In teacher education digital pedagogy is crucial for several reasons:

Adapting to Technological Advancements

Technology integration involves understanding the interplay between Content, Technology, and Pedagogy. The TPCK framework emphasizes that effective teaching is not merely about adding technology to existing methods; rather, it transforms conceptual representation and necessitates awareness of the dynamic relationships among the three components (Koehler & Mishap, 2005). Prospective teachers must prepare to incorporate digital tools into their teaching as technology evolves, understanding their role in tech-oriented classrooms (Satapathy, 2022). Prospective teachers are more equipped for the tech-driven classrooms of the future thanks to digital pedagogy, which gives them the tools they need to use educational technology efficiently.

Enhancing Learning Opportunities

Digital pedagogy works in a constructive approach, in which students construct their own knowledge in a social context (Satapathy, 2022). Students can benefit from a variety of interesting

learning opportunities offered by digital resources. They enable worldwide cooperation, virtual field trips, and interactive, multimedia-based instruction, all of which can increase students' interest and comprehension of the material.

Personalized Learning

Technology allows teachers to customize lessons to meet diverse student needs, such as adaptive learning technologies, which provide tailored pathways for different learning styles and paces.

Building Digital Literacy

Digital pedagogy in teacher education programmes enhances educators' digital literacy, encompassing ethical considerations, data privacy, and digital citizenship, crucial for preparing students for the digital world.

Preparing for Remote and Hybrid Learning

Events like the COVID-19 pandemic hastened the shift to remote and hybrid learning methods, demonstrating the need for digital pedagogy. Teachers with education in digital pedagogy are better equipped to oversee virtual classes and promote efficient collaboration and communication.

Promoting Collaboration and Global Learning

Teachers can engage with students and other educators worldwide through digital tools. Digital pedagogy-infused teacher education programmes help students develop the global perspective and teamwork abilities that are critical for teachers in diverse, networked classrooms.

Supporting Teacher Reflection and Growth

Teachers can frequently participate in reflective activities through digital platforms, such as blogs, online groups, or digital portfolios. These resources promote professional growth, ongoing education, and the exchange of best practices.

Digital pedagogy is crucial in teacher education as it equips future educators with technology skills, supports personalized and inclusive learning, and prepares them for the evolving educational landscape.

6.2 Role of Digital Pedagogy Fosters Learning Motivation among Prospective Teachers

The following are several ways through which digital pedagogy can significantly foster learning motivation among prospective teachers:

Engagement through Interactive Tools

Digital tools like gamification, interactive simulations, and virtual learning environments enhance student learning, boosting motivation among prospective teachers who actively participate in these environments to experience firsthand how these tools can be used effectively. Google Classroom Contemporary modalities

for virtual education, such as Massive Open Online Courses (MOOCs) platforms, utilize ICT to provide electronic materials, e-books, videos, and e-transcripts, facilitating flexible and adaptable learning (Kumar, 2024; Froehlich, 2023). This flexibility maintains motivation by allowing teachers to focus on relevant or challenging areas.

Collaboration and Networking

Digital platforms enable teachers to collaborate with peers, mentors, and global educators, fostering a sense of community and motivation to continue learning, as they feel part of a broader educational movement. Virtual learning tools can enhance academic performance, foster collaborative learning through peer participation, and hold teachers accountable for their students' learning (Wu, *et al.*, 2017; Akujieze, 2024).

Access to a Variety of Resources

Digital pedagogy offers a diverse range of resources like videos, eBooks, podcasts, webinars, and articles, motivating teachers by offering diverse learning methods and fostering a fresh and exciting learning experience.

Real-World Relevance

Digital tools can bridge the gap between theoretical knowledge and practical application, enabling teachers to create lesson plans, teach simulations, and interact with virtual students, making learning more practical and aligned with real-world teaching, increasing motivation.

Immediate Feedback

Digital tools provide real-time feedback, enabling teachers to identify areas for improvement and boost motivation by allowing learners to track their progress and continuously improve their skills.

Self-Directed Learning

Digital pedagogy promotes self-directed learning, empowering teachers to manage their own learning journey, which can boost intrinsic motivation and foster student engagement.

Innovation and Creativity

Digital platforms foster innovation, enabling teachers to explore innovative teaching methods and technologies, thereby motivating those who value creativity and sparking passion for teaching and learning.

Inclusive Learning

Technology can enhance inclusive learning environments by providing accommodations for disabled students and enabling prospective teachers to learn about inclusive teaching practices, thereby boosting motivation for those passionate about equity in education.

Exposure to Global Trends

Digital pedagogy enables teachers to stay updated on global educational trends and innovations, enabling them to incorporate best practices and new technologies into their teaching, preparing them for the ever-changing education landscape.

Digital pedagogy integrates various aspects to enhance the connection, support, and capability of potential teachers, thereby boosting their motivation to learn and grow as educators.

6.3 Challenges of Digital Pedagogy Fostering Learning Motivation in Teacher Education

Digital pedagogy faces challenges in enhancing learning motivation in teacher education, despite its potential for innovation and engagement. Barriers such as lack of resources, lack of motivation among prospective teachers, and lack of support can hinder its effectiveness.

Technological Access and Equity

The digital divide, where not all students or teachers have equal access to digital technologies, can lead to disparities in learning opportunities and motivation, particularly in low-income or rural areas, causing disengagement and reduced motivation to fully participate in digital learning environments.

Digital Literacy and Confidence

Teacher candidates may struggle with digital literacy, leading to feelings of overwhelm or frustration with technology, especially if introduced abruptly or without proper education. This lack of confidence can cause resistance, anxiety, and disengagement from learning activities, ultimately reducing motivation.

Pedagogical Education and Support

Many teacher educators lack sufficient education in digital pedagogy or are unfamiliar with integrating digital tools into their teaching practices. This lack of guidance can lead to ineffective teaching and decreased student motivation, as teachers may not design engaging and student-centred digital learning experiences.

Overload of Digital Tools

The abundance of digital tools and platforms can be overwhelming for teacher candidates and educators, making it difficult to choose the right tools for specific educational goals. Exposure to too many tools can lead to confusion and frustration, reducing motivation to engage in learning.

Lack of Personalization

Digital learning environments often lack personalization, making it difficult to cater to individual teacher candidates' unique needs and interests. This can lead to disengagement and decreased motivation, as

learning materials and activities may feel irrelevant or one-size-fits-all.

Imbalanced Focus on Technology vs Pedagogy

Digital pedagogy faces challenges due to its focus on technology rather than its ability to support effective teaching and student engagement. Its use for its own sake can detract from teacher education's deeper goals and diminish motivation by not aligning with meaningful learning experiences.

Assessment Challenges

Digital assessments pose a challenge in delivering engaging and meaningful learning experiences due to unclear evaluation methods and potential unfairness or disconnect from real-world teaching practices, potentially leading to demotivation among teacher candidates.

Student Autonomy and Agency

Digital learning environments can hinder active participation and self-directed learning if content delivery is prioritized over interaction or collaboration. This can lead to a decline in intrinsic motivation among teacher candidates, as they may feel passive consumers of content, lacking opportunities to contribute ideas or engage in meaningful collaboration.

Instructor and Peer Interaction

Digital environments can decrease interaction between students and instructors, affecting motivation in collaborative learning programmes. Additionally, feelings of isolation or disconnection can decrease students' engagement in the learning process.

Emotional Engagement

Digital learning environments often lack the emotional and relational connections that in-person teaching can provide, making it difficult for teacher candidates to feel emotionally engaged or supported. This lack of emotional connection can lead to disengagement and reduced motivation to persist in the learning process.

6.4 Opportunities of Digital Pedagogy Fostering Learning Motivation in Teacher Education

Digital pedagogy offers numerous opportunities to boost teacher education's learning motivation, including key opportunities.

Personalized Learning

Digital tools enable personalized learning experiences, allowing teachers-in-education to access resources tailored to their needs. Adaptive learning software, which offers challenges and rewards based on performance, helps maintain motivation by offering appropriate challenges.

Engagement through Interactive Tools

Digital pedagogy utilizes interactive tools like simulations, gamification, and collaborative platforms to enhance learning and motivation. Virtual classrooms and game-based environments provide fun and immersive learning environments for teachers-in-education to develop their skills.

Access to Diverse Resources

Teacher education programmes utilize digital resources like e-books, educational videos, podcasts, and online courses to cater to diverse learning styles and keep students motivated by allowing them to explore subjects from different perspectives and choose stimulating learning materials.

Flexible Learning Environment

Digital pedagogy encourages asynchronous learning, allowing learners to access content and participate at their own pace, which boosts motivation, reduces stress, and empowers teachers-in-education, resulting in increased motivation and engagement, especially for adult learners or those balancing work and study.

Collaborative Learning Opportunities

Digital platforms facilitate local and global collaboration, fostering a sense of community and shared purpose in teacher education programmes. Engaging in meaningful dialogue and problem-solving increases learners' sense of belonging and motivation to succeed, enhancing their learning experience.

Instant Feedback and Recognition

Digital tools provide immediate feedback, motivating teachers-in-education through real-time assessments and recognition through badges, certifications, or progress trackers, enabling them to quickly understand their strengths and areas for improvement, reinforcing a learner's sense of achievement.

Preparation for Real-World Teaching

Digital pedagogy involves the use of digital technologies in future classrooms, enhancing teachers' confidence and readiness to integrate these tools. This hands-on experience boosts motivation to master these tools and effectively apply them in their own educational settings.

Fostering Creativity and Innovation

Digital environments enable teachers to explore various teaching styles and creative approaches, fostering innovation and confidence in their methods. This freedom allows teachers to try new ideas without fear of failure.

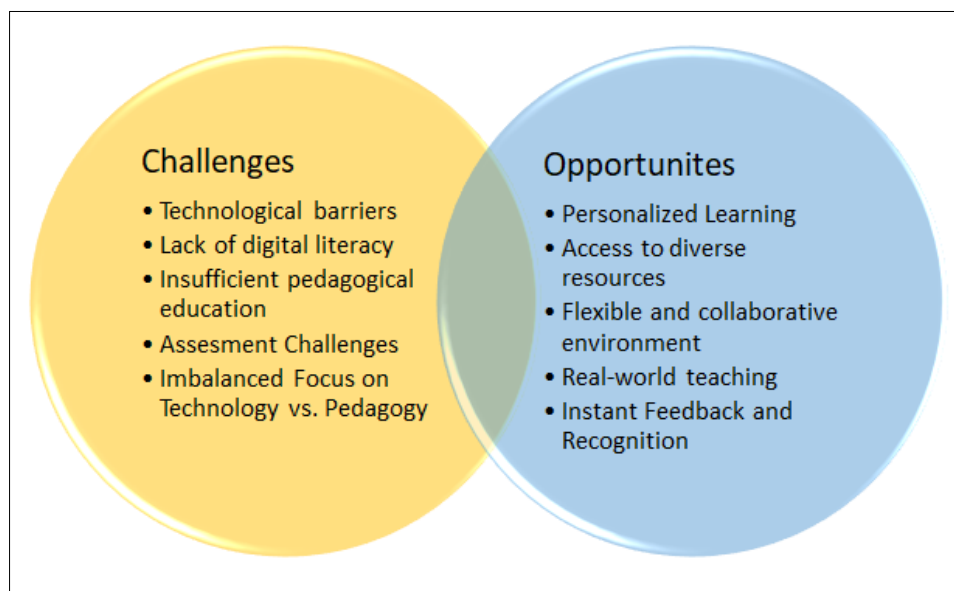
Global Perspectives and Networking

Digital platforms enable teacher education programmes to connect learners with global experts,

mentors, and peers, fostering motivation and professional growth. Exposure to diverse teaching methodologies and educational systems inspires teachers-in-education, promoting a sense of purpose and purpose in their learning process.

Incorporating Reflective Practices

Digital tools like blogs, podcasts, and portfolios enable reflective practices, allowing teachers-in-education to regularly evaluate their learning journey and document progress, fostering metacognition, and ensuring learners remain focused and motivated.



Implementing comprehensive professional development for educators in digital pedagogy, ensuring equitable access to technology, and fostering a learner-centered approach are crucial for overcoming challenges in the digital age. These strategies can support teacher candidates in developing motivation and skills for effective teaching.

Digital pedagogy fosters motivation in teacher education by personalizing learning, facilitating collaboration, offering immediate feedback, and providing access to resources. This approach prepares future educators for the challenges and opportunities of modern classrooms by creating an engaging, flexible, and inclusive learning environment.

7. Recommendations

To effectively foster learning motivation in teacher education, a comprehensive approach (that considers both technological and pedagogical aspects) is necessary.

- **Ensuring Equitable Access to Technology:** Implementing technology-based solutions for prospective teacher educator, including access to necessary devices and reliable internet, can improve engagement and motivation, level the playing field, and foster collaboration with local communities.
- **Developing Digital Literacy Skills:** Implement digital literacy education in teacher education programmes, focusing on tool usage, evaluation, and resource selection, to boost teachers' confidence and motivation in integrating digital tools into their practice.

- **Providing Professional Development for Educators:** Implement professional development for teacher educators to familiarize them with digital tools, platforms, and pedagogies, and design engaging, student-centered digital learning experiences.
- **Curating and Limiting Tools to Avoid Overload:** Reduce tool overload in the program by focusing on versatile, user-friendly, and aligned pedagogical tools, allowing teacher candidates to concentrate on mastering a few high-impact options.
- **Personalizing Learning Experiences:** Implement adaptive learning technologies for personalized learning paths and differentiated instructional strategies in digital environments, encouraging self-directed learning and motivation by making content relevant and engaging.
- **Balancing Technology with Pedagogy:** Align technology with pedagogical goals to enhance learning outcomes, collaboration, and engagement. This approach motivates students, makes education more engaging, purposeful, and connected to real-world teaching practices.
- **Redesigning Assessment Models:** Implement formative, interactive, and reflective assessments, incorporating digital portfolios, collaborative projects, and peer evaluations, to enhance student motivation and align with professional goals.
- **Promoting Autonomy and Active Participation:** Encourage active participation and self-directed learning in digital environments, fostering autonomy for teacher candidates and students,

enhancing intrinsic motivation and promoting meaningful learning.

- **Fostering Interaction and Community:** Implement interactive platforms like discussion boards, group projects, and video conferencing to foster community and belonging among peers and instructors, enhancing motivation and engagement among students.
- **Addressing Emotional and Social Engagement:** Implement strategies to foster emotional connections in digital learning environments, including interactive discussions, personalized feedback, and mentorship, to boost motivation and student engagement.
- **Encouraging Reflective Practices:** Regular reflection on digital learning experiences and teaching practices can enhance teacher candidates' motivation and professional growth, as it connects their education to their professional growth.
- **Incorporating Real-World Authentic Learning Experiences:** Implement case studies, simulations, and collaboration opportunities in teacher preparation programmes to engage students with real-world challenges, boosting motivation and investment in professional development.

8. CONCLUDING REMARKS

Teacher education programmes can effectively foster motivation in the digital age by balancing technological integration with meaningful, student-centered pedagogy. By thoughtful design, educators can create a digital learning environment that encourages engagement, collaboration, and continuous growth; ensuring teacher candidates have the necessary tools and support.

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