Outlining Digital Literacy Competence of Pre-Service Teachers at English Education Department

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Abstract

Pre-service English teachers in the technology transformation advancement of this era need to master digital literacy skills. They must not only be able to adapt to using technology for personal learning but also for their role as future-teachers. This paper aims to explore and evaluate the digital literacy competencies of university-level students, focusing on their skills and the challenges they face in applying technology in education. It uses a survey of case study research design with a digital literacy questionnaire involving one of the private universities in West Java, Indonesia. The data are analyzed based on Bawden's digital literacy framework. The data found there are more than sixty percent of pre-service teachers are able to create a directory or file folder; however, there are less than three percent of a pre-service teachers have a low ability in basic technical skills. It means that most pre-service English teachers have good digital literacy skills that can be used in teaching career development. Besides its support for pre-service teachers to be more creative in making learning effective and attractive, this also allows them. However, the teacher's role remains crucial in guiding students and providing an understanding of the positive and negative aspects of digital literacy.

Keywords: *Digital literacy; Pre-service English teacher; Technology*

Introduction

Digital literacy is known as the capacity to understand and use information offered in a variety of computer-based formats from a variety of known sources. The idea of literacy encompasses more than just the ability to read words on a page; it also refers to the capacity to evaluate and understand various data. The ability to use information on various digital platforms, such as networks, the Internet, software, and applications, is known as digital literacy. This is the capacity to understand and generate data in various digital formats (McDougall et al., 2018; Murtafi'ah & Setyo Putro, 2019; Reddy et al., 2020; Tinmaz et al., 2023). Put differently, over 196 million Indonesians can utilize digital media. To be precise, UNICEF (2018) notes that a minimum of 30 million children and teenagers in Indonesia are Internet users, accessing the web through smartphones (UNICEF, 2018).

There is a rapidly growing literature on digital literacy, which indicates an individual's capacity to discover, assess, and communicate data utilizing writing or computerized media stages (Goforth et al., 2018; Woods et al., 2019). It could be a combination of both specialized and cognitive abilities in

utilizing data and communication advances to form, assess, and share data. Digital literacy goes past specialized information. It refers to the information, abilities, and points of view that empower a person to be safe, secure, and engaged in a progressively advanced world. However, it also comes with its share of challenges, including the digital divide, information overload, privacy concerns, and educational gaps (Dashtestani & Hojatpanah, 2022; English, 2016; Murtadho et al., 2023; Pratolo & Solikhati, 2020).

Since the mid-1990s, when the Internet first became a widely used medium, policy leaders and social scientists have been concerned about how Internet access is distributed. Initially, observers thought that the Internet, and particularly the World Wide Web, would improve access to information for all people by drastically lowering the cost of information. After the initial excitement about technology subsided, observers noticed that certain types of people were more likely than others to use the Internet, and that, generally speaking, white men living in metropolitan areas, men, and people with higher levels of access to education and other resources that help people advance were the same groups with higher levels of Internet access (Annisa, 2019). The advancement of digital literacy is seen as a tool to enhance educational standards, tackle economic challenges, and cultivate an informed society (Nguyen & Habók, 2024; Sharma, 2018).

The skills needed for learning in the twenty-first century involve the capability to utilize Internet technology. Given the significant role of the Internet in our lives, it is crucial to carefully consider how it relates to the knowledge acquisition of future educators. Students encounter difficulties in grasping information from the Internet due to the sheer volume of data and the diverse methods of presentation. The Internet, akin to a textual medium, encompasses a range of formats, including written content, images, videos, and interactive simulations, all employed for communication and information dissemination, subsequently influencing cognitive processes (Cao et al., 2023). Given the abundance of information accessible online and the varying degrees of its quality, it is imperative to comprehend multiple facets of digital literacy. This understanding is essential for making more informed and judicious use of technology in the 21st century.

Being a universal language, English offers connections and access to all the knowledge needed to succeed in the digital age in terms of education. Revolution 4.0 is predictable given that the majority of people now consider technology to be a daily need. To provide students with the tools they need to navigate the Fourth Industrial Revolution, technology itself needs to be incorporated into the educational process. And now this revolution 5.0 is leading to a borderless connection between people around the world and humans with technology as well. But, a lot of students still struggle with learning English as a foreign language, especially those in Indonesia (Priyanti et al., 2019; Tavares & Azevedo, 2022). This is mainly the aim of this research which wants to dig out the primary sources that help for student participation in learning the language, which are books and teachers.

Bawden (2008) and Mega et al (2022) elaborate on the broad scope of digital literacy, which encompasses a wide range of specific skills and competencies, as well as general awareness and perspectives. He outlines four key components of digital literacy: Underpinnings, Background knowledge, Central competencies, Attitudes, and perspectives. *Underpinnings* encompass basic literacy skills such as reading, writing, and proficiency in using software packages and computers, the component consist of (1) basic technical skill, (2) installing program software, (3) connecting to the internet, (4) deleting a file from computer, (5) opening computer a file, (6) creating file and manage file into folder, (7) creating a directory or file folder, (8) copying a file from one to another.

Background knowledge involves an understanding of the creation and communication processes of both digital and non-digital information from diverse resources, the component consist of (1) downloading free books, novels, and others from the internet, (2) using keyboard phrases to search for information on the www, (3) using more advance searching techniques than keyword, (4) acces information from youtube and other apps, (5) using a www sear engine eg google opera etc, (6) world

wide web (www) search, (7) using CD-ROM to find information, (8) references applications and software.

Central competencies, refer to the capacity to gather knowledge from multiple sources and synthesize it effectively, the component consist of (1) upload the video material via youtube, (2) downloading a file from the internet, (3) power point presentation, (4) downloading files from database, (5) saving an image or graphic from a www page, (6) sending an email message in a formal english written text, (7) word processing.

Attitudes and perspectives encompass the ability to learn independently and demonstrate appropriate conduct in digital environments, the component consist of (1) using learning managemant system, (2) database navigation. it is also relevant to the statements of some experts who believe that digital literacy as part of a technology transformation that needs some support elements, as stated before.

From other points of view, digital literacy can be integrated into English classes by incorporating the fundamental competencies outlined in the curriculum. For instance, while instructing students on news item texts, educators can simultaneously educate them on recognizing and anticipating fake news or hoaxes. Similarly, when teaching procedure texts such as tips, instructors can incorporate digital literacy by presenting a model text focusing on online safety tips. Since digital literacy often involves information presented through computers, the texts used for instruction are delivered via digital devices. Effective classroom approaches for teaching digital literacy may include blended, flipped, or hybrid learning models (Journal et al., 2017; Murtafi'ah & Setyo Putro, 2019; Sadaf et al., 2017). Digital literacy in education transcends mere technical proficiency; it encompasses adept information management and critical thinking skills, including appropriate online conduct (Tang & Chaw, 2016; Vaskov et al., 2021).

In the context of future teacher's competencies digital literacy is a compulsory skill that the pre-service English teachers must master. So, they can be able to identify and exploit features in their social media platform to produce and re-create knowledge from internet sources into relevant new content. They only share trustworthy information via social media and messaging platforms, and they are thoughtful enough to analyze the issue before publishing that information on their social media profiles. Furthermore, potential EFL teachers who are digitally literate have the necessary abilities to protect their personal data. They must also be capable of surfing the internet to validate or critically analyze knowledge across websites, as well as establishing new learning routes for themselves throughout online learning (Christiani et al., 2022; Dejene, 2020; Maisa, 2022; Maisa et al., 2021).

Therefore, this paper aims to determine the digital literacy competence of pre-service English teachers in West Java, Indonesia. Literacy competence in this study is assessed based on the four components of digital literacy proposed by (Bawden, 2008) The four components of digital literacy is Underpinnings, Background knowledge, Central competencies, Attitudes and perspectives. At this point, students use digital products to learn, and those abilities can be applied to their future employment. Teacher education students, in particular, can apply their digital skills when they become teachers. Teachers employ technology not simply to make learning more practical and modern, but also to assist students in developing a set of abilities throughout their education (English, 2016).

Research Method

This research uses a digital survey to achieve the research objective, which aims to determine the digital literacy competence of pre-service English teachers in West Java, Indonesia. This survey was conducted online using Google Forms as a research instrument. The form consists of 25 questions which are divided as follows: eight questions assessing competency in using digital devices, as representative of underpinnings and in searching for digital information from various sources as representative of background knowledge; seven questions assessing knowledge competency in using digital products as

representative of central competencies, and two questions assessing attitudes and perspectives that emerge that indicate behavior in the digital environment as representative of attitudes and perspectives. In addition, the research instrument included a link to a Google form that respondents could access, which covered the four aspects of digital competence under study. The research participants were students majoring in English education, consisting of 93 male and female students who were in semesters 2 and 4 during the basic technology literacy course so that participants could respond to their respective locations. The data are analyzed based on Bawden's digital literacy framework. These aspects are including Underpinnings, Background knowledge, Central competencies, Attitudes and perspectives.

Result

In this part, the writers present data results as well. The data were taken in January 2024 at the English education department which are taken before the course Basic technology literacy which has 90 participants. There are four sub themes which are categorized into four different components and each instrument has been classified according to the data and has been adjusted to its category. This result will present data from four different elements, including category of underpinings, background of knowledge, central competencies,attitude and perspective. Below is the data presentation.

- **The Basic Digital Literacy Skill**

This category consists of basic literacy skills including Basic technical skill, installing program software, connecting to the internet, deleting a file from computer, Opening a computer a file, Creating file and managing file into folder, Creating a directory or file folder, Copying a file from one to another. The basic technical skills include the ability to operate technology or digital devices such as turn on, turn off the devices. In a bold learning framework, these skills expand to include understanding software-specific terms and icons, creating text and image files, and sharing these files on digital platforms. The survey data is as follows:

Table 1. The basic Digital literacy skill

Item	0	1	2	3
Basic technical skill	1,1%	3,2 %	59, 1 %	36,6%
Installing program software	2,2%	35,5%	45,2 %	17,2%
Connecting to the internet	2,2 %	2,2 %	54,8 %	40,9 %
Deleting a file from computer	2,2 %	10,8 %	51,6 %	35,5 %
Opening a computer a file	2,2 %	6,5 %	52,7 %	38,7 %
Creating file and manage file into folder	1,1 %	11,8 %	57 %	30,1 %
Creating a directory or file folder	2,2 %	21,5 %	60,2 %	16,1 %
Copying a file from one to another	0%	6,5%	55,9%	16,1%

Description: 0 = Not At All, 1 = Not So Good, 2 = Good Enough, 3 = Very Good

Referring the data in table 1, it can be said that there are less than two percents of participants have in capability in basic technical skills. Meanwhile there are more than fifty percents of participants are good at it. In other words, there are less than three percent participants have in capability in installing program software while there are more than forty percents participants are good at it. In addition, there are less than three percent participants are incapable of Connecting to the internet, deleting a file from computer, opening a computer a file. Meanwhile, there are more than fifty percents participants are good at it. At the opposite there are less than two percent participants are incapable of creating file and manage file into folder, whereas there are more than fifty percent participants are good at it. In addition, there are less than three percents of participants are incapable in creating a directory or file folder while there are more than sixty percent of participants are good at it. Therefore, there are Less than one percent of

participants have in capability in copying a file from one to another. Meanwhile, more than fifty percent of participants are good at it.

- **The Sources of Digital Information**

　　　This category consists of The sources of digital information including Downloading free books, novels, and others from internet, Using keyboards phrases to search for information on the www, Using more advance searching techniques than keywords, Access information from You Tube and other apps, Using a www sear engine eg google opera etc, World Wide Web (www) search, Using CD-ROM to find information, Reference manager applications and software. The survey data is as follows:

Table 2. The sources of digital information

Item	0	1	2	3
Downloading free books, novels, and others from internet	0%	9,7%	52,7%	37,6%
Using keyboards phrases to search for information on the www	1,1%	14%	58,1%	26,9%
Using more advance searching techniques than keywords	1,1%	28%	54,8%	16,1%
Access information from You Tube and other apps	0%	4,3%	47,3%	48,4%
Using a www sear engine eg google opera etc	0%	18,3%	54,8%	26,9%
World Wide Web (www) search	1,1%	7,5%	58,1%	33,3%
Using CD-ROM to find information	10,8%	48,4%	33,3%	7,5%
Reference manager applications and software	5,4%	39,8%	45,22%	9,7%

Description: 0 = Not At All, 1 = Not So Good, 2 = Good Enough, 3 = Very Good

The data gathered in the table 2 suggest that there are less than two percent of participant have in capability in using keyboards phrases to search for information on the www, using more advance searching techniques than keywords and World Wide Web (www) search. Meanwhile, more there are more than fifty percent of participants have good enough at it. In addition, there are almost anyone can downloading free books, novels, and other from internet, access information from You Tube and other apps and also using a www sear engine eg google opera etc. In other words, more than fifty percent of participants are good at it. Therefore, there are less than forty percent participant are good in using CD-ROM to find information. Meanwhile there more than forty percent have in capability at it. In other words, there are less than six percent participant have in capability in reference manager applications and software while there are more than forty percent of participants are good at it.

- **The Skill of Using Digital Devices**

　　　This category consists of The Skills of Using Digital Devices, including uploading video material via YouTube, downloading a file from the internet, PowerPoint presentations, downloading files from databases, Saving an image or graphic from a www page, Sending an email message in a formal English written text, word processing. The survey data is as follows:

Table 3. The Skill of using digital devices

Item	0	1	2	3
Upload the video material via YouTube	5,4 %	19,4 %	44,1 %	31,2 %
Downloading a file from the internet	1,1 %	5,4 %	54,8 %	38,7 %
Powerpoint presentation	5,4 %	17,2 %	51,6 %	25,8 %
Downloading files from databases	7,5 %	29 %	53,8 %	9,7 %
Saving an image or graphic from a www page	1,1 %	15,1 %	54,8 %	29%
Sending an email message in a formal English written text	4,3 %	38,7 %	41,9 %	15,1 %
Word processing	2,2 %	12,9 %	68,8 %	16,1 %

Description: 0 = Not At All, 1 = Not So Good, 2 = Good Enough, 3 = Very Good

Based on Table 3, it can be said that less than six percent of participants are incapable of upload the video material via YouTube, while there are more than forty percent of participants are good at it. Beside that, there are less than two percent of participants are incapable of downloading a file from internet, whereas there are more than fifty percent of participants are good at it. Furthermore, there are less than six percent of participants are incapable of power point presentation, while more than fifty percent of participants are good at it. Moreover, there are less than eight percent of participants are incapable of downloading file from database, then there are more than fifty percent of participants are good at it. In other that there are less than two percent of participants are incapable of saving an image or graphic from a www page, and there are more than fifty percent of participants are good at it. On the contrary, there are less than fifty percent of participants are incapable of sending an email message in a formal English written text, meanwhile more than forty percent of participants are good at it. On the other hand there are less than three percent of participants are incapable of word processing, then there are more than sixty percent of participants are good at it.

- **The Abillity to Collect Information from Multiple Resources**

This category consists of the ability to collect information from multiple resources including using learning management system and database navigation. The survey data is as follows:

Table 4. The ability to collect information from multiple resources

Item	0	1	2	3
Using learning management systems	7,5 %	24,7 %	57 %	10,8 %
Database navigation	9,7 %	39,8 %	45,2 %	5,4 %

Description: 0 = Not At All, 1 = Not So Good, 2 = Good Enough, 3 = Very Good

Referring the data in table 4, it can be said that there are less than eight percents of participants are incapable of using learning management system. Meanwhile there are more than fifty percents of participants are good at it. In other words, there are less than ten percent participants are incapable in database navigation while there are more than forty percents participants are good at it.

Discussion

This section will present the discussion of the finding data which are analyzed based on the bawden's framework including the basic digital literacy skill, The sources of digital information, The Skill of using digital devices, The ability to collect information from multiple resources. The finding of the first category indicates that most pre-english service teachers have a good skill of the basic digital literacy skills which is relevant to the theory of some experts which are presented at the previous part. In other words, as a english teachers, they have to be able to master basic technical skill, Installing program software, Connecting to the internet, Deleting a file from computer, Opening a computer a file, Creating file and managing file into folder, Creating a directory or file folder, Copying a file from one to another. Therefore, the english teacher could be the agent of transformation digital literacy advancement starting from their own classroom practice (Bawden, 2008; Journal et al., 2017; Tinmaz et al., 2023).

The findings of the second category indicates that most pre-service English teachers have a good skill of the sources of digital information which is relevant to the theory of some experts which are presented at the previous part. Therefore, as a english teacher they have to be able to master Downloading free books, novels, and others from internet, Using keyboards phrases to search for information on the www, Using more advanced searching techniques than keywords, Access information from YouTube and other apps, Using a www sear engine eg google opera etc, World Wide Web (www) search, Using CD-

ROM to find information, Reference manager applications and software (Pangrazio, 2020; Vault & Theses, 2021; Widi et al., 2022).

The findings of the third category indicates that most pre-service English teachers have a good skill of the skill of using digital devices which is relevant to the theory of some expert which are presented at the previous part. Consequently, as a english teacher they have to be able to master upload video material via You Tube, downloading a file from internet, power point presentations, downloading files from databases, Saving an image or graphic from a www page, Sending an email message in a formal English written text, word processing (Nelson, 2020; Pangrazio, 2020; Vault & Theses, 2021).

The findings of the fourth category indicates that most pre-service English teachers have a good skill of the abillity to collect information from multiple resources which is relevant to the theory of some experts which are presented at the previous part. Accordingly, as a english teacher they have to be able to master using learning management system and database navigation (Atmazaki & Indriyani, 2019; Hagel, 2015; Profile, 2022).

Researchers found that pre-service English teachers at universities in West Java, Indonesia already have the basic digital literacy skills, although some are still not fully competent or proficient in its application. This finding is reflected in the research results, especially in instruments that highlight Background Knowledge, namely using CD-ROM to find information and Attitudes & perspectives, namely database navigation. Background knowledge about digital literacy refers to a basic understanding of the concepts and principles that underlie the use of digital technology. Background knowledge includes an understanding of various types of digital devices and applications, as well as the ability to identify and understand trends and developments in the world of technology. By having solid background knowledge of digital literacy, one can more effectively use digital technology for educational purposes. Meanwhile, Attitudes & perspectives in digital literacy include individual attitudes and views regarding the use of digital technology and its impact on daily life. This includes attitudes toward technological change, flexibility in learning and adopting new innovations, and awareness of the ethical and privacy challenges associated with the use of digital technologies. Perspective also includes an understanding of the benefits and risks of digital technology, as well as the ability to critically evaluate information found online. By having a positive and critical attitude and perspective toward digital literacy, a person can be more effective in utilizing digital technology wisely and responsibly.

However, on the other hand, there are also many pre-service English teachers who already have an understanding and skills in digital literacy. As we have obtained from the survey results, the average pre-service English teacher is already qualified in one of the Underpinning components. This can be useful when you become a teacher, namely being able to use literacy technology to improve learning to make it more modern and effective. And can make teachers in the future who are technology literate in this era of globalization. Since pre-service English teachers need to recognize and employ the functionalities of their social media platforms to produce fresh and pertinent content from online sources. They exclusively disseminate reliable information via social media and messaging platforms, demonstrating careful consideration in scrutinizing matters before posting them on their social media profiles. Moreover, teacher candidates proficient in digital literacy possess the essential capabilities to safeguard their personal information. Furthermore, they should possess the ability to investigate the internet to verify or assess knowledge across various websites, while also forging new avenues of learning for themselves throughout their educational journey (Akayoğlu & Korkmazgil, 2020; Atar, 2023; Christiani et al., 2022; Maisa et al., 2021).

Based on data analysis, it can be said that the number of pre-service English teachers who already have basic technology literacy skills at Swadaya Gunung Jati University is greater than the number of pre-service English teachers who still do not have these skills. This shows that pre-service English teachers can keep up with the times and are technologically literate to provide students with a more modern,

effective understanding and learning, and can provide an understanding of technology so that the students they teach are not outdated, especially in the era of globalization. Like in the 21st century. Pre-service English teachers can also provide an understanding of the positive and negative impacts of using technology and free their students to seek or explore broader knowledge, of course still under the teacher's supervision. Enhancing the efficacy of teacher education generally and student learning specifically has been thought to benefit from a deeper understanding of the beliefs held by student-teachers regarding teaching and learning (Curran & Chern, 2017; Dejene, 2020; Maisa et al., 2021).

Conclusion

In conclusion, the data gathered as a result of the research indicates that pupils typically possess strong digital literacy competencies. These abilities are still at the knowledge stage, though. Students who want to become teachers must be able to use a variety of digital literacy for learning purposes, both while they are in school and in the workplace once they have finished their degree. It is crucial for all parties to understand digital literacy competencies in order to improve education in all its forms. It is the duty of aspiring teachers to instill digital literacy in their students once they have entered the teaching profession. Competent digital literate teachers will be able to produce students with good knowledge and ability to deal with the transformation of technology in the twenty-first century.

Acknowledgments

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