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Examining Teacher Educators' Role in Enhancing Digital Competence in Vietnam's Teacher Training Policies

Original scientific article

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Abstract

Digital competence, which includes not only the capacity to utilize digital technologies but also the critical comprehension of digital environments, ethics, and pedagogy, has emerged as a fundamental component in the development of contemporary educational systems. Regarding Vietnam's continuous efforts toward digital transformation, teacher educators bear a critical responsibility to prepare future teachers who can effectively navigate rapidly evolving educational and societal landscapes. The qualitative research investigates the roles and responsibilities assigned to teacher educators within Vietnam's national teacher training. Through thematic analysis, the research identifies key themes related to examining the role of teacher educators in the advancement of digital competence in teacher education in Vietnamese policies. Professional engagement, digital resources, teaching and learning, the role of the teacher educator in fostering learners' digital competencies, digital pedagogy, using digital tools, conceptual development, and transfer facilitation, which aids the aspiring teacher in navigating the digital teaching and learning environment, are the areas of inquiry. Findings demonstrate the teacher educators and teacher training student are embracing the integration of digital pedagogy based on tool access, pedagogical development, and understanding. This research shows that teacher educators and their students need strengthened experiential knowledge and confidence in translating digital experiences into classroom environments. It underscores that for digital competence to be meaningfully embedded in teacher education, teacher educators must demonstrate strong policy literacy, adaptive pedagogical skills, and reflective professional practice. These capabilities enable them to mediate policy intentions into practical, context-responsive teaching approaches, ultimately contributing to a resilient and forward-thinking digital education landscape within Vietnam.

Keywords: *Digital Competence, Teacher Educators, Teacher Training Policies, Vietnam Education Reform, Digital Pedagogy*

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Digital competence has been identified as a foundational aspect of teaching and learning at a time when education is changing at an unprecedented rate. As technology influences the way knowledge is disseminated, educators are currently being asked not only to have good digital qualities within themselves but also to develop them in students (Falloon, 2020). Digital competence encompasses more than technical proficiency; it involves critical awareness, ethical technology use, digital pedagogy knowledge, and understanding of social and cultural implications in education (Coker, 2020). Digitalization of classrooms and teaching practices is accelerating, and it is important that teacher educators understand their critical role in helping future teachers meet these challenges (Nguyen, 2023). By creating curricula and practices that promote the use of technology in the classroom, teacher educators are the only ones who have a meaningful impact on pre-service teachers' development of digital competency (Yang et al., 2022). The role of teacher educators in Vietnam's national teacher training policy, focusing on their role in developing future teachers' digital competence, was investigated (Nguyen et al., 2023). Examining selected policies, curriculum guidance and practicum frameworks from teacher education institutions in Vietnam would show that teacher educators are vital to educational digital transformation in Vietnam, and if existing policies and programs sufficiently support their activities (Hoang, 2024).

Effective online instruction requires Online Teaching Competence (OTC), a new pedagogical competency created during the COVID-19 pandemic and digital revolution (Pham et al., 2024). The world is becoming more and more digitalized these days, particularly in the explosive environment of the fourth industrial revolution (Moore et al., 2023). Science, Technology, Engineering, Mathmetics (STEM) education is globally popular due to the demand for higher-order thinking skills in science, technology, engineering, and mathematics, future changes like health issues and climate change, and the need for creativity, critical thinking, teamwork, and communication (Hang & Srisawasdi, 2021). As society becomes more and more reliant on information, higher education and research are increasingly essential components of sustainable cultural, economic, social, and environmental development for all individuals, communities, and peoples (Linh et al., 2022). The advancement of higher education is a top national goal, with university presidents leading the change and teacher training policies are crucial for meeting student and societal needs (O'Connor et al., 2023). Teacher training policies provide standards, frameworks, and guidelines for professional development, preparing teachers to teach effectively in diverse contexts, which are crucial in responding to technological, global, and societal changes (Anh & Phong, 2023).

By incorporating digital technologies and pedagogies into their curriculum, teacher educators play a critical role in improving the digital competency of preservice teachers. The use of technologies guides digital responsibility and engages with the societal and cultural influences of digitalization (Skantz-Åberg et al., 2022). Teachers should adopt a student-centered approach, adapting instruction to the rapidly evolving technology world, and encourage collaborative group learning behaviors among preservice teachers (Nagel et al., 2023). Making sure instructors are ready to incorporate technology into their lesson plans is one of the biggest problems facing teacher education policy (Tran-Thi-Thanh, 2024).

Rubio-Gragera et al. (2023) examined the digital competency of educators from bilingual Institutions in Andalusia, Spain, to determine whether the COVID-19 issue impacted their trust in utilizing ICT for teaching. The research discovered that teachers' self-evaluation of digital competency was poor, indicating a need for intervention in encouraging digital proficiency. The objective was to suggest methods for enhancing digital skills and provide educational resources for teacher training in digital competence. Gabarda Méndez et al. (2023) presented a sponsored teaching improvement initiative at the University of Valencia in Spain to improve digital competence between prenatal and primary school teachers. Digital competence has improved across all domains, with gender having an impact on the results. Shi et al. (2023) looked at the efficiency of a national strategy for digital competency training for Chinese teachers. The objective

was to recognize four stages and discover disparities in efficacy between privately and government-supported institutes.

Bitakou et al. (2023) assessed the existing huge open-access courses from three worldwide digital platforms, indicating that the majority do not provide enough coverage of core digital competencies essential for higher education professors. The findings underscore the importance of improving existing courses or establishing new ones to overcome these competency gaps, allowing higher education institutions to better prepare instructors for the digital era. Aydin and Yildirim (2022) investigated the present condition of teachers' digital competency (TDC) material in the educational technology (ICT) domain, with an emphasis on the COVID-19 epidemic. The evaluation of 406 papers from 2002 to 2021 found an increasing number of studies on TDCs, with more than half being released between 2020 and 2021. The report also discovered that Spanish scientists and organizations dominate TDC research, with researchers linked with Spanish institutions conducting two of every three studies. The findings make recommendations for future research in TDC, educational studies, programs to train teachers, and ICT in education. Tang et al. (2022) provided a self-evaluation structure to assess training educators' digital competence (DC) while teaching online.

Sánchez-Prieto et al. (2021) described that the technology revolution has revolutionized education, and instructors must adapt to build digital skills to keep up with these changes. Research in the self-governing region of Andalusia discovered that instructors had insufficient digital abilities, which were impacted by factors such as prior training, institution location, and teaching type. Colás-Bravo et al. (2021) focused on enhancing digital skills and utilizing ICT in the classroom to promote academic sustainability. The research emphasizes topics such as inclusivity, quality, and perpetual learning. The research summarizes studies on sustainable and digital teaching capacity in universities from 2011 to 2021. Ovella-García & Cloquell-Lozano (2021) described that teacher education was critical for providing students with the required skills and reducing learning disparities; however, graduate and teacher candidates in Spain, Cyprus, as well as Mexico discovered that, despite technical training, instructors lack the required skills to bridge digital divides. Sánchez-Rivas et al. (2024) looked at the digital teaching skills in block computing and robot education among present preschool instructors. The findings indicate substantial gaps in digital competence growth, notably in robotics and instructional programming. The report underlines the importance of education and development initiatives to improve digital competence. Licen & Prosen (2024) created the Digital Competence Scale for University Instructors (DCS-UT), a tool for evaluating teachers' fundamental digital skills. The measure showed a strong four-factor framework: digital literacy, digital competence, digital engagement, and technological integration. Díaz-Suárez et al. (2025) described the digital change in teaching methods and training needs within the Canaria Islands' educational system, as defined by the European Framework for Digital Competence of Teachers (DigCompEdu).

Lindfors et al. (2021) described the views on Swedish teacher educators' conditions that impact the ability to integrate digital technologies into teacher education, where student teachers can develop professional digital competence (PDC). Howard et al. (2021) described the implications of digitalization on the knowledge of teacher educators (TEDs), considering the considerations given to digital competence with teacher education curricula in Norway. Using thematic analysis of documents related to the program and course descriptions, the research found that TEDs were intended to teach both pedagogical aspects of digital tools and students' digital skills, responsibilities, and consciousness about the implications of societal consequences of digitalization. Nagel (2021) explored the connections between the methods employed in pre-service teacher preparation to foster digital competency. Based on the regression rules analysis of questionnaire data collected from a sample of 931 pre-service teachers.

Objective and Key Contribution

The purpose of the research is to examine the way the teacher educators can enhance students' digital competency within the framework of Vietnam's teacher training

regulations. The goal of this research is to better understand how teacher educators can help pre-service teachers prepare for the digital teaching and learning environment by including digital pedagogy, digital technologies, and conceptual growth in their training.

- To investigate the roles played by teacher educators in developing digital competence in Vietnam's teacher training policies. Specifically, the research is interested in understanding the support that teacher educators provide in the integration of a digitally-driven education context.
- To contribute by underscoring the key variables essential for enhancing digital competence in both teacher training students and teachers. The research indicates that for discipline and pedagogy, the development of digital pedagogies, the use of digital tools, offering conceptual development, and embracing transfer of learning for future teaching practices are significant factors. For teachers, aspects of professional engagement, correct use of digital resources, and the merger of teaching and learning strategies to support learners' digital competences are essential. These are important elements for developing a digitally competent teaching workforce that can navigate and shape the future of education.
- The findings show that teacher educators and student teachers were engaged with digital pedagogy; however, students and teachers needed further development in terms of translating digital experiences into practical applications within the classroom.

System Overview

The organization of the research includes five sections. Phase 2 contains the methodological frameworks that include the statistical analyses for the identification of misinformation terms. Phase 3 involves the results that significantly enhance the research. Phase 4 described the discussion, and Phase 5 involves the conclusion of the research with the political misinformation.

Methods

This section outlines the demographic profiles of teacher educators and training students, describing their age, gender, experience, and digital competence. It describes the qualitative interviews with educators and students across two rounds of interviews that focused on digital pedagogy and tools, and the teacher educators were preparing to integrate digital competencies into the teaching and learning of the classrooms.

Participants Details

The demographic profile of teacher educators (50) and teacher training students (250) in total 300 participant information are shows in the tables below. The group was composed of a significant proportion of more experienced educators and younger teacher training students. The participants were of a wide age range, from young adults to mature professionals, had a mix of levels of digital competence, and most had middle-level to beginner-level digital competencies. Teacher educator: The teacher educator (n=50) comprises mostly seasoned professionals, with 50% having more than 11 years of teaching experience. A majority are female (70%), and high in 41-50 age range (40%). In terms of income, most of the educators are in the 10-20 million VND income group (50%). Regarding digital competence, the educator group demonstrates overall proficiency, with 50% at a medium level, 30% at an expert level, and only 20% considered novices. Table 1 describes the teacher's demographic details.

Table 1.
Demographic Details for Teachers' Educators

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age	20-30	5	10%
	31-40	15	30%
	41-50	20	40%
	51+	10	20%
Gender	Male	15	30%
	Female	35	70%
Experience	0-5 years	10	20%
	6-10 years	15	30%
	11+ years	25	50%
Income	Less than 10M VND	10	20%
	10-20M VND	25	50%
	20+M VND	15	30%
Digital Competence	Beginner	10	20%
	Medium	25	50%
	Expert	15	30%

Teacher training students: The teacher training student (n=250) consists of 72% female respondents and a majority of 48% who are either 21 to 23 years old. The number of respondents in the four different years of research is fairly balanced, with approximately 26% in the first year, 24% in the second year, 26% in the third year, and 24% in the fourth year. The respondents displayed a range of digital competence levels as the results indicated that the students were mainly classified into three levels: 36% were beginner level, 48% possessed medium digital competence, and 16% were experts, which represents a broad spectrum of digital competence, with more novice and medium level students. Table 2 describes the teacher training students' details.

Table 2.
Demographic Details for Teacher Training Students

Demographic Variable	Category	Frequency (n)	Percentage (%)
Age	18-20	100	40%
	21-23	120	48%
	24+	30	12%
Gender	Male	70	28%
	Female	180	72%
Year of Research	1st Year	65	26%
	2nd Year	60	24%
	3rd Year	65	26%
	4th Year	60	24%
Digital Competence	Beginner	90	36%
	Medium	120	48%
	Expert	40	16%

Qualitative Data

The interviews are qualitative and address variables for both teacher educators and teacher training students, indicating that for discipline and pedagogy, the development of digital pedagogies, the use of digital tools, offering conceptual development, and embracing transfer of learning for future teaching practices are significant factors. For teachers, aspects of professional engagement, correct use of digital resources, and the merger of teaching and learning strategies to support learners' digital competences are essential. These are important elements for developing a digitally competent teaching workforce that can navigate and shape the future of education.

Teacher Educators

The interview takes place in two rounds, each round has 30 minutes, regarding the teacher educator's roles in promoting digital competence. The first round explores professional engagement, the use of digital resources, and professional adaptations to digital tools. The second round looks at the challenges of teaching and learning and facilitating learner's digital competence approaches to support. Both rounds generate qualitative information to better understand the teacher educator's approach in integrating digital competencies. Table 3 displays the question for teacher educators.

Table 3.
Interview Questions for Teachers Educators

Teacher Educators		
Thems	**Interviews**	**Questions**
Professional Engagement	Round 1	• How do you stay engaged with the ongoing developments in digital education and pedagogy? • In what ways do you collaborate with other educators or institutions to improve digital pedagogy in teacher training?
	Round 2	• How do you keep track of emerging trends in digital education, and how does that impact your teaching approach? • Do you feel that there is a strong culture of digital innovation within your institution, and if so, how does it influence your teaching?
Digital Resources	Round 1	• What types of digital resources (e.g., learning management systems, online libraries, digital content) are available to you and your students? How do you utilize them? • How do you decide which digital resources are appropriate for different subjects or teaching contexts?
	Round 2	• Have you experienced any challenges in accessing or utilizing digital resources for teaching? How do you overcome these challenges? • How do you balance the use of digital tools with traditional teaching methods, especially in the context of practical training?
Teaching and Learning	Round 1	• How have your teaching methods adapted to incorporate digital tools? Can you provide a specific example of a digital tool you use regularly? • How do you ensure that the digital tools used in the classroom promote active learning and student engagement?
	Round 2	• How do you evaluate the effectiveness of digital tools in achieving specific learning objectives? • Have you seen an improvement in student outcomes (e.g., engagement, knowledge retention) as a result of integrating digital tools into your teaching?
Facilitating Learners' Digital Competences	Round 1	• How do you assess the digital competence of your students, both in terms of their technical skills and critical thinking abilities? • How do you support pre-service teachers in developing their digital literacy, especially in their future classroom practices?
	Round 2	• What strategies do you use to promote digital citizenship and ethical online behavior among your students? • In your opinion, what additional support or training is needed to enhance pre-service teachers' digital competence?

Professional Engagement: Professional engagement refers to the active participation of teacher educators in ongoing professional development endeavors (e.g. workshops, seminars, collaborative activities). In other words, to be involved in attempts to enhance their knowledge and practice, maintain abreast of new trends in education, and engage in a community of learning with their colleagues and students.

Digital Sources: The term digital resources refers to a variety of online tools, platforms, and materials utilized by teacher educators and the students they teach to facilitate learning. Digital resources can include learning management systems (LMS), educational software, digital textbooks, and multimedia that can facilitate teaching and learning in the digital age by providing information access and establishing dynamic, captivating learning environments.

Teaching and learning: The teaching and learning process places a strong emphasis on the techniques and approaches teachers employ to encourage learning and skill improvement. An awareness of combining very effective instructional methods with digital methods, such as multimedia or digital

tools, to stimulate engagement, foster critical thinking and development, and provide opportunities for learning that is relevant and meaning-making is emphasized. It also recognizes the evolution of the teacher as the person who guides the learning of students.

Developing Learners' Digital Competences: Developing students' digital competencies includes helping them become proficient users of digital tools and resources. This entails cultivating kids' digital literacy, their safe and responsible technology usage, and their critical thinking and problem-solving skills, all of which are necessary for them to survive and prosper in a digital environment.

Teacher Training students

The interview consists of two rounds, each round having a 30-minute time duration, which discusses and reflects on digital tools and conceptual development of digital pedagogy for teacher training students in 1st-2nd year). Students were asked about their knowledge of digital tools, the impact of digital tools on their language learning to become teachers, and the plan to transfer their digital and conceptual skills to their future teaching contexts. Round two explores teacher training students in years three and four (3rd-4th year) in critical detail, focusing on their developing understanding of digital pedagogy, their use of digital technologies to improve instruction, as well as some understanding of using such resources in a traditional classroom setting. Both rounds provide qualitative insights into the way digital competencies become integrated or transferred into their future teaching practices, as shown in Table 4.

Table 4.
Interviews for Teacher Training Students

Teacher Training Students		
Thems	**Interviews**	**Questions**
Digital Pedagogy	Round 1	• How do you define "digital pedagogy," and how does it fit into your learning experience? • In what ways has your course helped you develop skills for using digital tools in teaching?
	Round 2	• How has your understanding of digital pedagogy evolved throughout your teacher training? • In your opinion, how can teacher educators better integrate digital pedagogy into the curriculum?
Digital Tools	Round 1	• Which digital tools (e.g., educational software, platforms, or apps) have you been introduced to in your training? How comfortable are you using them? • Can you share a situation where a digital tool enhanced your learning in a specific subject?
	Round 2	• How would you rate the effectiveness of the digital tools you've learned to use during your training in terms of enhancing your teaching ability? • What digital tools do you believe are essential for modern classrooms, and how have you been prepared to use them?
Conceptual Development	Round 1	• How do you think digital tools have helped in shaping your understanding of core teaching concepts? • Do you feel that digital pedagogy has influenced your conceptual development as a teacher?
	Round 2	• How do you apply your conceptual understanding of teaching to digital contexts (e.g., digital teaching strategies, assessment, or student engagement)? • Can you discuss a specific concept that you've found easier or harder to grasp due to the integration of digital tools?
Transfer Facilitating	Round 1	• Do you feel confident in transferring the skills you're learning in your training to your classroom setting in the future? • How does the integration of digital tools in your coursework help you visualize your future teaching practices?
	Round 2	• Have you been given any opportunities to implement the Digital tools and pedagogical concepts you've learned in practical settings (e.g., during practicum or teaching demonstrations)? • How do you perceive the transferability of these digital competencies into the real classroom environment?

Digital Pedagogy: The process of incorporating technology and digital tools into instruction is known as digital pedagogy. It involves rethinking traditional teaching methods by leveraging online platforms, multimedia, and interactive technologies to enhance the learning experience, engage students more deeply, and support diverse learning styles in a digital environment.
Digital Tools: Digital tools are the many forms of software, applications, and technologies that can be used in educational settings. Digital tools can include learning management systems (LMS), educational applications, multimedia tools, virtual classrooms, and online collaborative tools. Digital tools are designed to increase learning engagement, simplify teaching processes, and provide access to information that helps learners connect through interactivity and engages them in the learning experience.
Conceptual Development: Conceptual development is the process through which individuals construct and expand their understanding of key concepts and ideas. In education, conceptual development refers to the way that learners develop structures or frameworks (mental models) to conceptualize and apply knowledge. Digital tools can support conceptual development by providing interactive or multimedia-rich content to facilitate students' visualization and connection of complex ideas.
Transfer Facilitating: Transfer facilitating refers to the process of helping students transfer the knowledge and skills they have used and learned in one context to apply in new contexts and real-world situations. In the context of teacher education, this is beneficial when educator candidates develop and can connect their theoretical learning to the practical application of their digital competencies and, importantly, transfer these competencies to their future teaching practice.

Statistical Analysis

A qualitative technique for finding, examining, and interpreting data patterns is thematic analysis. It comprises organizing, coding, and honing themes derived from the viewpoints and experiences of participants. Giving detailed explanations of actions and attitudes.
Thematic analysis: A qualitative research technique involves finding, analyzing, and interpreting patterns (or themes) in a collection of data, such as observational notes, survey findings, or interview transcripts. The thematic analysis takes place through systematic coding and then ordering data into themes that develop from participant perspectives and experiences when being researched. Usually, it breaks this down into phases, such as becoming acquainted with the data, creating preliminary codes, looking for themes, evaluating themes, and finally defining and labeling themes. The approach is adaptable and utilized in many qualitative research formats to help researchers better understand the numerous ways participants interpret their perceptions, actions, or experiences about a certain topic or situation.

Result and Discussion

Thematic analysis yielded five overarching themes: understanding of digital pedagogy, willingness to use tools, fixation on pedagogical development, growth of concepts, and confidence transfer. Differences occurred across year levels, primarily for later year levels where students were demonstrating more integration and use of components in teaching.

Thematic analysis for teachers' educators

Table 5 presents the views of teacher educators with regard to digital pedagogy. Teacher educators are actively engaged in professional enagement and collaborate with peers to increase their use of digital tools educators have potential access to many digital resources and have to select the ones that most closely align with their context in teaching. By enhancing students' digital literacy and encouraging active learning, integrating digital tools into the classroom.

Table 5.
Result of Thematic Analysis for Teachers' Educators

Theme	Sub-theme	Findings	Quote(s)
Professional Engagement	Knowledge Enhancement	Educators are actively engaged in workshops and seminars to stay updated on digital pedagogy.	"I attend at least one professional development session every semester to stay ahead with digital tools."
	Collaboration	A majority collaborate with peers and institutions for better pedagogical strategies.	"Collaboration with colleagues has enhanced the use of digital tools in teaching."
Digital Resources	Resource Availability	Educators have access to various digital tools like LMS, digital libraries, and multimedia.	"To have access a wide range of digital resources, but selecting the right ones is key."
	Resource Selection	To carefully select resources based on the subject and class context.	"I choose resources that I know will directly engage students in the learning process."
Teaching and Learning	Digital Tool Integration	Educators integrate tools like interactive multimedia and learning platforms in their teaching.	"I use multimedia to explain abstract concepts – it makes things clearer for the students."
	Active Learning	To ensure that tools encourage student interaction, participation, and engagement.	"The key is not just presenting information, but having students actively engage with the content using tools."
Facilitating Learners' Digital Competences	Student Digital Literacy	Teachers assess students' digital skills and promote critical thinking and technological literacy.	"I regularly assess how well students can use digital tools and encourage them to critically evaluate online content."
	Promoting Digital Citizenship	Educators teach students about ethical online behavior and digital citizenship.	"To talk about the ethical use of technology in class – how to be responsible digital citizens."

Thematic Analysis for Teacher Training Students

Thematic analysis of teacher training students shows an evolving use of digital pedagogy and tools over the course of their training. In the 1st and 2nd years of training, teacher training students begin to explore using a selection of tools. While aware of using digital pedagogy and tools, there is still a desire for more practical application. In the 3rd and 4th years of training, there is a clearer understanding and increased confidence in using digital tools in real classroom contexts. However, obstacles still arise that limit full integration, and further support is sometimes desired.

Teacher Training Students (1st and 2nd Year)

Table 6 illustrates that students preparing for teacher training at an early stage have an understanding of digital pedagogy. As early-stage students, view digital pedagogy as embedding technology as a tool to support and improve teaching and learning. While students' familiarity with digital tools varies, the students acknowledge the conceptual development received as a result of using digital tools, but the students commented on the need for more practical experience and applications to utilize these skills in their future teaching context.

Table 6.
Thematic Analysis - Teacher Training Students (1st and 2nd Year)

Theme	Sub-theme	Findings	Quote(s)
Digital Pedagogy	Understanding Digital Pedagogy	Students define digital pedagogy as integrating technology into teaching to engage students.	"Digital pedagogy means using technology to help us teach in ways that engage and motivate students."
	Pedagogical Development	Their course has improved their understanding of digital tools and their role in teaching.	"I now understand how digital tools can improve student learning and engagement in the classroom."
Digital Tools	Tool Familiarity	Students have been introduced to LMS, apps, and digital resources, but vary in their proficiency.	"I've used LMS for assignments, but I'm still learning how to use other tools for teaching."
	Tool Application	To report positive experiences using digital tools for specific subjects, especially languages.	"I found using apps for language practice very useful. It made learning more interactive."
Conceptual Development	Learning Impact	Digital tools helped them grasp teaching concepts, especially in visualizing complex ideas.	"When used video analysis, it helped me understand how to teach movements more effectively."
	Conceptual Understanding	Digital pedagogy has supported their conceptual growth as future educators.	"The integration of technology in the courses is helping me think about how I'll teach with digital tools in the future."
Transfer Facilitating	Confidence in Transfer	Students feel moderately confident in applying learned digital skills to their future teaching.	"I'm not entirely sure how to apply everything yet, but I feel more confident with each class I take."
	Practical Application	To perceive some opportunities for hands-on practice during demonstrations but seekto understand how to use these tools in real more.	"I feel like I need more hands-on experience classrooms".

Teacher Training Students (3rd and 4th Year)

Table 7 describes the changes in the understanding of digital pedagogy among the advanced teacher training students from the opening year course on digital pedagogy. To describe increasingly robust understandings of digitally interactive teaching approaches and generally advocate for an even greater incorporation of digital tools in the curriculum. The students indicate much more confidence in digitally utilizing tools in real-world classroom situations and have had more experiences incorporating digital tools during their practicum placements. Despite the fact that some of the technologies fall short of expectations, students feel competent and desire to learn how to use the digital tools as effectively as possible.

Table 7.
Thematic Analysis - Teacher Training Students (3rd and 4th Year)

Theme	Sub-theme	Findings	Quote(s)
Digital Pedagogy	Evolving Understanding	Students report a deepening understanding of digital pedagogy, particularly in interactive methods.	"I've come to understand how important interaction is – not just using tech for the sake of it, but making it engaging."
	Integration into Curriculum	To believe that more integration of digital pedagogy is needed in teacher education curricula.	"The curriculum should have more hands-on use of digital tools to prepare us for real teaching situations."
Digital Tools	Tool Effectiveness	The tools have learned to use are perceived as enhancing their teaching ability and student engagement.	"I've been able to teach more effectively using digital tools, especially when explaining complex ideas visually."
	Future Use	To recognize the importance of digital tools like multimedia and Learning Management Systems (LMS) for modern classrooms.	"Digital tools are essential. It's a way to stay relevant as a teacher in today's classrooms."
Conceptual Development	Application of Concepts	Students now apply digital teaching strategies in the classroom, especially in lesson planning and student assessment.	"I'm applying what I've learned about digital tools in my lesson planning and assessments during my practicum."
	Difficulty with Tools	Some students still face challenges in fully understanding and using certain digital tools.	"I still struggle with some of the more complex tools, but I'm getting better with practice."
Transfer Facilitating	Real-world Application	Students report gaining more opportunities to apply digital tools during practicum placements.	"During my practicum, I had the chance to use digital tools to design lessons, which was incredibly helpful."
	Confidence in Implementation	To express confidence in transferring their digital skills to future teaching environments, though the request more guidance.	"I feel confident using digital tools in the classroom, but I wish to more guidance on how to use them effectively with students."

Discussion

The research emphasizes the importance of teacher development in preschool education in Vietnam. It suggests improvements in training, performance assessment, and remuneration. Effective teacher development enhances teaching quality and improves educational outcomes. To suggests providing robust training programs, assessing performance, and improving compensation to retain qualified educators. By strengthening these aspects, preschool teachers' capacity can be enhanced, leading to better teaching practices (Nguyen et al., 2025).

The Delphi technique identifies 18 key elements affecting pedagogical students' ICT capabilities in ESR, including learning environment, circumstances, and student characteristics. Factors like financial support, policy frameworks, and enthusiasm for ICT influence their effectiveness. To fully develop ICT capabilities, institutions must reconsider investment, policy development, and fostering technology enthusiasm. These elements include the learning environment, personal circumstances related to the learning process, and the attributes of the students themselves. (Van Dinh et al., 2025).

Teacher educators actively show professional practice with ongoing engagement with workshops and peer learning in the context of their digital pedagogy development. Their context also provides access to a wide range of digital resources (e.g. LMS, digital library, multimedia) that they can utilize while constantly weighing their appropriateness in the context. To incorporate these digital tools to be able to create active learners and sustain their engagement. It also focused on supporting students' digital competencies by looking at the promotion of digital literacy, critical thinking and ethical online behaviour. Teacher training students' understanding

and practical use of digital pedagogy is significantly changed during their training. In the first and second year, they develop conceptual knowledge, but want more experiences using digital tools. By the time the students reach third and fourth year, they feel they better integrate digital tools in their teaching, although it is clear they struggle with some technologies. There is an evident wish for more practical experience and integration into the curriculum, so that they feel better prepared for eventually teaching in the real-world.

Conclusion

This research investigated the influences of teacher educators on developing digital competence through teacher training policies in Vietnam. The investigation seeks to assess the types and responsibilities of teacher educators when it comes to enhancing digital competencies in Vietnam's teacher training policies; specifically, how teacher educators can contribute to the digitalization of teacher education through digital tools, digital pedagogy, and digital competence, and hence prepare future teachers to function in a digitally-driven educational environment. Teacher educators were found to have a role in developing student teachers' digital competence through professional engagement, pedagogical development, and using digital tools. Teacher training students displayed confidence in using digital tools, but by their final years, many stated uncertainties when translating this confidence into a real-world teaching practice. Research showed teacher educators need more hands-on practice, with guidance on pedagogies of digital learning, to enhance their broader capacity to prepare future educators to navigate digital spaces for teaching. The research performed could be useful to the future researchers as these results would act as foundational reference for exploring the evolving role of digital pedagogy in a teacher's education. The results would give an insight understanding of how the digital competence has developed across different stages of training showcasing both the strengths as well as loopholes in the current teacher's training programme. This will guide in more targeted curriculum improvements, interventions as well as policy recommendations.

Results reported and provided discussions can help solve multiple problems that experts observe in practice. By identifying the gaps and loopholes including limited hands-on-training with digital tools, digital comptetence among students, and the requirement of a better integration, the study possible will provide actionable insight for improving teacher's knowledge. The thematic analysis clearly showcase of what works and what needs improvement. This will progressively create a better training program which will further develop more professional development opportunities. Although the study has reported multiple references that could be useful to present as well as future researchers, but it also has come limitations. The research includes the purposeful sample of teacher education institutions in Vietnam, which may not capture the range of dynamics in educational contexts. A larger sample could expand later research to examine the effects of digital competence on student learning outcomes, as well as consider the implications of regional and cultural contexts for integrating digital tools. Finally, more longitudinal research will enhance the understanding of the way digital competence training might influence teaching over time.

Ethical Considerations

This study is committed to upholding the highest ethical standards in its collection and use of primary data involving human participants. The data collection was independent of any institutional affiliations, ensuring that participants were selected without bias or socioeconomic influence.

Conflict of Interest
The authors declare no conflicts of interest
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