

Original Article

Lived Experiences of Pre-Service Teachers in the Practice Teaching Using Technology-Based Pedagogy and Interactive Digital Tools

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Abstract

This study explored the lived experiences of pre-service teachers during practice teaching using technology-based pedagogy and interactive digital tools. A qualitative phenomenological research design was employed to understand how pre-service teachers experienced, adapted to, and coped with technology integration in real classroom settings. The participants were five selected graduates of Sultan Kudarat State University–Lutayan Campus who completed their practice teaching during the Academic Year 2024–2025. Data were collected using a validated semi-structured interview guide and analyzed through thematic analysis. Findings revealed that pre-service teachers experienced professional growth as they integrated technology into their teaching. The use of interactive digital tools, including Quizizz and Kahoot!, supported more engaging, interactive, and student-centered classroom experiences. However, participants encountered challenges such as limited technological infrastructure, unstable internet connections, equipment malfunctions, and varying levels of student digital literacy. To address these challenges, pre-service teachers relied on mentorship, peer collaboration, online resources, backup plans, and alternative teaching strategies. These experiences strengthened their adaptability, problem-solving skills, resilience, and professional competence. The study concludes that technology-based pedagogy and interactive digital tools offer valuable opportunities for pre-service teachers to develop their instructional practices and

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professional competence, but effective implementation requires adequate technological resources, institutional support, and ongoing training.

Keywords: Interactive digital tools, Philippines, phenomenological research design, pre-service teachers, student engagement, technology-based pedagogy

1. Introduction

Technology has become an important part of teaching and learning, providing teachers with different ways to present lessons, support classroom interaction, and engage learners. For pre-service teachers, learning to use technology in teaching is also an important part of their preparation, as they are expected to apply digital tools appropriately in classroom settings. Tondeur et al. (2012) emphasized the importance of preparing pre-service teachers to integrate technology into education, particularly through experiences that develop their knowledge, confidence, and ability to use technology for teaching.

However, existing studies have often focused on the preparation, competencies, and technology integration practices of pre-service teachers, while fewer qualitative studies have examined how pre-service teachers actually experience using technology during practice teaching. This creates a gap in understanding the personal and classroom experiences behind technology integration, including the difficulties they encounter, the support they receive, and how they adjust their teaching when technological problems or classroom challenges arise. Rather than focusing only on whether pre-service teachers can use digital tools, the present study explores how they experience using technology-based pedagogy and interactive digital tools in actual practice teaching.

This study also addresses the need to understand these experiences within the local context of Sultan Kudarat State University–Lutayan Campus. By focusing on the lived experiences of pre-service teachers who completed practice teaching, the study provides qualitative insights into how technology is experienced in real classroom situations. It therefore complements previous studies, such as Tondeur et al. (2012), by moving beyond general preparation and technology-integration practices to participants' own descriptions of their experiences, challenges, adjustments, and support during practice teaching.

This focus is aligned with Sustainable Development Goal 4 (SDG 4), which promotes inclusive and equitable quality education and lifelong learning opportunities for all. Understanding the experiences of future teachers with technology can provide insights to strengthen teacher preparation and support the effective use of digital tools in education. Thus, this study seeks to describe and understand the lived experiences

of pre-service teachers in practice teaching using technology-based pedagogy and interactive digital tools.

2. Methodology

This study employed a qualitative phenomenological research design to explore the lived experiences of pre-service teachers during their practice teaching, which used technology-based pedagogy and interactive digital tools. Phenomenology is a qualitative approach that focuses on understanding the meanings and interpretations individuals attach to their experiences. According to Creswell and Poth (2018), phenomenological research seeks to describe the common meaning of experiences shared by several individuals regarding a particular phenomenon. Similarly, Neubauer et al. (2019) emphasized that phenomenology allows researchers to examine social and psychological experiences from the perspectives of those who have directly encountered them.

The use of a phenomenological design was appropriate for this study because it aimed to gain an in-depth understanding of how pre-service teachers experienced the integration of technology-based pedagogy and interactive digital tools during their practice teaching. Rather than focusing solely on institutional policies or curriculum implementation, the study focused on participants' personal reflections, perceptions, challenges, coping strategies, and professional growth in authentic teaching environments.

The study was conducted at Sultan Kudarat State University in Lutayan during the Academic Year 2024–2025. The institution was selected because it offers teacher education programs that expose students to both traditional and technology-enhanced teaching approaches, thereby providing a relevant setting for the investigation.

The study involved five (5) graduates of Sultan Kudarat State University–Lutayan Campus who completed their practice teaching during Academic Year 2024–2025. Purposive sampling was used to select participants who had direct experience using technology-based pedagogy and interactive digital tools during practice teaching. The sample size was considered appropriate for the phenomenological design because the study focused on obtaining in-depth descriptions of the participants' lived experiences. Data collection continued until the participants' accounts provided sufficient information to describe the common experiences related to the phenomenon.

The inclusion criteria required participants to be graduates of the teacher education program, to have completed practice teaching, and to have integrated digital tools and technology-based instructional strategies into their teaching practice. Individuals who did not complete their practice teaching requirements or lacked exposure to technology-integrated instruction were excluded from the study.

The participants were selected because their experiences provided substantial insights into the opportunities and challenges associated with technology integration in teaching. Their status as graduates also enabled them to reflect critically and

holistically on their experiences, thereby contributing meaningful information relevant to the study's objectives.

The primary instrument used in this study was a semi-structured interview guide designed to gather detailed narratives regarding the participants' lived experiences during practice teaching. The interview guide consisted of open-ended questions focusing on the participants' use of technology-based instructional strategies, interactive digital tools, classroom experiences, challenges encountered, coping mechanisms, and perceptions regarding the effectiveness of technology integration in teaching.

The primary instrument was a semi-structured interview guide containing open-ended questions about the participants' experiences, challenges, and responses in using technology-based pedagogy and interactive digital tools. The interview guide was content-validated by three master teachers with expertise in educational research and instructional practices. It obtained a mean validation score of 4.76, interpreted as Very Highly Valid, based on a 5-point validation scale, where 5 = Very Highly Valid, 4 = Highly Valid, 3 = Moderately Valid, 2 = Slightly Valid, and 1 = Not Valid. The result indicated that the interview questions were considered relevant, clear, and appropriate for gathering the intended data. Follow-up questions were also used to allow participants to clarify and elaborate on their experiences.

The use of semi-structured interviews allowed flexibility in the data collection process while ensuring consistency across participants. This approach enabled the researchers to gather rich and comprehensive descriptions necessary for phenomenological analysis.

Prior to the study, formal permission was obtained from the appropriate university authorities at Sultan Kudarat State University. After approval was granted, the researchers identified qualified participants based on the established inclusion criteria. The participants were informed about the nature, objectives, and procedures of the study, including that participation was voluntary and that they had the right to withdraw at any stage without penalty.

Data collection was conducted through individual semi-structured interviews scheduled at times and places convenient for the participants. Depending on availability and accessibility, interviews were conducted either face-to-face or through online communication platforms. Before the interviews commenced, informed consent was obtained from all participants.

During the interviews, participants were encouraged to openly share their experiences and reflections regarding the use of technology-based pedagogy and interactive digital tools during practice teaching. All interviews were audio-recorded with participants' permission to ensure accurate data collection. The recorded interviews were subsequently transcribed verbatim to facilitate comprehensive analysis.

To minimize bias and maintain consistency, the researchers adhered to the prepared interview guide while allowing flexibility for probing and clarification. All collected data were organized systematically and securely stored throughout the study.

The collected data were analyzed using thematic analysis consistent with phenomenological research. The transcribed interviews were repeatedly read and reviewed to become familiar with the participants' responses. Significant statements related to the participants' experiences were identified and coded systematically.

The coded responses were then grouped into categories and clustered into emerging themes that represented the common experiences, perceptions, and challenges encountered by the participants during their practice teaching. The themes were interpreted to capture the essence of technology integration in teaching practice.

The interview data were analyzed using a phenomenological approach. The researchers first repeatedly read each transcript to understand the participants' individual experiences. Significant statements were identified and coded based on the participants' own words and experiences. These codes were grouped into meaning units and compared across participants to identify common patterns and preliminary themes. The themes were then reviewed against the original transcripts to ensure that they were supported by the participants' narratives. Finally, the researchers synthesized the themes to describe the shared, essential meaning of the participants' lived experiences in practice teaching through technology-based pedagogy and interactive digital tools.

Ethical standards were strictly observed throughout the study. Prior to data collection, participants were fully informed regarding the purpose, procedures, and significance of the research. Participation in the study was entirely voluntary, and informed consent was secured before the interviews were conducted. Participants were likewise informed of their right to withdraw from the study at any point without any adverse consequences.

Confidentiality and anonymity were ensured throughout the research process. Pseudonyms were assigned to participants to protect their identities, and all information gathered was treated with strict confidentiality. The collected data, including interview recordings and transcripts, were securely stored and made accessible only to the researchers.

The study also complied with the provisions of the Data Privacy Act of 2012 to ensure the protection of personal information and the responsible handling of research data. Furthermore, the researchers adhered to institutional ethical guidelines to safeguard the dignity, welfare, and rights of all participants and to ensure that no physical, emotional, or psychological harm occurred during the conduct of the study.

3. Results

3.1 Lived Experiences of Pre-Service Teachers in Using Technology-Based Pedagogy and Interactive Digital Tools

Theme 1: Teacher Transformation and Pedagogy

Participants described how integrating technology transformed their teaching approaches, particularly in developing confidence and adopting student-centered strategies. Participants shared:

"It is very challenging, I mean both challenging and I felt nervous at first." (P1)

"My teaching style shifted from being more lecture-focused to student-centered..." (P3).

"Using technology changed me as a teacher in so many ways. At first, I was scared I'd mess up the equipment or lose control of the class, but once I got comfortable, my confidence shot up I even started experimenting with new tools on my own!" (P3)

Theme 2: Student Engagement and Dynamics

Participants observed increased student participation and engagement when interactive digital tools were incorporated into classroom activities. Participants expressed:

"When I use an interactive quiz, even the quiet student joined actively." (P1)

"One moment that stood out was when I used interactive quizzes and educational videos during my lesson. I noticed that my students were very eager to answer and participate. Even the quiet students became more involved. It made the lesson more enjoyable, and I could see that they understood the topic better through visual and interactive materials." (P2)

"Some kids who were usually shy would type their thoughts in the chat..." (P3)

Theme 3: Instructional Evolution and Learning Models

Participants described how digital tools encouraged collaborative learning, learner autonomy, and the adoption of alternative instructional strategies. Participants stated:

“Once, I used a collaborative Google Slides project... The kids were so proud to share their work...” (P3)

“The specific teaching situation in digital learning... can provide students with the opportunity to take charge of their learning...” (P4)

“I use an interactive quiz during the lesson instead of using the traditional question and answer method.” (P5)

3.2 Challenges Encountered by Pre-Service Teachers in Using Technology-Based Pedagogy and Interactive Digital Tools

Theme 1: Macro-Level Infrastructure & Access

Participants described how inadequate technological infrastructure, unstable internet connectivity, and equipment limitations affected their ability to integrate digital tools into classroom instruction. Participants shared:

“The common challenges associated with teaching and integrating technology-based technology often include a lack of adequate infrastructure or reliable internet access.” (P4)

“So, several factors made it challenging for me to use technology effectively in my teaching practice. One of them is technical need of limited internet access and occasional equipment malfunction making it difficult to constantly use digital tools.” (P5)

“So, one of the difficulties that I experienced when integrating technology-based pedagogy in my lesson was unstable internet connection in the classroom because sometimes the video or digital materials that I prepared would not load properly which affect my flow of the lesson.” (P5)

Theme 2: Real-Time Disruptions & Technical Failures

Participants experienced unexpected technical disruptions during classroom instruction, which affected lesson delivery and required immediate adjustments to their teaching approaches. Participants expressed:

“There was a time when the internet suddenly disconnected. Another instance was when the projector did not work properly which delayed my lesson.” (P1)

“So, one of the difficulties that I experienced when integrating technology-based pedagogy in my lesson was unstable internet connection in the classroom because sometimes the video or digital materials that I prepared would not load properly which affect my flow of the lesson.” (P5)

“So, several factors made it challenging for me to use technology effectively in my teaching practice. One of them is technical need of limited internet access and occasional equipment malfunction making it difficult to constantly use digital tools.” (P5)

Theme 3: Holistic & Multifaceted Challenges

Participants encountered various challenges involving students' digital literacy, insufficient technical support, unclear institutional policies, and personal concerns about their technological competence. Participants revealed:

“Some students also had difficulty using certain digital tools, which required additional guidance.” (P2)

“There was no one to turn to for tech help if something broke... the school also didn't have a clear policy on using devices in class.” (P3)

“I sometimes spent too much time perfecting digital materials... and worried about not being tech-savvy enough.” (P3)

Theme 4: Teacher Resilience & Adaptive Response

Participants demonstrated adaptability and resourcefulness in overcoming technological challenges by employing alternative instructional strategies and maintaining classroom continuity despite technical difficulties. Participants stated:

“When I encountered challenges, I stayed calm and quickly shifted to my backup plan... I continued the lesson through discussion and board work instead of relying on online tools.” (P2)

“I quickly adjusted my lesson by using alternative teaching strategies like explaining the topic through discussion or using the whiteboard.” (P5)

“[It] helped me become more patient, resourceful, and thoughtful... I learned to think quickly and solve problems.” (P1)

3.3 Coping and Adaptation Strategies of Pre-Service Teachers in Integrating Technology-Based Pedagogy and Interactive Digital Tools

Theme 1: External Support Systems & Collaborative Learning

Participants emphasized the importance of mentorship, peer collaboration, and self-directed learning in overcoming difficulties associated with technology integration. Participants shared:

"To cope with difficulties, I made sure to practice using the digital tools before my actual lesson... Seeking advice from my cooperating teacher and classmates also helped me improve and gain confidence." (P2)

"I coped with the difficulties by preparing backup plans... I also asked guidance from my cooperating teacher and classmates..." (P5)

"Prepared backup materials... watching tutorials, and asking guidance from my mentors." (P1)

Theme 2: Strategic Planning & Crisis Management

Participants demonstrated the importance of advance preparation, contingency planning, and flexible instructional strategies in managing unexpected technological disruptions during classroom instruction. Participants expressed:

"When things went wrong, I learned to adapt fast. For the broken smart board, I grabbed some string and paper squares and turned the lesson into a hands-on activity... For the too hard Kahoot! game, I stopped the game, apologized to the class, and we turned it into a group spelling bee taking turns writing words on the board and helping each other. Now I always test everything twice before class and keep a backup plan ready to go just in case!" (P3)

"When encountering challenges with technology my class, my approach focuses on preparedness, adaptability and utilizing technology as a tool, not a crutch. The planned B mentality, I always ensure I have a non-tech alternative prepared. If a slideshow or video fails, I have a physical handout, a blackboard explanation or a discussion-based activity ready to go." (P4)

"I stayed calm and shifted to another activity. I learned to always have plan A and plan B." (P1)

Theme 3: Real-Time Cognitive & Emotional Adaptation

Participants described how managing unexpected technological challenges required emotional composure, quick decision-making, and the ability to adjust instructional approaches during classroom activities. Participants revealed:

"When I encountered challenges, I stayed calm and quickly shifted to my backup plan... I continued the lesson through discussion and board work instead of relying on online tools." (P2)

"I quickly adjusted my lesson by using alternative teaching strategies like explaining the topic through discussion or using the whiteboard." (P5)

"[It] helped me become more patient, resourceful, and thoughtful... I learned to think quickly and solve problems." (P1)

Theme 4: Long-Term Professional Identity & Empowerment

Participants described how overcoming challenges during practice teaching contributed to their professional confidence, instructional flexibility, and developing identities as future educators. Participants stated:

"These experiences made me a much better teacher. I learned to be more flexible and think about what's best for my students... mistakes are okay—it's a teaching moment..." (P3)

"The field experiences such as classroom observations, tutor and student teaching, also boosting confidence moving from an observer to a lead instructor that leaves me the confidence to take ownership of a classroom and feel prepared for the responsibilities of my future teaching career." (P4)

"These experiences helped me become more flexible, patient, and resourceful. I also gained more confidence in handling unexpected situations during teaching." (P5)

4. Discussion

4.1 Lived Experiences of Pre-Service Teachers in Using Technology-Based Pedagogy and Interactive Digital Tools

The findings showed that participants experienced changes in their teaching confidence, classroom practice, and instructional approach while using technology-based pedagogy and interactive digital tools. Their experiences included initial uncertainty, increased familiarity with digital tools, and adjustments in how they delivered lessons. Participants also described using technology to make classroom activities more interactive and to encourage learner participation. These experiences suggest that technology integration became part of their developing teaching practice during practice teaching.

Moreover, these findings are consistent with Ertmer and Ottenbreit-Leftwich (2019), who emphasized that teachers' technology integration is influenced not only by technical knowledge but also by pedagogical beliefs, confidence, and classroom experiences. The present findings similarly indicate that actual classroom exposure provided participants with opportunities to practice using digital tools while addressing their learners' needs. The findings also support Tondeur et al. (2020), who highlighted the importance of authentic teaching experiences in developing pre-service teachers' capacity to integrate technology. Thus, the participants' experiences

suggest that technology use during practice teaching was associated with changes in their teaching approaches and classroom interactions.

Furthermore, the findings revealed that participants used technology-based activities and interactive digital tools to encourage learner participation and interaction. They described using presentations, videos, quizzes, and educational applications to make classroom activities more interactive and visually engaging. The participants also reported that digital activities provided opportunities for learners to participate, including those who were less active during conventional classroom activities.

Additionally, the participants mentioned several digital platforms, including Google Classroom, Quizizz, Kahoot!, Canva, Prodigy, and Epic!. These tools served different instructional purposes. Google Classroom could be used to share learning materials and communicate activities, while Quizizz and Kahoot! could be used for interactive quizzes and assessments. Canva could support the preparation of visual learning materials, while Prodigy and Epic! could provide digital learning activities and resources. Importantly, these platforms were not only viewed as tools for engagement; their availability also gave participants alternative ways to continue or modify classroom activities when a particular digital resource was unavailable.

Similarly, these findings are consistent with Bond et al. (2020), who noted that digital technologies can support interaction and active participation in learning environments. Sailer and Homner (2020) likewise emphasized the role of gamification and digital learning activities in supporting learner engagement. However, the present study focuses specifically on participants' lived experiences during practice teaching, showing how they incorporated various digital resources into classroom activities in response to the situation and instructional needs.

4.2 Challenges Encountered by Pre-Service Teachers in Using Technology-Based Pedagogy and Interactive Digital Tools

The findings revealed that macro-level infrastructure and access emerged as significant factors influencing the effective integration of technology in teaching and learning. Participants identified inadequate internet connectivity, limited technological resources, and equipment malfunctions as major barriers that hindered the consistent use of digital tools in the classroom. These challenges affected not only instructional delivery but also teachers' confidence and ability to implement technology-enhanced learning effectively. The findings suggest that insufficient infrastructure reflects broader systemic issues that can create inequalities in educational opportunities and limit innovation in teaching practices (UNESCO, 2023; OECD, 2021). Furthermore, the need for reliable technical support, stable internet access, and functional equipment highlights the importance of institutional investment in strengthening the technological ecosystem within schools (Koehler & Mishra, 2020).

Moreover, real-time disruptions and technical failures emerged as common challenges that affected the smooth delivery of technology-integrated lessons.

Participants reported experiencing unstable internet connections, equipment malfunctions, software issues, and mismatches between digital content and students' learning levels, all of which interrupted instructional flow and student engagement. These challenges required teachers to demonstrate adaptability, problem-solving skills, and emotional resilience to maintain continuity of lessons. The findings also revealed the importance of proactive preparation, such as checking equipment, ensuring internet reliability, and preparing alternative activities or backup plans to minimize the impact of unexpected disruptions. Consistent with previous studies, effective management of technology-related challenges depends on teachers' preparedness, flexibility, and ability to implement contingency strategies in digitally supported learning environments (Howard & Mozejko, 2021; Ertmer & Ottenbreit-Leftwich, 2020).

Additionally, holistic and multifaceted challenges in technology integration stemmed from the interaction of technical, learner-related, institutional, and personal factors that influenced teaching effectiveness. Participants reported difficulties such as unstable internet connections, limited device availability, varying levels of student digital literacy, lack of technical support, unclear institutional policies, and personal concerns related to confidence and time management. These challenges required teachers to adapt their instructional strategies to accommodate diverse learner continuously needs while managing technological and organizational constraints. The findings suggest that technology integration is a complex process that extends beyond access to digital tools and involves the alignment of technological, pedagogical, and contextual factors (Mishra, 2019; Tondeur et al., 2019). Addressing these challenges requires a comprehensive approach that includes improved infrastructure, teacher professional development, student digital readiness, and stronger institutional support systems to ensure effective and sustainable technology-enhanced learning (OECD, 2021; Gu & Day, 2020; Brackett et al., 2021).

Furthermore, teacher resilience and adaptive responses emerged as essential qualities for managing the challenges of technology integration in the classroom. Participants emphasized the importance of technological readiness, including familiarity with digital tools and platforms, as well as contingency planning to address unexpected technical issues during instruction. The findings revealed that teachers demonstrated flexibility by quickly modifying lessons, using alternative teaching strategies, and shifting between digital and traditional methods during technological disruptions. These experiences strengthened their problem-solving skills, confidence, and capacity to maintain instructional continuity despite challenges, reflecting the importance of instructional adaptability and resilience (Tondeur et al., 2020; König et al., 2020). The development of strong technical competence, preparedness, and flexible teaching practices also enabled educators to sustain meaningful learning experiences and respond effectively to uncertainties in technology-enhanced learning environments (OECD, 2021; Trust & Whalen, 2020; Day & Gu, 2020).

4.3 Coping and Adaptation Strategies of Pre-Service Teachers in Integrating Technology-Based Pedagogy and Interactive Digital Tools

The findings revealed that external support systems and collaborative learning played a significant role in helping pre-service teachers develop their instructional competence, confidence, and problem-solving abilities. Participants relied on cooperating teachers, mentors, classmates, and digital learning resources, such as online tutorials, to seek guidance, share resources, and improve their teaching practices. The findings indicated that mentorship, peer collaboration, and continuous feedback supported both technical skill development and professional growth, enabling teachers to address challenges more effectively. Participants also demonstrated proactive help-seeking behaviors by consulting mentors, collaborating with peers, and engaging in deliberate practice to strengthen their readiness for classroom instruction (Tschannen-Moran, 2019; Vangrieken et al., 2018). These results highlight the importance of fostering collaborative learning communities and strong support networks, as they contribute to teacher confidence, instructional effectiveness, and ongoing professional development (Darling-Hammond et al., 2020; OECD, 2021).

Moreover, strategic planning and crisis management demonstrated the participants' ability to anticipate instructional challenges, develop contingency plans, and adapt teaching strategies in response to unexpected disruptions. The data revealed that participants demonstrated adaptability by quickly shifting lessons, modifying activities, and using alternative non-digital methods when technology failed. Participants emphasized the importance of having Plan A and Plan B to ensure learning could continue through prepared handouts, board work, or discussion-based activities when digital tools were unavailable. These practices reflect proactive planning, reflective decision-making, and adaptive expertise, where teachers adjust instruction based on real-time classroom conditions (Hatano & Oura, 2019; Darling-Hammond et al., 2020). Furthermore, the findings highlight that strategic planning and crisis management strengthen teacher resilience and instructional effectiveness by enabling educators to remain flexible, resourceful, and responsive in dynamic learning environments (König et al., 2020; OECD, 2021; Gu & Day, 2020).

Additionally, real-time cognitive and emotional adaptation reflected the participants' ability to remain calm, think critically, and adjust instructional strategies immediately in response to classroom disruptions. The data revealed that participants demonstrated composure and flexibility by shifting to backup plans, using alternative strategies such as discussion and board work, and maintaining lesson flow despite the absence of digital tools. These responses highlight cognitive flexibility and adaptive expertise, in which teachers respond to situational demands through quick decision-making and instructional adjustments (Hatano & Oura, 2019). Participants also reported developing emotional resilience, patience, and problem-solving skills as a result of repeated exposure to unexpected teaching challenges, reflecting professional growth through experience (Gu & Day, 2020). The findings emphasize that real-time

cognitive and emotional adaptation supports teacher resilience and instructional effectiveness by enabling educators to remain composed and responsive in dynamic classroom environments (Brackett et al., 2021; OECD, 2021).

Lastly, long-term professional identity and empowerment reflected the gradual development of participants' confidence, self-awareness, and ownership of their teaching practice through real classroom experiences. The data revealed that participants experienced professional growth by becoming more flexible, reflective, and student-centered as they navigated various teaching challenges in actual classroom settings. These experiences encouraged a growth mindset, in which mistakes were viewed as learning opportunities and instructional improvement became a continuous process, thereby supporting the development of adaptive and reflective teaching practices (Darling-Hammond et al., 2020). Participants also reported increased confidence and a stronger sense of professional responsibility as they transitioned from observers to active classroom facilitators, reinforcing teacher self-efficacy and empowerment (Tschannen-Moran, 2019). Overall, the findings suggest that sustained exposure to authentic teaching experiences can foster resilience, inclusivity, and professional agency, contributing to the development of educators capable of responding effectively to diverse learner needs (Gu & Day, 2020; Gay, 2018; OECD, 2021).

5. Conclusion

The study found that pre-service teachers experienced both opportunities and challenges in using technology-based pedagogy and interactive digital tools during practice teaching. They developed greater confidence in using technology, implemented interactive, learner-centered activities, and learned to adjust their teaching strategies based on classroom situations. However, they also experienced challenges such as unstable internet connection, limited resources, equipment problems, and other classroom demands. To manage these challenges, they relied on support from cooperating teachers, mentors, classmates, and other available resources, while preparing alternative activities when technology was unavailable. Based on these findings, schools and teacher education institutions should provide reliable internet, functional technological equipment, technical support, and appropriate training for pre-service teachers. Future researchers may conduct similar studies with more participants and in different schools or settings to further explore the experiences and challenges of pre-service teachers in using technology-based pedagogy and interactive digital tools.

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Conflict of Interest Statement

The authors have no relevant financial or non-financial interests to disclose.

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