



DIGITAL LITERACY COMPETENCE OF PRE-SERVICE TEACHERS: EXAMINING THEIR READINESS TO USE TECHNOLOGY

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ABSTRACT

This paper examines pre-service language teachers' digital proficiency and readiness in light of the changing needs of the twenty-first-century educational environment. In light of the evolving roles of educators and the critical role, that technology plays in empowering students. This study explores pre-service teachers' perceptions of and integration of digital literacy into their instructional strategies. The study used a phenomenological case study methodology, collecting data from 23 pre-service English instructors at IAIN Langsa through semi-structured interviews and questionnaires. The study shows participants' varied degrees of digital proficiency, which focuses on core ICT abilities. The results show a disconnect between theoretical understanding and real-world implementation in educational settings, even if many people have good attitudes toward digital literacy. To address the digital age problems, the essay highlights the value of teacher education programs in closing this gap and the necessity for pre-service teachers to gain pedagogical and technological experiences. The study's conclusions point to the need for more investigation to determine how digital literacy is used in classroom settings and to improve the digital readiness of aspiring teachers.

Keywords: Readiness, Digital Literacy, Digital Competence, Technology

1. INTRODUCTION

The difficulties of the twenty-first century and the digital competency of aspiring teachers have drawn much attention. To empower students in the twenty-first century, educators must adapt their teaching methods and the competencies they must acquire. Educators must create the conditions and chances necessary for in-depth learning. Instructors are expected to be more than facilitators of effective learning; they must be creative in selecting various tactics that can be combined and modified depending on the student and the situation. Pre-service teachers can apply the teaching skills they have learned in their higher education to their teaching practice by participating in an internship in a school. Pre-service teachers' technology-related experiences and beliefs impact their intention and preparedness to use technology in real-world settings (Park & Son, 2020). The pre-service language instructors discussed different technological platforms and tools for using technology at different teaching stages in the classroom. The primary focus of previous discussions has been the impact of technology integration on pre-service teachers' teaching perspectives and their ability to foster more profound subject knowledge, learning, and comprehension (Lei & Zhao, 2007).

According to several studies (Kirschner & Davis, 2003; Valcke et al., 2007), for student teachers to become digitally competent, their teacher education programs must provide them with the necessary technological instruction. Nonetheless, studies on teacher education continue to show that teacher educators and student teachers generally lack the skills necessary to use technology in a didactic and pedagogical way (Haugerud, 2011). Possessing specialized teaching-profession abilities and general skills appropriate for all circumstances—personal and professional—is necessary to integrate and use technology for educational objectives effectively. Professional digital competence for teachers is what this is known as (Lund et al., 2014). In this sense, teacher educators have two roles to play: not only should they be able to employ technology in their instruction, but they should also aid in enhancing the professional digital competency of aspiring teachers. How technology is integrated into these settings becomes especially crucial in a complicated educational program like teacher education, where teacher preparation occurs both on campus and in field practice schools. Thus, the following



query is crucial to our study: How well-versed are pre-service teachers in digital literacy? Are they prepared to use a computer throughout their practicum as teachers? To answer this question, the researchers will examine data from semi-structured interviews and open questionnaires given to pre-service teachers during their teaching practicum in schools.

The review acknowledges the existence of multiple terminologies and definitions of digital competence (Ala-Mutka, 2011; Ferrari, 2012), along with knowledge, skills, and competencies related to the use of technology, such as computer literacy (Nawaz & Kundi, 2010) and digital literacy. These terms have distinct interpretations in various intellectual, cultural, historical, social, and pedagogical contexts. Furthermore, this article highlights that teachers' professional use of digital technologies and digital competence differs from other professions based on the large body of research on teachers' use of ICT in the classroom (Almås & Krumsvik, 2007). Krumsvik (2011b) defines digital competence as "the teacher's...proficiency in using technology in a professional context with good pedagogic-didactic judgment" (Krumsvik, 2011b, pp. 44–45). This definition emphasizes the importance of teachers in the definition of digital competence. "The ability of people to know how to operate these [digital] technologies, and to use them safely, wisely, and productively" and "an awareness of the social practices that surround the appropriate use of new technologies" are the definitions of digital literacy given by Pegrum, Hockly, & Dudeney, (2022).

Krumsvik (2008, 2014) introduced a framework for the professional digital competence teachers need to use technology meaningfully in their classrooms and recognize its role in students' lives and society, realizing the importance of examining digital literacy among pre-service teachers. The four components of a teacher's professional digital competence are (a) basic ICT skills, (b) didactic ICT competence, (c) learning methods, and (d) digital competence, according to Krumsvik (2008, 2011; 2014), who introduced the Digital Competence Model, which was developed in a Scandinavian environment. Teachers' practical use of technology, including adoption, adaptation, appropriation, and invention, is basic ICT skills. "didactic ICT competence" describes how teachers employ technology in their pedagogy or achieve epistemic goals connected to students' knowledge development. To implement learning methodologies, educators must look at how they learn technology and how that knowledge may be transferred to their pupils. Lastly, digital competence is a meta-awareness that links instructors' technological proficiency to a comprehension of society's overall digitalization. With this larger framework in mind, we concentrate on the first element Krumsvik (2008) highlights in our study, which is the fundamental ICT abilities of pre-service teachers. Furthermore, we concentrate mainly on what pre-service teachers understand these ICT competencies (digital literacy or digital competence) to be because of their essential character.

In addition to helping students learn their subjects, this digital competency can give them the attitudes and abilities they need to thrive in the knowledge-based society of the twenty-first century. As a result, the digital revolution and the growing digitization of school life over the past decades have created a need for digitally competent teachers who can adequately implement technology (Krumsvik, 2011b; Mishra & Koehler, 2006). This is because today's workforce requires individuals to employ a variety of cognitive skills to solve problems in digital environments (Alviram & Eshet-Alkalai, 2006). Accordingly, it has been suggested that to stay up with the rapidly evolving digital society, educators and students must have a certain level of computer literacy (Nawaz & Kundi, 2010).

Education reforms, regulations, and frameworks also reflect the growing emphasis on abilities, skills, and attitudes, including digital competence. Along with reading, writing, math, and conversational abilities, digital competency is now the fifth fundamental skill. Nonetheless, the research indicates that there "seems to be a gap between technical knowledge and knowledge on how to employ technology in a learning context" among student teachers, teacher educators, and pre-service teachers (Haugerud, 2011, p. 227). This focuses on incorporating digital competency into teacher education curriculum texts (Instefjord & Munthe, 2015).



Teachers' preparedness for integrating technology

According to the Merriam-Webster Dictionary, readiness is "the state of being prepared for something or willing to do something." Since teachers' technical knowledge and abilities do not guarantee their preparedness for technology integration in the classroom, teacher preparation to use technology for learning and teaching is multifaceted and complex (Cuhadar, 2018). A core knowledge base for pre-service teachers' preparedness for incorporating technology in the classroom (Mishra & Koehler, 2006). It emphasizes that the use of technology by educators includes not only technical expertise but also technological understanding from the standpoint of the intended curriculum and related pedagogy. To meet the needs of students in the digital age, universities must ensure that their instructors can incorporate technology into their courses.

The connections between the attitudes of pre-and in-service teachers and their actual usage of digital technologies have been the subject of extensive research (Khanum, Siddique, & Haleem, 2021). However, conditions that do not encourage the use of ICTs in teaching may also be an obstacle. Researchers have covered several of the obstacles that teachers face in general education. First-order and second-order barriers are the two categories into which Ertmer (1999) divided these barriers. First-order hurdles are those that instructors face from the outside, such as time constraints, lack of access to software and technology, lack of support, and inadequate teacher preparation. Teachers' willingness, beliefs, expertise, and established classroom practices are examples of second-order hurdles. The capacity to "seek change and improve the current situation and build what is desired" (p. 3) is referred to as the "third-order barrier" of "design thinking," as proposed more recently by Tsai and Chai (2012). Instructors with technology-based design thinking competency may overcome first- and second-order barriers. Therefore, it is essential to assess pre-service teachers' preparedness for effective technology integration in teaching to support them better with this process through teacher education programs.

2. METHODS

A qualitative technique was utilized in this study to explore, understand, and explain the social phenomenon that an individual or group of individuals is facing or experiencing (Creswell, 2014). Using interviews to gather data, this research used a phenomenological case study methodology to explain the participants' experiences of a phenomenon (Giorgi, 2009). Furthermore, the phenomenon that Bevan (2014) describes will depict the participants' experiences according to their encounters. This study's data came from direct research objects or primary sources gathered through interviews and questionnaires. The purpose of the questionnaire is to collect personal information, experience, knowledge of attitudes, and opinions from participants using a list of statements (Cheng, & Dörnyei, 2007). In the meantime, regular talk during the interview was meant to directly analyze the respondent's phenomenon (Cheng, & Dörnyei, 2007). A Google Form was used to deliver the open-ended survey online. All participants underwent semi-structured face-to-face interviews utilizing the semi-structured questions from the study. The study's subjects were IAIN Langsa pre-service English instructors who had completed an internship before beginning their teaching careers. Twenty-three pre-service English teachers served as research subjects for the questionnaire data collection. In addition, nine others were interviewed. Purposive sampling was the basis used to choose the interview subjects. Only subject representatives who matched the predetermined requirements were used for this (Cheng, & Dörnyei, 2007). The total score of the respondents' responses to every question on the questionnaire served as the selection criterion. This study was carried out at IAIN Langsa. This study was carried out during the even semester of 2023. Following the acquisition of the questionnaire data, a descriptive analysis was conducted. Descriptive data analysis was performed to determine the average answer and the frequency distribution of the responses. Following the results of the data analysis on the questionnaire, data gathering via interviews was carried out. Transcripts of the recorded data were created once the interview data was acquired—the data analysis aimed to identify themes about their competence and preparedness.



3. RESULTS & DISCUSSION

Participants were asked to provide detailed explanations for their written comments, which they also submitted through Google Forms. To maintain secrecy, the names given to the participants in the extracts are pseudonyms. After the Google Forms responses were analyzed, smaller participant groups were called to participate in semi-structured in-person interviews. These semi-structured interviews were used to gather additional information and for triangulation. Face-to-face interviews were extended invitations to all survey respondents to obtain a more thorough understanding of the problem.

Only 23 people, nevertheless, gave a favorable response. Semi-structured questions from the survey were used in face-to-face interviews with eight participants who were the first to answer. They were asked in in-person interviews to elaborate on the points brought up during the first round of data collecting. The interviews allowed the researchers to go deeper into the survey and conduct a more thorough investigation of the results. The semi-structured follow-up interview analysis further supported these conclusions. Interviewees praised digital literacy initiatives and indicated a desire to improve their proficiency in digital literacy before starting their teaching careers. Digital literacy among the participants entailed using digital technologies for various reasons, including teaching and communication. Many attendees discussed how technology benefits teaching and learning and why it is crucial. Several responses from the participants are listed below.

to increase the enjoyment of teaching and learning activities

Pupils are more excited to engage in the educational process.

makes teaching and learning more accessible as it is applicable

To provide digital learning, technology that can access and execute digital learning activities must be integrated. This is because I teach a digital science class with a learning management system.

since it facilitates learning and information access

since it may facilitate teaching

In general, they both agree on the advantages. There is no denying that using technology in the classroom interferes with instruction.

To increase the enjoyment of teaching and learning activities.

for pupils to participate in learning with tremendous enthusiasm

makes it easier to access and exchange information about educational resources

because it facilitates my teaching approach

Since utilizing educational technology is more enjoyable and keeps kids from getting bored, it helps them concentrate and want to engage in teaching and learning activities until they are completed.

These answers show that the participants understood the notion of digital literacy. They held that accepting new knowledge and having an open mind are traits of those who are digitally literate since people who use digital technology well must be receptive to different viewpoints. Every participant mentioned how crucial digital activities are to maintaining relationships. Factors influencing the use of technology before the teacher education program before starting their teacher education program, it was discovered that each participant had a different level of expertise with computers and the Internet (such as email and web searches). However, based on their abilities and sincere interest in technology, their experiences and degree of technological expertise varied. These results are consistent with what was disclosed. As a result, the participants showed interest in using technology in the classroom. The participants also discussed a number of the tools they use in the classroom, such as a wireless speaker, laptop, focus, speaker, notebook, gadget, portable speaker, and overhead projector. As reported in several other studies, the questionnaires needed to address the extensive use of YouTube (Yang, Wang, & Bautista, 2024).



"I am conversant with new technologies and their features, the researchers said when they asked this question. They replied, "I understand." However, the researchers saw that their understanding remained moderate because they were using conventional technologies—devices in this instance. Assignments are sent or downloaded by students using their devices. The question "I know how to use ICT as a medium for sharing ideas and thinking together" did not delve deeper into improving laptop usage. The only purpose for which computers and notebooks are used is to access PowerPoint presentations shown in the classroom. They also need clarification about what technology is suitable for them to employ when delivering material in the classroom when this topic is posed.

Additionally, these pre-service teachers use less advanced tools than pupils could use to aid their education. They need to learn how to mentor students with more advanced technology. Researchers also inquired about using specific programs that supplement classroom instruction when individuals utilize technology. It is interesting to note that they also do not employ any specialized applications to hone their teaching abilities during teaching practice. Specifically, they must learn to use ICT for idea sharing and group thought. Pre-service teachers believe they can use devices like laptops, wireless speakers, notebooks, In-focus, Projector, and gadgets for teaching.

Their primary focus was using mobile devices, social media, and the Internet to search for information or access online content. Nobody was involved in the creation of media. Their primary emphasis was using social networking sites, mobile phones, and the Internet for online purchasing and information searches. They said that they understood when this question was posed. However, because they essentially use tools and technologies that people generally use, it is challenging to define comprehension in this context. This demonstrates that they must still include any particular technology in teaching and learning.

Regarding the instructor component, a vital link was found between the educational approaches used by the classroom teacher and the students' perceptions of the influence of technology use. These pupils engaged in learning and experiences differently and with enthusiasm. It was found through data analysis of the EFL pre-service teachers' interviews that these teachers are not prepared for many of the technological challenges that arise while implementing technology in the classroom. This was in contrast to earlier studies (Lorenz et al., 2015), which showed that pre-service teachers use technology significantly to support their teaching. There is no way to generalize this assertion. Lankshear and Knobel (2006) linked new literacies to digital competence. In this instance, pre-service teachers claim to comprehend, but they are still far from being prepared to carry out their pre-teaching obligations. The results showed that the participants knew few digital tools. Their understanding of digital literacy was limited to knowledge acquisition rather than critical, creative, and collaborative application.

3. CONCLUSION

The outcome shows that the pupils must prepare to use digital technology for learning and teaching. Additionally, they stated that while digital technologies were standard, they were not yet at the manufacturing stage. To assess and improve their competencies, they must put their theoretical knowledge into practice while receiving feedback. To better equip them to educate students who are digital natives, in-service teachers and course instructors also provide feedback. It is necessary to conduct additional research to determine how well-prepared pre-service teachers are to apply their digital literacy knowledge in actual teaching environments. Subsequent studies may also make use of observations of real-world usage or activities where participants are given a challenge to address with digital tools. This might offer a more thorough understanding of the individuals involved.



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