Investigating Indonesian EFL preservice teachers’ digital technological awareness and their challenges in EFL learning: A case study

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Abstract

The role of technology in learning English as a foreign language (EFL) remains significant. While numerous studies explored the effectiveness of technology in learning EFL, there is a paucity of research that examines EFL preservice teachers’ digital technological awareness and their challenges in using technology in EFL learning. This study aims to investigate EFL preservice teachers’ digital technological awareness and their challenges. This case study involved six EFL preservice teachers from the English Education Program at one of the higher colleges in West Nusa Tenggara Province, Indonesia. The data were garnered through in-depth interviews and observations. Thematic analysis was used to analyze the data. The result shows that teachers’ teaching style frequently incorporating technology in learning has been the main influence in enhancing the students’ technological awareness. In terms of challenges, EFL preservice teachers faced four main difficulties: financial barriers, technical issues, meeting the lecturer’s expectations, and technological anxiety. This study suggests that there is a need for teacher training programs to include components that focus on enhancing digital technological awareness.
Introduction

The role of technology in education has greatly transformed and supported the teaching and learning processes. The presence of technology in the educational setting brings multifaceted benefits for both teachers and students (Mustaphad et al., 2020). In the context of learning English, technology provides a powerful tool that enhances language acquisition and proficiency (Ahmadi, 2018). One notable advantage for teachers is the ability to incorporate instructional materials to cater to diverse learning styles and preferences (Smith & Jones, 2018). Moreover, integrating multimedia resources, interactive applications, and online platforms into English as a foreign language (EFL) instruction enables educators to create dynamic and engaging lessons, accommodating various learning preferences (Brown & Miller, 2019). Therefore, due to these positive impacts, EFL teachers should consider incorporating the technology into their teaching practice to maintain EFL learners’ learning goals.

Furthermore, technology facilitates personalized learning experiences for students since it allows them to check progress at their own pace and have targeted feedback (Shemshack & Spector, 2020). This can be maintained by using educational apps and language learning platforms that offer interactive exercises and quizzes, allowing students to practice language skills in a self-paced and engaging manner. Chen and Chang (2017) argue that technology positively impacts language learning outcomes, as students can focus on areas of improvement and receive instant feedback. Additionally, technology
promotes cooperative learning settings, particularly in eliminating regional boundaries and bringing students worldwide together (Haleem et al., 2022).

Digital technological awareness refers to being conscious of objects, events, or sensory patterns and perceptions (Taopan & Siregar, 2021). In terms of factors that influence the teachers' awareness, three main factors have been highlighted: beliefs, resources, and experience (Phipps & Borg, 2009). Taopan and Siregar (2012) state that textbooks, workshops, and learning in both formal and informal settings can also influence teachers' awareness since these would facilitate teachers' experiences and allow teachers to share their insight with other teachers. Therefore, digital technological awareness refers to the consciousness of educators or students in uplifting their skills in utilizing technology in their teaching and learning practices. The present study delves into the nuances of digital technological awareness among Indonesian EFL preservice teachers, considering their unique challenges in incorporating technology into their teaching practices. By exploring the intersection of technology and EFL instruction within the Indonesian context, we seek to provide insights that can inform teacher education programs and contribute to enhancing EFL pedagogy in Indonesia.

Technology integration in EFL learning plays an essential role since it can facilitate the language repertoire among EFL learners. The research that focuses on incorporating digital technology in the EFL context has frequently been studied (Andrei, 2017; Nomass, 2013; Pazilah et al., 2019; Ubaedillah et al., 2021). Studies regarding investigating technological awareness in English as foreign language teaching (ELT) have been conducted. Taopan and Siregar (2021) studied the preservice English teachers' awareness in the eastern part of Indonesia, and the study found that the preservice English teachers at East Nusa Tenggara Indonesia developed their awareness of the prominence of technology by experiencing the use of technology provided by their lecturers. Taopan and Siregar (2021) reveal that collaboration among peers has also influenced technological awareness among students. However, this study did not explore the difficulties faced by the participants in improving their technological awareness.

Another study on technological awareness among college students has been conducted by Hendawi and Nosair (2020). The emotional and cognitive technological awareness among college students is high, while their level of awareness in the skill field is average (Hendawi & Nosair, 2020). Although technological awareness in the ELT setting has been conducted, there is a paucity of evidence in research regarding exploring digital technological awareness and the challenges of using technology among preservice EFL
teachers. The present study attempts to fill this void by exploring the tertiary EFL students’ challenges and awareness of using digital technology in learning English. Therefore, to enhance the learning practice, the importance of exploring the EFL preservice teachers’ awareness and challenges in digital technology in learning EFL needs to be conducted since the education landscape is rapidly evolving due to technological advancements (Akcaoglu, 2008).

The integration of technology tools in EFL learning leads to a significant transformation, providing innovative avenues for both educators and learners. Many studies have been conducted to investigate different types of technology used by EFL learners and educators in English. For example, computer-assisted language learning (CALL) programs (Dashtestani, 2014; Farivar & Rahimi, 2015; Maly, 2017), virtual learning environments (VLEs) (Thamarana, 2016; Tuncer, 2015) and utilizing learning management systems (LMS) have become crucial platforms for content delivery, communication facilitation, and coursework management (Prasetya, 2021; Srichanyachon, 2014). Despite the abundance of studies on learning EFL and the integration of technology, there is little research investigating the technological awareness and difficulties EFL preservice teachers face in learning English. Exploring this issue is essential because understanding the technological awareness of EFL preservice teachers would assist EFL educators in designing effective teaching programs and aiding them in enhancing the experiences of EFL preservice teachers in technology exposure. Reisoğlu and Çebi (2020) state that responsible educators must understand and guide their students with digital technology, as preservice teachers need to be equipped with digital skills to enhance their pedagogical competencies and professional careers. Due to its importance, this study fills this void by using two research questions:

1. How do EFL preservice teachers develop awareness about the importance of digital technology for learning EFL?
2. What are the challenges faced by Indonesian EFL preservice teachers in learning English using digital technologies?

Literature review

Digital technological awareness

The term awareness approximately refers to being aware and conscious, being cognizant, well-informed, and alert (Nugroho et al., 2022). If it relates to the context of education, digital awareness means teachers being aware of
supporting technology to enhance the teaching and learning process (Lam et al., 2018; Makruf et al., 2021). This also correlates to the tools or technological techniques in performing the learning activities (Knowles, 2018). Therefore, digital technological awareness highlights how educators or language learners are conscious of the utilization of technology in the process of learning or teaching the EFL. This notion is also supported by Toscano (2011), who states that technological awareness does not merely incorporate the tools into learning but also refers to how technology supports our lives and facilitates our ideologies in our culture. Al-Ajmi and Aljazzaf (2020) state that some factors affect English as a foreign language (EFL) students’ technological awareness. The first factor is the availability of supporting technology, which includes computers, internet connection, or mobile devices. Another factor is teacher and peer influence. The ability of educators to use technology in the teaching and learning process results in a positive influence on students’ awareness. This is also in line with the role of peers; the peer’s interaction will also shape the students’ attitudes and preferences in utilizing technology. Cultural and socioeconomical are other factors that affect students’ technological awareness. This is because socioeconomic status leads to frequent exposure and familiarity with using technology (Al-Ajmi & Aljazzaf, 2020).

The examination of digital technological awareness among Indonesian EFL preservice teachers holds significant relevance to the present study. By delving into how they engage with and perceive technology in the context of English language learning, the present research aims to shed light on their challenges and strategies. Understanding their level of digital awareness and the barriers they face is essential for designing tailored interventions that can effectively enhance their pedagogical competencies and facilitate their professional development (Batane & Ngwakok, 2017). This investigation contributes to the broader discourse on digital literacy in language education. It provides valuable insights for designing and implementing teacher training programs in the Indonesian EFL context.

**Incorporation of technology into learning EFL**

Incorporating technology into EFL learning is inevitable due to its importance and effectiveness (Tuzahra et al., 2021). Technology’s main function in EFL learning results in interactive learning, easy access to information, and mitigating the learning barriers (Alsulami, 2016). However, the cognitive factor is another function of using technology in the classroom since it provides opportunities for learners to engage cognitively with language content through
interactive and dynamic activities, fostering deeper understanding and retention (Clark & Mayer, 2016).

The widespread and transformative impact of technology integration in education has prompted scholars and educators to investigate frameworks that directly impact the teaching and learning process in the EFL classroom (Bui, 2022). Introduced by Mishra and Koehler (2006), the technological pedagogical content knowledge (TPACK) model is a framework that has attracted much attention. TPACK is a current method for comprehending the intricate interactions of pedagogy, content, and technology in the learning environment. The understanding of successful technology integration in education has advanced significantly with the introduction of the TPACK framework (Mishra & Koehler, 2006). Voogt et al. (2013) argue that TPACK provides an integrated framework to help teachers utilize technology to enhance instruction by integrating technology, pedagogy, and content knowledge. From this, it is essential to address outstanding issues and deepen the understanding of how TPACK can be successfully implemented in various educational contexts as this field of study continues to develop.

Technological awareness in learning English is becoming increasingly important in today’s digital age. Pratiwi and Waluyo (2022) argue that integrating technology in education positively impacts English language programs as it assists educators in incorporating digital tools and resources. Umida and Abdulkhay (2023) argue that these technological advancements provide EFL learners with enhanced engagement, immediate feedback, and access to authentic materials. Technology also allows for personalized learning experiences, as students can tailor their language acquisition journey to their specific needs and pace (Zheng et al., 2022). Through the use of multimedia, students have the opportunity to practice and develop their language skills dynamically and interactively. Kem (2022) also supports this view. He states that technology offers a variety of resources and platforms that cater to different learning styles and preferences.

Therefore, digital technological awareness in learning EFL opens up a world of possibilities for learners, particularly for EFL preservice teachers, allowing them to explore new avenues and gain valuable language skills in a way that is relevant and engaging to their lives. By highlighting the transformative potential of technology in language learning, particularly for EFL preservice teachers, this subsection underscores the significance of investigating their digital awareness and challenges. Understanding how technology can enrich language education experiences and empower educators is integral to the overarching goals of the study, which seeks to identify
strategies to enhance digital pedagogical practices and address barriers to effective EFL learning (Batane & Ngwako, 2017).

**Research on digital technology awareness in the EFL context**

The growing interest in digital technology awareness research has emerged in the last few years. Taopan and Siregar (2021) analyze how a design influences the preservice English teachers' technological awareness in ELT in the Indonesian EFL context. EFL preservice teachers develop their awareness of the prominence of technology by experiencing the use of technology provided by their lecturer (Taopan & Siregar, 2021). Furthermore, in terms of technological preferences, Xodabande (2018) examines the Iranian EFL preferences for different types of digital technologies in learning EFL. The study shows that Iranian students choose diverse types of technology to support English learning outside the classroom, such as electronic dictionaries, internet sites, and films. However, these studies only explore certain factors influenced by technological awareness and the choices of different types of technology, and they have not explored the difficulties their participants face.

The studies also highlight the digital awareness and practice of Indonesian ESP teachers. The study discusses the professional training program, such as attending workshops, seminars, and conferences, and developing the ESP teachers' competencies and awareness. Furthermore, social networking sites and web-based materials help this group of teachers in digital teaching practices (Nugroho et al., 2022). The digital technology challenges in learning English using e-learning have also been investigated by Ja’ashan (2020); the findings confirm three main challenges EFL students using e-learning at the University of Bisha face. These refer to academic, technological, and administrative challenges. Although these two studies (Ja’ashan, 2020; Nugroho et al., 2022) have highlighted several factors influenced by technological awareness and the challenges EFL learners face, these studies have not explained why social networking sites and web-based materials can support technological awareness among their participants.

Other studies focused on digital technological awareness were conducted. Kurbanova and Mamajanova (2022) found several advantages of using technology: motivating students, enhancing students’ engagement, and teaching students to analyze and draw conclusions. Erbas et al. (2021) also highlighted the role and importance of technology in learning English for elementary school students and showed how technology could support elementary school students in reaching achievement. Giving different tasks in preparing technology helped teachers engage each other, and the students feel
so motivated when they put in a group to discuss the projects (Erbas et al., 2021). Using different types of technology in the classroom, such as computers, recordings, and other supporting devices, would motivate students to study English (Erbas et al., 2021). However, the integration of technology in learning English is also helpful since students can be immersed in different types of information (Masruddin, 2014; Waluyo, 2020).

Even though studies focused on investigating the integration of EFL and technology have frequently been conducted, there is little information on technological awareness and the challenges EFL preservice teachers face. Exploring the preservice technological awareness and their difficulties in using technology plays an essential role since it would help the EFL educators to design the appropriate teaching model, maximizing the incorporation of using technology in learning EFL, and informing the educational decision makers in taking the targeted interventions, particularly dealing with the technological difficulties faced by preservice teachers (Ramaligela, 2021) Therefore, there is a need for a study to deal with this issue when teaching EFL in the context of higher education.

Method

Research design

This study employed a qualitative approach under the procedure of a case study (Yin, 2009). A case study allows researchers to explore the complex issue within the context being investigated since the aim of a case study is to investigate the experience of individuals or participants (Lambert & Lambert, 2012). The choice to employ a case study in this research was driven by its unique ability to thoroughly investigate the two research questions of this study, which were related to digital technology awareness and the challenges EFL preservice teachers face. Unlike quantitative methods, which may prioritize numerical data, a case study allowed us to deeply explore individual experiences, offering rich insights into the intricacies of how technology was utilized and perceived within the EFL learning environment (Lambert & Lambert, 2012; Yin, 2009). In this study, we explored the EFL preservice teachers’ stories and experiences in using technology, particularly exploring the EFL preservice teachers’ digital technology awareness and challenges by drawing the participants’ experiences and stories in EFL learning.
Participants

The participants in this research were six EFL preservice teachers. They were from the English Education Program at one of the higher colleges in West Nusa Tenggara Province, Indonesia. The participants were recruited purposefully (Suri, 2011) based on several criteria: the participants are currently using digital technology in learning EFL inside or outside the classroom; they are EFL students; and they have at least one year of learning English in the tertiary context. In this research, the EFL preservice teachers are pseudonyms. The primary objective of purposive sampling is to involve selected participants who are knowledgeable about or have sufficient experience with the topic (Creswell & Clark, 2011). Choosing a minimal number of participants in a case study enables researchers to explore the participants' experiences deeply (Yin, 2009). In detail, the participants' information is presented in Table 1.

Table 1
Demographic information of the participants

<table>
<thead>
<tr>
<th>Participants</th>
<th>Gender</th>
<th>Ages (years)</th>
<th>Learning experiences (years)</th>
<th>Background of study</th>
<th>English proficiency level</th>
</tr>
</thead>
<tbody>
<tr>
<td>KM</td>
<td>Female</td>
<td>21</td>
<td>3</td>
<td>English Education</td>
<td>Intermediate</td>
</tr>
<tr>
<td>AR</td>
<td>Female</td>
<td>22</td>
<td>3</td>
<td>English Education</td>
<td>Intermediate</td>
</tr>
<tr>
<td>CKL</td>
<td>Male</td>
<td>21</td>
<td>3</td>
<td>English Education</td>
<td>Beginner</td>
</tr>
<tr>
<td>BH</td>
<td>Female</td>
<td>20</td>
<td>3</td>
<td>English Education</td>
<td>Intermediate</td>
</tr>
<tr>
<td>SD</td>
<td>Male</td>
<td>18</td>
<td>2</td>
<td>English Education</td>
<td>Beginner</td>
</tr>
<tr>
<td>NA</td>
<td>Female</td>
<td>18</td>
<td>2</td>
<td>English Education</td>
<td>Beginner</td>
</tr>
</tbody>
</table>

Prior to their involvement, participants were provided with detailed information about the research purpose, procedures, potential risks, and benefits of the research following ethical guidelines. Informed consent was obtained from all participants, confirming their voluntary participation and understanding of their rights in the study. Furthermore, participants' anonymity and confidentiality were safeguarded throughout the study, with data securely stored and only accessible to authorized personnel. The majority of the participants were from underprivileged families, and there was a lack of technological exposure. These participants have more than one year of
experience in learning English, ranging from two to three years. The six participants have the same educational background of study, English Education. They were labeled KM, AR, CKL, BH, SD, and NA. These ethical considerations underscored the integrity and validity of the research findings while prioritizing the well-being and rights of the participants. The participants’ English proficiency ranged from beginner to intermediate levels, reflecting diverse levels of language competence within the group.

Data collection

To understand the EFL preservice teachers’ digital technology awareness and challenges, we employed in-depth interviews (Turner, 2010) and observation (Lofland et al., 2022). The in-depth interview allows the researchers to explore social phenomena driven by individuals’ experiences that uncover the underlying meanings and interpretations shaping participants’ human behavior and interaction (Turner, 2010). Meanwhile, the observation aimed to establish an initial understanding of the participant’s behavior, environment, and the context of the study (conducted before the interviews) and to capture the changes or developments of the participants since the interview section (carried out after the interview) (Lofland et al., 2022).

In carrying out the interviews, we employed semi-structured interviews (Lofland et al., 2022) since it allowed us to ask further questions to explore participants’ responses and ensure clarity in maintaining the data. To maintain the depth stories and experiences and let the participants narrate the story properly, the interview used Bahasa Indonesia and the participants’ first language, Bimanese. To avoid the ambiguities of interview questions and to maintain reliability and validity, a pilot study was conducted with a subset of the study population. The pilot study aimed to identify and address any issues with the research instruments and ensure they were appropriate for the study population. After greeting the participants, we started the interview by explaining the purpose of the study and ensuring the participants’ rights during the interview section. Seven main questions were asked of the participants: (1) ‘Can you give a specific example of when you incorporated digital technology into your EFL learning experience?’ (2) ‘How do you perceive the role of the technology supporting your EFL learning?’ (3) ‘Can you narrate an experience where you faced difficulties or challenges while integrating digital technology into EFL learning?’ (4) ‘How do you believe the use of digital technology in EFL learning aligns with the goals and objectives of your study?’ (5) ‘What kind of support or resources do you believe are necessary to enhance the effective integration of digital technology into EFL learning?’ (6) ‘What are the essential
skills and competencies you need to effectively utilize digital technology in teaching practices?’ and (7) ‘What impact does this have on your learning outcome or technological awareness?’ The main purpose of asking these questions was to explore the participants’ experience in developing their technological awareness and the difficulties they encountered. Moreover, these inquiries aimed to assist us in aligning with the overall purpose of this study. To avoid missing information, we took notes and recorded the interview process. To maintain the study’s trustworthiness, after transcribing the interview results, the participants were allowed to double-check or read the transcription to ensure the accuracy of the information.

The observation process was done in two stages (Lofland et al., 2022): before the interview and after the interview process. The observation was conducted before the interview to establish an initial understanding of the participant’s behavior, environment, and the study context. Classroom observation (Lofland et al., 2022) was employed as supporting data. Moreover, the observation after the interview process aims to capture the changes or developments of the participants since the interview section. The observation was taken from our note observation in the class. The six participants involved in this study were not volunteers but students enrolled in the course. In order to overcome the potential biases arising from the observational data collected during teaching to improve the validity of the findings and to achieve data triangulation, we involved an informant familiar with the research context and the participants. This informant played a crucial role in cross-verifying the collected data and providing additional perspectives on this study so that this study results in a comprehensive and reliable research outcome. During the observation phase, we meticulously took notes and closely observed the participants’ behavior and learning engagement in a specific technology-related class, Speaking Class. This class facilitated the EFL learners’ use of technology in teaching and learning. The focus of the observation at this stage was on assessing whether the participants utilized technological devices during classroom activities. To complement and enhance the observational data, we also took notes of important data, such as capturing insights into the lesson content, participants’ interactions, presentations, and any noteworthy occurrences. These notes served as a valuable supplementary resource, providing context and supporting the qualitative observations made during the study. The utilization of both direct observation and notes aimed to offer a comprehensive understanding of the participants' experiences and interactions within the technological learning environment.
Data analysis

Thematic analysis was employed in this study to capture comprehensively the entire dataset. Thematic analysis is a qualitative method used to identify, analyze, and report patterns (themes) within a dataset (Braun & Clarke, 2019). Initially, the data were approached using inductive analysis since it allows themes to emerge from the data and ensures flexibility in capturing the themes (Kyngäs, 2020). The analysis process unfolded in several steps. Firstly, we initiated the coding process by closely examining the data, identifying features, and creating initial codes to capture key concepts. Subsequently, we organized and grouped these codes to explore patterns and connections, thereby facilitating the identification of emergent themes. To enhance the coherence of the data, we meticulously reviewed and refined each theme, ensuring alignment with the dataset and research objectives. The summary of the thematic analysis process adapted from Braun and Clarke (2017) is shown in Table 2.

Table 2

<table>
<thead>
<tr>
<th>No</th>
<th>Steps</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Familiarization with the data</td>
<td>We transcribe, read, double-check the data (listening at least once), and write down the preliminary ideas.</td>
</tr>
<tr>
<td>2</td>
<td>Coding</td>
<td>We systematically capture the important data.</td>
</tr>
<tr>
<td>3</td>
<td>Searching for theme</td>
<td>We create a thematic map by organizing the related themes.</td>
</tr>
<tr>
<td>4</td>
<td>Reviewing theme</td>
<td>We establish a functional connection between the themes and code extract, and the entire data set to create a thematic map of the analysis.</td>
</tr>
<tr>
<td>5</td>
<td>Defining and naming the theme</td>
<td>We further analyze the data to capture the specific themes. This phase results in untitled themes.</td>
</tr>
<tr>
<td>6</td>
<td>Producing the report</td>
<td>In this last analysis step, we select the specific theme of the data try to connect to the research questions, and then continue to write the result of the report.</td>
</tr>
</tbody>
</table>

Eight themes emerged from the data that highlighted the digital technology awareness of EFL preservice teachers and their challenges: technology facilitating learning, technology engagement, lecturer influence, teaching style, initial understanding of technology, technical issues, low level of technological usage, and financial barriers. By rigorously examining the relationships among these themes, we were able to address the research questions effectively and derive meaningful insights from the dataset.
**Trustworthiness**

In this study, trustworthiness was methodically addressed using various techniques to improve credibility, dependability, and transferability (Adler, 2022). Credibility is maintained by ensuring the findings accurately reflect the participants' experiences through triangulation of data sources (Adler, 2022). A range of techniques, such as classroom observation and in-depth interviews, were used to grasp the participants' viewpoints. The transferability of the study’s findings could be applied to a similar context and was acquired by providing a rich and detailed description of the study setting, participants, and data collection. This study also did a pilot study to avoid the ambiguities of interview questions and maintain the reliability and validity of the interview questions. In this study, moreover, we shared the preliminary findings with participants to acquire their input and ensured the participants’ perspectives were accurately represented and provided an opportunity to clarify misinterpretations of the preliminary findings. Furthermore, we collaborated with different disciplines to bring diverse perspectives to the research process. This could assist in challenging assumptions and contribute to a more comprehensive research topic.

**Findings**

Based on the thematic analysis, these highlighted eight themes: technology facilitating learning, technology engagement, the influence of the lecturer, teaching style, initial understanding of technology, technical issues, lecturer’s expectation, and financial barrier. These findings are classified into two sections based on the previous research questions. In detail, the findings are divided as follows.

**Digital technology awareness of EFL preservice teachers**

The study revealed varying levels of digital technological awareness among the six Indonesian preservice teachers. Four participants demonstrated a high level of proficiency in utilizing digital tools for language teaching, while the remaining two exhibited a moderate to low level of awareness. The findings also indicate that EFL preservice teachers have utilized technology in their learning process due to the influence of lecturers. For example, KM, AR, and CKL acknowledged:
I’ve always been fascinated by technology. I actively seek out innovative ways to integrate it into my EFL learning process, such as using various online platforms and language learning apps to significantly enhance engagement. My lecturer is also my inspiration in using technology. (KM)

I believe in the power of technology to enhance learning experiences. Since my lecturer in English Education tends to give us video and presentation projects, I regularly use language learning apps and multimedia presentations to make my presentation and video more engaging. (AR)

I was so nervous when using technology since I was from a small school in a rural area and never had experience using it. However, after my lecturer showed us the use of technology in learning English, my thoughts suddenly shifted, and I started thinking of its importance for my future career. (CKL)

Using technology is amazing; I love how my lecturer uses several technological tools in her teaching, like Kahoot! Quizzes, videos, website. (AR)

The above excerpts indicated that using supporting technology in the classroom, such as videos and technological projects, leads to the initial growth of technological awareness among EFL preservice teachers. The technological tools, such as Kahoot! and Quizzes employed by a lecturer in the class, captured EFL preservice attention to engage with technology. These excerpts also indicated that due to the assignment requirement, which required the participants to employ technological tools, influenced the EFL preservice teachers’ curiosity in building up their technological awareness. The participant also revealed that although he came to a rural school, which did not support his technological skills, his thoughts regarding the importance of technology for his future career built up after showing how to use technology in the classroom.

The observation in the classroom also supports these findings. Based on this, the learning engagement of KM, AR, and CKL demonstrated a clear understanding while their lecturer employed varied strategies and technology in the classroom. They tend to be active in the classroom and use supporting technology tools while doing the presentation in front of the class. The classroom participation in the discussion process also demonstrated proficiency. Moreover, EFL preservice teachers always show satisfactory results when submitting their assignments. For example, SD expressed:

My awareness of technology has evolved since I saw my lecturer. Since then, technology has been an integral part of my learning approach. I regularly use multimedia presentations, interactive quizzes, and online collaboration tools.
to make lessons more dynamic. I even know how to make quizzes using interesting apps like Kahoot! (SD)

This excerpt clearly showed that the participants’ journey in technology awareness has been marked by significant evolution. The participants’ engagement with various technological tools, including multimedia presentations, interactive quizzes, and online collaboration tools, reflects a commitment to creating dynamic and engaging learning experiences. These technological skills were shaped due to his attention to his lecturer in the classroom.

From these scripts, it is seen that the four EFL preservice teachers show a high level of awareness of employing technology in their learning process. Their learning experience has also driven their awareness of technology since the projects or assignments from lecturers require them to employ technology to support their presentations or projects. This data is also supported by the lecturer's observation in the class since these four students always integrated the supporting technology with satisfactory results on their projects and presentations. Their engagement in the EFL learning process also shows that their classroom participation through discussion and presentation always demonstrates satisfied learning results.

While four participants show a high level of awareness of using technology in their learning process, two participants pose a low level of awareness. As BH and NA said:

I must admit I haven’t used digital tools as much as some of my friends. I find it a bit overwhelming, and I’m unsure how to incorporate them effectively into my learning process. My lecturer usually gives video projects, but I always ask my friends to make my PPT or video. (BH)

I tried using an online platform for vocabulary practice, but I always had trouble accessing it and struggled to troubleshoot. It disturbs my mood when I use technology. That's why I think technology is not quite important to support my learning. (NA)

I don’t understand how to use it. My head is so dizzy sometimes when I try to use it. (BH)

I was so skeptical when my lecturer announced we should submit a video as our middle term. (NA)

These two respondents, BH and NA, show different attitudes towards their awareness of using technology. Despite the lecturer has promoted the use of
technology in the EFL learning process, these two respondents tend to see this teaching style as a problem. Two main factors cause this issue: the inability to use technological tools and the difficulties in accessing the technology. These two factors have influenced their technological awareness and their learning. The lecturer's observation also confirms these findings since the project and presentation of BH and NA show unsatisfactory results. They tend to be confused about how to make proper PowerPoint slides, edit the videos, and use some supporting applications.

**Challenges of using technology in learning EFL**

Related to EFL learners' challenges in using technology, the findings highlight three main themes: technical issues, financial barriers, and students' anxiety about using technology.

*Technical issues and the lecturer's expectation*

The data show that six participants face several challenges regarding EFL preservice teachers' challenges in learning English using digital technology. For example, NA and BH acknowledged:

One challenge is that I'm not very familiar with the available tools. I'm not confident in navigating technology, and I worry about technical issues like internet connection or device trouble. (NA)

Because doing the project using technology is a new model for me, I tend to worry if I can't fully follow my lecturer's expectations, like using good animation, thumbnails, or showing the script of the video. My lecturer is so perfectionist in marking the assignment. (BH)

From these excerpts, the difficulties in using technology are diverse among EFL preservice teachers. Technical issues such as Internet connection, lack of familiarity with available tools, and a lack of confidence in navigating technology are the main problems that hinder EFL learners from incorporating technology into their learning process. Another difficulty is meeting the lecturer's expectation in incorporating high elements in the projects, such as using video scripts, animations, thumbnails, and others leads to the EFL learners' anxiety as the learners should meet the lecturer's expectation.

*The financial barrier and the anxiety in learning*

Another obstacle encountered by EFL preservice teachers is financial barriers. As explained in this study, most participants come from underprivileged
families. Due to a lack of funds to purchase necessary technological tools, such as laptops, this condition hinders EFL preservice teachers from improving their technological skills. As a result, it leads to learning anxiety among EFL preservice teachers. As KM and CKL shared:

As I've told you, I enjoy integrating technology into my English learning, but the problem is that I have difficulties improving my technological skills because of financial issues. This is because I don't have supporting funds to attend the training or buy a new laptop, as my current laptop tends to have problems. (KM)

I'm living with my grandmom because my parents had passed away since I was little. In the past, she was just a daily laborer. Therefore, I can't afford to buy a laptop because I know our life is difficult. I always borrow my friend’s when finishing the assignment. (CKL)

From these two excerpts, the financial barrier emerges as a significant obstacle. KM has difficulties improving technological skills due to insufficient funds to upscale his technological potency. The same challenges faced by CKL, based on this EFL preservice teachers, the economic factor has also been the main issue of using technology in learning EFL.

Discussion

Digital technology awareness of EFL preservice teachers

In terms of digital technology awareness, the use of different types of technological tools in the classroom, such as Kahoot!, Quizzes, and PPT, plays a critical role in EFL students' digital technological awareness of EFL preservice teachers. The participants also revealed that giving projects or assignments that require EFL preservice teachers to incorporate technology into the projects also influences their awareness. Furthermore, lecturers' preferences for technology tools are also the key to improving the EFL students' technological awareness. These findings are in line with the theory of digital awareness in an educational context that clearly states that digital awareness is not only being aware of supporting technology in the learning process but also associates the technological tools in supporting learning activities (Knowles, 2018; Lam et al., 2018; Makruf et al., 2021). These findings also imply that the academic culture integrating technology into the learning process promotes the EFL learners' curiosity and their digital willingness to learn more about the different types of
technology devices or tools. Aljazzaf (2020) clearly states that teachers' and peers' ability to influence technology in teaching and learning processes positively influences students' awareness. Moreover, Aljazzaf (2020) further argues that the availability of supporting technology, including computers, Internet connection, or mobile devices, is one factor that influences technological awareness among learners. These findings confirm the previous study that the technological shift impacts educators' and students' curiosity in learning different types of technology (Hendawi & Nosair, 2020; Liao et al., 2017). The study's findings are similar to those of Taopan and Siregar (2021), revealing that the lecturer's teaching style influences EFL preservice teachers' technological awareness.

**Challenges of using technology in learning EFL**

Even though their lecturers' teaching style has influenced EFL preservice teachers' awareness of using technology, other respondents show a contradicting result. The technological awareness of two respondents of this study is relatively low due to the difficulties in understanding the use of technology and the lack of understanding in accessing it. This is in line with the principles of the technological pedagogical content knowledge (TPACK) framework, which is a framework used in education to understand and promote effective teaching with technology; this should be supported by the diverse effects of lecturers' teaching pedagogies on technological awareness (Mishra & Koehler, 2006). TPACK knowledge of the dynamic interactions between pedagogy, content, and technology knowledge is necessary for effective technology-based instruction. Moreover, lecturers can increase students' awareness and engagement by skillfully integrating technology into their lessons. However, the Digital Divide theory refers to the concept that there is a gap between those who have access to digital technologies and those who do not, typically based on socioeconomic, geographic, or demographic factors (DiMaggio & Hargitay, 2001). This could be the reason for the respondents' inconsistent results. This theory highlights how different differences in technological access and skills can cause levels of technological proficiency. The access paradox is echoed by the respondents with low technological awareness who report having trouble accessing and understanding technology (Selwyn, 2010). Although technology can democratize education, it can also lead to new kinds of inequality, particularly if students encounter difficulties in accessing it. This aligns with the theory of The Community of Inquiry (CoI) framework (Garrison et al., 2000).
In terms of technical issues, perceived usability and ease of use greatly impact users’ intentions to adopt technology, according to the technology acceptance model (TAM) (Ibrahimi et al., 2020). In line with TAM, the technical issues, such as poor internet connections and unfamiliarity, suggest that resolving these problems is essential to a successful technology interaction. Due to this condition, targeted language acquisition cannot be reached effectively since there is limited access to technological advancement. Pratiwi and Waluyo (2022) argue that the use of technology allows for personalized learning experiences, as students can tailor their language acquisition journey to their specific needs and pace, and they have the opportunity to practice and develop their language skills dynamically and interactively. However, due to difficulties preservice teachers face, such as technical issues, anxiety, and financial barriers, these challenges lead to a lack of exposure for students to incorporate technology into their EFL learning process (Al-Ajmi & Aljazzaf, 2020).

The lecturer’s expectations align with TPACK, which emphasizes how important it is for educators to incorporate technology into their pedagogical expertise (Mishra & Koehler, 2006). However, lecturers who give projects for EFL learners should also consider the student’s needs and economic background since it is also beneficial for reaching the students’ engagement in the classroom. Fulfilling requirements for combining different components is consistent with the notion of using technology to improve teaching methods. Therefore, integrating TPACK into teacher education programs can be beneficial as it will help teachers understand how to use technology to enhance their teaching methods and address content-specific challenges.

The financial barrier EFL learners face confirms that the Digital Divide theory emphasizes the disparity in access to and usage of information and communication technologies. This financial barrier is in line with the previous study conducted by Fang et al. (2019). Fang et al. (2019) state that many people face difficulties using technology due to economic factors since they cannot afford the devices (computers or laptops), resulting in personal beliefs and self-efficacy concerns. The students’ technological anxiety in this study is also supported by the existing theory called the technology anxiety model (TAM), which discusses anxiety that can arise when individuals are uncertain about their ability to use technology (Henderson & Corry, 2021; Huang et al., 2022). Therefore, teacher training may benefit from including techniques from the TAM creating a welcoming learning environment, introducing technology gradually, and offering resources to build confidence are a few ways to achieve students’ confidence in using technology.
Conclusion

This research explores the digital technological awareness and challenges EFL preservice teachers face. This study finds that although the four participants are highly aware of technology, two show contradicted results. The lecturers' teaching style that integrating technology into EFL teaching and learning is the key factor that affected the participants' technological awareness. Moreover, utilizing various technological tools also enhances preservice teachers' technological awareness. Drawing from the participants' experiences, the findings also reveal that EFL learners face four main difficulties in using technology in learning EFL: financial barriers, lecturers' expectations, learners' technological anxiety, and technical issues. Building EFL learners' confidence in accessing technology through teacher professional development (TPD) can be conducted to facilitate a welcoming environment for these learners to enhance the use of technology in their learning process. It is also important for educators who teach students from disadvantaged families to consider the preservice economic backgrounds since it will affect what types of supporting and affordable technological tools can facilitate students in learning English.

However, this study is limited to the technological awareness and challenges EFL preservice teachers face. Therefore, future studies should consider several points; because this study only investigated six EFL preservice teachers in one university, further studies may recruit many participants from at least two different universities to obtain diverse and enriched data. This study also employs two research instruments: an interview and a lecturer's observation; further studies may use a mixed-methods approach and utilize a questionnaire with closed and open questions. It is recommended for educators and policymakers working in the educational sector to focus on analyzing and enhancing the digital awareness of EFL learners since it would result in positive impacts on the teaching and learning practice. This can be achieved through workshops, learning, analyzing needs, or conducting TPD.

Acknowledgments

We would like to acknowledge the contribution of the students of English Education program for participating in this study. The journal's editor and anonymous reviewers' useful feedback on an earlier version of this work is also appreciated.
Disclosure statement

No potential conflict of interest was reported by the authors.

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References


