

Lived Experiences of Pre-Service Teachers in Developing Digital Competence Through an Instructional Training E-Package: A Qualitative Exploratory Study

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DOI: <https://dx.doi.org/10.47772/IJRISS.2026.100600055>

Received: 20 May 2026; Accepted: 25 May 2026; Published: 17 June 2026

ABSTRACT

The growing demand for technology integrated instruction has increased the need for pre-service teachers to develop meaningful digital competence during teacher preparation. This study explored the lived experiences of pre-service teachers in developing digital competence through an instructional training e-package. Specifically, it examined participants' perceptions of the training experience, their perceived competence development, and the contextual factors that shaped their learning process. The study employed a qualitative exploratory approach informed by phenomenological orientation to understand how participants interpreted and experienced digital learning within teacher education. Six pre-service teachers were purposively selected through maximum variation sampling. Data were gathered through semi structured interviews following the completion of the instructional training e-package. Interview transcripts were analyzed using Braun and Clarke's reflexive thematic analysis. Findings revealed that participants viewed the training as professionally relevant and meaningful in preparing them for technology integrated teaching. Hands-on learning activities, guided practice, and collaborative engagement contributed to increased confidence and instructional readiness in using digital tools for teaching and learning. Participants also identified contextual challenges, including unstable internet connectivity, limited access to devices, and time-related pressures. The findings provide qualitative insight into how experiential and practice-based digital learning experiences shape pre-service teachers' perceptions of digital competence development. The study may contribute to the enhancement of technology integrated teacher education initiatives and context responsive digital training programs.

Keywords: Digital competence; Experiential learning; Instructional technology; Pre-service teachers; Technology integration

INTRODUCTION

Digital technologies continue to reshape educational environments across schools and higher education institutions. In teacher education, pre-service teachers are increasingly expected to integrate technology meaningfully into instruction, communication, assessment, and classroom engagement. As educational systems adopt blended and technology mediated learning approaches, future teachers are expected to demonstrate not only pedagogical competence but also the ability to apply digital tools in ways that support meaningful learning experiences (Bond et al., 2018; Ghomi & Redecker, 2019).

Digital competence extends beyond technical familiarity with digital applications. Current perspectives describe digital competence as the responsible, critical, and pedagogically appropriate use of technology in teaching and learning environments (Caena & Redecker, 2019; Redecker, 2017). For pre-service teachers, digital competence also involves confidence, adaptability, instructional judgment, and readiness to respond to diverse classroom situations through technology supported instruction.

Despite increased exposure to digital technologies, many pre-service teachers continue to experience difficulties in integrating digital tools effectively within instructional contexts. Some studies indicate that technology training in teacher education remains fragmented and often focuses on isolated technical skills rather than authentic classroom application (Falloon, 2020; Instefjord & Munthe, 2017). As a result, pre-service teachers may become familiar with digital applications without fully understanding how these tools support pedagogy and learner engagement.

Research suggests that digital competence develops more meaningfully when learning experiences are experiential, practice-based, and situated within authentic teaching tasks (Ghomi & Redecker, 2019; König et al., 2020). Opportunities for guided practice, collaboration, and reflective engagement may help future teachers connect technological knowledge with classroom realities. In contrast, purely theoretical or demonstration based approaches may limit deeper understanding and long term application of digital learning skills.

In response to these concerns, instructional training e-packages have emerged as flexible and accessible learning interventions in teacher education. These interventions commonly combine modular content, guided demonstrations, collaborative activities, and performance based tasks that encourage active participation and instructional application. Studies report that structured digital learning experiences may contribute to increased confidence, instructional readiness, and self efficacy among pre-service teachers (Falloon, 2020; Trust & Whalen, 2020).

Although studies on digital competence continue to expand, much of the literature remains focused on quantitative measurement of competence levels and technology readiness. Limited research has explored how pre-service teachers personally experience structured digital training interventions and how they interpret these experiences within their professional preparation. Understanding these lived experiences may provide deeper insight into the contextual, affective, and reflective dimensions of digital competence development.

This study explored the lived experiences of pre-service teachers in developing digital competence through an instructional training e-package. Specifically, it examined participants' perceptions of the training, their experiences of competence development, and the contextual factors that influenced their learning process. By foregrounding participants' narratives and reflections, the study provides qualitative insight into digital competence development within teacher education.

RESEARCH METHOD

Research Design

This study employed a qualitative exploratory design informed by phenomenological orientation to examine how pre-service teachers experienced digital competence development through an instructional training e-package. The study focused on participants' meanings, reflections, and interpretations of their learning experiences within technology integrated learning contexts. A phenomenological orientation was considered appropriate because it allowed the researchers to foreground participants' subjective experiences and sense making processes while recognizing the contextual nature of digital learning experiences (Creswell & Poth, 2018; Moustakas, 1994).

Rather than seeking universal essences of experience in a strictly philosophical sense, the study aimed to generate rich experiential descriptions of how participants perceived, interpreted, and applied digital learning experiences during the instructional training process.

Participants

Six pre-service teachers were purposively selected using maximum variation sampling to capture diverse experiences related to digital competence development. Participants represented varying levels of performance improvement, prior digital exposure, and engagement during the training process. Smaller participant groups in qualitative experiential inquiry may allow deeper exploration of meaning, interpretation, and reflection rather than broad generalization (Creswell & Poth, 2018).

Participation in the study was voluntary. Informed consent was secured before data collection, and confidentiality of participant information was maintained throughout the research process.

Instructional Training E-Package

The instructional training e-package was implemented over four weeks using blended asynchronous and synchronous learning activities. The synchronous sessions were conducted through Zoom Video conferencing and were supported by online communication and learning platforms that facilitated consultation, collaborative engagement, task submission, and feedback sessions.

The training introduced participants to digital tools commonly used in educational settings, including Canva for instructional material development, Google Forms for assessment construction, Kahoot! for interactive learner engagement, and collaborative productivity tools for lesson preparation and classroom communication.

Each module included structured learning objectives, guided demonstrations, reflective tasks, and performance-based activities aligned with authentic classroom situations. Participants developed instructional materials, digital assessments, and technology integrated learning activities that reflected actual teaching responsibilities. The training emphasized experiential and practice-based learning by encouraging participants to apply digital tools within meaningful pedagogical contexts rather than focusing solely on technical procedures.

Scaffolded guidance, peer collaboration, and instructor feedback were integrated throughout the training process to support engagement and gradual competence development.

Data Collection

Data were gathered through semi structured interviews conducted after participants completed the instructional training e-package. The interview guide was validated by experts in educational technology, language, and instruction. Questions focused on participants' perceptions of the training experience, perceived competence development, encountered challenges, and recommendations for improving the training process.

Interviews were conducted using participants' preferred language to encourage openness and authenticity in responses. With participant consent, interviews were audio recorded and later transcribed for analysis.

Data Analysis

Interview transcripts were analyzed using Braun and Clarke's reflexive thematic analysis (Braun & Clarke, 2006). The analytic process involved repeated familiarization with the transcripts, inductive coding, theme development, theme refinement, and interpretation. Themes were generated through continuous engagement with participant narratives and careful examination of patterns of meaning across interviews.

The researchers acknowledged that their professional backgrounds in teacher education and instructional technology may have influenced interpretation of the data. Reflexive journaling and analytic memoing were conducted throughout the coding and interpretation process to critically examine assumptions and interpretive decisions. The researchers repeatedly revisited participant narratives to preserve intended meanings and ensure that thematic interpretations remained grounded in participants' experiences.

Trustworthiness

Credibility was strengthened through verbatim transcription, prolonged engagement with participant narratives, and the inclusion of direct participant quotations. Dependability was supported through documentation of analytic procedures and reflexive records. Confirmability was addressed through continuous reflexive consideration of researcher assumptions and interpretive influence. Transferability was enhanced through rich contextual descriptions that may help readers determine the applicability of the findings within similar educational contexts (Lincoln & Guba, 1985).

RESULTS AND DISCUSSION

This section presents the experiences and reflections of the pre-service teachers after participating in the instructional training e-package. The findings were derived from participants' narratives gathered through semi structured interviews and analyzed using reflexive thematic analysis. The discussion focuses on participants' perceptions of the training, their experiences in developing digital competence, and the contextual factors that influenced their learning process.

Professional Relevance of the Instructional Training E-package

Participants described the instructional training e-package as meaningful and professionally relevant to their preparation as future teachers. Many participants explained that the training helped them understand how digital tools may be integrated into actual teaching situations rather than being used merely for compliance with academic requirements.

One participant shared:

"Before the training, I only used applications for simple classroom reports and presentations. During the activities, I realized that digital tools can help improve student engagement and lesson delivery. I became more confident in using technology for teaching." (P1)

Another participant reflected:

"The training changed how I viewed instructional technology. I realized that digital tools are not only for making presentations attractive. They can also help teachers assess learners and make classroom activities more interactive." (P5)

Participants' experiences indicate that the training contributed to their perceived instructional readiness and confidence in technology integrated teaching. Rather than viewing technology as purely technical, participants associated digital tools with classroom relevance and professional preparation.

These findings align with previous studies emphasizing that digital competence includes pedagogical application, instructional judgment, and professional readiness rather than technical proficiency alone (Caena & Redecker, 2019; Redecker, 2017). Practice-based digital learning experiences may help pre-service teachers connect technological knowledge with authentic teaching responsibilities (Ghomi & Redecker, 2019).

Experiential and Practice-based Learning in Digital Competence Development

A dominant pattern across participant narratives was the importance of experiential and practice-based learning in shaping their perceived digital competence development. Participants consistently emphasized that direct engagement with digital tasks allowed them to better understand the practical value of educational technologies.

One participant explained:

"At first, I was hesitant because I was unfamiliar with some applications. When we started creating instructional materials ourselves, I gradually became more comfortable using the tools. The activities helped me learn through actual experience." (P4)

Another participant shared:

"The hands-on activities helped me understand the purpose of the applications better. We were not only taught how to use them. We were also asked to create outputs that could actually be used in teaching." (P2)

Several participants also described how repeated practice helped reduce anxiety and strengthened confidence in exploring unfamiliar technologies.

“I became less afraid of making mistakes because the activities allowed us to practice several times. Every session helped me improve gradually.” (P6)

Participants’ narratives suggest that competence development was closely connected to active participation, repeated practice, and opportunities to apply digital tools within meaningful instructional situations. These experiences reflect the importance of experiential learning environments in supporting confidence, self-efficacy, and adaptability among future teachers.

Similar findings have been reported in studies highlighting the value of authentic and performance based digital learning experiences in teacher education (Falloon, 2020; König et al., 2020). Learning environments that encourage experimentation, reflection, and instructional application may contribute to deeper and more sustainable digital competence development.

Contextual Enablers and Constraints in Digital Training

Participants also identified several contextual factors that shaped their learning experiences during the training process. Peer collaboration, instructor guidance, and shared problem solving were commonly viewed as supportive elements that enhanced engagement and learning.

One participant stated:

“Working with classmates helped me understand difficult parts of the activities. When someone encountered technical problems, others were willing to help.” (P3)

Another participant explained:

“The facilitator gave clear instructions during the sessions, which helped reduce confusion during the activities.” (P5)

Although participants generally viewed the training positively, they also described several challenges that affected participation and learning continuity. Internet instability and limited access to devices emerged as recurring concerns.

One participant shared:

“There were times when the internet connection interrupted the Zoom sessions. It became difficult to follow discussions and submit activities on time.” (P1)

Another participant explained:

“Limited access to devices affected my pace in completing the activities because I sometimes had to share equipment at home.” (P4)

Participants also mentioned time related pressures associated with balancing academic responsibilities alongside the training requirements.

Despite these constraints, participants viewed the challenges as manageable and expressed willingness to continue improving their digital skills. Several participants recommended extending the duration of the training and providing additional opportunities for guided practice and technical support.

The findings indicate that digital competence development is influenced not only by instructional design but also by broader contextual and infrastructural conditions. Similar concerns regarding connectivity, access to devices, and digital readiness have been documented in studies involving technology integrated teacher education (Falloon, 2020; Trust & Whalen, 2020).

Contributions and Implications

The study provides qualitative insight into how pre-service teachers experience digital competence development within a structured instructional training environment. By foregrounding participants' narratives and reflections, the study highlights the experiential, contextual, and affective dimensions of digital learning that are often underrepresented in quantitatively oriented research.

Participants' experiences suggest that digital competence may be strengthened through practice-based and context responsive learning experiences that encourage active engagement, collaboration, and authentic instructional application. Rather than viewing digital competence solely as technical skill acquisition, participants associated competence with confidence, instructional readiness, and the ability to apply technology meaningfully within teaching contexts.

The findings also suggest that teacher education programs may benefit from integrating experiential digital learning opportunities within professional education courses. Learning activities that involve authentic instructional tasks, reflective practice, and collaborative engagement may help future teachers develop greater confidence in using technology within classroom environments.

At the institutional level, the findings highlight the continuing influence of infrastructural and contextual challenges on digital learning experiences. Access to reliable connectivity, adequate devices, and sustained technical support may contribute to more equitable and meaningful digital learning opportunities for pre-service teachers.

Since the findings are based primarily on participant perceptions and experiences, future studies may incorporate classroom observations, instructional artifacts, or longitudinal approaches to examine how digital competence develops and is applied within actual teaching practice.

CONCLUSION

The study explored how pre-service teachers experienced digital competence development through an instructional training e-package. Participants described the value of experiential learning, guided practice, and collaborative engagement in helping them become more confident and prepared to use digital technologies within instructional contexts.

The findings suggest that practice-based digital learning experiences may contribute to participants' perceived instructional readiness and confidence in technology integration. Participants also recognized the influence of contextual conditions such as internet connectivity, device accessibility, and time related pressures on their learning experiences.

In a nutshell, the findings indicate that meaningful digital competence development involves not only technical exposure but also opportunities for authentic instructional application, reflection, and collaborative learning. Future research may further examine how digital competence developed during teacher preparation translates into classroom practice during internships and professional teaching experiences.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge Central Mindanao University as the Sending Higher Education Institution and Bukidnon State University as the Delivering Higher Education Institution. The authors also express sincere appreciation to Commission on Higher Education for the scholarship support provided through the CHED Scholarship for Instructors' Knowledge Advancement Program.

Use Of Artificial Intelligence (AI)-Assisted Technology

During the preparation of this manuscript, the authors used ChatGPT for language refinement and proofreading support. All generated content was carefully reviewed, revised, and validated by the authors, who take full

responsibility for the accuracy, interpretation, and integrity of the manuscript.

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