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Abstract

This study explores the perceived readiness of pre-service English as a Foreign Language (EFL) teachers to integrate Information and Communication Technology (ICT) into their teaching practices in Vietnam. Using a mixed-methods approach, the research draws on quantitative and qualitative data from 110 final-year pre-service EFL teachers completing their teaching practicum in local schools. Data were collected through questionnaires and semi-structured interviews, with readiness assessed using Krumsvik's (2014) digital competence model. The findings indicate that participants generally perceive their digital competence as moderate to high across all four domains, reflecting a strong sense of confidence in ICT integration. However, significant gender differences emerged, with male pre-service teachers reporting higher digital competence than their female counterparts. The study also identifies four major challenges encountered during the practicum: pedagogical limitations, technological constraints, psychological barriers, and concerns about students' ICT-related difficulties. These findings highlight the need for teacher training programs to provide more targeted support in developing digital assessment competence and addressing barriers to ICT integration, ensuring that future educators are well-equipped for technology-enhanced EFL instruction.

Introduction

The way of acquiring new abilities, including language, has been changed by the enormous and quick development of ICT (Aisyiyah, 2022). It has been demonstrated that technology-enhanced language learning and teaching has positive impacts on students' motivation and engagement (Kristalli et al., 2020). For students in the 21st century, competences in using ICT are considered essential elements of skills since they allow them to engage with and contribute to society as global workers and citizens (Park & Son, 2020). As a result, governments and educational departments have made significant expenditures in ICT infrastructure and other measures to prepare future teachers to use technology for learning and teaching in order to capitalize on the expanding potential of ICTs and better prepare students with ICT capabilities (Park & Son, 2020). Recent studies in teacher education have shown that new teachers' acceptance and use of ICTs are significantly influenced by the amount and caliber of pre-service teachers' technological experiences in their teacher education programs (Lawrence & Tar, 2018). Thus, as part of their teacher training programs, numerous teacher education institutions worldwide provide pre-service

teachers with technology training components (Batane & Ngwako, 2017).

Along with the global trend of equipping pre-service teachers with skills of using ICT in the classroom, Vietnam is not an exception as the English Teacher Competency Framework provided by Ministry of Education and Training (MOET) has emphasized that an English teacher education program must include one essential aspect that is the ability to use technology in education. In other words, digital competence is considered as one of core skills that future EFL teachers have to achieve during their school years (Nguyen, 2024). Compared to their predecessors, today's pre-service EFL teachers should be better equipped to use technology in the classroom (Park & Son, 2020). Studies (Nguyen, 2021; Huynh et al., 2018; Le & Vo, 2014; Pham et al., 2019; Winley & Lau, 2012; Ranellucci et al., 2020) have shown that despite the apparent emphasis on the pedagogical and didactical use of ICT in teaching, instructors feel unprepared for integrating technology and struggle to use ICT in the classroom. Pre-service EFL teachers rarely use technology during their teaching practicums, despite the fact that teacher education programs offer courses on educational technology to encourage the use of ICTs in the classroom (Tondeur et al., 2017). Studies also demonstrated that numerous ICT-related courses do not, in fact, lead to changes in teachers' practices or the sustained or increasing use of ICTs in instructional contexts. Therefore, it can be concluded that there is a disconnect between the way teachers use ICTs in their everyday classroom activities and what they learn in their teacher education programs (Tondeur et al., 2017). The need to better understand the factors influencing pre-service language teachers' preparedness for computer-assisted language learning (CALL), including their attitudes toward and experiences with technology integration in language learning and teaching, is highlighted by this situation, which poses questions for teacher educators and researchers to have better understanding on pre-service EFL teachers' preparedness in integrating technology in their teaching. This study examines pre-service EFL teachers' perceived readiness to integrate ICT within the Vietnamese context. It explores participants' self-reported digital competence and experiences, focusing on their evaluation of teacher training program at a university in Vietnam, as well as the challenges they anticipate in using ICT in their future teaching.

Literature Review

Definitions of ICT and Readiness in ICT Use

The introduction of ICT is widely regarded as a significant outcome of modern scientific and technological advancements, leading to profound changes in a number of areas of daily life. The term "ICT" first emerged in the mid-1980s, initially referring to a variety of electronic systems used for mediated and broadcast communications (Parvez, 2011). In the context of the present study, ICT specifically encompasses both internet-based technologies - such as email, websites, and social networking platforms - and computer-based tools, including desktops, laptops, tablets, smartphones, and software applications designed to support the teaching and learning of English (Davies & Hewer, 2009).

The literature generally agrees that teachers' methods of instruction are shaped by their own experiences, learning, and practice (Wang, 2002). However, without adequate and appropriate training on how to integrate ICT into their teaching in pedagogically effective ways, it is unreasonable to expect teachers to adjust their current practices.

The Cambridge Dictionary defines readiness as "willingness or a state of being prepared for something". Building on this definition, Cuhadar (2018) argues that teacher's readiness to incorporate ICT in learning and teaching is a complex and multi-dimensional issue. Notably, it cannot be determined solely by their technical knowledge and skills; rather, it also depends on other factors such as pedagogical understanding, confidence, and institutional support.

The Role of ICT in EFL Teaching

The integration of ICT in EFL teaching has significantly transformed language learning. Previous studies consistently highlight the positive impact of ICT on student engagement, motivation, and learning outcomes. To be specific, Blake (2008) noted that ICT tools such as multimedia, language apps, and online platforms create interactive environments that enhance language acquisition. These tools provide learners with authentic language exposure through interactions with native speakers and real-world content (Warschauer, 2000). Additionally, ICT fosters collaborative learning by enabling peer interactions through online discussions and group projects (Sánchez et al., 2014). The flexibility of ICT allows for differentiated instruction, catering to diverse learning styles and providing personalized learning experiences (Kukulska-Hulme, 2012). Furthermore, ICT expands access to a variety of resources, such as online dictionaries and MOOCs, which help learners improve language skills outside the classroom (Chik, 2014; Moser & Jones, 2018).

Digital Competence Framework

It is believed that future teachers must be capable of employing a range of digital technologies and of designing and selecting appropriate digital tools for their classrooms. It is also necessary for them to be aware of how technology affects their students, in both beneficial and detrimental ways (Aisyiyah, 2022). To carry out technology enhanced learning and teaching, a range of intricate skills is necessary. A model of teachers' digital competence has been developed by Krumsvik (2014).

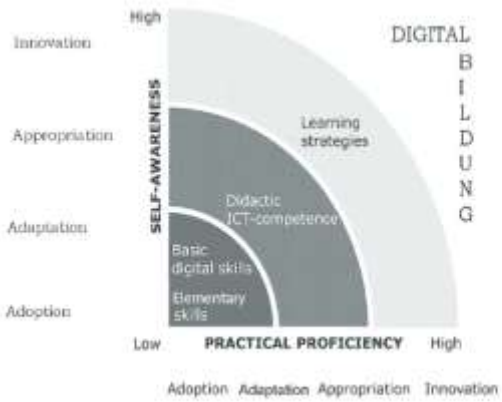

Figure 1. Krumvik's (2014) Model of Teachers' Digital Competence

The model identifies four essential components of digital competence, each playing a crucial role in education.

First, basic digital skills encompass the fundamental use of ICT for communication and leisure activities, such as accessing music, news, and social media, as well as the basic use of administrative and office software, including learning management systems. Second, didactic ICT competence refers to the pedagogical application of digital tools within subject areas, ensuring their seamless integration into language instruction. Furthermore, learning strategies highlight the teacher's role in supporting students' development of learning strategies, knowledge construction, and metacognitive skills through ICT. Lastly, digital competence emphasizes teachers' awareness of the social and ethical implications of ICT in education, promoting responsible use while mitigating challenges such as cyberbullying, plagiarism, and privacy concerns. Together, these components form a comprehensive framework for fostering digital competence in modern classrooms.

Factors Affecting Readiness in ICT Use of Pre-Service EFL Teachers

Recent research highlights several factors influencing pre-service EFL teachers' readiness to integrate ICT in their teaching practices. Technological competence remains a critical factor. A study by Bawaneh and Awwad (2020) found that pre-service teachers with higher levels of ICT proficiency are more confident in utilizing technology for language teaching. Conversely, teachers with lower technological skills often experience anxiety and reluctance when integrating ICT. Attitudes toward technology also play a significant role. According to Al-Maroof and Al-Emran (2018), pre-service teachers who possess positive attitudes towards ICT are more likely to adopt technology in their teaching, while those with negative attitudes may resist its use. Institutional support is another crucial factor. Alharbi (2019) emphasized that pre-service teachers in institutions with strong ICT infrastructure and professional development programs feel more prepared to use technology effectively. Additionally, access to resources influences readiness. A study by Goktas et al. (2020) revealed that pre-service teachers in schools with limited access to technology or poor internet connectivity struggle to develop necessary ICT skills. Finally, pedagogical training is essential, as teachers who receive adequate training on integrating ICT into language teaching are better equipped to use it effectively in the classroom (Kocoglu et al., 2022).

Previous Studies on the Readiness of Pre-Service EFL Teacher for Integrating Technology in Their Teaching

Research on pre-service teachers' readiness to integrate technology into English language teaching has been widely conducted across different educational contexts. Rokenes and Krumsvik (2016) investigated postgraduate student teachers in Norway, focusing on their digital competence, confidence, and ability to implement technology-enhanced teaching strategies. Their findings highlighted variations in proficiency and the role of factors such as modeling, scaffolding, reflective practice, and access to resources in shaping digital competence.

Similarly, Fathi and Edadi (2020) examined Iranian EFL pre-service teachers' experiences with a Computer-Assisted Language Learning (CALL) program. Their study identified key factors affecting CALL implementation, including obstacles like inadequate resources and transfer failure, as well as motivators such as perceived usefulness and peer collaboration. A critical finding was that participants generally lacked full confidence in their ability to integrate CALL into their teaching.

Park and Son (2020) extended this inquiry to the Hong Kong context, using in-depth interviews to assess pre-service EFL teachers' readiness to adopt CALL. While some participants expressed confidence, others were uncertain about their technological proficiency and the sufficiency of their training. Likewise, Aisyiyah (2022) explored Indonesian pre-service teachers' preparedness for Technology-Enhanced Language Learning (TELL) through a course on Artificial Intelligence for language education. Using four dimensions - fundamental digital skills, didactic ICT competence, learning strategies, and digital competence - the study found that most participants perceived themselves as ready to implement TELL after training.

The existing body of research on gender-based differences in the digital competence of pre-service EFL teachers remains limited. Hinojo-Lucena et al. (2019) conducted a study examining whether the digital competence of 140 teachers in Spain varied based on factors such as age, gender, teaching experience, and subject area. Their findings indicated that gender did not have a significant impact on teachers' digital competence. Conversely, Çebi and Reisoğlu (2020) explored pre-service teachers' perceptions of their digital competence and examined whether these perceptions differed according to gender, subject area, and self-assessed competence levels. Their results revealed significant variations in digital competence based on all three factors, including gender.

Despite the growing body of research on pre-service EFL teachers' readiness to integrate technology into language teaching, a critical gap remains in understanding their perceived readiness during their practicum phase. Existing studies (e.g., Rokenes & Krumsvik, 2016; Fathi & Edadi, 2020; Park & Son, 2020; Aisyiyah, 2022) have primarily focused on digital competence development within coursework and training programs, yet little is known about how these competencies translate into actual teaching practice, where contextual challenges may arise to influence ICT integration. Furthermore, research on gender-based differences in digital competence among pre-service EFL teachers remain inconclusive. Given these mixed findings, further investigation is needed to determine whether male and female pre-service EFL teachers differ in their perceived digital competence and readiness during the practicum.

The study seeks to address the following research questions:

RQ1: How do pre-service EFL teachers perceive their digital competence for integrating ICT in their teaching?

RQ2: How different do male and female pre-service EFL teachers assess their competence to integrate ICT in their teaching?

RQ3: What obstacles influence pre-service EFL teachers' readiness to incorporate ICT into their teaching?

Method

Setting and Participants

The study was conducted at a local university in Vietnam, where 80 to 120 pre-service EFL teachers enroll annually in a teacher education program designed to develop pedagogical, linguistic, and digital competences. The program follows a blended learning model, integrating face-to-face instruction with online platforms, including learning management systems and digital resources. Through coursework and a practicum component,

pre-service teachers engage with ICT tools to enhance lesson delivery, student engagement, and assessment practices. This setting provides a relevant context for examining their perceived readiness to integrate ICT into language teaching.

Participants for this study were randomly selected from a pool of fourth-year pre-service EFL teachers who were completing their ten-week teaching practicum at local high schools. This method ensured a fair and unbiased selection while maintaining the study's focus on ICT integration in real teaching contexts. By targeting students at this stage of their training, the study captures their most recent experiences, attitudes, and perceived obstacles related to using ICT in the classroom (Fathi & Edadi, 2020; Park & Son, 2020; Rokenes & Krumsvik, 2016).

A total of 110 pre-service teachers participated, comprising 81 females and 29 males, aged 20 to 25. Their experience with ICT tools in language teaching varied, reflecting diverse levels of digital competence. Participants were approached in person and invited to join the study, as the researchers were also their lecturers, facilitating direct engagement and recruitment.

Data Collection

To collect data, this study employed surveys, and semi-structured interviews. The survey utilized a 5-point Likert scale questionnaire (1 = strongly disagree to 5 = strongly agree), adapted from Krumsvik's (2014) digital competence model. The questionnaire consisted of 15 items assessing participants' perceptions on basic digital skills, didactic ICT competence, digital learning strategies, and digital competence. The questionnaire was distributed to 110 participants via Google Forms to gather quantitative data.

Following the survey, nine participants (3 males and 6 females) were selected for semi-structured interviews to further explore key themes that emerged from the survey results. To ensure a diverse and representative sample, purposeful sampling was used to select interviewees based on their self-perceived ICT competence (high, moderate, and low), teaching experience with ICT tools, confidence levels, and reported obstacles (Creswell & Poth, 2018). Purposeful sampling is widely used in qualitative research to ensure the inclusion of participants with varied perspectives that can enrich the study's findings (Patton, 2015). Additionally, maximum variation sampling was applied to capture a broad spectrum of experiences and attitudes, which helps provide a more comprehensive understanding of the challenges and motivations influencing ICT integration (Miles, Huberman, & Saldaña, 2014). The interviews allowed for a deeper exploration of participants' reasoning behind their survey responses, clarifying ambiguities and adding qualitative depth to the study's conclusions (Merriam & Tisdell, 2016).

Data Analysis

The data were analyzed using a mixed-methods approach, incorporating both quantitative and qualitative techniques. For the quantitative analysis, survey responses were processed using SPSS 26 (Statistical Package for the Social Sciences 26), with mean scores and standard deviations computed to summarize participants' perceptions of their digital competence. The reliability of the survey instrument was assessed using Cronbach's

Alpha, with a threshold of 0.6 or higher considered acceptable for internal consistency. To examine gender-based differences in perceived digital competence among pre-service EFL teachers, an independent samples t-test was conducted.

Table 1. Reliability Statistics

Cronbach's Alpha	N of Items
.965	15

In the perspectives of the qualitative data analysis, the semi-structured interviews were analyzed using thematic analysis to identify patterns and recurring themes related to participants' experiences with ICT in language teaching. Interview transcripts were carefully reviewed, coded, and categorized into themes that complemented the survey findings. The procedure of analyzing the data strictly follows the six steps outlined by Braun and Clarke (2006). Firstly, the researcher transcribed the data. After identifying the initial set of codes, the researchers went back and reviewed them to find codes that described the same underlying phenomenon. Subsequently, the codes are merged together into higher-level categories, which are themes.

In this research, two main types of codes were used: (i) descriptive codes (summarizing the main idea of a segment of data) and (ii) in vivo codes (taken from the participants' speeches and placed in quotation marks). Both two coding types - descriptive and in vivo were recorded in a column alongside the corresponding text. The themes and sub-themes were employed to organize the data and make the analysis more structured and easier to comprehend. This qualitative approach helped to provide deeper insights into the participants' readiness and attitudes toward technology integration in education.

Results

Pre-Service EFL Teachers' Perceived Digital Competence

Results of quantitative and qualitative data were combined to form the final description for the results of the first research question about how students self-perceive their digital competence during their practicum. The qualitative data findings are quite parallel with the quantitative ones, as all four themes align with the interpretations of the quantitative data, including: (i) Pre-service EFL teachers' self-perceived fundamental digital competence, (ii) Pre-service EFL teachers' self-assessed didactic ICT competence, (iii) Pre-service EFL teachers' self-perceived competence to develop digital learning strategies, (iv) Pre-service EFL teachers' perception on digital competence.

Pre-Service EFL Teachers' Self-Perceived Fundamental Digital Competence

Four items assess pre-service teachers' self-perceived basic digital skills in relation to their readiness for integrating technology-enhanced language teaching. The survey's results assessing how easily people can complete tasks involving digital technology are displayed in Table 2.

Table 2. Pre-Service EFL Basic Digital Competence

Items	Minimum	Maximum	Mean	Std. Deviation
The ease in handling computer tasks (document creation and editing, file and folder management)	1	5	3.68	1.196
The ease in using word processors, presentation software, web browsing, multimedia, and communication tools	1	5	3.70	1.162
The ease in utilizing online collaboration platform (e.g. Google Drive, Dropbox, Google Slides)	1	5	3.46	1.081
The ease in setting up and installing software on a laptop	1	5	3.56	1.260
Valid N (listwise)	110			

As can be seen from Table 2, the highest mean score was observed for proficiency in using word processing, presentations, and multimedia applications (M = 3.70, SD = 1.162) which suggested moderate to high confidence in these tasks. Similarly, basic computer operations, such as document creation and file management, also showed a relatively high mean (M = 3.68, SD = 1.196), though with some variability among participants. In contrast, competence in using online collaborative tools (M = 3.46, SD = 1.081) and installing applications on a laptop (M = 3.56, SD = 1.260) scored slightly lower, indicating that these areas may require further support and training. The standard deviations suggest notable variations in self-reported proficiency, particularly in installing applications, where responses ranged widely. These findings highlight the need for targeted digital literacy training in teacher education programs to ensure all pre-service teachers develop strong foundational ICT skills for effective technology-enhanced language learning.

Table 3. Qualitative Result for Fundamental Digital Competence

Readiness themes	Sub themes	Number of quotes	Illustrative quotes
Basic digital skills	Device operation skills	3	computer usage, “project it on a projector or TV”
	Software and application use	8	“website”, “Office tools”, “Word”, “Excel”, “PowerPoint”, “quiz website”

When it comes to the basic digital skills of the preservice teachers, two noticeable types of skills were mentioned as device operation skills and software and application use (See Table 3). All of the participants showed the ability to use at least a digital device throughout the interview. Specially, three out of nine students stressed the ability to utilize the computer and other supporting devices like a projector. Sentiments that illustrate this include:

> Before teaching, I will prepare the lesson and quiz links. When I go to class, I can also connect my PowerPoint and project it on a projector or TV for the students to see. (S1)
> The knowledge I learned at school was only basic office computer knowledge. (S5)

Similarly, all the pre-service EFL teachers expressed their proficiency in utilizing various software or applications for instructional purposes. Their ability to effectively exploit websites and office tools such as Excel and PowerPoint, as evident in these statements:

> I use PowerPoint to transfer lesson plans there as well as organize a variety of activities. (S4)
> In each lecture, I only need basic things like slides and a quiz website. (S6)
> The skills in using Excel and PowerPoint that I have accumulated up to now are enough. (S8)

These excerpts demonstrate that all the subjects have reached a level of proficiency in using technology.

Pre-Service EFL Teachers' Self-Assessed Didactic ICT Competence

Didactic ICT competence refers to the ability of pre-service teachers to use ICT to improve their language instruction in the classroom. To explore this aspect, six questions items are used.

Table 4. Pre-Service EFL Teachers' self-Assessed Didactic ICT Competence

Items	N	Minimum	Maximum	Mean	Std. Deviation
The ability to develop e-books (PDF and ePub) and PowerPoint presentations for instructional materials	110	1	5	3.50	1.171
The ability to produce instructional videos (e.g. lectures, demonstrations, and tutorials)	110	1	5	3.47	1.064
The ability to navigate learning management systems (Google Classroom, Canvas, Moodle, etc.	110	1	5	3.49	1.115
The ability to design online quizzes and tests	110	1	5	3.65	1.192
The ability to create online assignments	110	1	5	3.50	1.171
The ability to manage grades using LMS platforms, apps, or software	110	1	5	3.22	1.053
Valid N (listwise)	110				

The descriptive statistics in Table 4 indicate pre-service EFL teachers' self-perceived competence in using digital tools for instructional design and assessment. The highest mean score was seen for creating online quizzes and tests (M = 3.65, SD = 1.192). These results show that participants feel relatively confident in this skill. Similarly, creating e-books, PowerPoint presentations (M = 3.50, SD = 1.171), and online assignments (M = 3.50, SD = 1.171) received moderate ratings, indicating familiarity but also room for improvement. The ability to create instructional videos (M = 3.47, SD = 1.064) and use learning management systems (M = 3.49, SD = 1.115) showed similar levels of self-reported competence, suggesting that while participants can navigate these platforms, their proficiency varies. The lowest mean score was recorded for managing grades using LMS or software (M = 3.22, SD = 1.053), highlighting this as a potential area where additional training may be needed. The standard deviations indicate moderate variability in responses across all items, suggesting differences in prior exposure or confidence in using digital tools for teaching and assessment. These findings emphasize the need for targeted training in

teacher education programs to enhance digital instructional competencies.

Table 5. Qualitative Result of Didactic ICT Competence

Readiness themes	Sub themes	Number of quotes	Illustrative quotes
Didactic ICT-competence	Lesson planning with ICT	8	"Bing's Copilot to create lecture steps", "use IT to learn about information related to the lecture", "create electronic lectures", "use websites directly to find information that is helpful for the lesson plan", "find online sources to incorporate content on the same topic into the lesson"
	Interactive teaching tools and collaboration applications	5	"Zoom and Google Classroom", "online platforms for students to brainstorm", "Use Google Classroom to manage students", "take quizzes", "Google Meet for group work"
	Technology integration challenges	4	problems with Internet connection, "power goes out"

Considering didactic ICT-competence, these university students depict their implementation of technology in lesson planning and organizing interactive activities but at the same time show some technology integration challenges (See Table 5). Some of the participants reported making online lectures or using AI-powered websites to generate the lesson plan:

> Because when preparing a lecture, I must look through a lot of materials. For example: Bing's Copilot to create lecture steps: Prepare lectures, prepare tests, create warm-up games for students. (S5)
> I use IT to create electronic lectures. (S7)

Beyond lesson planning, technology is also employe to create immersive learning experiences and facilitate collaborate learning among students. Some participants acknowledged the importance of online platforms for encouraging student interaction and group work:

> I can use online platforms for students to brainstorm. (S4)
> In addition to Zoom, I also use Google Meet for group work. (S9

Pre-Service EFL Teachers' Self-Perceived Competence to Develop Digital Learning Strategies

The ability of teachers to use digital resources to support their students' learning - from scaffolding and knowledge

production to metacognition - is referred to as digital learning strategies. The participants' perceived proficiency with digital learning methodologies in this study is assessed using three items. The results are shown in Table 6 below.

Table 6. Pre-Service EFL Teachers' self-Perceived Competence to Develop Digital Learning Strategies

Items	N	Minimum	Maximum	Mean	Std. Deviation
Competence in facilitating brainstorming sessions with digital learning strategies	110	1	5	3.33	1.068
Competence in organizing collaborative classroom activities using digital tools (Google Docs, Google Slides, Padlet, etc.)	110	1	5	3.37	1.039
Competence in guiding students in researching and interpreting information from various online sources	110	1	5	3.40	1.051
Valid N (listwise)	110				

Table 6 provides insights into pre-service EFL teachers' self-perceived ability to develop digital learning strategies into their teaching. The highest mean score was recorded for the belief that ICT has positive impacts on language learning (M = 3.44, SD = 1.113), indicating a generally favorable perception of technology in education. Similarly, guiding students in searching for and interpreting information from multiple internet sources (M = 3.40, SD = 1.051) and conducting collaborative activities using digital technologies (M = 3.37, SD = 1.039) received moderate ratings. Conducting brainstorming activities with digital strategies (M = 3.33, SD = 1.068) was also rated moderately, reflecting a need for more support in fostering interactive digital discussions.

Table 7. Qualitative Results of Digital Learning Strategies

Readiness themes	Sub themes	Number of quotes	Illustrative quotes
Digital learning strategies	Internet navigation	3	"guide students in finding information", "guide students to websites to improve their skills", "guide students to find information sources online
	Teachers' changes in the intended learning strategies	4	students' self-learning strategies, guide students on how to use AI to create their own exercises",

The participants also reported the learning strategies they delivered to the students (See Table 7). Most of the subjects agree that internet navigation skills are important. They also went on to describe the changes in the learning strategies they intended to teach the students. Regarding internet navigation techniques, the participants

highlighted a focus on the sources of information:

> Currently, with my knowledge, I think it is enough for me to guide students in finding information (S2)
> I can guide students to websites to improve their skills in learning foreign languages (S4)
> I can guide students to find information sources online (S7)

Besides the skills to look for knowledge online, the pre-serviced teachers also changed from showing them the resources to empower students to find or to make their own learning materials:

> Before, I used to give speaking ideas for students to follow. Thanks to technology, there are many rich activities to offer learning strategies to students and students discover themselves. (S1)
> AI gave me some methods and I also guided students on how to use AI to create their own exercises. (S5)

Pre-Service EFL Teachers' Perception on Digital competence

Digital competence concerns teachers' awareness of the impact and social implications of ICT, as well as the ethical aspects of its use in classrooms. It also involves how educators guide students in using ICT responsibly in education while mitigating its potential drawbacks (Rokenes & Krumsvik, 2016; Aisyisah, 2022). The last two questions aimed to examine this component.

Table 8. Pre-Service EFL Teachers' Digital competence

Items	N	Minimum	Maximum	Mean	Std. Deviation
Perception of positive impacts of ICT on language learning	110	1	5	3.44	1.113
Perception of negative effects of ICT on students (cyberbullying, plagiarism, privacy issues, escapism, etc.)	110	1	5	3.22	1.008
Valid N (listwise)	110				

The mean score for ICT's positive impact on language learning was 3.44 (SD = 1.113), indicating moderate agreement, while the mean for its negative effects (e.g., cyberbullying, plagiarism) was 3.22 (SD = 1.008), presenting slightly less concern. Overall, respondents generally recognized both the benefits and drawbacks of ICT in education, with a stronger inclination toward its positive influence.

Gender-Based Differences in Digital Competence among Pre-Service EFL Teachers

The results of the independent samples t-test indicate significant gender-based differences in digital competence among pre-service EFL teachers across four domains: fundamental digital competence, didactic ICT competence, digital learning strategies, and digital competence. Male participants consistently reported higher mean scores across most items which show greater self-perceived digital proficiency.

Table 9. Differences between Male and Female Pre-Service EFL Teachers' Digital Competences

Themes	Items	Gender	Mean	Std. Dev.	Sig.	Sig. (2-tailed)
Fundamental digital competence	The ease in handling computer tasks (document creation and editing, file and folder management)	Female	3.37	1.198	.001	.000
		Male	4.55	.632		
	The ease in using word processors, presentation software, web browsing, multimedia, and communication tools	Female	3.38	1.157	.001	.000
		Male	4.59	.568		
	The ease in utilizing online collaboration platform (e.g. Google Drive, Dropbox, Google Slides)	Female	3.17	1.046	. 078	. 000
		Male	4.28	.702		
	The ease in setting up and installing software on a laptop	Female	3.28	1.296	.001	.000
		Male	4.34	.721		
Didactic ICT competence	The ability to develop e-books (PDF and ePub) and PowerPoint presentations for instructional materials.	Female	3.20	1.156	.008	.000
		Male	4.34	.721		
	The ability to produce instructional videos (e.g. lectures, demonstrations, and tutorials)	Female	3.20	1.042	.051	.000
		Male	4.24	.689		
	The ability to navigate learning management systems (Google Classroom, Canvas, Moodle, etc.	Female	3.23	1.110	.031	.000
		Male	4.21	.774		
	The ability to design online quizzes and tests	Female	3.44	1.225	.045	.002
		Male	4.24	.872		
	The ability to create online assignments	Female	3.28	1.196	.027	.001
		Male	4.10	.860		
	The ability to manage grades using LMS platforms, apps, or software	Female	2.99	.994	.721	.000
		Male	3.86	.953		
Digital learning strategies	The competence in facilitating brainstorming sessions with digital learning strategies	Female	3.11	1.095	.027	.000
		Male	3.93	.704		
	The competence in organizing collaborative classroom activities using digital tools (Google Docs, Google Slides, Padlet, etc.)	Female	3.21	1.081	.033	.001
		Male	3.83	.759		
	The competence in guiding students in researching and interpreting information from various online sources	Female	3.20	1.066	.086	.001
		Male	3.97	.778		
Digital competence	The perception of positive impacts of ICT on language learning	Female	3.23	1.154	.009	.000
		Male	4.00	.756		
	Perception of negative effects of ICT on students (cyberbullying, plagiarism, privacy issues, escapism, etc.)	Female	2.98	.922	.362	.000
		Male	3.90	.939		

From Table 9, in terms of fundamental digital competence, male pre-service EFL teachers reported significantly greater ease in performing essential computer operations, such as file management and document editing. Their mean score (M = 4.55, SD = 0.632) was notably higher than that of female participants (M = 3.37, SD = 1.198) with a p-value of 0.000. Likewise, males showed higher self-reported competence in using word processing software, PowerPoint, and online collaborative tools such as Google Drive and Dropbox. A similar pattern emerged in their ability to install applications on their devices, where males (M = 4.34, SD = 0.721) significantly outperformed females (M = 3.28, SD = 1.296), reinforcing the observation that male participants exhibit greater autonomy and confidence in managing digital tools.

A comparable trend was observed in didactic ICT competence, which encompasses the integration of technology into teaching and learning processes. Male participants demonstrated superior proficiency in creating digital instructional materials, such as e-books and PowerPoint presentations, with a mean score of 4.34 compared to 3.20 for females **(**p = 0.000**).** Similarly, their ability to navigate and utilize learning management systems (LMS) such as Google Classroom, Canvas, and Moodle was significantly higher (M = 4.21 for males vs. M = 3.23 for females, p = 0.000**).** Additionally, males reported a greater ability to design online quizzes and manage student grades using LMS applications. These findings suggest that male pre-service teachers not only demonstrate a higher level of digital literacy for instructional purposes but also feel more comfortable integrating technology into their pedagogical practices.

The gender disparity extends to digital learning strategies, where male pre-service teachers reported greater proficiency in facilitating interactive and student-centered learning experiences through digital tools. Their mean score for conducting brainstorming activities using ICT (M = 3.93) was significantly higher than that of their female peers (M = 3.11), with a p-value of 0.000. Similarly, male participants reported stronger competence in implementing collaborative learning activities through digital platforms (M = 3.83 for males vs. M = 3.21 for females, p = 0.001). These findings further emphasize the gap between male and female participants in their ability to leverage digital tools for engaging classroom activities.

Beyond their technical abilities, male participants also expressed a more positive perception of ICT's role in education. When asked about the impact of digital technologies on language learning, males reported a mean score of 4.00, while females rated it lower at 3.23 (p = 0.000), suggesting a more favorable attitude toward the use of ICT in educational settings. Interestingly, male participants also demonstrated a heightened awareness of the potential negative aspects of technology, such as cyberbullying, plagiarism, and privacy concerns (M = 3.90 for males vs. M = 2.98 for females, p = 0.000). This suggests that, in addition to their stronger technical skills, male pre-service teachers are more critically engaged with both the advantages and challenges posed by digital tools in education.

The findings indicate a clear gender-based disparity in digital competence, with male pre-service EFL teachers consistently reporting higher levels of proficiency across all dimensions of ICT integration. The statistically significant differences, reflected in p-values below 0.05**,** suggest that gender plays a crucial role in shaping digital literacy levels. These differences may be attributed to varying levels of prior exposure, frequency of use, or

divergent attitudes toward ICT in teaching. Given the importance of digital competence in contemporary education, it is imperative to implement targeted interventions to bridge this gap, ensuring that female pre-service teachers receive the necessary support and training to enhance their technological skills and confidence in digital teaching strategies.

To have a deeper understanding about why there are significant differences in digital competence between male and female pre-service EFL teachers in their perceptions, the researchers asked more questions relating to different aspects for both males and females attending the interviews. The results revealed several factors contributing to the higher digital competence ratings among male pre-service EFL teachers compared to their female counterparts. A significant theme that emerged was prior exposure to technology.

All three male participants reported having used computers, software, and online platforms from a young age, which allowed them to develop familiarity and confidence with digital tools. In contrast, four out of six female participants indicated limited exposure before university, which made them feel less prepared to engage with technology in their teaching practice.

> I have been using computers and different types of software since high school, so I feel comfortable with digital tools. Many tasks like installing applications, troubleshooting software issues, and using online learning platforms come naturally to me. (Male Student 2)
> I didn't have much experience with technology before university. I had to learn everything, and sometimes I feel unsure if I'm using the tools correctly. (Female Student 4)

Another key factor was self-confidence in digital skills. Male participants demonstrated a higher level of confidence in exploring and using digital tools independently. They were more likely to attempt troubleshooting on their own and experiment with new software without hesitation. In contrast, female participants expressed uncertainty and a preference for structured guidance.

> If I don't know how to use a tool, I explore it on my own or watch tutorials. I am confident that I can figure it out. (Male student 3)
> I always worry about making mistakes when using technology. I prefer having step-by-step instructions before I try something new. (Female student 4)

The way male and female participants approached learning digital skills also differed significantly. Male participants were more inclined to experiment with technology through trial and error, seeing mistakes as part of the learning process. They frequently mentioned discovering new features by testing them out. Female participants, however, tended to prefer structured learning environments, where they could follow clear instructions or receive formal training.

> I like to test different features of a platform to see what works best. Even if I don't understand something at first, I keep trying until I get it. (Male student 1)

> I find it difficult to learn technology on my own. I prefer workshops or tutorials where I can follow instructions. (Female student 6)

External support and social influences also played a role in shaping digital competence. Male participants frequently engaged in discussions with peers about new technologies, sharing tips and solutions informally. In contrast, female participants relied more on formal training sessions or instructor guidance.

> I often discuss new apps or teaching software with my friends. We share tips and troubleshoot problems together. (Male student 1)
> If I need help with technology, I usually ask my instructor or wait for a training session. (Female student 3)

These findings indicate that the higher digital competence ratings among male pre-service EFL teachers can be attributed to greater prior exposure, stronger self-confidence, a more independent approach to learning, and frequent peer discussions about technology. Addressing this gap requires targeted training programs that build female pre-service teachers' digital self-efficacy, encourage independent exploration, and foster collaborative learning environments that facilitate knowledge-sharing among all learners.

Pre-Service EFL Teachers' Awareness of Challenges When Using Technology to Learn and Teach English Language During Their Practicum

Interestingly, one theme emerged in the process of analyzing the qualitative data as the participants were worried about some obstacles that they are facing and potential harness to students' progress due to technology. These future EFL teachers proposed their concerns relating four anticipated challenges: (i) pedagogical challenges, (ii) technological challenges, (iii) psychological barriers, (iv) students' overuse of technology for learning and possible communication issues.

Pedagogical Challenges

One of the first key obstacles identified by pre-service EFL teachers was the difficulty in designing ICT-integrated lesson plans that effectively enhance language learning. Five out of nine interviewees expressed that the use of technology in their teaching might overshadow instructional goals rather than support them. As one interviewee reported, "I find it challenging to balance technology with lesson objectives; sometimes I feel it becomes a distraction rather than a tool for learning" (S2), while another stated, "I want to use ICT, but I struggle with finding the right balance between digital and traditional methods to ensure students are actually learning" (S8). Assessment using ICT was another area of concern, with many pre-service EFL teachers unsure about how to fairly and efficiently evaluate students' progress using digital tools.

> I am not sure how to assess students using ICT without making it too complicated or unfair (S4).
> I feel like digital assessments sometimes miss the human element, and I worry that students might find

ways to cheat (S5).

Technological Challenges

Limited proficiency in using ICT tools for teaching was a recurring theme in the interviews. Future language teachers reported that their training programs provided only basic exposure to ICT, leaving them unprepared to navigate complex digital platforms effectively.

> Sometimes I don't feel confident using ICT in an actual classroom setting during my practicum as we were not given a deep training on ICT integration (S6).
> There are so many digital tools out there, and I don't know which ones are the best for language teaching. It's overwhelming (S1).

Technical issues such as software malfunctions, unreliable internet connections, and a lack of available devices in schools further hindered their confidence in integrating ICT into their teaching practices. Additionally, some pre-service EFL teachers emphasized students' varying levels of digital literacy, which could complicate the effective use of technology in lessons.

> Some students are very tech-savvy, while others struggle with basic tasks. It's hard to find a balance that works for everyone (S9).
> Sometimes, students get frustrated when technology doesn't work properly, and it disrupts the whole lesson (S4).

Psychological Barriers

Psychological factors significantly impacted pre-service teachers' readiness and confidence in incorporating ICT into their teaching. Fear of failure and anxiety about making mistakes in front of students were common challenges that many future educators faced. Six out of nine participants expressed concerns that technical difficulties or ineffective use of ICT could undermine their credibility as teachers, leading to a loss of control or respect in the classroom. One pre-service teacher voiced, "I worry that if something goes wrong with the technology, I won't know how to fix it, and that will make me look unprepared." This fear of appearing unprepared or incompetent was a recurring theme, as the pressure to navigate digital tools smoothly often led to anxiety. Another student teacher admitted, "Sometimes, I hesitate to use ICT because I'm afraid students might know more than me, and I don't want to lose control of the classroom". Such concerns reflect a deeper insecurity about the potential power dynamics in the classroom, where teachers might feel that their role could be undermined by students who are more familiar with the technology. The anxiety surrounding these technological challenges highlights the critical need for supportive training programs that address both the technical and psychological aspects of integrating ICT into teaching, as these factors play a crucial role in how confident teachers feel when using technology in the classroom.

Students' Overuse of Technology for Learning and Possible Communication Issues

Lastly, future language teachers expressed concerns regarding the potential overdependence of students on technology, which they believed could impede their learning process. One participant remarked, "IT will make students dependent on technology" (S2), while another highlighted the risk of students misusing technology due to insufficient understanding, noting, "Students can abuse technology if they do not know how to use it. If they don't know how to make it, they just copy and paste" (S5). Furthermore, one teacher raised concerns about communication difficulties, suggesting that the use of technology, such as presenting slides, could diminish the interaction between the teacher and students, thereby compromising the quality of the learning experience (S1). These observations underscore the need for a balanced approach to integrating technology in language teaching, ensuring that its use enhances rather than hinders student engagement and learning outcomes.

These responses indicate that pre-service EFL teachers' concerns extend beyond their own challenges with ICT and also include potential difficulties students may face. While infrastructure-related issues - such as unreliable internet connections and lack of equipment - were mentioned, participants also emphasized the impact of ICT on student engagement, learning habits, and classroom interaction.

Discussion

The study's findings provide valuable insights into pre-service EFL teachers' self-perceived competencies and perceptions of digital learning strategies. The highest mean score was recorded for the belief that ICT positively impacts language learning and teaching, indicating a general acknowledgment of technology's benefits in education. This supports previous research by Park and Son (2020), which found that pre-service teachers view ICT as a tool that enhances student engagement, collaboration, and independent learning. Similarly, Tondeur et al. (2017) emphasized that teachers' attitudes toward ICT significantly influence their willingness to integrate technology into instruction. Despite recognizing ICT's benefits, pre-service teachers showed moderate confidence in guiding students to search for and interpret information from multiple sources and conduct collaborative activities using digital tools. This suggests that while they understand the importance of digital research and collaboration, their ability to implement these skills effectively varies, aligning with Aisyiyah's (2021) findings that limited hands-on experience impacts teachers' ability to facilitate interactive learning. Additionally, moderate confidence levels in conducting brainstorming activities using digital tools suggest a need for further training in leveraging technology to foster student engagement and critical thinking. Hew and Brush (2007) emphasized that successful digital integration requires not only technical proficiency but also strategic pedagogical approaches, while Ertmer and Ottenbreit-Leftwich (2010) highlighted that teachers' perceived self-efficacy and prior exposure to technology-enhanced teaching shape their ability to design meaningful digital learning experiences. Notably, the lowest mean score was observed for awareness of ICT's negative effects, such as cyberbullying, plagiarism, and privacy concerns, suggesting that pre-service teachers may have limited awareness of digital ethics and security challenges. Aisyiyah (2021) stressed the need to integrate digital ethics and cybersecurity awareness into teacher education programs to equip future educators with the skills to mitigate risks associated with ICT use in classrooms.

In addition, this study highlights significant gender disparities in pre-service EFL teachers' self-perceived digital competence, with male participants consistently rating themselves higher in key digital skills, including instructional material creation, learning management system use, and digital learning facilitation. These findings align with research suggesting that males generally report greater confidence in technology use, likely due to increased exposure and societal perceptions (Kay, 2006; Siddiq et al., 2016; Hatlevik & Christophersen, 2013; Cebi, 2020). Additionally, cultural and educational contexts may shape these confidence levels (Cooper, 2006). Given the importance of digital competence in language teaching (Hubbard, 2013; Park & Son, 2020), targeted interventions are necessary to bridge the gender gap, supporting arguments that confidence and pedagogical beliefs influence technology integration (Ertmer & Ottenbreit-Leftwich, 2010; Redecker & Punie, 2017). Male participants also demonstrated greater awareness of ICT's benefits and drawbacks, reinforcing research that digital competence extends beyond technical skills to include critical thinking and ethical considerations (Ilomäki et al., 2016; Aisyiyah, 2022). To address these disparities, teacher education programs should implement structured digital pedagogy training (Tondeur et al., 2018; Nguyen, 2024; Sumarni et al., 2023) to foster equitable digital engagement and ensure future EFL teachers are well-prepared for technology-enhanced instruction.

Lastly, the challenges identified by pre-service EFL teachers in this study resonate with those reported in previous research on ICT integration in language education. Consistent with studies by Tondeur et al. (2017) and Kessler (2018), participants expressed concerns regarding the pedagogical alignment of digital tools with instructional goals, suggesting that insufficient training often leads to superficial or ineffective use of technology in the classroom. Similar to the findings of Altun (2019), technological limitations - including lack of reliable internet access, limited availability of devices, and low digital literacy among students - were seen as significant barriers. Furthermore, psychological factors, such as fear of failure and anxiety about students' superior technological competence, echo the concerns highlighted by Ertmer and Ottenbreit-Leftwich (2010), who argue that teachers' beliefs and self-efficacy are critical in shaping technology integration practices. Notably, this study also adds to the existing literature by emphasizing pre-service teachers' apprehension about students' overuse of ICT and its potential to hinder interpersonal communication—a concern less frequently explored in earlier studies. These findings underscore the need for teacher education programs to go beyond technical training and address the pedagogical and emotional complexities involved in ICT-enhanced language teaching.

Conclusion

In conclusion, this study results highlights the moderate confidence levels of pre-service EFL teachers in using digital learning strategies, with varying competencies across different domains. While they acknowledge the benefits of ICT in language learning and teaching, their ability to effectively implement digital tools for brainstorming, collaboration, and information retrieval remains inconsistent. Additionally, limited awareness of ICT-related risks, such as cyberbullying and plagiarism, underscores the need for a more comprehensive digital literacy framework within teacher education programs. The findings also reveal significant gender disparities in self-perceived digital competence, with male participants consistently reporting higher proficiency in various digital skills. These differences may be influenced by varying levels of exposure to technology, confidence in digital tool usage, and broader social or educational factors. Furthermore, several obstacles were identified that

impact pre-service teachers' readiness to integrate ICT. These included pedagogical challenges in aligning technology with learning objectives, limited technological training and infrastructure, psychological barriers such as fear of failure or loss of control, and concerns about students' overreliance on digital tools. Together, these findings underscore the need for teacher education programs to adopt a more comprehensive and inclusive approach to digital competence development—one that addresses gender disparities while also equipping future teachers with the pedagogical, technical, and emotional skills required for effective ICT integration.

Despite its contributions, this study is subject to several limitations. The sample size was relatively small and context-specific, focusing on a limited number of pre-service EFL teachers within a particular institutional and cultural setting, which may limit the generalizability of the findings. Future research should consider employing longitudinal designs to better capture the development of digital competence over time and in diverse educational contexts. Further investigation into how targeted interventions—particularly those that are gender-responsive and practice-oriented—can address the identified challenges would also be beneficial in shaping more effective teacher training frameworks.

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