



# The Investigation of EFL Preservice Teachers' Digital Literacy during Teaching Practice: Perceptions, Application, Enablers and Disincentives

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## Abstract

In modern society, EFL pre-service teachers are supposed to possess digital literacy as technology develops. Though teachers' digital literacy has advanced significantly, little focus is being paid to how EFL pre-service teachers perceive and apply digital literacy, as well as what supports and hinders their ability to use it. In this study, an interview, which aimed to research the digital literacy of EFL pre-service teachers in their practicum, was designed. After the interviewing, pre-service teachers' perception, application ability of digital literacy and the enablers and disadvantages of digital literacy during practicum were shown. The survey was conducted in the form of qualitative survey with 13 interviewees, who are from different universities. It indicates that they think that it is increasingly essential to improve digital literacy, and are already to apply more digital technologies to their class. This practical investigation can make educational policymakers know how to improve the digital literacy of pre-service teachers.

## Subject Areas

Education Administration, Teacher Education

## Keywords

Digital Literacy, EFL Pre-Service Teachers, Qualitative Analysis Practicum

## 1. Introduction

With the rapid development of information technology, digital literacy has be-

come an indispensable part of modern society, and its importance is increasingly prominent in the field of education. Specifically in English education, the application of digital literacy not only helps to improve teaching quality, but also effectively promotes students' interest in learning and their ability to learn independently. Language instructors have a duty that goes beyond simply imparting language skills as global communication becomes more and more digitally produced [1]. The demands placed on educators about their knowledge, methods of instruction, and learning environment are all altered by digital competency [2]. Through the Covid-19 pandemic time, we can see the importance of the digital literacy of teachers. [3] claims that because students use digital technology more frequently for amusement than for academic purposes, digital literacy among students is still in the low range. Therefore, teachers should design and produce cutting-edge teaching materials and integrate approaches [4]. If students enrolled in English education study programs or pre-service teachers possess strong digital literacy abilities, the barriers faced by instructors while addressing digital literacy in the English teaching process can be minimized [5]. If educators or aspiring educators lack enough digital literacy, it could lead to issues and unique difficulties during their teaching practicum [6]. A basic gap in our knowledge of the application, facilitators, and deterrents of EFL pre-service teachers' digital literacy throughout their teaching practice remains, despite the fact that several research has examined how EFL pre-service teachers perceive their level of digital literacy.

The above studies are mostly in the preliminary exploration stage, explaining the perceptions, structure and application of digital literacy of EFL pre-service teachers from different angles. However, there are still some issues. Current research on digital literacy among teacher candidates, especially EFL pre-service teachers, often lacks clear research goals and standards. This leads to a lack of focus and practicality in the research results. The studies do not clearly identify the factors that promote or hinder the development of digital literacy among English education majors, making it difficult to provide effective guidance and support for enhancing their digital literacy. Additionally, it is challenging to offer useful suggestions for educational leaders. Through qualitative analysis, which can ensure the validity and reliability, the goal of this study is to fill the existing knowledge gap on the benefits and drawbacks of digital literacy for EFL pre-service teachers who had completed practicums at various universities. In contrast to earlier research, the results of this study offer a distinctive perspective on the factors that support and hinder EFL pre-service teachers' digital literacy. This research not only helps us understand the current status of digital literacy among English education majors but also provides valuable insights for the professional development of student teachers and the reform of education and teaching. Our research approach and the methods used for collecting data in part one will be presented in the following sections. The results are then thoroughly analyzed and presented in part two. The discussion and conclusions of the research are presented in the third and final section.

## 2. Method

### 2.1. Study Design

In this study, a qualitative research design was used [7]. This study was designed as an interview and it aimed to find the methods for developing and supporting digital literacy of EFL pre-service teachers. For this purpose, the researchers conducted interviews in four modules with 13 EFL pre-service teachers. These modules were: a) introduction and warming-up; b) perceptions and self-evaluation of digital literacy; c) contributing and obstructive factors affecting digital literacy; d) plans and recommendations.

### 2.2. Participants

This study was voluntarily participated by 13 pre-service English teachers from 11 universities. All the students major in English and have completed teaching internships. The participants consist of 10 females and 3 males, including nine third-year students, three fourth-year students, and one second-year student. These pre-service teachers are not only required to apply their English professional knowledge and skills in internship teaching, but also face the challenge of integrating English subject teaching with digital literacy.

The selection of participants was guided by several considerations. Firstly, our goal is to ensure that the participants are representative of English education majors with different backgrounds and levels. Secondly, we sought participants with sufficient internship experience to gain a deep understanding and analysis of the application and impact of digital literacy in English teaching. Finally, we established good communication with the participants to ensure that they could accurately express their genuine thoughts and feelings about digital literacy.

During the data collection process, we adopted qualitative analysis methods through interviews. This approach allows us to gain a deep understanding of the participants' genuine thoughts and feelings about digital literacy, including their cognition, application, enabling factors, and hindering factors, as well as the specific problems and challenges they encountered during their internships. Through the study of these participants, we can comprehensively understand the cognition and application of digital literacy among English education majors, as well as the specific problems and challenges they encountered during their internships. The analysis of the promoting and inhibiting factors that affect the improvement of digital literacy among English education majors provides targeted suggestions for their professional development and educational teaching reform.

### 2.3. Data Collection Tools

Interviews were used to get information about pre-service teachers' opinions in terms of digital literacy development and their plans and recommendations on how to enhance their proficiency in digital literacy and the application of digital technologies. Pre-service teachers were asked different open-ended questions for each module [7]. Pre-service teachers were asked the following questions: "How

long did your teaching practicum last?”, “Prior to your teaching practicum, what was your comprehension of digital literacy?”, “What is your perception of digital literacy during your teaching practices as an EFL pre-service teacher?”, “How would you assess your mastery of digital literacy?”, “Aside from your teaching practicum, what other factors have contributed to the improvement of your digital literacy? Please elaborate.”, “Have you faced any difficulties in teaching and learning with digital tools? If so, please expound.”, “In your view, how do these difficulties affect the development of digital literacy?”, “Could you share with us the feedback you received from your students on your digital classroom and how it impacted your digital literacy?”, “What strategies do you consider essential for pre-service teachers looking to enhance their proficiency in digital literacy and the application of digital technologies?”. In this way, 10 questions were given to pre-service teachers. Pre-service teachers were asked to reflect on teaching practicum in the light of these questions. Each interview lasted in about half an hour.

## **2.4. Data Analysis**

Qualitative Analysis is a non-numerical, exploratory approach to data analysis that goes beyond quantitative measures to provide a nuanced understanding of phenomena. By analyzing text, images, and observations, it delves into the context and complexities of human behavior and social phenomena. This approach enables researchers to describe, interpret, and explain the world from the perspective of the participants, offering insights that are often overlooked in quantitative studies. The analysis of qualitative data necessitates a considerable amount of effort from the researcher to systematically and meticulously classify unorganized/raw data into a comprehensible format, without neglecting the intricate details of the research domain. This enables the derivation of meaningful generalizations with far-reaching implications [8].

The data obtained from interviews were analyzed with Nvivo software. Analyses were made by one researcher. The researchers followed a two-phased qualitative data analysis procedure [7]. Inductive analyses was used in the study in order to discover the views of pre-services teachers in terms of digital literacy development and how they predicted to enhance their proficiency in digital literacy and the application of digital technologies.

In the analysis phase, inductive analysis was used. In inductive analysis, analysis process was not built on a theory or framework, but on the contrary it was identified through the data [9]. In this context, transcribed interviews were repeatedly read and compared. Similar ideas and thoughts were grouped and coded under similar themes [7].

## **3. Results**

### **3.1. Pre-Service Teachers' Comprehension Prior to Teaching Practicum**

Prior to their teaching practicum, respondents shared a common understanding

of digital literacy as the ability to effectively use digital tools and resources for educational purposes in a digital society. They perceived digital literacy as competencies associated with assembling information, reading and understanding multimedia and hypermedia texts, finding and critically evaluating information, and working collaboratively to convey data [10]. Many respondents viewed digital literacy as a means to enhance communication skills and foster critical evaluation of information, essential in an era of abundant digital content. They emphasized the importance of integrating multimedia elements, such as PowerPoint presentations incorporating videos, images, and songs, to stimulate student interest and facilitate understanding of cultural backgrounds. This perspective was reflected such as: “When I was a student, I liked my teacher, use more pictures and video games.” Continuous learning and preparation, such as watching online courses and searching for better teaching methods, were seen as crucial for improving digital literacy. Respondents also acknowledged digital literacy’s role in improving teaching quality and making learning more efficient, flexible, and diverse, such as: “The traditional classroom teaching structure is no longer suitable for the digital age through the use of some teaching tools, such as motor media”. They recognized varying levels of digital literacy proficiency, with some considering themselves at an intermediate level due to their ability to search for information and solve problems effectively using digital tools. Overall, digital literacy development was considered to involve the acquisition of a set of skills or competencies necessary for functioning in the digital age [11].

### **3.2. Pre-Service Teachers’ Perceptions and Self-Evaluation of Digital Literacy**

Respondents’ perceptions of digital literacy during their teaching practices revealed both commonalities and differences. A prevalent view among respondents was the recognition of digital literacy as an essential competency for modern education, encompassing the ability to locate, evaluate, and utilize digital information effectively. Many noted its role in enhancing teaching efficiency, engaging students, and creating interactive learning environments. For instance, one respondent stated, “Digital literacy consists of the ability to locate, evaluate, and use information...to facilitate learning”, another respondent mentioned, “Let students feel the happiness of learning in the communication and exploration”. Additionally, the use of multimedia tools such as PowerPoint presentations, educational apps, and learning management systems was frequently mentioned as beneficial in supporting diverse learner needs and fostering a dynamic classroom atmosphere. A notable commonality was the emphasis on continuous learning and adapting to new digital tools. Many respondents admitted to varying levels of proficiency and identified areas for improvement, particularly in more advanced digital skills like using Excel and Word, just like a respondent said, “I recognize that there is still substantial room for growth and reef”.

The integration of digital technologies was seen as critical in meeting the demands of contemporary education policies and enhancing the overall teaching

experience. However, differences emerged in the perceived mastery and application of digital literacy. Some respondents felt confident in their basic digital skills but acknowledged a need for growth, stating they “recognize that there is still substantial room for growth and refinement” Others highlighted generational gaps, with younger teachers generally more adept at adopting new technologies compared to their older counterparts. This generational difference underscores the impact of prior exposure and familiarity with digital tools on teachers’ proficiency levels. The causes of these commonalities and differences can be traced to several factors. The universal need for digital literacy in modern education creates a shared understanding of its importance. Yet, individual experiences, access to resources, and generational factors contribute to differing levels of proficiency and confidence. Teachers’ ongoing professional development and the rapidly evolving nature of digital technologies also play significant roles in shaping their digital literacy skills and perceptions. In a word, while respondents uniformly acknowledged the critical role of digital literacy in education, their varying degrees of mastery and application highlighted the need for continuous learning and adaptation to new technological advancements.

### **3.3. Contributing and Obstructive Factors Affecting Digital Literacy**

In addition to educational internships, interviewees also mentioned other factors that contributed to or hindered the development of digital literacy. They highlight self-study, institutional support, and personal experiences as significant influences, while also acknowledging the challenges posed by technological issues and the need for ongoing learning and adaptation.

**Self-Study and Online Resources:** Many respondents emphasized the role of self-directed learning in improving their digital literacy, such as: “Learning advancing digital skills through self-learning channels such as online searches, watching learning videos, and reading”. Engaging in online searches, watching tutorial videos, and reading articles were frequently mentioned methods. One respondent noted, “In addition to educational internships, self-study can also help improve digital literacy. Learning advancing digital skills through self-learning channels such as online searches, watching learning videos, and reading online tutorials “Self-learning allows for continuous learning and the acquisition of new skills independently. These responses confirmed previous research which was aimed at the self-diagnosis of the level of basic digital literacy and experiences connected with e-learning [12].

**Institutional Support and Resources:** Institutional support, including access to digital tools and software, was another common factor. Introduction Teacher education institutions aim to prepare student teachers for their professional careers as educators. Ideally, this preparation should include developing digital competence through both on-campus classroom instruction and practical teaching experiences [13]. Respondents highlighted the importance of facilities and resources provided by schools, such as computer labs and digital teaching

aids. One participant shared, “I believe that having certain facilities in schools can improve the digital literacy of students on campus”. Additionally, some respondents also pointed out that formal education, including courses and competitions that require the use of digital tools, played a significant role in their digital literacy development.

**Professional Development and Workshops:** Participation in professional development workshops and academic courses was frequently cited as beneficial. These structured learning opportunities provided hands-on training and exposure to new digital tools and technologies. In the digital age, teacher education programmers are generally expected to prepare students for their professional activities in schools [14]. At the same time, practice mentors are supposed to have experience and qualifications in the academic (research and teaching) field and in practice mentor training [15]; For example, one respondent mentioned, “Taking online courses and participating in professional development workshops has provided me with valuable insights and skills”. Such programs often include practical examples and case studies that help pre-service teachers apply digital literacy concepts in real teaching contexts.

**Peer Collaboration and Feedback:** Collaboration with colleagues and receiving feedback from students were also noted as important for improving digital literacy. Sharing experiences and knowledge with peers helped respondents gain new insights and practical tips. One respondent stated, “Collaboration and communication with fellow learners and educators have enhanced my understanding and application of digital technologies”. Additionally, feedback from students on the use of digital tools in the classroom provided opportunities for refinement and improvement.

**Varying Levels of Institutional Support:** While some respondents had access to substantial institutional support and resources, others reported minimal contact with digital tools during their education. This discrepancy affected their initial digital literacy levels and their ability to integrate technology effectively into their teaching. Student teachers often recognize and understand the limitations inherent in their roles during teaching situations [15]. One participant noted the lack of computer classes in high school due to academic pressure, which limited their exposure to digital tools.

**Variations in Technical Proficiency:** Respondents evaluated their own digital literacy levels, revealing a range of confidence and skills. While some felt assured of their capabilities, others identified significant gaps. For example, one respondent admitted, “My digital literacy is quite low; I lack the skills and knowledge to use relevant software and hardware.” This range highlights the need for tailored professional development plans to address individual needs.

**Challenges with Digital Tools:** Technical difficulties emerged as a common theme, though the specific issues varied. Some respondents faced challenges such as poor internet connectivity and software malfunctions, which disrupted their teaching. One participant expressed frustration, stating, “Technical issues can prevent them from operating digital tools correctly, thereby affecting their

development in digital literacy.” Others mentioned struggles in balancing digital tools with traditional teaching methods and managing classroom discipline. Analysis of Commonalities and Differences: The shared experiences among respondents reflect a general understanding of the importance of self-directed learning, institutional support, and professional development in improving digital literacy. These factors offer pre-service teachers diverse opportunities to develop and enhance their digital skills. The emphasis on continuous learning underscores the evolving nature of digital literacy, which requires ongoing adaptation to new tools and technologies. However, disparities in experience and proficiency are influenced by access to resources and support, as well as individual learning opportunities. Respondents with more exposure to digital tools and formal training reported higher levels of digital literacy and confidence. Conversely, those with limited or initial exposure to digital technology encountered greater challenges in integrating these tools into their teaching practice. Although technical difficulties are a common issue, their impact varies based on the respondents’ environments and available support systems. Those with robust institutional support are better positioned to handle technical issues, while those lacking such support experience greater disruptions in their teaching.

In conclusion, respondents identified self-study, institutional support, professional development, and peer collaboration as key factors in enhancing their digital literacy. However, variations in institutional support, individual proficiency levels, and technical challenges underscore the need for personalized approaches to digital literacy training. Addressing these disparities through targeted professional development and strengthened institutional resources can help preservice teachers effectively integrate digital tools into their teaching, ultimately benefiting students’ learning experiences. This study highlights the importance of continuous learning and adaptation in the ever-evolving landscape of digital literacy.

### **3.4. Pre-Service Teachers’ Plans and Recommendations**

The feedback from students plays a crucial role in shaping these perceptions, influencing the development of digital literacy skills, and highlighting areas for improvement.

**Importance of Digital Literacy:** All respondents acknowledged the significance of digital literacy in contemporary education. Digital literacy has an important role in the ability to critical thinking in learning in the digital era [16]. They recognized it as an essential skill that enhances teaching efficiency and student engagement. One participant emphasized, “Digital literacy is crucial for contemporary English language teaching”. It encompasses the ability to effectively use various digital tools and resources to “engage students, facilitate learning, and create interactive educational experiences”.

**The Role of Feedback in Professional Development:** Student feedback has consistently been highlighted as a crucial factor in improving digital literacy. Respondents noted that positive feedback motivates them to continue integrat-

ing digital tools into their teaching, while constructive criticism helps them identify areas for improvement. For instance, one respondent mentioned, “As an English as a Foreign Language teacher, student feedback is an essential tool in my professional development. It helps me identify my strengths and weaknesses, address issues with digital literacy, and ultimately improve my teaching practice.”

**Enhancing Student Engagement:** Many respondents reported that digital tools made their classes more engaging and interactive. The use of multimedia resources, such as videos and slides, was frequently mentioned as effective in capturing students’ attention and enhancing their learning experience. One teacher noted, “My students think the digital classroom is so funny. They can learn knowledge when they play English games. The digital classroom is a good way to make students pay more attention to my class”.

**Continuous Learning and Adaptation:** The need for continuous learning and adaptation to new digital tools was a common theme. Respondents emphasized the importance of staying updated with technological advancements and seeking new ways to integrate these tools into their teaching. One respondent shared, “Teachers need to continuously pay attention to students’ learning experiences and technology acceptance. Improve their own technology adaptation ability and data literacy”.

**Levels of Technological Proficiency:** There were notable differences in the respondents’ levels of technological proficiency. While some felt confident in their digital literacy skills, others acknowledged significant gaps and the need for further training. One respondent admitted, “I am not very familiar with digital literacy. I only know how to make a PowerPoint. I should learn more skills about Excel and Word”.

**Impact of Technological Issues:** The impact of technological issues varied among respondents. Some experienced significant disruptions due to technical problems, such as poor internet connectivity or software malfunctions, which affected their teaching effectiveness. One participant mentioned, “Technological difficulties can sometimes be distracting. This feedback has encouraged me to focus more on balance and appropriate use of technology when designing digital teaching activities”.

**Student Feedback and Adaptation:** The feedback from students varied, influencing how teachers adapted their digital teaching strategies. Some respondents received positive feedback on their use of digital tools, while others faced challenges with students’ understanding and engagement. For example, one teacher noted, “Students sometimes know more about using digital tools than teachers do. These feedbacks give me a feeling that teachers need to continuously pay attention to students’ learning experience and technology acceptance”.

The commonalities among respondents indicate a shared recognition of the importance of digital literacy in education. The feedback from students is universally seen as vital for professional growth, helping teachers refine their digital teaching strategies. Additionally, the use of multimedia resources to enhance

student engagement is a widely adopted practice, reflecting the growing trend toward interactive and technology-enhanced learning environments.

The differences in technological proficiency and the impact of technological issues can be attributed to varying levels of access to resources and support, as well as individual learning opportunities. Respondents with more experience and access to digital tools reported higher proficiency levels, while those with less exposure faced more significant challenges. The variation in student feedback also highlights the diverse needs and preferences of learners, which teachers must navigate to create effective digital learning experiences.

In conclusion, the respondents' perceptions of digital literacy during their teaching practices reveal both commonalities and differences. The shared emphasis on the importance of digital literacy, the critical role of student feedback, and the use of multimedia resources underscore the evolving landscape of education. However, the differences in technological proficiency and the impact of technological issues highlight the need for tailored professional development and support. Addressing these disparities through continuous learning and adaptation will enable pre-service teachers to effectively integrate digital tools into their teaching, ultimately enhancing their students' learning experiences. The insights from this study emphasize the dynamic nature of digital literacy and the importance of staying updated with technological advancements to meet the demands of modern education.

Enhancing digital literacy and the application of digital technologies. These insights reflect the multifaceted approaches and varying levels of experience among the respondents, highlighting both shared strategies and individual preferences. Common Themes 1. Continuous Learning and Training: A recurrent theme among the respondents is the emphasis on continuous learning and professional development. Many pre-service teachers highlighted the importance of engaging in training courses, workshops, online learning, and professional development activities to stay updated with the latest digital tools and best practices. One respondent noted, "Improving the proficiency of pre-service teachers in digital literacy and the application of digital technologies requires training, hands-on opportunities, resource support, collaborative sharing, and continuous learning and self-reflection". This continuous learning approach ensures that teachers remain competent and adaptable in the evolving digital landscape.

Practical Application and Hands-On Experience: The necessity of practical application and hands-on experience was emphasized by multiple respondents. Engaging with various digital tools and resources in real-world scenarios helps pre-service teachers build proficiency and confidence. One participant suggested, "Practice using various digital tools and resources is crucial to proficiency and confidence. Pre-service teachers should experiment with different software and hardware and practice their use in instructional design and delivery to build their skills. This hands-on approach enables teachers to apply theoretical knowledge in practical settings, enhancing their overall digital literacy.

Collaboration with colleagues and peer learning were frequently mentioned as effective strategies for improving digital literacy. Sharing experiences, knowledge, and best practices with peers and mentors can provide valuable insights and support. One respondent stated, “Pre-service teachers should seek collaboration with colleagues and experts who have experience with digital literacy and share knowledge and ideas collaboratively, which can enhance their learning and promote innovation”. This collaborative approach fosters a supportive learning environment and encourages the exchange of innovative teaching strategies.

**Integration of Digital Tools in Teaching:** Integrating digital tools into teaching practices was a common strategy among the respondents. Utilizing digital resources, multimedia, and interactive platforms can enhance the learning experience and engage students more effectively. One teacher emphasized the importance of mastering digital tools, stating, “Teachers can continuously improve their ability to use digital tools by attending training courses, reading relevant books and articles, and learning online”. Effective integration of digital tools not only improves teaching efficiency but also caters to diverse student needs.

**Reflective Practice and Adaptation:** Many respondents highlighted the importance of reflective practice and adaptation in the context of digital literacy. Continuously evaluating the effectiveness of digital tools and teaching methods allows teachers to make necessary adjustments and improvements. One respondent shared, “It is essential to be reflective and constantly evaluate the effectiveness of digital tools in promoting students’ learning” This reflective approach ensures that digital tools are used optimally to enhance student outcomes.

**Levels of Digital Literacy and Confidence:** The respondents’ levels of digital literacy and confidence varied significantly. While some pre-service teachers felt confident in their digital skills, others acknowledged the need for further development. For example, one respondent admitted, “I am not very familiar with digital literacy. I only know how to make a PowerPoint. I should learn more skills about Excel and Word”. This variation highlights the diverse starting points and experiences among pre-service teachers.

**Institutional Support and Resources:** The availability of institutional support and resources also varied among respondents. Some pre-service teachers had access to extensive digital infrastructure and training opportunities, while others reported limited resources. One participant mentioned the importance of providing advanced digital infrastructure, including “network coverage, equipment, and technical support, to support digital literacy development”. Differences in institutional support can significantly impact teachers’ ability to develop and apply digital literacy skills.

**Specific Strategies and Focus Areas:** Respondents identified different specific strategies and focus areas based on their individual experiences and teaching contexts. For instance, some emphasized the need to master data analysis and application to improve teaching evaluation, while others focused on the importance of balancing digital and traditional teaching methods to maintain interpersonal skills and critical thinking. One teacher highlighted the need for “in-

novative teaching methods” that combine online and offline models to better meet students’ learning needs. These differences reflect the varied priorities and approaches among pre-service teachers.

**Challenges and Barriers:** The challenges and barriers faced by pre-service teachers in enhancing their digital literacy also differed. Some respondents cited technical issues, such as poor internet connectivity and software malfunctions, as significant obstacles. Others mentioned the need for better training and support to overcome these challenges. One participant noted, “Technological difficulties can sometimes be distracting. This feedback has promoted me to focus more on balance and appropriate use of technology when designing digital teaching activities”. Addressing these challenges requires targeted support and resources to ensure effective digital literacy development.

In conclusion, the responses from pre-service teachers reveal a range of strategies and experiences related to digital literacy and the application of digital technologies. Common themes include the importance of continuous learning, practical application, collaboration, integration of digital tools, and reflective practice. These strategies collectively contribute to the development of digital literacy skills, enabling teachers to effectively incorporate technology into their teaching practices. However, differences in levels of digital literacy, institutional support, specific strategies, and challenges highlight the need for personalized professional development and support. Tailoring training programs to address individual needs and providing adequate resources and infrastructure can help pre-service teachers overcome barriers and enhance their digital literacy. By fostering a culture of continuous learning, collaboration, and reflective practice, educators can better adapt to the evolving digital landscape and meet the diverse needs of their students.

## **4. Discussion and Conclusions**

### **4.1. Pre-Service Teachers’ Opinions in Terms of Digital Literacy Development**

Overview and discussion on digital literacy among EFL pre-service teachers have become a cornerstone of modern education, particularly for pre-service teachers specializing in English as a Foreign Language (EFL). The responses from pre-service teachers highlight their perceptions, experiences, and strategies regarding digital literacy, revealing common themes and individual differences. This paper synthesizes these perspectives, examines the current state of digital literacy among pre-service English teachers, and proposes methods to enhance their digital competencies.

**Universality in digital literacy development: Importance of Continuous Learning and Professional Development:** Pre-service teachers universally recognized the importance of ongoing education to enhance digital literacy. They emphasized engaging in continuous learning through training courses, workshops, and online resources. This approach ensures they stay abreast of the latest

technological advancements and best practices in digital education. One respondent noted, “Improving the proficiency of pre-service teachers in digital literacy and the application of digital technologies requires training, hands-on opportunities, resource support, collaborative sharing, and continuous learning and self-reflection”.

**Practical Application and Hands-On Experience:** Hands-on experience is crucial for developing digital literacy. Pre-service teachers highlighted the need to engage with various digital tools and platforms in real-world teaching scenarios to build confidence and proficiency. Practicing the use of software and hardware in instructional design and delivery helps bridge the gap between theoretical knowledge and practical application. “Practice using various digital tools and resources is crucial to proficiency and confidence. Pre-service teachers should experiment with different software and hardware and practice their use in instructional design and delivery to build their skills”.

**Collaboration and Peer Learning:** Collaboration with colleagues and mentors was frequently mentioned as a valuable strategy for enhancing digital literacy. Sharing experiences and best practices with peers can provide fresh insights and foster a supportive learning environment. One respondent stated, “Pre-service teachers should seek collaboration with colleagues and experts who have experience with digital literacy and share knowledge and ideas collaboratively, which can enhance their learning and promote innovation”.

**Integration of Digital Tools in Teaching:** Effective integration of digital tools into teaching practices is essential for modern educators. Pre-service teachers discussed the benefits of using multimedia, interactive platforms, and other digital resources to create engaging and dynamic learning environments. Mastering these tools can significantly enhance teaching efficiency and student engagement. “Teachers can continuously improve their ability to use digital tools by attending training courses, reading relevant books and articles, and learning online”

**Reflective Practice and Adaptation:** Reflective practice allows teachers to assess the effectiveness of their digital teaching methods and make necessary adjustments. Continuous reflection and adaptation help educators improve their digital literacy and teaching strategies. “It is essential to be reflective and constantly evaluate the effectiveness of digital tools in promoting students’ learning”

**Varying Levels of Proficiency:** The respondents exhibited different levels of digital literacy. Some pre-service teachers felt confident in their abilities, while others recognized significant gaps in their knowledge and skills. For instance, one teacher admitted, “I am not very familiar with digital literacy. I only know how to make a PowerPoint. I should learn more skills about Excel and Word”. This variation underscores the diverse starting points and learning needs among pre-service teachers.

**Institutional Support and Access to Resources:** The availability of institutional support and resources varied significantly among respondents. Some pre-service

teachers had access to advanced digital infrastructure and extensive training opportunities, while others reported limited resources. One participant emphasized the need for better institutional support: “Providing advanced digital infrastructure, including network coverage, equipment, and technical support, is essential for supporting digital literacy development”.

**Specific Focus Areas:** Different respondents prioritized various aspects of digital literacy based on their teaching contexts and personal experiences. Some focused on mastering data analysis for better teaching evaluation, while others stressed the importance of balancing digital and traditional teaching methods. These differing priorities reflect the unique challenges and opportunities faced by individual teachers.

**Challenges and Barriers:** Pre-service teachers encountered various challenges in enhancing their digital literacy. Technical issues, such as poor internet connectivity and software malfunctions, were common obstacles. Additionally, some respondents highlighted the need for more comprehensive training to overcome these barriers. “Technological difficulties can sometimes be distracting. This feedback has promoted me to focus more on balance and appropriate use of technology when designing digital teaching activities”.

**Methods for Enhancing Digital Literacy:** To address the identified gaps and enhance digital literacy among EFL pre-service teachers, several strategies can be implemented:

1) **Comprehensive Training Programs:** Institutions should offer comprehensive training programs that cover a wide range of digital tools and teaching strategies. These programs should include hands-on workshops, online courses, and ongoing professional development opportunities to ensure teachers remain current with technological advancements.

2) **Institutional Support and Infrastructure:** Providing robust institutional support is crucial. Schools and educational institutions should invest in advanced digital infrastructure, including reliable internet access, up-to-date hardware, and software, as well as technical support. This infrastructure will enable pre-service teachers to effectively integrate digital tools into their teaching.

3) **Peer Collaboration and Mentorship:** Facilitating collaboration and mentorship among pre-service teachers can significantly enhance digital literacy. Institutions should create opportunities for teachers to share experiences, exchange best practices, and receive guidance from more experienced colleagues. Peer learning communities and mentorship programs can provide invaluable support.

4) **Reflective Practice and Feedback:** Encouraging reflective practice and incorporating regular feedback mechanisms can help teachers continually improve their digital literacy. Institutions should promote a culture of self-reflection and provide platforms for teachers to receive constructive feedback from peers and students.

5) **Integration of Digital Literacy into Curriculum:** Digital literacy should be

integrated into the teacher education curriculum. Pre-service teachers should be taught how to effectively use digital tools and resources as part of their standard training. This integration ensures that digital literacy becomes a fundamental aspect of their teaching practice.

6) Addressing Technological Challenges: To overcome technological challenges, institutions should provide targeted support and troubleshooting assistance. Training programs should include sessions on problem-solving and effective use of digital tools under various conditions. This support will help teachers feel more confident in managing technical issues.

The responses from EFL pre-service teachers underscore the importance of digital literacy in modern education. Continuous learning, practical application, collaboration, integration of digital tools, and reflective practice are key strategies for enhancing digital literacy. However, varying levels of proficiency, institutional support, and specific focus areas highlight the need for tailored professional development and comprehensive institutional resources. By implementing these strategies, educational institutions can better support pre-service teachers in developing their digital literacy skills. This, in turn, will enable teachers to create more engaging, efficient, and effective learning environments for their students. As the digital landscape continues to evolve, fostering robust digital literacy among educators will be essential for meeting the challenges and opportunities of 21st-century education.

## 5. Limitations and Future Research

Despite employing a qualitative analysis approach through interviews, this study has several limitations. The first limitation is that in this study the representativeness of the sample may be influenced by factors such as region and school type. Future research should aim to expand the sample size and diversity to enhance the generalizability of the findings. Another limitation of the study is that this study primarily focused on the digital literacy of pre-service English teachers during their practicum, without addressing other subjects or fields. Future research could extend to other disciplines to provide a comprehensive understanding of the application and influencing factors of digital literacy across various fields. Moreover, future research could employ more sophisticated data analysis methods and techniques, such as text mining and sentiment analysis, to delve deeper into the interview data. These advanced methods would allow for a more nuanced understanding of the current state of digital literacy among pre-service English teachers during their practicum and the factors influencing it. This, in turn, would provide robust support and guidance for improving digital literacy among pre-service teachers. Additionally, longitudinal studies could be beneficial in understanding how digital literacy develops over time among pre-service teachers and how it impacts their teaching effectiveness and student outcomes. Experimental studies could also be conducted to test the effectiveness of specific digital literacy training programs. Finally, exploring the role of insti-

tutional support and policy in shaping digital literacy skills would provide valuable insights into how educational environments can be optimized to support the development of these essential skills. This study has some limitations.

## 6. Funding Statement

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## Conflicts of Interest

The authors declare no conflicts of interest.

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