The 1st International Webinar Undergraduate Paper (IWUP)
Faculty of Teacher Training & Education
University of Muhammadiyah Prof. DR. HAMKA
Jakarta, 30 June 2023
DOI: 10.22236/ie.vi1

EXPLORING THE DIGITAL LITERACY OF PRE-SERVICE TEACHERS: A STUDY ON THE TEACHING ASSISTANCE PROGRAM

Nur Hafizhah
Lambung Mangkurat University
nurhafizhah77@gmail.com

Abstract: In the current situation, digital literacy has become a crucial skill for pre-service teachers, as it plays a vital role in effectively utilizing technology in the classroom and providing students with valuable information technology resources. This research aims to investigate the digital literacy levels of pre-service teachers participating in a teaching assistance program at school. The study employed descriptive statistics to analyze the data collected from pre-service teachers enrolled in a Teaching Assistance Program. Using a framework for assessing teacher digital literacy, the analysis focused on five key dimensions: information management, team-based learning, information processing and presentation, digital integrity, and social responsibility. The findings indicated that pre-service teachers demonstrated a high level of digital literacy across all sections. While the results highlighted their preparedness to employ information and communications technology (ICT) for educational purposes, it also revealed an ongoing need for further development in digital literacy skills.

Keywords: *Digital Literacy, Teaching Assistance Program, Technology Education*

INTRODUCTION

Pre-service teachers require to learn how the internet and other platforms are used to engage students learning. They need to acquire the appropriate knowledge and skills in an online network and use technology to effectively teach students (Akarawang et al., 2015). Using multiple learning technologies requires stability and security as well as concerns about online or blended learning. Some of these changes in the learning environment are giving pre-service teachers the performance they need especially the technology that aims to help pre-service teachers lead the classroom to success (Aslan, 2020).In this new era, we can see that students have changed their learning and communication because they have more access to resources and these resources are reliable and accurate (Liza & Andriyanti, 2020). If a pre-service teacher understands the ability to choose the right tools it will guide learners to succeed in their learning (Suwarto et al., 2022). It can be seen that modern students own a smartphone with a large number of devices for accessing classroom and learning resources (Dias & Victor, 2017). The use of digital technology in teaching and learning is an important key to facing today's situation in schools (Astuti et al., 2021). Both teachers and students are optimistic about the use of these digital tools and their impact on students' motivational communication skills and abilities (Dias & Victor, 2017). Pre-service teachers belief can influence their attitudes and instructional choices toward digital learning and teaching environments (Nabhan, 2021).

DOI: 10.22236/ie.vi1

Because of that reason, the Minister of Education, Culture, Research, and Technology, Nadim Makarim launched *Merdeka Belajar Kampus Merdeka* (MBKM, freedom to learn, independent campus) program. The program aims to provide university students with experiential learning opportunities (*Buku-Panduan-Merdeka-Belajar-Kampus-Merdeka-2020.Pdf*, n.d.).

The students are exposed to hands-on exercises that will improve both their soft and hard abilities. One of the standout MBKM programs is teaching assistant at the school. Students from universities who are passionate about education assist teachers at all grade levels, from elementary to secondary. They support educators as they manage teaching-learning activities (Kodrat, n.d.). (Prachagool et al., 2022) studied the level of digital literacy of pre-service teachers during the period time of covid-19 pandemic; they were in a high level of aspects digital literacy. This shows that they are willing to compromise with technology for education but digital literacy still involves them and science teachers. Another research conducted by (Liza & Andriyanti, 2020); the study showed that they had a high level of digital literacy and were ready to apply digital technologies. In this way, students and pre-service teachers can meet the digital literacy needs of professional English teachers and improve the quality of English teaching and learning outcomes by integrating digital technologies.

An approach related to the expansion and development of information technology for pre-service teachers is to design and provide educational training to improve educational technology skills and digital learning competencies; although, the existence of reference standards and effective and useful teaching materials is the only prerequisite for genuine teaching and learning (Botturi, 2019). These elements may help students improve academic performance and positive attitudes toward learning with technology. There are many studies about the digital literacy of pre-service teachers, however, this study aims to study the perception of pre-service teachers on digital literacy teaching assistance program at school. This will help educators to design and transform their classrooms to foster digital literacy in the future as well as pre-service teachers.

LITERATURE REVIEW

Digital Literacy

In the digital age, the definition of "literacy," which originally referred to the ability for reading and writing, has steadily expanded to include the capacity for understanding information digitally the skill of deciphering images, sound, etc (Bawden, 2001).

The phrase "digital literacies" refers to the collection of abilities required to manage meaning effectively in a time when communications are mostly digitally networked, including blended communications that use both analog and digital channels and are frequently aided by mobile devices (Pegrum, 2019).The rapid development of digital technologies has also contributed to the ongoing updating of the digital literacy phenomena. In general, if people did not develop these skills, digital technology might have a negative impact on social transformation (Ata & Yıldırım, 2019). Digital literacy is more than just knowing how to use technology; it

DOI: 10.22236/ie.vi1

also entails mastering ideas (Tang & Chaw, 2016). Digital literacy has evolved due to technological developments some digital literacy frameworks have proposed several skills or competencies such as critical thinking creativity and collaboration in secure online communication and cultural skills.

Digital literacy is an individual's ability to learn and understand the information about this technology era that and change to mobile learning and source. Digital literacy involves reflection on various social practices and concepts related to the mediation of distributed exchangeable texts created through digital. So to the list included in the quote above pre-service teachers can add blogs video games text messages online social networking discussion forums online research and more (Lankshear & Knobel, 2008).

The integration of digital literacy into formal education may help motivate students to draw links between different topic areas and their personal and professional life (Churchill, 2020). Pre-service teachers need to master digital literacy to fill their teaching assistance at school.

Teaching Assistance Program

Teaching assistance is one of the MBKM programs. This program is expected to help pre-service teachers make the connection between their classroom learning and the actual requirements of their students' schools (Suyatno et al., 2023). Under the supervision of the supervising lecturer, pre-service teachers perform teaching assistant tasks at school (*Buku Panduan Merdeka Belajar - Kampus Merdeka.Pdf*, n.d.). Activities carried out by pre-service teachers at this school are divided into three; they are school administration activities, non-academic activities, and academic activities themselves. All activities require them to master digital things. Pre-service teachers need to prepare themselves to design and manage their activities through smart choices, and smart technology, and be ready to deal with the digital era (Prachagool et al., 2022)

METHOD

This research purpose is to examine pre-service teachers' perceptions of digital literacy during teaching assistance program at school. An online survey conducted for investigating pre-service teachers' perception of digital literacy.

Respondent

The responders are pre-service English teachers who have taken the teaching assistance program or students batch 2020. Because online education streams and social networks are important for everyone now, they should adopt and apply digital learning technologies in professional practice. Responders are pre-service English teachers from Lambung Mangkurat University, Faculty of Teacher Training and Education, English Language Education Study Program, batch 2020.

DOI: 10.22236/ie.vi1

Research Tool

Participants rate their digital literacy experience on a five-point Likert scale, such as 1= strongly agree, 2= agree, 3= disagree, and 4= strongly disagree. The research tool is adapted and modified from Prachagool et al (2022). The research instrument based on teachers' digital literacy framework is a questionnaire with 5 sections: (1) information management (2) team-based learning (3) information processing and presentation (4) digital integrity and (5) social responsibility.

Data Collection

Data are collected by calling pre-service teachers who have taken the Teaching Assistance Program course in the English Language Education Study Program batch 2020. The researcher asks all pre-service teachers about digital literacy through an online survey. Collect capture and double-check data for completeness before creating and interpreting worksheets.

Data Analysis

The digital literacy of pre-service teachers will be analyzed by descriptive statistics, mean, and standard deviation. The level of digital literacy can be calculated and interpreted as expressed in four-point Likert Scale levels of mean score: 1.00-2.00 are at a low level, 2.01-3.00 are at a medium level, and 3.01-4.00 are at a high level ('The Influence of Learning Styles and Motivation on Undergraduate Student Success in Mathematics', 2021). Data is presented in descriptive research and digital learning will be discussed.

FINDINGS AND DISCUSSION

Findings

In this study, pre-service teachers had a high level of digital literacy in all aspects. returning to each component's item can be described that a few items that have reached the highest level, *i.e., Social responsibility*— I understood that cyberbullying was wrong, and *Information processing and presentation*— I'm aware they are different in presenting information through letters, images, or videos. However, the medium level did find 1 item that appeared in *Information processing and presentation*— I'm able to effectively analyze and present the data using the data. The level of digital literacy of pre-service teachers during teaching assistance program at school is at a high level and it shows that they have the capability for using technology in education (Tabel 1). Furthermore, they can create classrooms that carry out the standards for 21st-century teacher competency. The teaching assistance program allowed and speed up them to prepare the ICT for education in this era.

DOI: 10.22236/ie.vi1

Table 1. Level of digital literacy

Item	Mean	SD	Level of digital literacy
Information Management	*3,24*	*0,084*	*High*
I can set up a search for information.	3,37	0,62	High
I can look for appropriate data using reliable online sources.	3,26	0,64	High
I can analyze information through online resources.	3,15	0,65	High
I can carry on the information and store it through online resources.	3,19	0,72	High
Team-based learning	*3,18*	*0,17*	*High*
I'm ready to collaborate and share knowledge via online media,	3,22	0,63	High
I like to do many projects with friends by using online media	3,07	0,81	High
I learned how to handle programs to work with my online's friends.	3,00	0,72	High
I want to make myself better to be able to connect with friends around the world online.	3,44	0,74	High
Information processing and presentation	*3,19*	*0,21*	*High*
I'm able to effectively analyze and present the data using the data.	2,89	0,57	Medium
I'm aware they are different in presenting information through letters, images, or videos.	3,48	0,69	High
I can use ICT to create and design presentations very well.	3,19	0,67	High
I was able to process information from many different sources.	3,22	0,79	High
Digital Integrity	*3,25*	*0,11*	*High*
I understand my right to use and access online information.	3,41	0,68	High
I'm aware of the copyrights (text or media) that appear on the internet.	3,19	0,77	High
I'm aware that ICT can be used to improve energy efficiency.	3,15	0,70	High
Social Responsibility	*3,26*	*0,25*	*High*
I'm conscious of the dangers connected with using the internet.	3,22	0,74	High

DOI: 10.22236/ie.vi1

I have interacted with others on the internet in a kind and respectful manner.	3,07	0,90	High
I protected my files and digital devices with a strong password.	3,22	0,79	High
I understood that cyberbullying was wrong.	3,74	0,64	High
When I saw that hoax information had been posted, I will report that media.	3,04	0,79	High

On the other hand, if they put theory into practice by learning to use new technology or encourage technical pedagogical and content knowledge (TPACK) for their students, the level of digital literacy will be effective. The TPACK framework is appropriate for teacher training programs as well as professional development programs like this teaching assistance program. It focuses explicitly on the abilities and knowledge required to use digital resources to facilitate subject learning (Falloon, 2020). The level of social responsibility may be the highest mean score and followed by, digital integrity, information management, information processing and presentation, and team-based learning (Figure 1). There is not too much different, just 0, that's all, It looks to be essential to teachers' skills with technology in the classroom since they are able to introduce students to learning in the right way and with the necessary techniques (Prachagool et al., 2022).

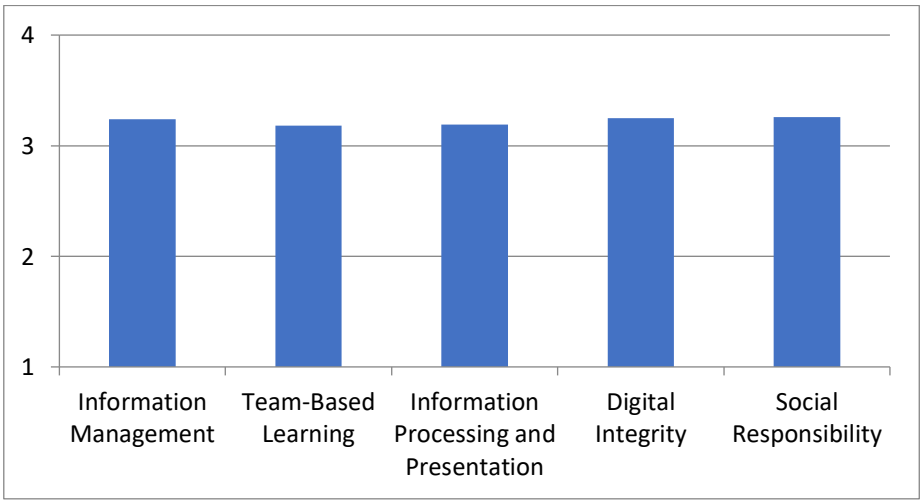

Figure 1. Digital literacy

The findings showed that pre-service teachers possess a high level of positive digital literacy. The instructional design and methods should make better use of technology in the classroom, encourage students to learn digital literacy, and search for global information online. Children and everyone around them could catch on their internet awareness. TPCK can engage pre-service teachers to implement their innovative lessons and help the students to succeed in digital learning in this era (Nuangchalerm, 2011). It also will help the students who are participating in the teaching assistance program to conduct more effective classes (Kodrat, n.d.).

DOI: 10.22236/ie.vi1

In teaching assistance program, the digital literacy of pre-service teachers is important to prepare qualified teachers for the future. It may help improve the equity of educational quality education with higher education. In mastering digital literacy, operation skills, thinking skills, collaboration skills, and awareness skills are the 4 components that pre-service teachers should have (Prachagool et al., 2022). Programs of study at the college and university level should encourage digital literacy as well as the 21st century's essential learning abilities, the use of digital literacy in pedagogical strategies, and the proper abilities for integrating educational technology.

Nowadays, the participants will be ready to conduct modern classes and they will survive with the ICT. They are a generation that familiar with the internet so they will easily deal with it. Technology and digital integration are not difficult to learn and adapt to their students. The next challenge for digital learning focuses on essentially important elements, including social responsibility, critical thinking, and decision-making based on meaningful awareness of information technology usage (Sayaf et al., 2021).

Although pre-service teachers might help students in learning cognitive information, the school curriculum must still include attributes and abilities. To make information technology an effective and long-lasting learning tool, digital literacy should be encouraged and promoted in learning environments.

CONCLUSION AND SUGGESTION

Based on the pre-service teachers' digital literacy framework, research tool is a questionnaire that consisted of 5 aspects: (1) information management (2) team-based learning (3) information processing and presentation (4) digital integrity, and (5) social responsibility. This study found that pre-service teachers during the teaching assistance program showed high levels of digital literacy in all aspects. This program is expected to be a training and professional development in digital learning. After that, they will deal with digital literacy for helping their students to reach the goal of digital citizens and sustainable learning environments.

REFERENCES

Akarawang, C., Kidrakran, P., & Nuangchalerm, P. (2015). Enhancing ICT Competency for Teachers in the Thailand Basic Education System. *International Education Studies*, *8*(6), p1. https://doi.org/10.5539/ies.v8n6p1

Aslan, S. (2020). Analysis of Digital Literacy Self-Efficacy Levels of Pre-service Teachers. *International Journal of Technology in Education*, *4*(1), 57. https://doi.org/10.46328/ijte.47

Astuti, M., Arifin, Z., Mutohhari, F., & Nurtanto, M. (2021). Competency of Digital Technology: The Maturity Levels of Teachers and Students in Vocational Education in Indonesia. *Journal of Education Technology*, *5*(2). https://doi.org/10.23887/jet.v5i3.35108

DOI: 10.22236/ie.vi1

Ata, R., & Yıldırım, K. (2019). Exploring Turkish Pre-Service Teachers' Perceptions and Views of Digital Literacy. *Education Sciences*, *9*(1), 40. https://doi.org/10.3390/educsci9010040

Bawden, D. (2001). Information and digital literacies: A review of concepts. *Journal of Documentation*, *57*(2), 218–259. https://doi.org/10.1108/EUM0000000007083

Botturi, L. (2019). Digital and media literacy in pre-service teachereducation: A case study from Switzerland. *Nordic Journal of Digital Literacy*, *14*(3–4), 147–163. https://doi.org/10.18261/issn.1891-943x-2019-03-04-05

Buku Panduan Merdeka Belajar—Kampus Merdeka.pdf. (n.d.).

Buku-Panduan-Merdeka-Belajar-Kampus-Merdeka-2020.pdf. (n.d.).

Churchill, N. (2020). Development of students' digital literacy skills through digital storytelling with mobile devices. *Educational Media International*, *57*(3), 271–284. https://doi.org/10.1080/09523987.2020.1833680

Dias, L., & Victor, A. (2017). Teaching and Learning with Mobile Devices in the 21st Century Digital World: Benefits and Challenges. *European Journal of Multidisciplinary Studies*, *5*(1), 339. https://doi.org/10.26417/ejms.v5i1.p339-344

Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development*, *68*(5), 2449–2472. https://doi.org/10.1007/s11423-020-09767-4

Kodrat, D. (n.d.). *Power Relation In English Classroom: A Case Study In Teaching Assistance Of Mbkm Program*.

Lankshear, C., & Knobel, M. (Eds.). (2008). *Digital literacies: Concepts, policies and practices*. Peter Lang.

Liza, K., & Andriyanti, E. (2020). Digital literacy scale of English pre-service teachers and their perceived readiness toward the application of digital technologies. *Journal of Education and Learning (EduLearn)*, *14*(1), 74–79. https://doi.org/10.11591/edulearn.v14i1.13925

Nabhan, S. (2021). PRE-SERVICE TEACHERS' CONCEPTIONS AND COMPETENCES ON DIGITAL LITERACY IN AN EFL ACADEMIC WRITING SETTING. *Indonesian Journal of Applied Linguistics*, *11*(1). https://doi.org/10.17509/ijal.v11i1.34628

Nuangchalerm, P. (2011). *In-service Science Teachers' Pedagogical Content Knowledge*.

Pegrum, M. (2019). Digital literacies in language education. *Matraga - Revista Do Programa de Pós-Graduação Em Letras Da UERJ*, *26*(47). https://doi.org/10.12957/matraga.2019.44077

Prachagool, V., Nuangchalerm, P., & Yawongsa, P. (2022). Digital Literacy of Pre-service Teachers in the Period Time of COVID-19 Pandemic. *Journal of Educational Issues*, *8*(2), 347. https://doi.org/10.5296/jei.v8i2.20135

Sayaf, A. M., Alamri, M. M., Alqahtani, M. A., & Al-Rahmi, W. M. (2021). Information and Communications Technology Used in Higher Education: An Empirical Study on Digital Learning as Sustainability. *Sustainability*, *13*(13), 7074. https://doi.org/10.3390/su13137074

DOI: 10.22236/ie.vi1

Suwarto, D. H., Setiawan, B., & Machmiyah, S. (2022). Developing Digital Literacy Practices in Yogyakarta Elementary Schools. *Electronic Journal of E-Learning*, *20*(2), pp101-111. https://doi.org/10.34190/ejel.20.2.2602

Suyatno, S., Wantini, W., Pambudi, D. I., Muqowim, M., Tinus, A., & Patimah, L. (2023). Developing Pre-Service Teachers' Professionalism by Sharing and Receiving Experiences in the Kampus Mengajar Program. *Education Sciences*, *13*(2), 143. https://doi.org/10.3390/educsci13020143

Tang, C. M., & Chaw, L. Y. (2016). *Digital Literacy: A Prerequisite for Effective Learning in a Blended Learning Environment? 14*(1).

The Influence of Learning Styles and Motivation on Undergraduate Student Success in Mathematics. (2021). *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, *12*(3), 658–665. https://doi.org/10.17762/turcomat.v12i3.771