Bodhi International Journal of
Research in Humanities, Arts and Science

Vol. 10 Special Issue 2 March 2026
E-ISSN: 2456-5571

Digital Technology for Prospective Teachers Professional Development to Enhance Quality of Education

R.K. Radhika[1], G. Narmada Devi[1], R. Abinaya[1], V. Prawnya[1] & Dr. P.S. Sreedevi[2]

[1](Research Scholars), Department of Education, Gandhigram Rural Institute (Deemed to be University), Dindigul District, Tamil Nadu- 624302, India

[2]Professor, Department of Education, Gandhigram Rural Institute (Deemed to be University), Dindigul District, Tamil Nadu- 624302, India

Crossref doi
Open Access

Manuscript ID:
BIJ-SPL2-MAR26-EDU-048

Subject: Education

Received : 23.01.2026
Accepted : 08.02.2026
Published : 20.03.2026

DOI: 10.64938/bijsi.v10si2.26.Mar048

Copy Right:

This work is licensed under
a Creative Commons Attribution-
ShareAlike 4.0 International License.

Abstract

The present research article aims to obtain the professional development model needs of prospective teachers in mastering digital technology to improve the quality of education. Technology development in education has forced all parties to integrate various educational activities according to current conditions. The research method used mixed research involving qualitative and quantitative data analysis. Data were collected through a survey which was completed with observation and interviews. Analysis of qualitative data is in the form of narrative through data reduction, data presentation, and concluding stages. In contrast, quantitative data is the result of digital technology needs presented in percentages. The analysis results show that digital technology is still not fully used in pre- service teaching and learning activities. This also impacts prospective teachers' understanding of the technology application model in schools and students' achievement.

Keywords: digital technology, prospective teachers, teacher professional and quality education

Introduction

Everyone must possess the qualities necessary to compete and meet the demands of the ever-evolving global life. The provision of high-quality education is essential to the development of our country, India. A multitude of educational resources, including as webinars, online courses, and interactive platforms, are freely accessible through digital technologies and are crucial for the professional development of teachers. Teachers can collaborate in real time and share resources thanks to this technology, which promotes a community of practice that advances professional development (Potapchuk & Pukas, 2022). Teachers' proficiency with a variety of digital technologies, which are essential for developing captivating learning experiences, is greatly enhanced by professional education programs. Technology is included into teaching methods through training programs that promote a positive attitude toward it (Lee & Suh, 2024).

A strategy for reforming the Indian educational system has been outlined in the National Education Policy (NEP) 2020, with an emphasis on technological integration, experiential learning, and holistic development. Notwithstanding the advantages, obstacles including restricted access to

technology and instructors' differing degrees of preparedness may make it difficult to successfully incorporate digital technologies into professional development (Shvardak et al., 2024). Resistance to Change: Some educators may resist transitioning to digital environments due to comfort with traditional methods, highlighting the need for tailored support and training.

Even though digital technology has many benefits for teacher professional development, there are several obstacles that must be removed before it can be used effectively. This dual viewpoint emphasizes how crucial it is to have a supportive infrastructure and continual training in order to optimize the advantages of digital tools in education.The significance of digital education is acknowledged by NEP 2020, which also highlights the necessity of incorporating it within the curriculum. The main facets of high school digital education under NEP 2020 will be covered in this article. Thus, the roles, responsibilities, and places of teachers, teacher educators, and prospective teachers are highly strategic.

Therefore, four pedagogical competencies—personality, social, and professional—must be present in professional teacher qualifications. Professional competency necessitates qualified knowledge and the ability to stay abreast of scientific and technical advancements. Science and technological advancements have had a big impact on how professionally teachers conduct teaching an d learning. Both instructional and administrative tasks in educational institutions have been handled in the digital age.

Need and Significance of the Study

In the upcoming years, educational institutions have mandated that professors teach a variety of disciplines using digital technology. E-portfolios have been used to support professional development, for example. Teachers and teacher educators can carry out the professional job in teaching and learning activities in a variety of ways. In order for teachers to become skilled educators, every school must assist them in developing their professional identities (Yurinova et al., 2021). In this instance, teachers' professional identities are rooted in the manner they educate (Davey, 2013). The process of teacher professional learning is intricate and necessitates both individual and group cognitive and emotional engagement from instructors (Kabilan et al., 2025). Teachers must therefore continue to participate in ongoing professional development because classroom management and 21st-century teacher professionals are closely related to developing creative and innovative skills, communication, media awareness, computer literacy, artificial intelligence, and information technology.

Statement of the problem

An analysis of linked research shows that professional teachers' methods in the classroom are related. In this instance, the instructor effectively manages both teaching and learning in the classroom. Learning activities and the growth of learning communities are typically linked to professional development. Interest in transforming schools into learning institutions and providing instructors with structured means of exchanging knowledge and experiences is rising. This study looks at aspiring teachers' proficiency with technology, which is rapidly expanding and has an impact on educational activities. This is important because, currently, technological developments that continue to require the learning process to be carried out using digital technology tools as media. Teachers must present their lessons using digital platforms like Google Meet, Zoom, and Website Learning. Numerous technical applications, such as online learning materials, have also been made available by the government.

The outcomes of remarkable classroom observations and the creative advancements observed in citizens of the twenty-first century highlighted the necessity of teacher professionalism in the teaching and learning process to employ digital technologies from the pre-service teacher education period. Therefore, the purpose of this study is to improve the quality of education by assisting aspiring teachers in developing their professional skills in digital

technology. It is also anticipated that this research will give aspiring educators the digital tools they need to instruct in the classroom. However, the theme of this study is *"Digital Technology for Prospective Teachers Professional Development to enhance Quality of Education,"* which focuses on how future educators might improve the quality of education by learning digital technology.

Methodology

According to the context, this study examined the phenomena in the field using the survey method and the descriptive qualitative approach (Creswell, 1998).To find out what kind of professionalism teachers need while using digital tools for teaching and learning, research data was gathered. In this instance, the study investigates the experience and aptitude of aspiring educators in using the technological resources used in classrooms, particularly during learning activities. Thus, observations and interviews were used in the data collection method. Data reduction, data presentation, data analysis, and conclusion were all used to analyze the data, and percentage analysis was the statistical method employed.

In Balaramapuram, Thiruvananthapuram, Kerala, two teacher education institutions that offer Bachelor of Education (B.Ed.) and Diploma in Elementary Teacher Education (D.El.Ed.) programs on a single campus under the same management—the Pattom Thanu Pillai Memorial College of Education and the Pattom Thanu Pillai Memorial Institute of Teacher Education—were the sites of this study. The goal of the data collection was to determine how potential instructors use technology and mobile devices for the teaching and learning process. The simple random sampling technique was adopted, (N=26) student teachers was selected for the study from the two teacher education institutes were also given questionnaires and semi-structured interviews.

Findings of the Study

This information is derived from survey results using semi-structured interview questions and a Digi World for Prospective Teachers (DWPT) questionnaire to evaluate how teachers use digital technology in the teaching and learning process and to determine how professional they are in this area. Support for teachers or staff as they integrate technology into their changing methods of delivering education, from lesson planning and curriculum integration to administrative and record-keeping tasks, is part of professional development. The survey's findings are displayed as a percentage graph in Figure 1.

The figure makes it clear that teachers' proficiency with technology is still lacking. The chart's eleven indicators with low percentages demonstrate this. Technology proficiency is still lacking among aspiring educators. It has an impact on the expected level of digital literacy among aspiring educators. According to the results of the interviews, teachers also anticipate that the school would help them become more proficient with technology by doing different training exercises. The role of education for aspiring educators assist in their professional endeavours. In this instance, aspiring educators understand how crucial a variety of talents are to bolstering their career. In this instance, the professors are aware of the importance of both professional and personal technological mastery.

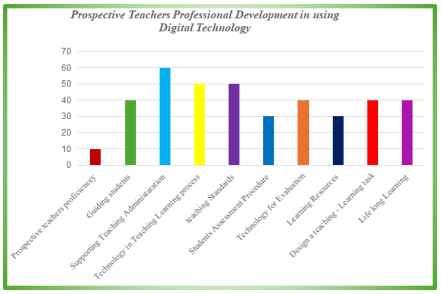

Fig.1: Prospective Teachers Professional Development in using Digital Technology

The fourth indicator shows that teachers are eager to use technology in their instruction. Technology is still rarely used in the classroom. Since the COVID-19 Act requires that teaching and learning activities be done at home, it goes without saying that using digital applications is essential to making learning activities easier for students.

However, as the fifth indicator states, technology should be included in the standard of instructional demands since digital technology-based learning activities are connected to student learning outcomes. Teachers have tried integrating technology into their lessons, even though learning activities haven't had a significant impact on students' learning results. Teachers can incorporate constructivist activities into their lessons.

In order to facilitate communication and engagement during the learning process, students can develop fundamental and important abilities.

As a result, aspiring educators lack the skills necessary to effectively use technology in instructional activities. It is evident from the manual instructional evaluation and learning outcomes assessment tasks.

Discussion

The survey results make it evident that all ten indicators have low percentage levels; additionally, aspiring teachers still have difficulty using digital technology as a learning resource; and, finally, the resources offered are limited to student worksheets and lack authenticity because they are presented outside of the context of the students' learning experiences. Additionally, everyone can now access information more easily thanks to technological advancements, and aspiring teachers need to participate in activities created by schools to enhance their professional competence in mastering technology. These activities can be used to explore learning resources, create learning assignments, or create learning media.

Educational Implications of the Study

Since the use of contemporary methods to focus on digital pedagogy, blended learning, and integrating tools like online platforms, multimedia, and data analytics has a crucial role for effective teaching, the current study emphasizes the necessity of moving away from traditional pedagogy and toward digital pedagogy for the development of future teachers. For teachers to keep up to date and confident, continuous and adaptive learning—which offers quick technological evolution—as well as ongoing, modular, needs-based training, such as virtual coaching and peer support, are essential. Although infrastructure and training investments are necessary to enable equitable access to high-quality digital teacher training and professional development, technology can help close gaps for underserved educators.

Suggestions for further research

Beyond short-term results, longitudinal studies can be carried out at the national administration level to monitor the long-term effects of digital teacher professional development on teachers' practice, student engagement, and accomplishment over a number of years. Investigations exploring successful methods for incorporating AI into teachers' professional development can be conducted at the stakeholder level, with an emphasis on enhancing teachers' critical thinking, AI literacy, and ethical application. Teachers or teacher educators might undertake projects at the state educational administrative level that compare how well various digital tools, such as e-portfolios, data analytics, virtual reality, and augmented reality, enhance particular teaching skills.

This study, however, is still restricted to examining the requirements for digital technology to enhance the professional skills of aspiring teachers. Therefore, more research can be conducted to find digital technology applications that meet the demands of today's educational activities for students. Furthermore, research can also be linked to other activities that improve digital technology proficiency based on the needs of educators.

Conclusion

The results of the study indicate that future teachers need professional development that integrates digital technologies. Prospective educators are aware that schools must promote the use of digital technology in education through a range of activities, including learning about various application models that can be used for classroom learning activities. Additionally, the level of current, pertinent knowledge and skills is

impacted by one's level of familiarity with digital technology.

As evidenced by the eagerness and enthusiasm of the aspiring teachers regarding digital technology knowledge that can be used in the classroom, it is hoped that the study has largely succeeded in highlighting various needs and requirements in various contexts, as well as by examining the range of challenges and the implications of the research findings. In addition to making teaching easier and more engaging, the researcher expects that the new study will assist aspiring educators acquire a good attitude toward digitalized teaching methods, which will help them become more qualified professionals who can help train future citizens.

References

1. Potapchuk, T., & Pukas, I. (2022). Digital Technologies In Professional And Pedagogical Development Of A Teacher. Research Notes, 1, 103–110. https://doi.org/10.31654/2663-4902-2022-pp-1-103-110
2. Lee, J., & Suh, S. (2024). AI Technology Integrated Education Model for empowering fashion Design ideation. Sustainability, 16(17), 7262. https://doi.org/10.3390/su16177262
3. Shvardak, M., Ostrovska, M., Predyk, A., & Moskovchuk, L. (2024). The use of digital technologies in professional training of primary school teachers. Lnternational Electronic Journal of Elementary Education. https://doi.org/10.26822/iejee.2024.337
4. Yurinova, E. A., Byrdina, O. G., & Dolzhenko, S. G. (2021). Transprofessional competences of school teachers in the digital environment: education employers' perspective. Education and Information Technologies, 27(2), 1841–1863. https://doi.org/10.1007/s10639-021-10687-w
5. Davey, R. (2013). The professional identity of teacher educators. https://doi.org/10.4324/9780203584934
6. Kabilan, M. K., Annamalai, N., & Yunus, Y. M. (2025). Navigating Policy and Practice: Examining the realization of Malaysia's Education Blueprint (2013–2025) for English teachers' continuous professional development. TESOL Journal, 16(3). https://doi.org/10.1002/tesj.70062
7. Creswell, J. W. (1998). Qualitative inquiry and research design: choosing among five traditions. http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BV B01&doc_number=014279495&sequence=000001&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA