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Research Article

Digital competence of Thai EFL pre-service teachers: Perceptions, classroom integration, and influencing factors

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ABSTRACT

Effective digital competence and technology integration have become increasingly important for English as a foreign language (EFL) pre-service teachers (PSTs); however, they often confront various challenges, especially in the practical usage of digital technology in class. The purposes of this study were to investigate the levels of perceived digital competence of Thai EFL PSTs, to explore their digital integration in actual classroom practice, and to examine the factors contributing to their digital competence. Self-assessment questionnaires administered to 32 Thai EFL PSTs revealed a marked contrast between the highest- and lowest-rated items within the personal-ethical dimension. In classroom observations, most PSTs demonstrated a developing level of digital competence. Multimedia creation was rated at the expert level, ranking highest among the observed areas of technology integration. Lastly, the findings from semi-structured interviews revealed that supportive factors influencing their digital competence were contextual enablers, technological familiarity, personal behavior, and mentorship/peer support. In contrast, challenging factors involved institutional support, personal behaviors, insufficient digital skills, inadequate ongoing training, and difficulties in student-technology interaction. These findings emphasize the importance of a supportive school ICT culture and tiered training programs for PSTs, ranging from beginner to advanced levels, to promote digitally competent, confident, and innovative PSTs who are fully prepared for the dynamic demands of modern education.

Keywords: teacher digital competence, EFL pre-service teachers, technology integration, personal-ethical competencies, personal-professional competencies

INTRODUCTION

As technology advances rapidly worldwide, digital competency has become a crucial component of 21st century education. Teachers at all levels are progressively using digital tools to enhance learning experiences and strengthen students' language competencies (Pitukwong & Saraiwang, 2024; Saraiwang & Worawong, 2023). Consequently, the ability to use these digital resources effectively is indispensable. For educators, digital skill mastery facilitates the integration of information and communication technologies into education (Tomczyk, 2021), which creates more effective instruction (Sakhieva et al., 2025). For students, it not only fosters collaboration and interaction with others (Holm, 2025) but also cultivates the broader set of competencies necessary for ongoing learning and adaptation to a digital learning environment (Zheng et al., 2024). Success in today's education requires additional skills that go beyond traditional literacy (Almazroa & Alotaibi, 2023). The demand for digital competence is not merely a trend; rather, it signals a significant shift in the skills required to thrive in an increasingly connected and digital world (Eslit, 2023).

By integrating technology into their teaching practices, teachers can improve conventional teaching methods in innovative ways (Cao et al., 2023). This is important because digital competence not only enables teachers to diversify their instructional methods and strategies to accommodate various learning styles, abilities, and interests of students (Moorhouse & Yan, 2023), but it also provides them with access to numerous resources, including authentic audio-visual materials, interactive learning platforms, and online collaboration and communication tools. This teacher-led integration of technology supports the development of student digital competence, which is needed for self-directed learning in English as a foreign language (EFL) contexts. Consequently, students are better able to navigate and use online resources independently (Scheel et al., 2022), providing them to more flexible and individualized learning experiences (Haleem et al., 2022; Scheel et al., 2022). As the demand for technology integration increases, the development of digital competences among both teachers and students is vital to ensure that language instruction stays up-to-date with technology.

Integrating technology into EFL instruction is no longer optional; it is essential for promoting effective learning environments. However, this transformation involves considerable challenges, particularly in developing digital competence, which is important for meaningful engagement with technology for both teachers (Demissie et al., 2022) and students (Wild & Heuling, 2020). Many teachers struggle to adapt their methods to a technology-driven environment (Fenández, 2020; Haleem et al., 2022), while students may have unequal access to devices and the internet as well as varied digital literacy (van de Werfhorst et al., 2022). Moreover, despite being considered digital natives, many students frequently lack essential digital competencies such as information literacy, communication and collaboration, safety and security, and problem-solving (Sarva et al., 2023; Scheel et al., 2022). Additionally, a lack of adequate training, resources (Aydin et al., 2024), and ongoing support slows this digital transition. To effectively implement digital learning in EFL classroom, education systems must empower students with appropriate technological support (Scheel et al., 2022) while ensuring that professional development programs are tailored to teachers' individual characteristics and technological efficacy (Bekoe et al., 2025).

The imperative for digital competence is not limited to teachers and educators; it is equally essential for pre-service teachers (PSTs) who require sufficient digital competence to successfully apply technology in practical teaching environments (Jimarkon et al., 2021; Tomczyk, 2021). Digital competence goes beyond the simple use of digital technology (Farjon et al., 2019); rather, it involves the pedagogical and ethical judgment required to evaluate and apply digital resources effectively within educational settings (Chiu et al., 2024; Falloon, 2020; McGarr & McDonagh, 2021). Although PSTs extensively use digital technologies, their digital abilities vary significantly (Chu et al., 2023), and many still struggle with integrating these tools effectively in their classrooms.

As highlighted in the recent OECD report, international frameworks emphasize teacher digital competence (TDC) (Foster, 2023); however, Thailand struggles to put this policy into practice. Although the national higher education plan (2023-2027) mandates digital training in universities, this training fails to translate into actual classroom practices. Similar to other EFL contexts, Thai PSTs often encounter unequal resources and a lack of hands-on training with technology. Because there is little empirical research on how these teachers assess their own digital readiness and handle practical challenges, an in-depth study is essential. This research aims to explore how future teachers perceive their digital competencies, how they actually use technology in teaching, and what factors influence their instructional growth.

Among the most comprehensive and up-to-date frameworks for TDC is the teacher digital competence framework (Falloon, 2020). It expands upon the technological pedagogical content knowledge (TPACK) paradigm (Mishra & Koehler, 2006) by introducing two essential areas: personal-ethical and personal-professional domains. Rather than focusing solely on basic digital abilities, the TDC framework emphasizes using technology safely, productively, and ethically. This focus makes it highly suitable for EFL PSTs. Modern English language teaching heavily relies on digital resources, cross-cultural online communication, and authentic media. As a result, EFL teachers are tasked with ethically selecting online resources and leveraging digital networks for their own language maintenance and professional growth. Because the TDC framework effectively captures these complex needs, it serves as the ideal theoretical foundation for this study. In particular, this research aims to:

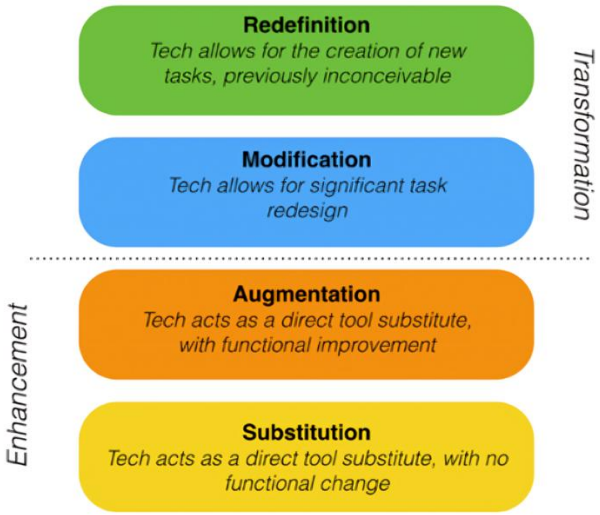

Figure 1. The SAMR model (adapted from Puentedura, 2006, as cited in Falloon, 2020, licensed under CC BY 4.0.)

(1) examine the perceived digital competence levels of Thai EFL PSTs,

(2) investigate their digital integration in classroom settings, and

(3) explore factors influencing their digital competence.

The findings of this work can be utilized to develop curricula and to identify effective strategies for enhancing the digital skills of future educators.

LITERATURE REVIEW

Teacher Digital Competence

The growing prominence of digital technologies, especially in educational contexts, has emphasized the significance of TDC as an essential requirement for high-quality education. Dias Trindade and Ferreira (2020) define TDC as the knowledge, abilities, and/or skills necessary to utilize technology and implement these competencies to facilitate and enhance students' learning. Beyond the functional use of digital technology, it is essential to have a critical awareness of the ethical implications associated with its use (McGarr & McDonagh, 2021). Falloon (2020) further states that teachers require more than simply utilizing digital tools to present educational content; they must function efficiently, safely, and ethically in digitally mediated contexts.

Over the years, numerous frameworks and models have been created to describe the specific digital competence that teachers require to be technologically or digitally competent as well as to support teachers in developing their students' digital skills, including the SAMR model (Puentedura, 2006), the TPACK framework (Mishra & Koehler, 2006), and more comprehensive digital competence models such as Falloon's (2020) TDC framework. Although these frameworks share the common objective of fostering meaningful technology integration, they have substantial differences in terms of their scope, emphasis, and underlying assumptions regarding the definition of digital competence.

The first model is SAMR, which was developed by Puentedura (2006); it offers teachers a systematic approach to integrating technology into teaching effectively (**Figure 1**). This model comprises four stages: substitution, augmentation, modification, and redefinition. According to Crompton and Burke (2020), SAMR is commonly utilized as a practical model for teachers to identify the levels of advancement in incorporating educational technology into their teaching. Nevertheless, some scholars argue that SAMR presents technology integration as a linear progression which may overlook the complex pedagogical decisions required in authentic classroom contexts. This is supported by Hamilton et al. (2016), who state that structuring the levels from substitution to redefinition as hierarchical steps may suggest that higher levels are preferable. This structure might encourage teachers to prioritize technological transformation rather than the

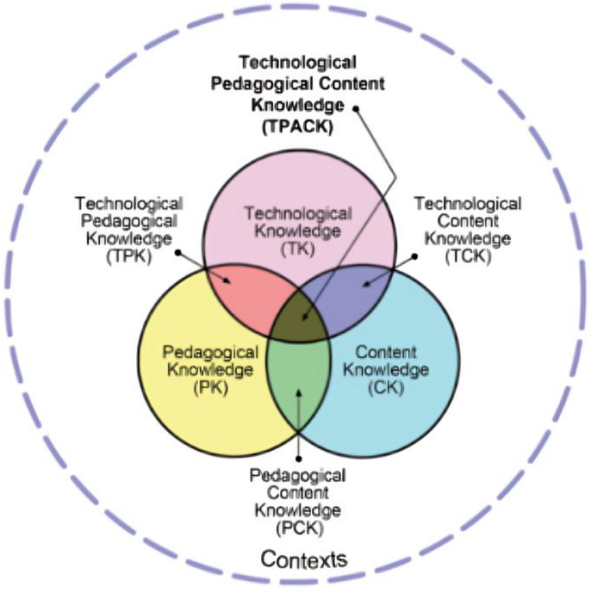

Figure 2. The TPACK framework (adapted from Mishra & Koehler, 2006, as cited in Falloon, 2020, licensed under CC BY 4.0.)

underlying learning processes. Additionally, Kimmons et al. (2020) further emphasize that SAMR tends to evaluate the levels of digital tool use in classrooms rather than students' engagement or educational outcomes. Consequently, SAMR has encountered criticism for emphasizing the levels of technological transformation while insufficiently addressing contextual and pedagogical efficacy (Blundell et al., 2022).

On the other hand, the TPACK framework shifts the focus from levels of technology use to the intersection of technological, pedagogical, and content knowledge (**Figure 2**). The framework prioritizes the dynamic interactions between these distinct knowledge domains rather than viewing integration as a linear, progressive transformation. Recently, a study conducted by Almithqal and John (2025) highlighted how TPACK can be applied to teaching English pronunciation among Jordanian university lecturers. It was found that teachers' technological knowledge, without appropriate pedagogical knowledge and content knowledge, was insufficient for effective instruction. The findings further emphasize that meaningful ICT integration requires balanced development across the interconnected TPACK domains. This suggests that teachers' competence to integrate technology effectively depends on access to digital tools, their pedagogical readiness, and contextual application of technology in language instruction.

Nevertheless, previous research has reported inconsistencies in the relationship between teachers' self-reported TPACK and their instructional practice. For instance, Schmid et al. (2021) discovered that there was no significant correlation between PSTs' usage of digital technology in their lesson plans and their self-reported TPACK ratings. According to this research, the use of technology in instructional design may not always be predicted by perceived digital competence. Furthermore, recent evidence from Mohammadpour and Maroofi (2025) further confirms this inconsistency by showing that teachers often overestimate their competence on self-assessment scales compared to their performance on scenario-based tasks. Therefore, these inconsistencies raise concerns about whether self-reported TPACK measures the complex set of competencies required for meaningful technology integration in educational contexts.

As SAMR focuses on levels of technological transformation, and TPACK emphasizes the integration of TPACK domains, both approaches have been criticized for their omission of ethical, professional, and contextual dimensions. Due to the limitations of the two frameworks, Falloon (2020) re-conceptualized a multidimensional TDC framework that incorporates not only technological, pedagogical, and content knowledge but also personal-ethical and personal-professional dimensions (**Figure 3**). Personal-ethical competencies play a major role in the development of responsible citizenship toward digital technologies. They involve modeling and teaching the sustainable and safe use of digital resources and addressing ethical issues such as privacy, identity protection, cyberbullying, and digital footprints. Moreover, personal-

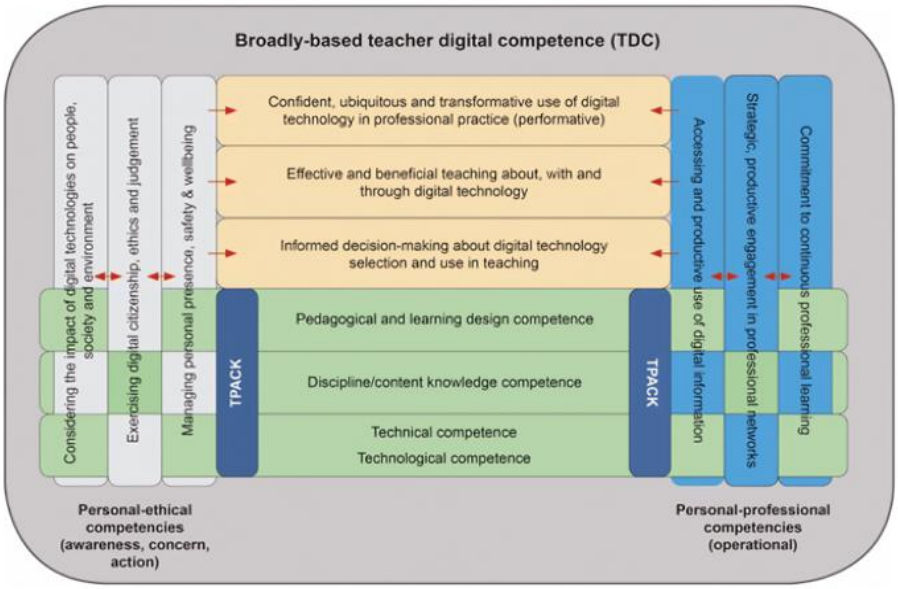

Figure 3. The TDC framework (Falloon, 2020)

professional competencies emphasize information literacy, strategic engagement in professional networks, and commitment to continuous professional learning.

Despite Falloon's (2020) well-established framework, empirical studies in many cultural contexts remain limited (Chiu et al., 2024), raising questions about its applicability across contexts. To respond to this limitation, the present study associates the domains from Falloon's (2020) framework with specific research objectives and corresponding research methodology. The technological, pedagogical, content, personal-ethical, and personal-professional dimensions will be explored by assessing PSTs' perceived digital competence through a self-assessment questionnaire. Nevertheless, previous studies indicate that perceived competence does not consistently transfer into classroom practice; hence, actual digital competence is investigated via classroom observations to analyze the correlation between perceived digital competence and actual instructional practice. Finally, semi-structured interviews will be conducted to investigate the institutional and environmental influences that contribute to the development of TDC in order to gain a more comprehensive understanding of the influencing factors. From these corresponding methods, the research will explore digital competence using Falloon's (2020) framework associated with perception, practice, and context, rather than depending only on self-assessed indicators.

RESEARCH METHODOLOGY

This study combines quantitative and qualitative methods. The purposes of the study were to:

(1) investigate the perceived digital competence levels of Thai EFL PSTs,

(2) explore their digital integration in actual classroom settings, and

(3) examine factors influencing their digital competence.

Participants

The participants consisted of 32 English education students at a Thai university. They were completing their teaching practicum across several provinces in the central part of Thailand, representing both urban and rural educational contexts in Thailand. To reduce selection bias, they were randomly selected from a purposive pool of students completing their primary or secondary school practicum during the second semester of the 2024 academic year. While the sample size of 32 is small for widespread quantitative generalization, it is deemed adequate for this exploratory mixed-methods study. The primary objective is to gain in-depth, context-specific insights rather than establishing universal claims.

Research Instruments

Based on the literature related to TDC and digital integration in the classroom, the researchers developed three research instruments: a self-assessment questionnaire, an observation form, and interview questions. Then, these instruments were validated by three university experts with over five years of experience in teaching and technology integration. Based on their feedback, the instruments were revised and piloted with 30 pre-service students who were excluded from the main study. The data confirmed high reliability, yielding Cronbach's alpha scores of .83 for the 32-item questionnaire and .84 for the observation protocol.

Self-assessment questionnaire

This was developed to investigate the perceived digital competence of Thai EFL PSTs. The questionnaire included five dimensions: seven items on personal-ethical competencies, seven items on personal-professional competencies, four items on technological knowledge, seven items on content knowledge, and seven items on pedagogical knowledge, for a total of 32 items on a 6-level Likert scale. The questionnaire was given out in Thai to guarantee accuracy and clarity.

Observation protocol

This was designed to explore how Thai EFL PSTs integrate digital technology in classroom settings. It included 15 items on a 6-point Likert scale. The first nine items assessed the degree of digital integration by technology type, such as word processing, multimedia creation, and interactive instructional technologies. The other six evaluated the appropriateness of technology use, such as the ethical and responsible use of technology, as well as the alignment of digital tools with specific learning objectives. An open-ended remark area was added to enable researchers to record additional contextual details during observations.

Interview

A semi-structured interview with eleven questions was designed to gain deeper insights towards factors affecting digital competence such as choice of digital tools, available educational resources, role of technology in English language teaching, and obstacles preventing digital integration. Sample interview questions included: 'What factors influenced your choice of digital tools?' and 'What factors or obstacles limit your ability to use digital tools in your teaching?' (see **Appendix A** for the full list of interview questions).

Data Collection

The data collection took place between November 2024 and March 2025. Before collecting data, the researchers informed the participants regarding the purpose of the study, methods, participants' rights, and confidentiality. The participants were then given 30 minutes to complete the self-assessment questionnaire on paper about their perceived digital competence before their teaching practicum. Afterwards, the researchers conducted three one-hour classroom observations to examine how the participants applied digital competence in their teaching. Subsequently, the researchers conducted an in-depth interview after their teaching practicum.

Data Analysis

Quantitative data from the questionnaires and classroom observations were analyzed by using descriptive statistics (means [Ms] and standard deviations [SDs]). Given the small sample size (N = 32), a Pearson correlation was conducted to examine the relationship between participants' perceived digital competence and their actual classroom integration. Qualitative data were analyzed by using content analysis for observations and thematic analysis for interviews. The coding process involved generating initial descriptive codes related to digital competence factors, synthesizing similar ideas into interpretive codes, and ultimately categorizing them into overarching themes. To ensure qualitative reliability, a second researcher independently coded a subset of the data. Any coding discrepancies were resolved through discussion to reach a consensus.

Table 1. Self-evaluation for digital competence

No	Items	M	SD	R
Personal-ethical competencies				
1	I can limit excessive digital use to avoid physical problems (e.g., obesity, blurred vision, muscle aches).	2.78	1.36	25
2	I can limit excessive digital use to avoid psychological problems (e.g., social isolation, online addiction).	2.44	0.86	27
3	I respect individual diversity in digital content.	5.38	0.65	1
4	I always maintain a positive online environment. (e.g., avoid cyberbullying and deceiving someone)	5.16	0.83	3
5	I minimize creating digital waste and changing electronic devices as needed.	4.25	1.35	11
6	I secure my personal information on social media platforms.	5.09	0.88	5
7	I secure students' confidential information (e.g., exams, grades, financial data, counseling records, personal information).	5.28	0.72	2
Personal-professional competencies				
8	I teach students about data privacy and security.	3.66	1.38	17
9	I use various search techniques to efficiently find relevant information online.	4.41	0.86	9
10	I equip students with skills to evaluate the credibility of online sources.	3.63	1.14	18
11	I connect with educators to exchange and broaden instructional knowledge.	2.53	1.00	26
12	I create and share educational materials on online platforms.	3.09	1.83	23
13	I seek technology knowledge to support my professional development.	3.59	1.20	19
14	I use new tools for achieving specific instructional goals (e.g., enhancing students' engagement or communication).	3.19	1.31	22
Technological knowledge				
15	I can choose the appropriate digital tools to make English learning more interesting.	3.47	0.87	21
16	I can solve basic technical problems that happen when using technology for teaching.	4.41	0.90	9
17	I can use digital assessment tools, such as Kahoot!, Quizlet, Padlet, or Google Forms, to evaluate student understanding.	5.03	0.59	6
18	I feel confident using a variety of technology for instructional purposes.	3.94	0.97	15
Content knowledge				
19	I can select lesson content that aligns with the English proficiency levels of my students.	4.03	0.88	13
20	I can use English effectively in the classroom.	3.50	1.09	20
21	I have sufficient knowledge of English grammar and can explain its rules clearly.	3.50	1.09	20
22	I have sufficient vocabulary knowledge to effectively teach my students.	5.13	0.65	4
23	I am knowledgeable about various assessment methods for evaluating English language proficiency.	3.94	0.86	15
24	I know how to design engaging and effective lesson plans and interesting teaching materials.	4.09	0.76	12
Pedagogical knowledge				
25	I understand the cultural aspects related to English-speaking countries and can incorporate these into my teaching.	4.00	0.94	14
26	I can identify students' various learning styles and use different teaching methods based upon the needs of individual students.	3.91	0.88	16
27	I can create well-written lesson plans with effective learning objectives that engage students in learning activities.	4.31	0.46	10
28	I can use appropriate assessment tools to evaluate student understanding and adjust my teaching accordingly.	4.25	0.79	11
29	I can effectively manage my classroom to promote student engagement.	4.69	0.68	7
30	I can use a variety of instructional strategies (e.g., use questioning techniques) to promote 21st century skills.	4.44	0.79	8
31	I know how to provide constructive feedback to help students improve their learning.	3.00	0.90	24
32	I can reflect on my teaching practices and identify areas for improvement to enhance student learning outcomes.	5.13	0.60	4

Note. R: Rank

FINDINGS

Pre-service Teachers' Perceived Digital Competence

PSTs completed a questionnaire concerning perceived digital competence. The questionnaire consisted of thirty-two items on a six-point Likert scale, ranging from completely disagree to completely agree.

Table 1 reveals that PSTs' highest perceived competence was in item 3, "I respect individual diversity in digital content," which achieved an M score of 5.38 (*SD* = 0.65). Following closely, PSTs reported notably high confidence in their capacity to secure students' confidential information (item 7), with an M of 5.28 (*SD* = 0.72), and to maintain a positive online environment (item 4) (*M* = 5.16, *SD* = 0.83). Beyond these ethical aspects,

Table 2. PSTs in different school sizes

Grade level	School size			
	Extra-large	Large	Medium	Small
Primary school (6 PSTs)	-	3 PSTs	3 PSTs	-
Lower secondary (12 PSTs)	6 PSTs Physical education	4 PSTs Language – mathematics, sciences	2 PSTs Social studies, language	-
Upper secondary (14 PSTs)	7 PSTs Language – mathematics, sciences, English-Chinese	4 PSTs Language – mathematics, sciences, social studies	3 PSTs Social studies, sciences	-

Table 3. PSTs' technology integration

Types of technology	M	SD	Ranking	Proficiency level
1. Word processing	4.16	0.62	4	Competent
2. Organizing and brainstorming	2.50	0.71	7	Developing
3. Data collection and analysis	2.25	0.87	8	Beginner
4. Communication and collaboration	4.50	0.79	2	Expert
5. Instructional media	4.03	0.39	5	Competent
6. Multimedia creation	4.94	0.61	1	Expert
7. Interactive instructional technologies	3.91	0.80	6	Competent
8. Database-based	4.19	0.81	3	Competent
9. Kinesthetic technology	1.75	0.94	9	Beginner

PSTs also rated themselves highly in vocabulary knowledge (item 22) (M = 5.13, SD = 0.65) and, notably, the ability to reflect on their teaching practices and identify areas for improvement to enhance student learning outcomes (item 32), also with a high M of 5.13 (SD = 0.60), tying for the fourth-highest rank.

In contrast, the lowest rated competencies included the least confidence in limiting digital use to avoid psychological (item 2; M = 2.44, SD = 0.86) and physical problems (item 1; M = 2.78, SD = 1.36). In terms of professional practices, they expressed lower confidence in networking with educators to exchange instructional knowledge (item 11; M = 2.53, SD = 1.00), knowing how to provide constructive feedback (item 31; M = 3.00, SD = 0.90), and creating and sharing educational materials on online platforms (item 12; M = 3.09, SD = 1.83).

Thai EFL PSTs' Digital Integration in Actual Classroom Settings

To explore the types and appropriateness of digital integration by PSTs in the classroom, an observation form was employed.

Table 2 presents track data from 32 Thai EFL PSTs during their teaching practicum. None of the PSTs were assigned to small schools, and academic tracks do not exist in Thai government elementary schools. Among the PSTs in lower and upper secondary schools, the majority were placed in extra-large (6 and 7, respectively) and large schools (4 in each tier). Extra-large schools offered a wider variety of academic tracks, such as physical education, sciences, and languages. In contrast, medium-sized schools hosted fewer PSTs and provided narrower track options. To examine how PSTs integrated technology into these various settings, the researchers conducted classroom observations. When geographical barriers or other logistical constraints made on-site visits impossible, these observations were conducted online. Finally, if a PST's technology use during a lesson was unclear, the researchers held follow-up interviews to obtain further clarification and contextual understanding.

For this study, technology proficiency levels were defined as follows: *not used* (1.00-1.49) indicates that the technology was absent during the classroom observation. *Beginner* (1.50-2.49) reflects limited experience, lack confidence, or struggle to use the tools effectively. *Developing* (2.50-3.49) describes technology integration is in its initial stages during which continual guidance or training remains necessary. *Competent* (3.50-4.49) means the technology is used effectively and in line with instructional objectives. *Expert* (4.50-5.49) indicates a fluent use of technology to enhance the learning experience. Finally, *innovative* (5.50-6.00) describes a creative and impactful integration of technology that significantly improve student learning outcomes.

Table 3 demonstrates differences in digital integration levels. Significantly, multimedia-based technologies showed the highest average usage (M = 4.94, SD = 0.61), while communication and collaboration technologies

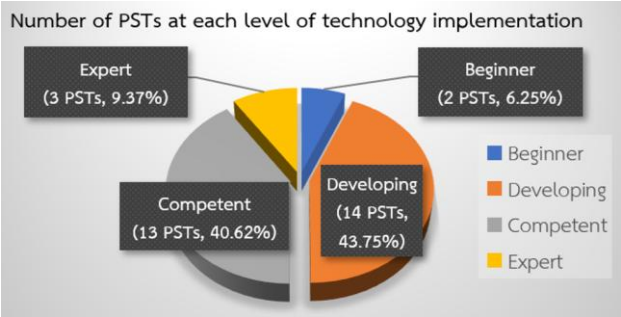

Figure 4. Number of PSTs at each level of technology implementation (the authors' own elaboration)

(*M* = 4.50, *SD* = 0.79) also aligned with the *expert* proficiency level. Database-based, word processing, instructional media, and interactive instructional technologies were at a *competent* level with M values of 4.19 (*SD* = 0.81), 4.16 (*SD* = 0.62), 4.03 (*SD* = 0.39), and 3.91 (*SD* = 0.80), respectively, while organizing and brainstorming technologies were at the *developing* level (*M* = 2.50, *SD* = 0.71). In contrast, the lowest M scores were found for kinesthetic technologies (*M* = 1.75, *SD* = 0.94) and data collection and analysis (*M* = 2.25, *SD* = 0.87) technologies, indicating a *beginner* proficiency level.

Furthermore, observation data revealed varied implementations of effective and ineffective use of digital tools. Word processing technologies, particularly Microsoft Word, were consistently used for lesson planning and worksheet creation, although some instances of careless formatting and language errors were found. Organizing and brainstorming tools, such as Padlet and Miro, were occasionally used for mind-mapping and idea generation, but excessive time spent using these tools would sometimes disrupt other content. Notably, data collection and analysis tools were rarely used because PSTs viewed them as irrelevant to their lessons. Communication and collaboration, such as through the LINE messaging application, were highly effective for task assignment and student interaction. Instructional media, including YouTube and TikTok, were regularly integrated to introduce and model language content, but issues arose with video length, linguistic difficulty, and content irrelevance. Multimedia creation tools like PowerPoint and Canva were utilized to enhance visual presentations and interactive activities, though some presentations were affected by ineffective design elements. Interactive instructional technology applications such as Kahoot!, Quizizz, or Blooket were used for vocabulary and reading practice. When students lacked individual devices, PSTs adapted by leading these activities from the front of the class. Additionally, database-based resources like online dictionaries were used, PSTs received little instruction on how to select the correct word meanings. Finally, although kinesthetic technologies, such as virtual tours and motion-sensing activities, were rarely utilized, they were integrated creatively when applied.

Figure 4 demonstrates that 14 PSTs were at the *developing* proficiency level (43.75%). The next largest level was *competent*, represented by 13 PSTs (40.62%). A smaller proportion—just 3 PSTs (9.38%)—were at *expert* proficiency. Interestingly, 2 PSTs (6.25%) were classified as beginner. No PSTs were in the *not used* or *innovative* categories.

The appropriateness of technology use was interpreted as follows: *very poor* (1.00-1.49) indicates the PST is unable to apply technology in instructional settings. *Poor* (1.50-2.49) indicates that technology use is inappropriate or misaligned with instructional objectives. *Fair* (2.50-3.49) refers to limited and inconsistent technology use, with minimal effectiveness. *Good* (3.50-4.49) reflects appropriate technology use on some occasions. *Very good* (4.50-5.49) represents effective and appropriate integration of technology in most instructional situations. Lastly, *excellent* (5.50-6.00) indicates consistent, seamless, and highly effective use of technology in teaching.

Table 4 demonstrates that PSTs received the highest ratings in the *very good* category for choosing appropriate digital tools for learning objectives and student participation (*M* = 4.72, *SD* = 0.57), as well as for ethical technology use (*M* = 4.59, *SD* = 0.78). Additionally, technical skills for operating digital tools (*M* = 4.38, *SD* = 0.78) and selecting tools based on content (*M* = 3.97, *SD* = 0.53) were rated as *good*. Conversely, the lowest scores—which highlighted areas needing improvement—were the use of various tools for specific teaching

Table 4. Appropriateness of technology use

Technology integration in classroom	M	SD	Remarks
1. Ethical and responsible use of technology	4.59	0.78	Very good
2. Use of various digital tools for specific instructional goals	3.19	0.58	Fair
3. Integration of technology to make classroom activities more efficient	3.22	0.48	Fair
4. Necessary technical skills to operate digital tools	4.38	0.78	Good
5. Selection of digital tools in accordance with the content	3.97	0.53	Good
6. Appropriateness of digital tools to support specific learning objectives and student participation	4.72	0.57	Very good

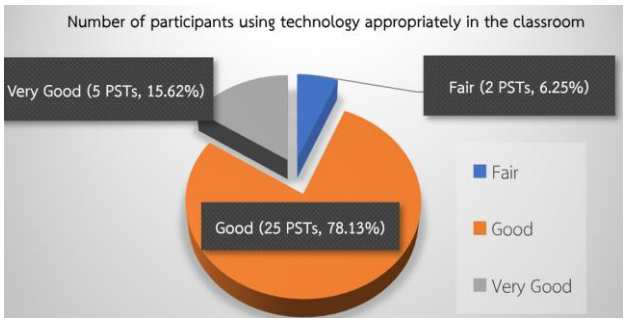

Figure 5. Number of PSTs using technology appropriately in the classroom (the authors' own elaboration)

purposes (*M* = 3.19, *SD* = 0.58) and the integration of technology to enhance classroom efficiency (*M* = 3.22, *SD* = 0.48), both of which fell into the *fair* level.

Figure 5 demonstrates that the majority (25 PSTs, 78.13%) were classified as the *good* category. A smaller proportion, 5 PSTs (15.62%), achieved a *very good* result. Only 2 PSTs (6.25%) were categorized as *Fair*. Notably, none of the PSTs were rated in the *very poor*, *poor*, or *excellent* categories.

A Pearson correlation showed no significant link between the PSTs' perceived digital skills and their actual use of technology in the classroom ($r(30) = .039$, $p = .83$). In other words, higher confidence in digital tools did not necessarily translate to more frequent technology integration during their teaching practicum.

Factors Influencing Digital Competence of Thai EFL PSTs

Qualitative data from semi-structured interview transcripts were thematically analyzed in order to identify the key factors influencing PSTs' digital competence. The codes were grouped into broader themes based on recurring patterns among participants. Themes that were supported by a minimum of two to four participants were retained in order to certify analytical rigor. Additionally, representative quotations were selected to exemplify each pattern. Throughout the analysis, two overarching divisions were acknowledged:

1. Supportive factors promoting digital competence in PSTs
2. Challenging factors hindering the development of digital competence in PSTs.

Supportive factors promoting digital competence in PSTs

Supportive factors that promoted digital competence included contextual enablers, familiarity with technology, personal behavior, and mentorship and peer support (**Figure 6**).

Contextual enablers: Contextual enablers are the external conditions in the practicum school which can facilitate the development of digital competence. Some participants (PSTs 3, 4, 6, 11, 14) said contextual enablers are a key factor in digital competence development.

Accessibility of tools: PST4 mentioned: "With a reliable projector and access to online video platforms such as YouTube, I found it easy to implement a good level of authentic materials in my teaching." PST3 and PST11 also stated, "My practicum schools allow students to use personal mobile phones in the classrooms, which facilitated me to create interactive learning activities with educational apps."

Infrastructure support: Reliable internet, IT access, and necessary infrastructure contributed to PSTs not facing any technical obstacles with digital tools. PST6 said, "A reliable Wi-Fi at my practicum school made it easier to search for online resources." PST14 also highlighted IT support "Having an IT support team at the

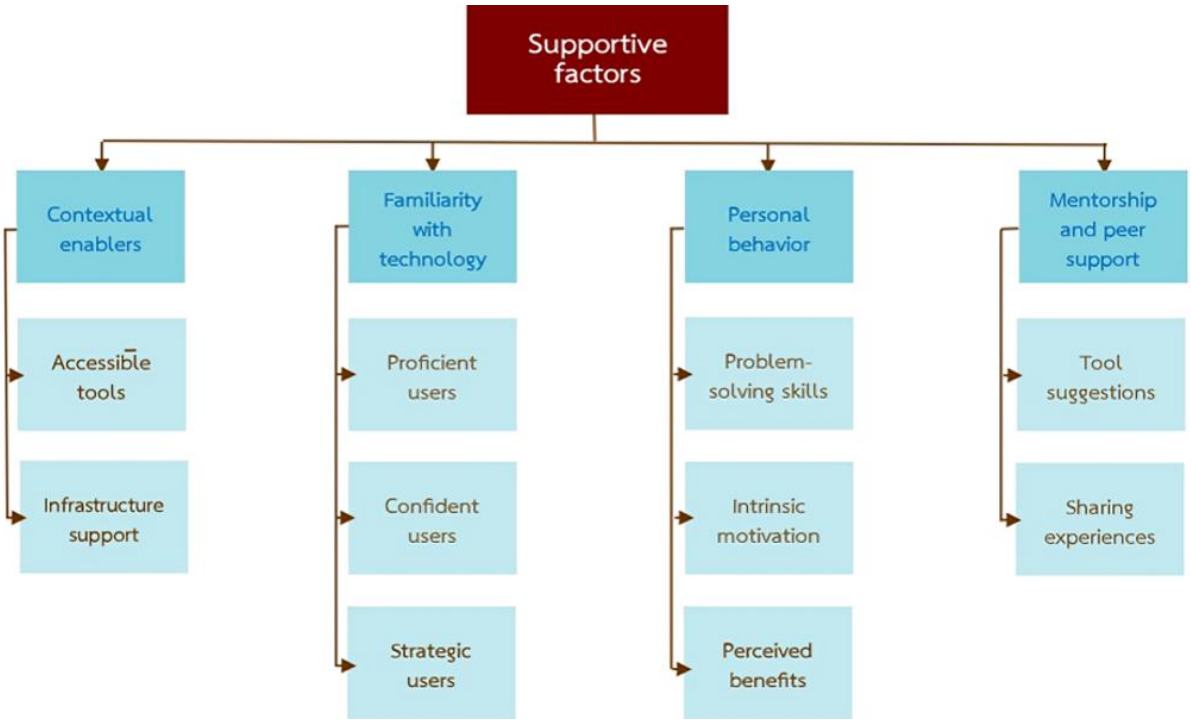

Figure 6. Supportive factors (the authors' own elaboration)

school was quite helpful. When I had any technical problems, they were always available to help me solve the technical problem."

These examples demonstrated a direct relationship between the availability of digital resources and PSTs' competence to use technology in their classroom. PSTs who were easily accessible resources showed more confidence and could explore with a wider technology application.

Technology familiarity: A recurring pattern across several participants (PSTs 1, 3, 4, 6, 7, 8, 9, 11, 12, 13, 14, 17, 21) indicated that prior exposure to digital tools in their everyday lives contributed to greater confidence, flexibility, and independence in classroom application. Starting with such a familiarity functioned as a positive foundation from which to develop digital competence for teaching. Frequent and varied use of digital devices and applications in their daily lives has created an intuitive understanding of technology, thus lowering the initial barrier to its adoption in the educational context. From the interviews, the PSTs could be classified into three types of users.

Proficient users: These PSTs could troubleshoot IT problems on their own (PSTs 1, 11). PST1 explained, "I faced a problem with presentation software, but I could find the solution by myself because I've used it quite a bit before."

Confident users: PSTs who had confidence in their digital skills were more likely to use technology in their teaching, to try new tools, and to adapt teaching methods (PSTs 3, 4, 13, 14, 21). PST4 stated, "The more I used online quizzes with my students, I felt more comfortable with it. It also made me more willing to try out new technologies when I saw that it worked for my students."

Strategic users: Familiarity helped PSTs select the right tools for specific pedagogical purposes (PSTs 6, 7, 8, 9, 17, 21). PST 9 remarked, "I knew Kahoot! might be useful for lesson review, whereas Padlet would be better for writing collaboratively." These results indicate that familiarity with technology forms the basis of PSTs' digital competence so they can effectively move from basic usage to more strategic and meaningful integration.

Teachers who use technology in their daily lives probably have more than technical skills; it gives them the confidence to try new things in the classroom without being afraid of failure. They are already comfortable with digital tools, so they can easily change from using an app to designing meaningful lessons that actually enhance students' learning.

Personal behavior: Several participants (PSTs 6, 7, 8, 13, 16) identified personal behavior, including problem-solving skills, intrinsic motivation, and perceived benefits, as components that led to digital competence. More engaged and confident participants were those who actively experimented with digital tools and adapted to contextual constraints.

Problem-solving skills: PSTs with a good level of problem-solving skills actively searched for effective solutions. PST6 stated,

> "While my school does not allow students to use mobiles, I could design the vocabulary review exercise in an interactive way. I projected an online Wordwall quiz on the screen; I helped the team that could answer questions correctly to move their "virtual board game" pieces, keeping students engaged while following school rules. I think teachers need to find adaptive solutions."

Intrinsic motivation: PSTs who were aware of technology's advantages were more motivated to develop digital competence. PST7 shared, "I got motivation to learn new digital tools because I saw a big increase in my students' engagement when I used them."

Perceived benefits: PSTs perceived technology as a way to enhance students' comprehension. As PST8 mentioned,

> "I employed some videos and interactive phonics games, focusing on sounds and letter clusters because they helped the children learn how to read the simple words easily. When I saw their improvement, I felt motivated to continue using these types of tools."

These findings suggest that personal behavior functions as a driving force behind digital competence development, as they enable PSTs to actively engage with and adapt technology to diverse teaching contexts.

Mentorship and peer support: Participants (PSTs 4, 8, 17, 21) mentioned that mentorship and peer collaboration were significant in supporting the development of digital competence. Participants described how interactions with mentors and peers introduced them to new tools and enhanced their instructional practices.

Tool suggestions: School advisors, university supervisors, and peers suggested useful digital tools and applications. This introduced the PSTs to new technologies, which perhaps they may not have discovered on their own. As PST8 stated

> "My university supervisor suggested using Quizizz for formative assessment. While it's a great tool for creating quizzes, I initially struggled with how to design questions that truly assessed my students' understanding of the specific learning objectives for that lesson. Knowing about the technology was not enough; I also needed to find out how to utilize it successfully in my lesson."

Sharing experiences: Sharing experiences of success and obstacles that occurred while teaching contributed to new reflective insights and helped to develop a community of practice. As PST4 elaborated, "It was a beneficial experience when my friends shared how they successfully used some games, like Conceptboard for brainstorming ideas. Their positive experience gave me the confidence to try it."

These findings suggest that while resource sharing supports efficiency, experience sharing contributes more deeply to pedagogical understanding and confidence, particularly in the context of technology integration.

Challenging factors hindering the development of digital competence in PSTs

The factors that hindered the development of digital competence among PSTs are discussed in this section. These factors have been classified under five main themes: institutional context, personal behavior, digital competence deficiencies, lack of continuous training, and students' interaction with technology (**Figure 7**).

Institutional context: The institutional context played a significant role in shaping PSTs' digital competence, and several challenges within this context could obstruct the development and implementation

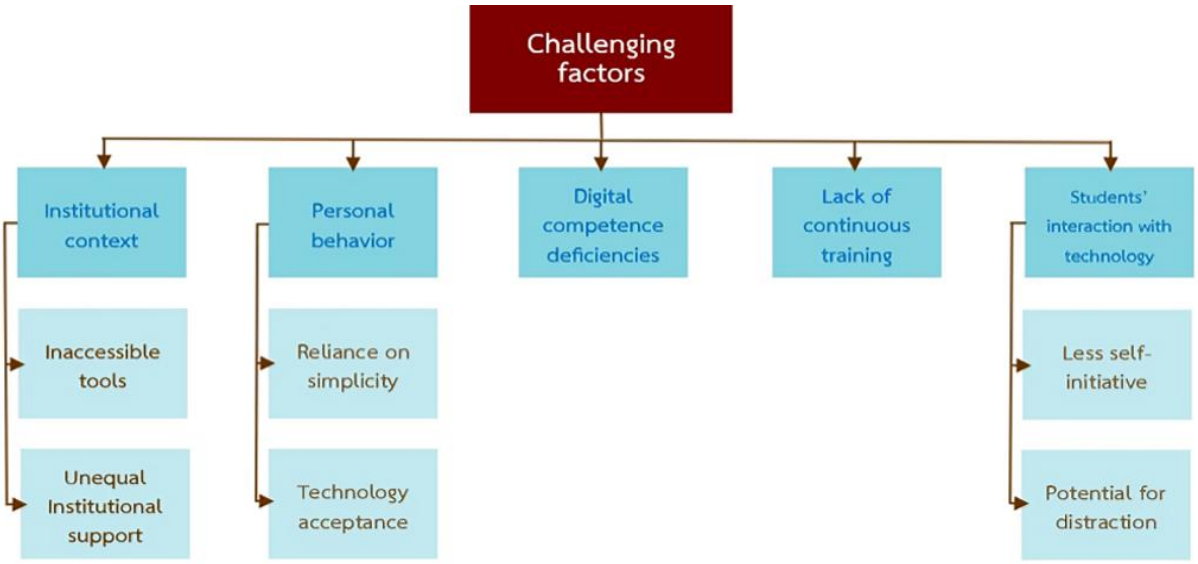

Figure 7. Challenging factors hindering digital competence in PSTs (the authors' own elaboration)

of PSTs' digital skills. A recurring pattern across participants (PSTs 2, 5, 10) indicated that limitations in institutional support created unequal opportunities for technology integration.

Inaccessible tools: Access to digital tools was one of the imperatives that allowed the integration of digital competence into PSTs' classroom practice. However, many PSTs encountered problems regarding the unavailability of tools in some schools, which acted as a barrier to integrating technology into their pedagogical work. These obstacles may occur in many ways, such as limited availability of devices or software and unreliable internet connectivity. PST2 states that, "We have few computers in school, and the network is very slow and not stable. It is really difficult to design lessons to use online or interactive games." Likewise, PST5 said "There were insufficient technological resources in her assigned classroom that limited her ability to create digital activities effectively."

Unequal institutional support: While some institutions try to support digital competence development, the level and quality of support can be unequal between different schools and among individuals within the same school, leading to unequal opportunities for development. As PST10 mentioned, "My friend who was placed in a large, well-funded school had access to interactive whiteboards and attended professional development workshops on technology integration held by his school. We received very different levels of support." Moreover, PST5 explained the inequity that she encountered:

Unlike my friend at the same school, who had a well-equipped room with a new interactive whiteboard and computer, I was assigned a room with outdated technology – lacking even a computer or projector. Furthermore, my classroom was behind the playground and close to the main road, making the learning atmosphere chaotic and unpleasant. This lack of suitable technology and a positive classroom environment significantly hindered my ability to teach effectively using digital resources, and it felt unequal that my friend had it so much easier.

These results imply that institutional inequities should be viewed as part of the system's constraints limiting the digital competence development of PSTs.

Personal behavior: The behaviors of PSTs, such as a reliance on simplicity and technology acceptance, are also determining factors in the development of teachers' digital competency. A consistent pattern across participants (PSTs 2, 10, 15, 18, 19) indicated that personal beliefs and attitudes toward technology influenced their willingness to adopt digital tools in teaching.

Reliance on simplicity: Some PSTs (PSTs 2, 15, 18) preferred to utilize basic tools instead of trying out more complicated ones. PST2 stated, "I tend to use digital tools that I'm used to because I don't want to take the chance that something new won't work well in the classroom."

Technology acceptance: Some PSTs (PSTs 10, 19) hardly ever used technology due to anxiety, low confidence, or their belief in traditional practice. PST10 said:

> "I am quite worried about the use of technology in my class because I think unexpected things might happen, and I can't solve the problem right away. In addition, I am not sure if it is actually better than traditional methods of teaching."

Similarly, PST19 expressed hesitation in adopting new tools due to a lack of confidence in handling unexpected technical issues. From these findings, they imply that low self-efficacy is an important factor hindering digital competence, as it limits opportunities for experimentation and learning.

Digital competence deficiencies: Many PSTs expressed concerns about their skills to troubleshoot some technical problems, integrate technology pedagogically, or adapt to evolving tools. A recurring pattern across participants (PSTs 2, 5, 15, 18, 24) indicated a gap between general digital literacy and pedagogical application. PST2 noted, "I may use social media and some applications for personal purposes but cannot transfer those skills into using them to teach English. There is a huge difference between the use of technology for fun and use for learning." PST24 also indicated the inability to choose appropriate digital tools for particular learning goals, emphasizing the challenge of applying technological knowledge in instructional contexts.

These findings provide evidence of the fact that having basic digital skills does not automatically transfer into effective pedagogical integration.

Lack of continuous training: PSTs mainly stated that the technology training they had received did not target English language teaching. A consistent pattern among the interviewees (PSTs 3, 7, 11, 20) indicated a requirement for ongoing and targeted professional development. It was reported that there is a need for more practical and subject-specific guidance that can be applied in EFL classrooms. "We had some initial training, but there's no ongoing support or follow-up," PST7 said. In addition, PST20 emphasized, "As technology is advancing, we require continuous professional development to get used to the new technology and learn to use it effectively. A one-time workshop is just not enough."

These results imply that continuous training is essential for sustaining and enhancing PSTs' digital competence.

Students' interaction with technology: Students' interaction with technology also influenced PSTs' ability to integrate digital tools effectively. A recurring pattern across participants (PSTs 3, 10, 20, 21, 25, 26) indicated that student behavior played a significant role in shaping teachers' technology use.

Less self-initiative: If students showed less self-initiative, PSTs might be discouraged from applying technology in the actual classroom. As expressed by PST10, "If students are not ready to explore digital resources by themselves, it becomes difficult to encourage them to use technology in a meaningful way."

Potential for distraction: During the class period, one obstacle was the distraction when using technology. PSTs should properly encourage students to effectively use technology for learning purposes. As PST3 stated, "It was hard for students to concentrate when they were using their phones or smartphones in class. I tried very hard to minimize distractions and ensured that the mobiles were used for study rather than social media." Other participants voiced similar concerns regarding having students engaged when digital devices were introduced in the classroom (PSTs 10, 21).

These findings highlight the relationship between student engagement and teachers' willingness to integrate technology, suggesting that student readiness is a critical factor in digital competence implementation.

DISCUSSION

Pre-service Teachers' Perceived Digital Competence

The high self-ratings concerning respecting diversity in digital content, securing student information, and maintaining a positive online environment align directly with the personal-ethical competence domain of the TDC framework (Falloon, 2020) and the ISTE Standards for Educators (International Society for Technology in Education, 2017), which emphasizes ethical and safe digital functioning in diverse environments. This finding shows that PSTs view themselves as responsible digital citizens, an increasingly important trait for educators. This perceived strength could potentially be used in professional development by motivating teachers to share best practices or mentor colleagues in this area (Palacios-Rodríguez et al., 2025).

Furthermore, PSTs expressed confidence in their vocabulary skills. Although the PSTs rated their own knowledge highly, classroom observations showed a gap between their actual performance and their lesson objectives. This suggests that they may have overestimated their abilities, which highlights the need for further in-depth research. Additionally, the PSTs highly rated their ability to reflect on their own teaching. This is in line with Phan and Nguyen (2024), who found that EFL PSTs have a strong understanding of reflective practice. This skill is a key part of the personal-professional domain, which emphasizes strategic engagement in professional networks (Chiu et al., 2024).

Conversely, low self-assessments regarding the ability to control excessive digital use to prevent psychological and physical problems also fall within the personal-ethical competence domain, which covers personal presence, safety, and well-being (Chiu et al., 2024). This contrast with the highs for other aspects of personal-ethical competence is noteworthy. These findings suggest that while PSTs feel ready to help others stay safe online, they struggle to manage their own digital well-being. This contrast shows that the personal-ethical domain is complex; high confidence in one area does not guarantee confidence in another. Ultimately, this points to a critical weakness that requires targeted support for educators.

Beyond personal well-being, PSTs also reported limitations within the personal-professional domain. For instance, a lack of confidence in connecting with other educators to exchange instructional knowledge may hinder the exploration and collaborative adoption of new digital teaching practices, which require peer interaction and knowledge sharing (Aydin et al., 2024). Additionally, PSTs demonstrated difficulties in providing constructive feedback. This could imply that PSTs lacked the skills and confidence required to deliver feedback effectively. These results align with the previous findings by Pitukwong and Saraiwang (2024), who reported that participants expressed reluctance to request and provide feedback, as well as Cendani and Purnamaningwulan (2023), who discovered that students enrolled in Micro Teaching Class doubted their abilities to make comments during teaching practice. Finally, the reluctance to create or share educational materials online highlights a gap in personal-professional skills. One possible reason for the lack of online community participation could be limited digital creation skills, a lack of experience, or a failure to see the value of online networking. These findings align with Kaçar (2022), who noted that PSTs often struggle to create varied instructional materials and therefore require ongoing guidance and support.

Thai EFL PSTs' Digital Integration in Actual Classroom Settings

Observation data revealed that over fifty percent of PSTs had a level of digital competence categorized as *developing* level. This is consistent with prior research, which has identified teachers' digital competence as being in the *developing* or intermediate stage (Demissie et al., 2022; Guillén-Gámez, 2020; Zhao et al., 2021). This suggests that although many PSTs use technology in their regular practice, they require additional assistance for optimal integration. In addition, Falloon's (2020) TDC framework highlights that while PSTs already possess technological competence, they have not yet developed the self-transformational use of digital technology into professional practice. This implies that many PSTs are able to teach with technology; however, they lack a profound understanding of how to use it creatively and effectively to improve learning. This challenge is echoed by Almithqal and John (2025), who found that technological knowledge in isolation is insufficient; it should be integrated with appropriate pedagogical strategies and content understanding.

The results from the classroom observation, relating to digital integration, the two highest M scores were *appropriateness of digital tools to support specific learning objectives and student participation* and *ethical and responsible use of technology*. They were rated as *very good* level. These directly align with Falloon's (2020) TDC framework. High scores in ethical and responsible use of technology imply strong personal-ethical skills. These are crucial for responsible digital citizenship: safe, sustainable, and ethical use of digital resources, along with privacy protection and data security. These PSTs were aware of including ethics in their teaching environments (McGarr & McDonagh, 2021). In addition, the rating of *very good* for *appropriateness of digital tools to support learning objectives and student engagement* shows a significant growing ability in combining pedagogical and technological knowledge that they understood why and when to use particular tools to support student learning, aligning with the strategic understanding highlighted in the TPACK framework (Mishra & Koehler, 2006).

In contrast, the lowest M score, rated in the *fair* category, was for *The use of various digital tools for specific instructional goals*. This finding directly relates to personal-professional competencies, which are critical for

long-term career growth but often overlooked in initial teacher training. The problem shows that PSTs may not be effectively searching for or evaluating digital tools beyond their current experience. This underscores the necessity of enhancing personal-professional competencies through professional networks to discover new tools. This is consistent with Pérez-Navío et al.'s (2021) study revealing future teachers often struggle to find and select relevant information. As a result, this indicates that PSTs' capacity to explore, evaluate, and strategically select digital tools is critical for improving their personal-professional competencies and supporting more effective instructional practices.

Factors Influencing Digital Competence of Thai EFL PSTs

The educational environment of a school, particularly its technological accessibility, significantly influenced PSTs' competence to use technology in their instruction. PSTs mentioned that simple access to digital tools and a supporting infrastructure were crucial, as they enhanced their confidence and proficiency in using technology inside the classroom. This corresponds with Althubyani's (2024) conclusion that accessible materials may reduce stress and allow teachers to focus on their teaching. However, simple access to digital tools and supportive infrastructure are inadequate to ensure successful technological integration. Establishing an effective ICT environment via governmental policies and institutional assistance is essential for improving digital competence (Yang et al., 2023). Likewise, Dias-Trindade et al. (2023) emphasize that the major challenge for teachers goes beyond just having access to technology; it is knowing how to pedagogically use it to transform the learning experience. To achieve this transformation, training programs should be targeted towards specific areas of digital competencies—from beginner to advanced stages—to meet the varied needs of all teachers. This tiered approach allows teachers to put learning into practice suiting specific needs, changing the focus from technology itself to consolidated pedagogical practice (Dias-Trindade et al., 2023). By adopting the tiered approach, it can reinforce the personalized professional development which considers teachers' individual characteristics, levels of technological efficacy, and teaching contexts to support more meaningful ICT integration (Bekoe et al., 2025).

Another important factor is the familiarity of PSTs with technology, revealed in three distinctive groups: proficient users, confident users, and strategic users. Proficient users can integrate technology more efficiently into the classroom by, for example, troubleshooting IT problems on their own. Confident users will be more motivated to integrate the use of new tools in actual classes, especially when the outcomes turn out to be positive, such as improvement in student engagement. Consequently, teachers who have more confidence in the use of digital skills are more likely to integrate technology into their teaching. This is also consistent with the self-determination theory (Chiu et al., 2024), which states that successful technology integration can satisfy a teacher's basic psychological needs for competence, autonomy, and relatedness. This will naturally increase those innate motivations and help to gradually improve their digital skills and achieve sustainable digital growth.

Mentoring and support from peers are essential in building PSTs' digital competence. The support systems through a collaborative learning environment, where they can share both successes and failures, align with previous research, demonstrating how principals, colleagues, students, and supervisors can all influence how teachers apply digital tools (Althubyani, 2024; Chiu et al., 2024; Marais, 2023). This kind of integrated learning is an invaluable tool for professional growth because it provides instant and practical insights into best practices for technology use in the classroom (Alshehri, 2025). Ultimately, mentoring and peer support go beyond simple guidance; they create a powerful ecosystem of shared learning that significantly improves a PST's ability to use technology in their future career.

Despite the supportive influence, there are several factors that have a challenging influence on PSTs' digital competence. The most significant barrier was related to the institutional context, particularly there were insufficient resources that may impede digital integration opportunities (Althubyani, 2024; Antonietti et al., 2022). One important issue was the absence of resources and uneven support in schools, which resulted in disparities in the distribution of digital resources across various practicum schools (Tomczyk, 2024). Larger or better-funded schools often have more modern equipment and advanced digital learning environments, whereas smaller or rural schools may struggle to provide basic digital tools or reliable internet connectivity due to financial constraints. This link between funding and digital capability is supported by Fang (2024), who found that increased education funding positively impacts key aspects of digital education reform. Although

school size and funds play a major role in digital competency, the findings of this research show interesting results. Despite being in the same large, well-funded schools, PSTs taught in different classroom settings, resulting in varying access to digital resources across classrooms. This classroom-level digital inequality significantly reduces a PST's practical ability to integrate technology. While a school may have ample technology, the distribution and actual use of digital resources can still be inconsistent at the classroom level, which creates varied learning environments for PSTs.

Personal behaviors and attitudes of PSTs can be a major barrier to digital competence. A reliance on simple and familiar tools often limits the exploration of more advanced options. This behavior aligns with the technology acceptance model (Davis, 1989). According to this model, although a new technology appears useful, if people consider it difficult or complicated to use, then they probably will not consider using it (Marikyan & Papagiannidis, 2024). This unwillingness to explore directly limits their digital competence because this prevents continuous learning and skill refinement. From the perspective of self-determination theory (Chiu et al., 2024), a lack of incentive to willingly develop competence or autonomy can reduce intrinsic motivation and possibly block individuals in exploration.

In addition to personal and school-related challenges, student engagement directly affects how PSTs use technology. When students lack the motivation or skills to try digital tools, PSTs become hesitant to use advanced teaching methods, which creates a negative cycle (Rodafinos et al., 2024). Furthermore, as PST3 noted, smartphones often distract students from learning due to social media and constant notifications (Fadillah & Purnawarman, 2024). These challenges show that PST training must go beyond basic technical skills to include effective classroom management and digital citizenship.

Ultimately, these internal and external factors explain the most striking quantitative finding of this study: the lack of a significant relationship between PSTs' perceived digital skills and their actual classroom use. While the PSTs felt highly confident in their abilities, the qualitative data reveals that real-world school environments, limited equipment, and practical obstacles frequently prevent them from applying these skills during their practicum. Furthermore, by investigating the Thai context, this study addresses a critical geographical gap highlighted by Sakhieva et al. (2025), who argue that current ICT research is heavily dominated by developed Western nations. This research thus answers the urgent call for empirical contributions from developing countries, illustrating how localized constraints uniquely shape digital integration in non-Western settings.

Limitations and Suggestions

Although this study offers useful insights, it has a few limitations. First, the modest sample size (N = 32) means the findings are specific to this context and might not be broadly generalized to all Thai EFL teachers. Second, because participants might overestimate their own skills, future studies should use actual performance tests rather than relying solely on self-assessments. Third, the presence of observers in the classroom may have caused the participants to change their normal behavior—a phenomenon often noted in ethnographic research. Finally, due to time constraints, some participants were observed only once. Future research should include multiple observations and mentor teacher insights to get more accurate picture of their true classroom performance.

CONCLUSIONS

This study extends Falloon's (2020) TDC framework by showing that digital competence is not only an individual set of skills, but it is a multi-faceted competence focusing on the interaction between teachers' perceptions, their classroom practices, and their teaching environment. While Falloon's (2020) framework identifies the personal-ethical and personal-professional domains as vital components of modern teaching, this research reveals a disconnection between competence and action. Thai EFL PSTs had relatively high perceived competence in ethical and professional domains, but the findings from observation revealed a considerable disparity between perception and actual practice. This suggests that TDC is best demonstrated through actual practice rather than self-reported measures. Furthermore, this study suggests that TDC varies according to specific factors such as contextual enablers, technology familiarity, personal behavior, mentorship and peer support, continuous training, students' interaction with technology, etc. Hence, TDC

needs to be seen as a dynamic system that requires coordinated support across these areas to promote the efficient and sustainable implementation of new technologies in EFL classrooms.

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APPENDIX A: INTERVIEW QUESTIONS

1. What digital tools and/or educational resources do you use during your teaching practicum?
2. What factors influenced your choice of digital tools?
3. Which learning resources did you find most useful in your English classes, and which ones caused problems?
4. What kind of learning resources do you think would make your English teaching more effective? Why?
5. What role do you think technology plays in teaching English?
6. Did your practicum school support you in developing your digital skills for teaching?
7. How did your mentor teachers, university supervisors, or peers support you in developing your digital skills?
8. Does the school's curriculum allow you to integrate digital tools flexibly and effectively? Please explain why or why not.
9. Have you participated in any training or professional development to improve your digital skills for teaching English? If so, how did it help you?
10. What do you think is the greatest benefit of using digital tools in English language teaching?
11. What factors or obstacles limit your ability to use digital tools in your teaching?