P-ISSN 2355-2794
E-ISSN 2461-0275

Digital Literacy Practices in Tertiary Education: A Case of EFL Postgraduate Students

Aji Budi Rinekso*
Rojab Siti Rodliyah
Intan Pertiwi

Study Program of English Language Education, Faculty of Language and Literature Education, Universitas Pendidikan Indonesia, Bandung 40154, INDONESIA

Abstract

Over the past few decades, technologies grew rapidly, transforming traditional instructions to be more digitalized and stimulating many researchers to study digital literacy practices in a school-educational context. However, studies exploring digital literacy practices in the context of tertiary education are still scarce. Within the qualitative approach, this study investigated digital literacy practices by EFL (English as a Foreign Language) postgraduate students. Moreover, it intensively discusses the kinds of digital tools used by the participants and the purposes of using them. Additionally, the way the participants conceptualized digital literacy was also elaborated. Thirty-four EFL Master students of a public university in Bandung, Indonesia, participated in this study. An online open-ended questionnaire and semi-structured interviews were applied in data collection. Meanwhile, eight dimensions of digital literacy in the Hague and Payton's frameworks were used as the basis of the thematical analysis of the interview data. Results showed that the participants conceptualized digital literacy as soft skills for managing digital information covering the acts of searching, comprehending, evaluating, creating, and sharing. The prominent result of this study relates to how the participants used digital tools for academic/research and general purposes. Subsequently, this study recommends that tertiary education institutions provide more training on maximizing digital tools for

* Corresponding author, email: ajibudirinekso@upi.edu

Citation in APA style: Rinekso, A. B., Rodliyah, R. S., & Pertiwi, I. (2021). Digital literacy practices in tertiary education: A case of EFL postgraduate students. *Studies in English Language and Education*, *8*(2), 622-641.

Received December 1, 2020; Revised March 4, 2021; Accepted March 10, 2021; Published Online May 3, 2021

https://doi.org/10.24815/siele.v8i2.18863

academic writing and broader access to prepaid journal articles. Further exploration of lecturers' digital literacy practices is highly recommended.

Keywords: Digital literacy practices; tertiary education; EFL postgraduate students.

1. INTRODUCTION

Numerous studies have explored digital literacy practices in the context of school-education and English language teaching both from the students' side (Black, 2005, 2009; John, 2014; Meurant, 2008) and teachers' side (Colton, 2020; Tour, 2019; Weaver, 2012). However, studies focusing on digital literacy practices in tertiary education, especially in the postgraduate program of English as a Foreign Language (EFL) education, are still scarce. In fact, digital literacy is one of the essential components of teaching English in tertiary education as EFL postgraduate students are expected to be pioneers for serving high-quality English language teaching and research. Likewise, digital literacy is essential for leveraging students' professional and academic success in tertiary education (Sparks et al., 2016). Therefore, the present study explored digital literacy practices in tertiary education context – postgraduate program, specifically in the Master program of EFL education.

This study is focused on two main objectives. Firstly, the study sought empirical evidence on how EFL Master students perceive digital literacy. Their perceptions, opinions, and beliefs that lead to an empirical-based concept of digital literacy can be used as a comparative reference to the existing digital literacy theory. Secondly, the study investigated digital tools used by EFL Master students; how they dealt with the digital tools, and for what purposes they used them. The results of this study are beneficial for future research in navigating other related issues of digital literacy practices in the boundary context of English language teaching and tertiary education. Paralleling with the purpose of the study, four research questions are administered:

1. What is digital literacy according to EFL Master students?
2. What are the types of digital tools used by EFL Master students?
3. How do the EFL Master students deal with the digital tools?
4. What are the purposes of using digital tools among the EFL Master students?

2. LITERATURE REVIEW

2.1 The Origin of Digital Literacy

The origin of digital literacy goes back to the history of literacy and its concept, which is influenced by the cognitive psychological approach (Larson & Marsh, 2005). According to this concept, literacy is defined limitedly as the ability to read and write. However, socio-cultural contexts are disregarded on this literacy concept (Gee, 2008). Reading and writing activities are viewed separately from social practices and context. The ability to read and write is perceived as one's cognitive ability representing the process of retrieving, thinking, reasoning, meaning-making, and inferring information. Shortly, literacy is conceptualized as an internal process occurring inside an

individual's mind (Gee, 2015). Thus, in much literature, this literacy concept is called 'traditional literacy.' Eventually, scholars realized that literacy is an integral part of social practices. People do reading and writing for multiple purposes in regard to their social contexts. Therefore, a new theory of literacy that acknowledges the role of the socio-cultural aspect is originated.

Since the 1980s, scholars from some fields, such as sociology, anthropology, linguistics, and literature, introduced New Literacy Studies (NLS), a new concept of literacy that considers social practices and context based on sociocultural perspective/theory (Lewis & Fabos, 2005). This movement on new literacy concept is also known as "the social turn" (Rowsell & Pahl, 2015, p. 6). Acknowledging the influence of sociocultural theory, NLS proposed different views of literacy. According to NLS, literacy is not merely defined as reading and writing ability, but it goes beyond that, reflecting how people do the information exchange based on their social contexts or daily practices (Larson & Marsh, 2005). People receive and produce information in regard to their social contexts. To illustrate, reading or writing journal articles will be different from reading novels. Also, sending messages to our lecturers must be different from informing or texting our friends. Correspondingly, the study of literacy does not merely focus on measuring reading and writing ability but rather on exposing the variation of social practices in every context (Street, 2009). Such contexts as health, economy, culture, and technology determine the focus of literacy. Building on this perspective, literacy is deemed plural "literacies" (Gee, 2015, p. 36).

The idea of plurality results in various types of literacy, such as academic literacy, health literacy, financial literacy, technology literacy, critical literacy, and cultural literacy. Each type of literacy has its focus and contextual boundary. For example, health literacy deals with exchanging information related to healthcare, medicine, first aid, and disease identification. Possessing health literacy means that individuals can read, analyze, understand and use healthcare information. They might even be able to make wise decisions regarding their health condition. This confirms the statement of Gee (2015, p. 36) that people "read and write specific sort of texts in specific ways". Similarly, this also applies to digital literacy. As digital technology is massively adopted in teaching and learning practices, students have to contextualize how they deal with digitally mediated communication exchange. Working with digital tools and spaces demands students to be more analytical, evaluative, and selective when perceiving, using, and sharing information. To sum up, digital literacy is rooted in NLS theory, where the exchange of information is viewed in the context of digitally mediated communication.

Digital literacy is potentially ambiguous for many people as it is named variously in literature and research studies. Some prominent authors used the term 'digital literacy' in their study (Bawden, 2001; Belshaw, 2012; Eshet, 2004; Gilster, 1997), while other studies prefer to use 'digital competence' (Janssen et al., 2013; Krumsvik, 2008) and '21st-century literacy' (Morrell, 2012; Smith & Dobson, 2011). Although various terminologies are used, practically, they share the same idea. In addition, digital literacy looks overlapping with other related literacies such as technology literacy, computer/IT/ICT literacy, e-literacy, media literacy, academic literacy, and information literacy. Some studies, such as Bawden (2001, 2008) and Martin (2008), discussed the concept of digital literacy among various related literacies and, they confirm that digital literacy combines multiple concepts of related literacies to be a single-set competence. Correspondingly, Hobbs (2010, p. 17) states that "we can

consider different types of literacy to be part of the same family". In conclusion, the fundamental concept of digital literacy relates to how people manage information exchange wisely.

2.2 Components of Digital Literacy

There are some different components of digital literacy proposed by different experts. Drawn from the work of Dudeney et al. (2013), Dudeney and Hockly (2016) conceptualize digital literacy as an individual's ability to operate digital technologies and using them in a safe, wise, and productive way. Thus, they break down digital literacy into four main dimensions: language, information, connections, and (re)design, where each of the dimensions has sub-categories representing key digital literacies. The summary of those dimensions is shown in Table 1.

Table 1. Four dimensions of digital literacy (Dudeney & Hockly, 2016).

Dimensions of digital literacy	Key digital literacies
Language (focus on communication done via digital texts, images, and multimedia)	Print literacy, texting literacy, hypertext literacy, visual media and multimedia literacy, gaming literacy, mobile literacy, code, and technology literacy.
Information (focus on digital information management: searching, evaluating, storing, and retrieving)	Search literacy, information literacy, tagging literacy.
Connections (focus on social network participation and collaboration)	Personal literacy, network literacy, participatory literacy, cultural and intercultural literacy.
(Re)Design (focus on modifying/adapting digital information)	Remix literacy.

Furthermore, Hague and Payton (2010) describe digital literacy as skills, knowledge, and understanding allowing people to have criticality, creativity, and safe practices when engaging with digital technologies in all aspects of life. In addition, digital literacy is considered as not merely technical skills for operating digital tools but is more about how to use digital technologies wisely. Thus, they emerged eight dimensions of digital literacy where all of the dimensions are interrelated and holistic. Table 2 shows the summary of the eight dimensions.

Table 2. Eight dimensions of digital literacy (Hague & Payton, 2010).

Dimensions of digital literacy	Descriptions
Functional skills	Exhibiting skills in operating digital tools like using computers, Microsoft Office, browser applications, e-learning platforms, and online assessment tools.
Creativity	Possessing an ability to produce digital content creatively, like writing stories on blogs, posting a picture and its description on social media, creating short movies or video presentations.
Critical thinking and evaluation	Reinforcing critical thinking and evaluation when perceiving digital information by asking critical questions, such as "why we do/do not agree, what do we know about, and why do we think that" should be done when gaining digital information.

Table 2 continued…

Cultural and social understanding	Employing digital technologies for broadening cross-cultural understanding, such as watching videos on YouTube about British or American culture.
Collaboration	Working collaboratively when using digital technologies such as collaborating to write in personal blogs and fan community, having virtual discussions on teleconference applications, and editing texts collaboratively through Google Docs.
The ability to find and select information	Showing an ability to select, identify, analyze and evaluate digital information. This also relates to critical thinking and evaluation ability, such as validating digital information by accessing a number of credible websites.
Effective communication	Having an ability to share digital content informatively by re-contextualizing them. An example of effective communication is creating a table/graph for summarizing explanations of an online essay.
E-safety	E-safety is closely related to critical thinking. It refers to the skills of using digital technologies safely, such as being aware of unsecured websites, scamming, cyberbullying, digital copyright, and plagiarism issues.

Essentially, the aforementioned experts' works on digital literacy components share the same idea. Digital literacy is constructed based on technical and soft skills. Correspondingly, the present study acknowledged the two skills representing how people operate digital technologies and utilize them in a professional, effective, safe, and wise way. Also, the present study referred to Hague and Payton's framework of digital literacy in designing data collection tools (interview guide) and interpreting the collected data.

2.3 Digital Literacy Practices in Tertiary Education Context

Digital literacy practices in all education levels are the same as students' engagement with digital technologies. However, there might be small differences between digital literacy practices in the school-educational and tertiary/higher-educational contexts. Because digital literacy is derived from NLS and sociocultural perspective, its practices will always be contextual, following individuals' social orientations and purposes. Similarly, university students, especially EFL Master students, have different learning orientations from both primary and secondary EFL/ESL students. University EFL students deal with more complex information, linguistic features, and language contents. Also, they have to deal with such academic/research purposes as accessing online journal databases, synthesizing journal articles, writing research proposals, and evaluating the reliability of journal websites/publishers (Adeleke & Emeahara, 2016; Ankrah & Atuase, 2018).

Following the work of Lea and Jones (2011), digital literacy instructions in tertiary education can be viewed from a model of meaning-making, comprising three elements – participants, modes, and practices. Participants represent a technological application, and students who use digital tools, modes relate to how digital contents are managed (accessed, read, shared, and used by the students), and practices refer to the application of digital technologies for specific purposes. To be applied in the context of the present study, EFL Master students and digital technologies they use

e.g., Google Classroom, Zoom, WhatsApp Group, Microsoft Office, Google Forms, Google Docs, Grammar Checker, Plagiarism Checker, Journal databases, Journal Indexer and Search Engines, belong to the element of participants. Then, how the students search for reliable materials, read, analyze and synthesize journal articles, and share online resources refer to the element of mode. Meanwhile, using a plagiarism checker for showing similarity index, the use of grammar checker for identifying grammatical errors, and the use of track changes/comment features in Microsoft Word/Google Docs for collaborative writing, represent the element of practices.

Similarly, Reyna et al. (2018) proposed a framework for teaching digital literacy in tertiary education. The framework consists of three domains – conceptual, functional, and audio-visual. The conceptual domain reflects on students' ability to search, sort, analyze and understand digital information. For example, students are assigned to make a critical review of English curricula. Then, they search for official documents of English curricula, analyze them, find weaknesses and strengths of the curricula, and synthesize relevant theories about curriculum analyses. Functional domain refers to the ability to operate digital technologies, such as Microsoft Office, Google Docs, Google Forms, Google drive, reference manager, teleconference applications, e-learning platforms, statistical applications, and social media. Lastly, the audio-visual domain relates to students' ability to apply knowledge on the creation of digital artifacts, such as creating video presentations, infographics, posters, presentation slides, and podcasts represent the audio-visual domain.

Moreover, assessing digital literacy in tertiary education can be done in various ways. Sparks et al. (2016) suggested using performance-based assessment to evaluate university students' digital literacy practices. A performance-based assessment provides a more authentic assessment to represent students' level of digital literacy. Asking students to find reliable, relevant, and high-quality journal articles/research reports and requesting them to analyze and synthesize the articles/reports are good examples of performance-based assessment.

2.4 Previous Studies

Previous studies have focused on digital literacy practices in tertiary education. Although some of them did not specifically focus on EFL Master students, their research results help the present study for navigating the cases and projecting the expected findings.

First, De Groot (2017) explored the integration of out-of-class Thai student-teachers' digital literacy practices into English language learning and teaching. The study resulted in two issues: the use of digital technology for learning English by Thai student-teachers outside classrooms and pedagogical potential of the practices for future classroom English learning and teaching. For the first issue, Thai student-teachers used various social media such as Facebook, Instagram, and Twitter to have online discussion forums. Some of them actively used English in the discussions, while the rest looked more silent as they just listened and read posts on the discussion boards. They were also engaged with affinity spaces, YouTube, and Skype (chatting with foreigners). However, some student-teachers could not benefit from out-of-classroom digital literacy practices maximally as they were apprehensive about the practices e.g., chatting with foreigners. Meanwhile, for the second issue, the pedagogical potential of

the practices relates to how student-teachers could have authentic practices of digital literacy and prepare better performances in their teaching training.

Furthermore, Akayoglu et al. (2020) investigated digital literacy practices among Turkish pre-service EFL teachers. The study found that the pre-service EFL teachers perceived the concept of digital literacy as knowledge to use digital tools critically, creatively, and collaboratively. The role of professors was also quite important to promote the use of digital technologies. When the professors frequently utilized digital technologies in the teaching practices, the pre-service EFL teachers would likely follow the practice. Additionally, the pre-service EFL teachers use various social media for their professional development. Furthermore, the study provided implications for educational practice/policy: 1) language teacher educators should give pre-service teachers the understanding to pedagogical purposes of digital tools, 2) language teacher educators have to be the role model for integrating digital literacy practices in classroom teaching practices, and 3) pre-service teachers need to combine technology-related courses with pedagogy and digital material design.

The third study explored Malaysian university students' digital literacy practices for academic needs (Shariman, et al., 2012). The findings reveal that the students preferred digital content serving various multimodal forms (attractive visual-graphic design). However, lack of English proficiency, short attention span, low motivation/interest in the information/topics provided in digital content sites became the barrier. These problems led to the difficulty of evaluating digital content extensively. Also, it causes an inability to evaluate the credibility, authenticity, and reliability of the sources providing the digital contents. As a result, the students just had a superficial comprehension of the digital contents. Looking at this fact, the study reminded teacher-educators to highly concern about students' critical thinking and evaluative skills when searching for digital information.

3. METHODS

3.1 Research Design

As this study specifically explored the digital literacy practices of EFL Master students, a qualitative case study was selected to be the procedure for this research. A case study seeks to uncover social phenomena within a contextual boundary and treats them as a case (Creswell & Poth, 2018; Yin, 2016). Correspondingly, this study put a group of EFL Master students along with their digital literacy practices to be a single case. Using multiple data collection methods and positioning researchers to be the critical instrument became the relevant reasons for selecting the case study research design.

3.2 Participants and Context

The participants of this study included 34 EFL Master students of a public university in Bandung, Indonesia. They were one, third, and fifth-semester students in the 2020/2021 academic year. They already completed around 15-30 credit semesters; half of them have already joined courses related to ICT/technology for language teaching and are still writing thesis proposals or journal articles. They experienced

face-to-face classroom learning during September-December 2019, but they studied virtually due to the COVID-19 pandemic situation for the next semesters in 2020.

3.3 Data Collection Methods

Two data collection methods, i.e., open-ended questionnaire and semi-structured interview, were administered in this study. Both of them were done virtually to maintain physical distancing during the pandemic. The questionnaire was mediated by Google Forms, while the interviews were conducted via Zoom for around 45-60 minutes for each participant. An open-ended questionnaire was selected since it resulted in getting deeper/richer data, fitted to the nature of the qualitative approach, and allowed participants to deliver their own voices/perceptions/appraisal on their digital literacy practices. Also, the impossibility of conducting interviews with all participants due to limited time became the reason for employing an open-ended questionnaire. In this case, most of the participants were at the end of the semester and still preparing for their final examination. Meanwhile, to triangulate data from the questionnaire, the researchers selected five participants to be interviewed. The selection was made purposively based on their willingness and informative answers on the questionnaire. In terms of developing the data collection tools, the researchers proposed four open-ended questions in the questionnaire in regard to the research questions in this study and made eight open-ended questions for the interview guide based on Hague and Payton's framework.

Table 3. Questionnaire items.

No.	Questions
1.	What is digital literacy? Please explain the term upon your own experiences/perceptions/thoughts.
2.	What digital tools do you usually use during your study? For what purposes do you use them?
3.	What social media do you use? How do you use them (for academic or just personal communication)?
4.	How do you think you can use digital tools for studying English and supporting your academic purposes (e.g., reading/writing journal articles and theses)?

Table 4. Questions of the interview guide.

No.	Dimensions	Questions
1.	Functional skills	What digital tools can you operate (e.g., Microsoft Office, browser applications, e-learning platforms)?
2.	Creativity	What digital content do you make (e.g., video presentations, stories on blogs, articles, posting pictures, digital documents (pdf, docx, pptx)?
3.	Critical thinking and evaluation	How do you assess digital content? For example, what do you think about an article you have downloaded? Do you agree/disagree with the contents? Or do you think that it is a good article?
4.	Cultural and social understanding	Do you learn English cultures or international cultures from the internet? For example, watching YouTube or accessing websites explaining the cultures?
5.	Collaboration	How do you use the internet, applications, and any other digital tools for collaborative learning?

Table 4 continued…

6.	The ability to find and select information	How do you find reliable digital content or online resources? Could you identify unreliable sources?
7.	Effective communication	How do you share digital information? Do you just directly share or analyze, synthesize, validate and summarize first before sharing it?
8.	E-safety	How do you use the internet safely? For example, how can you identify unsecured websites, how can you avoid plagiarisms, how can you maintain digital copyright? Do you know sci-hub (illegal websites for downloading prepaid journal articles)? What do you think about that?

3.4 Data Analysis

The researchers followed the three stages of qualitative data analysis suggested by Miles et al. (2014), namely: 1) data condensation, 2) data display, and 3) drawing and verifying conclusion. In the step of data condensation, coding stages (initial, axial, and selective coding) were applied to emerging themes (Saldaña, 2015). Also, the process of emerging the themes from the interview data was based on the eight dimensions of Hague and Payton's framework. Then, all of the emerging themes were compared to the pre-existing theories of digital literacy. Subsequently, data were displayed and interpreted to draw conclusions.

3.5 Ethical Consideration

Since this study dealt with humans as its participants, ethical considerations were acknowledged. Before collecting data, the researchers explained the goal of this research to the participants, asking their permission and committed to keeping their data confidentially. Likewise, the researchers used pseudonyms when presenting the participants' data.

4. RESULTS

This section presents the results of the study in regard to the research questions. To maintain research ethics and confidentiality, the names of participants mentioned in the excerpts are pseudonyms.

4.1 Digital Literacy According to EFL Master Students

Following the stages of the coding process, four themes emerged, namely:
1) soft skills,
2) literacy by digital technology,
3) technical skills, and
4) teaching and learning digitally.

As shown in Table 5, each theme is supported by relevant excerpts of the participants.

Table 5. Emerging themes of digital literacy concept.

Themes	Example of excerpts
Soft skills (managing digital information)	"The ability to understand something textually and contextually in relation with the use of digital devices". [Stanley]
	"The ability to understand, to use and engage with information through the help of digital technology". [Alina]
Literacy by digital technology	"Digital literacy refers to reading and writing activities in learning a language using technological tools". [Emily]
	"It is an activity to promote reading and writing through digital equipment". [Stephen]
Technical skills (operating digital tools)	"In my opinion, digital literacy refers to someone's understanding and ability in using technology". [Mary]
	"The understanding of the use of any kind of things or tools related to the term of digital". [Smith]
Teaching and learning digitally	"Digital literacy is our way on how to maximize the use of technology in teaching and learning process". [Jean]
	"Digital literacy is our ability to utilize digital tools to support our teaching and learning activities". [Anne]

First, soft skills were the most representative theme to define digital literacy. More than half of the total participants argued that digital literacy related to the ability to manage digital information. It represents various actions, including accessing, navigating, incorporating, interpreting, assessing, evaluating, engaging with, interacting with, comprehending, understanding, composing, and creating digital content. Also, it reflects on how people contextualize those actions into particular occasions like evaluating digital contents before sharing them to online communities/groups and accessing official or trusted EFL/ESL websites to get examples of suitable teaching materials. For this theme, the participants perceived digital literacy as the way people use digital technologies wisely. It was not only about individuals' ability to operate digital tools like computers, smartphones, and search engines but preferably on how people contextualize their social practices in digital spaces.

Second, digital literacy is defined as merely literacy practices with digital technology. Around a quarter of the total participants believed that digital literacy is the process of reading and writing in digital spaces. According to the participants, the activities of reading/writing e-books, journal articles, PowerPoint slides, infographics, online news, and e-mails represent digital literacy practices. They defined digital literacy as reading or writing activities mediated by digital technologies since they perceived literacy as merely reading and writing activities. This understanding reflects on the idea of traditional literacy, where literacy is just conceptualized as reading and writing activities. However, the participants correlated with digital technologies. As a result, they argued that digital literacy is reading or writing using digital technologies. Moreover, for some participants, digital literacy was viewed as technical skills for operating digital tools such as computers, smartphones, smartboards, projectors, social media, and websites or blogs design. This conceptualization is potentially influenced by information technology (IT) competence which mainly focuses more on the technical skills of digital technology operation. In this case, the participants saw two elements in the concept of digital literacy: digital technology and IT competence. Correspondingly, the view resulted in an idea that to be digitally literate, one must be able to operate digital technology properly. This idea becomes the opposite of the first

theme which looks at digital literacy beyond the technical skills but preferably on soft skills for managing digital information wisely.

Finally, the least number of participants thought that digital literacy is teaching and learning with digital technology. They correlated the pedagogical perspectives in the concept of digital literacy because the participants were also working teachers when they were studying in the graduate program. They were currently part-time teachers in some public schools in Bandung. Their arguments on the concept of digital literacy were influenced by their daily teaching and learning practices. They utilized e-learning platforms, online assessments, e-books, PowerPoint slides, videos, audios, and online resources for their teaching practices.

In conclusion, all participants conceptualized digital literacy differently based on their perceptions, experiences, and daily practices. Soft skills belong to the most representative conceptualization of digital literacy as it is preferred by more than half of the total participants. Additionally, it corresponds to the idea of NLS, where literacy reflects on contextually social practices. However, some participants viewed digital literacy superficially as technical skills for operating digital tools, reading or writing activities in digital spaces, and instructional activities mediated by digital technologies.

4.2 Digital Tools Used by EFL Master Students

The second research question in this study deals with the types of digital tools used by the participants in their learning activities. The following is the representation of the findings, drawn in Table 6, with the total frequency of the respondents in using particular digital tools.

Table 6. List of digital tools used by EFL Master students.

Categories	Digital tools used by participants	Total (f)
Software for academic/research purposes	Academic social networking sites	4
	E-journals	31
	E-library	3
	Plagiarism checker	7
	Reference manager	3
	Paraphrasing tools	3
	Shadow website (sci-hub)	32
Software for study and general purposes	Search engine	34
	E-dictionary	30
	Social media	34
	E-learning platforms	34
	Teleconference applications	34
	Blogs	2
	Microsoft office	34

Based on the collected data, digital tools used by participants can be classified into two categories, i.e., software for academic or research purposes and software for study and general purposes. All of the participants used laptops and smartphones as their primary devices, through which they could operate various software for research, study, and other purposes.

Regarding the first category, most participants accessed e-journals e.g., Taylor & Francis, Elsevier, Wiley, Cambridge, Emerald, Sage Publications, Science Direct, Google Scholar, and shadow website (Sci-Hub) to obtain journal articles for academic or research purposes. Additionally, few participants used academic social networking

sites, namely ResearchGate and e-libraries such as libgen or library genesis, and academia to browse journal articles and e-books. Meanwhile, some participants, who have started writing their thesis proposals or journal articles, employed a set of tools for supporting the academic writing process, including plagiarism checkers (e.g., Grammarly, Turnitin, Duplichecker), reference managers (e.g., Mendeley, Endnote), and paraphrasing tools (e.g., Quillbot).

The second category refers to software for study and other general purposes. In doing assignments, most of the participants used search engines, such as Google, to browse materials, Microsoft office to make drafts or present materials, and e-dictionaries (e.g., Cambridge, Oxford, Merriam Webster, U-dictionary) to look up words for their meaning, pronunciation, and spelling. Then, for the learning process during the COVID-19 pandemic, all participants utilized e-learning platforms (e.g., Google Classroom, Edmodo) and teleconference apps (e.g., Zoom, Google Meet). Meanwhile, some participants accessed social media (e.g., YouTube, Twitter, Instagram, WhatsApp) and blogs for searching updated news, personal communication, and entertainment.

In summary, various digital tools used by the participants can be classified into two categories based on their specific functions. They are software for academic or research purposes and software for study and other general purposes.

4.3 Dealing with Digital Tools

Moreover, the way the participants dealt with digital tools was represented in the form of digital content creation, evaluation, sharing, and safety. During their learning experiences in the Master program, the participants produced two digital contents, namely video presentation and digital storytelling, and stored them in Google Drive and YouTube to provide easy access for classmates (audiences). Then, for evaluating online resources such as journal articles and e-books, the participants always considered some aspects such as referring to reputable journal database only, checking journal ranking at Scimagojr or Clarivate Analytics, typing relevant keywords, using journal filters (year of publication and subject), screening on abstract and table of contents, doing a critical reading and taking the most relevant part of articles or e-books only. Likewise, to achieve useful information-sharing for effective communication, the participants pondered some issues like comprehending digital contents or information, checking its validity, and adding highlights before sharing it with others. Also, they adjusted the information with the readers. Finally, the participants were aware of the safety of accessing online resources. They avoided digital plagiarism by paraphrasing, citing, writing references, or crediting original authors. However, most of the participants still accessed Sci-hub, a shadow/illegal website for downloading prepaid journal articles freely. They did not have money to purchase the prepaid journals, while their campus only subscribed to a limited number of those journals. Although accessing Sci-hub was illegal, the participants argued that at least they did not do plagiarism and commercial acts. To sum up, the participants used, adapted, or dealt with the digital tools wisely when creating, evaluating, sharing, and securing digital contents.

4.4 Purposes of Using Digital Tools

Based on the thematical analysis, the participants' purposes of using digital tools can be categorized into five themes:
1) academic and research,
2) learning English and its culture,
3) collaborative works,
4) conducting online classes, and
5) personal communication and entertainment.

Those purposes are reflected based on the participants' daily practices. Table 7 presents and describes these five themes.

Table 7. The participants' purposes of using digital tools.

Purposes	Descriptions
Academic/research	Searching for e-books, journal articles, and literature in journal databases such as Google Scholar, ResearchGate, Taylor & Francis, Wiley, Emerald, etc.
Learning English and its culture	Improving vocabulary through e-dictionary. Searching for a more detailed explanation of theories/concepts through YouTube video lessons (Experts/Professors' explanations). Broadening cross-cultural understanding through vlogs and social media.
Collaborative works	Discussing tasks via WhatsApp, Zoom, Google Meet. Collaborative writing by using the comment feature in Microsoft Word.
Conducting online classes	Synchronous online learning through Zoom and Google Meet. Asynchronous online learning through Google classrooms and Edmodo.
Personal communication and entertainment	Contacting friends and lecturers via WhatsApp. Searching for updated news and entertainment through social media e.g., Twitter, Instagram, and YouTube.

The first theme, academic or research purpose, is relevant because the instructional processes at graduate programs typically focus on research studies. EFL Master students are demanded to be skillful and knowledgeable in understanding, reviewing, and conducting research in the field of English language teaching. Therefore, searching relevant literature, journal articles, and e-books is their daily practices. A social networking site like ResearchGate was used as one of the sources for their journal articles. In general, the participants accessed Google Scholar for searching journal articles, although some of them preferred to search journal articles from more reliable journal databases such as Taylor & Francis, Wiley, Emerald, ScienceDirect/Elsevier, Sage Publication, and ERIC (Education Resources Information Center). In the following excerpts, E refers to excerpts and the numbers are the display of the excerpts from data as displayed in sequences in this paper:

E1 "Then, I usually accessed ResearchGate and Sci-hub to find journal articles. Yes sometimes, I also accessed Google Scholar, too". (Helena)

E2 "…since we need journal articles for resources to support our academic achievement, sometimes I used some websites like Taylor & Francis, Scigate, Wiley, Cambridge, Emeralds and others, and searched books from libgen.is". (Caroline)

The second theme relates to how the participants used digital tools to improve their English skills and cross-cultural understanding. Most of the participants used e-dictionaries such as Cambridge, Oxford, Merriam Webster, and U-dictionary to

improve their vocabulary. They can get the meaning of new words, check the pronunciation, word classes, and spelling.

E3 "Oh yeah, I used e-dictionary to improve my vocabulary like Cambridge and Oxford e-dictionary". (Thomas)

E4 "I used e-dictionary like Merriam Webster and u-dictionary when doing assignments to check the meaning of words and their pronunciation". (Emma)

In the same way, YouTube contributes to the improvement of participants' listening skills. Participants reported that they watched YouTube videos about theory/concept explanation by experts/professors and English video lessons involving native speaker conversations to deepen their knowledge on ELT research. Additionally, from this activity, the participants could practice their listening skills while learning the substance of the video.

E5 "I watched YouTube to improve my listening skill as there are many videos on YouTube delivered in English to explain theories and provide teaching tips". (Emma)

Finally, the participants reported that digital tools like YouTube and social media could enhance their cross-cultural understanding. Watching vlogs on YouTube helped them to know how native speakers and foreigners behave, speak and interact in their daily practices. They stated that the vlogs' creators were Indonesians living abroad (in the USA, UK, Australia, and European countries) and sharing their cultural explorations in the countries they were staying in. Then, social media offer English idioms and humor or jokes. This could help the participants to be natural and native-like users of English.

E6 "I usually watched vlog videos about cultures in America, UK, or other countries. Vloggers told about how native speakers behave in their daily lives, which is different from our habits. Mostly, the vloggers that I watched are Indonesian students living abroad…In Instagram, I also found humor or jokes commonly used by native speakers of English". (Thomas)

Another purpose of using digital tools, collaborative works, is commonly in the form of discussions and peer-feedback. The participants discussed assignments, projects, and group work through WhatsApp Groups. Sometimes, they also met virtually using teleconference apps such as Zoom and Google Meet. Meanwhile, peer-feedback writing was done when they enrolled in the Qualitative Data Analysis course (QDA). The course required all the students to write two sections of journal articles: introduction and literature review. The lecturer monitored the process of writing. Every student submitted his/her writing to the lecturer via Google Classroom. Afterward, the lecturer provided feedback on the writing using the comment feature of Microsoft Word. Also, the students exchanged their writings to get feedback from each other, and it was also done through the comment feature of Microsoft Word.

E7 "I often used WhatsApp group to discuss assignments with my classmates or when I had a group work. Then, I used Zoom and Google Meet for in-person discussions". (Helena)

E8 "That was when I joined QDA class, and the lecturer assigned the students to write the introduction section of a research article. The article was submitted through Google Classroom, and later on, the lecturer gave comments for the revision on my document file. I also did collaborative writing feedback with my friends using the same comment feature". (Emma)

The fourth purpose of the participants' use of digital tools is conducting online classes. During the two semesters of 2020 (February-May and September-December), all the participants completed their courses online due to the outbreak of the COVID-19 pandemic. Lectures, assignment submissions, and class coordination were made virtually. I general, the participants had two types of online learning: synchronous and asynchronous learning. Synchronous learning refers to the real-time instruction allowing students and lecturers to interact virtually within a single time zone and space using teleconference applications such as Zoom and Google Meet. Meanwhile, asynchronous learning allows students and lecturers to interact in different time zones. For example, the lecturer posted reading materials in an online classroom and asked the students to critically review the materials in a week. Subsequently, within the allocated time, the students submitted their critical review. This type of learning was mostly done through e-learning platforms such as Google Classroom and Edmodo.

E9 "For learning during the pandemic time, I often used Zoom and Google Meet for real-time classes. Oh yeah, I also used Google Classrooms when I joined a course in the second semester". (Helena)

E10 "…Google Classrooms and Edmodo for online class, too, but not for real-time meeting or videoconference". (Thomas)

The last purpose of using digital tools reflects on how the participants use them for their personal communication and entertainment. Messenger and social media were the most preferred ones for this purpose. The participants used WhatsApp to communicate with their lecturers, friends, and colleagues. Meanwhile, Instagram, Twitter, and YouTube were to gain updated news and entertainment in a leisure time.

E11 "For communication purposes, I used WhatsApp just to contact my lecturers and friends". (Caroline)

E12 "While for other casual websites or less formal communication, I used Twitter, Tumblr, and YouTube to get information just at a glance or for leisure time". (Alice)

In summary, all of the participants' purposes of using digital tools are classified into the five aforementioned themes. Those themes reflect how the participants used digital tools for their study, personal communication, and entertainment.

5. DISCUSSION

This research aimed to find out how EFL Master students perceived digital literacy and what digital tools they used, how they used them, and what they used them for. Based on the findings, four issues emerged to be discussed critically. Firstly, the way the participants conceptualized digital literacy reflected on the grand theory of literacy where two main paradigms are acknowledged: new literacy studies (NLS) and traditional literacy (Gee, 2008, 2015; Larson & Marsh, 2005; Lewis & Fabos, 2005). The majority of the participants viewed digital literacy as soft skills, including the acts of searching, comprehending, evaluating, creating, and sharing digital information rather than technical skills for operating digital tools like copying, pasting, hyperlinking, and highlighting a text. This understanding supports the idea of NLS, where literacy is linked to contextual social practices. Additionally, this corresponds

to a previous study in which digital literacy is seen as knowledge to use digital tools critically, creatively, and collaboratively (Akayoglu et al., 2020). Meanwhile, some other participants perceived digital literacy as technical skills and the acts of reading and writing in digital spaces. This conceptualization corresponds to the idea of traditional literacy which separates literacy and social practices. Finally, the least number of participants considered digital literacy as teaching and learning by using digital tools. This conceptualization connects to the social practices (teaching/learning), but it is extremely specific and not representative.

Furthermore, the participants used many digital tools, and they can be categorized into two types – software for academic or research purposes and software for study and general purposes. These findings are related to what previous studies have reported (Akayoglu et al., 2020; De Groot, 2017), where digital tools were used in regard to students' learning purposes. Each of the digital tools has specific functions in supporting the participants' activities in learning. Prominently, as the participants of this study were Master students, many applications and websites for academic or research purposes such as plagiarism checker, reference manager, e-library, and e-journals were utilized. This corresponds to their learning needs since Master students frequently dealt with research projects.

Regarding how the participants deal with digital tools, the results correspond to the elements and dimensions of digital literacy (Lea & Jones, 2011; Reyna et al., 2018). The participants used digital tools wisely when they did activities involving the use of digital tools, such as searching, screening, comprehending, validating, evaluating, creating, and sharing. They also utilized digital tools for clear purposes, such as using Microsoft Office to complete assignments, and e-dictionary to improve vocabulary, and e-journal/journal databases to obtain resources online. However, potential tools such as plagiarism checkers, reference managers, and paraphrasing tools were not maximally used, and most of the participants relied on Sci-hub (shadow/illegal websites) because it was unavoidable.

Finally, regarding the participants' purposes of using digital tools, this study shares similar results to what previous studies have reported e.g., social media for learning English (Colton, 2020; De Groot, 2017), e-dictionary for vocabulary learning (Wang, 2012), social media for intercultural understanding (Özdemir, 2017; Wang & Chen, 2020), messenger (WhatsApp) for collaborative learning (García-Gómez, 2020; Rinekso & Muslim, 2020) and teleconference apps (Zoom) for language learning (Kohnke & Moorhouse, 2020). However, this study offers significant novelty in the field of digital literacy because it focused on the tertiary education context, which is characteristically different from the high school context. Academic and research purposes emerge as the prominent result in this study. The majority of the participants utilized e-journals maximally as they checked journal credibility by using relevant keywords and journal filters, screening abstracts, and reading journal articles critically. Although most of the participants used e-journal optimally, some of them also benefitted from supporting academic writing tools such as plagiarism checkers, reference managers, and paraphrasing tools. Mostly, they relied on manual referencing and paraphrasing. In addition, they did not check the similarity levels of their writings using plagiarism prevention software such as Turnitin. Paraphrasing tools were used just for validation as genuine writings essentially come from the authors' ideas.

6. CONCLUSION

This study deals with the exploration of digital literacy practices among EFL Master students. The findings of the study highlight four main issues – conceptualization of digital literacy, kinds of digital tools used, how to deal with digital tools, and purposes of using the digital tools by the students. Generally, digital literacy was conceptualized as soft skills for managing digital information covering the acts of searching, comprehending, evaluating, creating, and sharing. Then, the students used two kinds of digital tools, namely software for academic or research purposes and software for study and general purposes. In terms of dealing with the digital tools, the participants had experiences in such activities as creating digital content, evaluating online resources, sharing information in a practical way, and avoiding digital plagiarism to maintain the safety of accessing online resources. The purposes of using the digital tools are represented in five themes, namely academic or research, learning English and its culture, collaborative works, conducting online classes, and personal communication and entertainment. Additionally, the most prominent result of this study relates to how the students utilized digital tools for academic or research purposes, as this study was conducted in a tertiary education context.

The generalizability of the results of this study is subject to certain limitations. For example, this study was very contextual, focusing on specific, homogenous, and bounded participants. Therefore, the results of this study cannot be generalized as in other contexts people may conceptualize digital literacy differently. Also, the types of digital tools and the purposes of using them are potentially different. Notwithstanding these limitations, the study suggests that tertiary education should provide more training on optimizing the use of digital tools for academic writing and broader access to prepaid journal articles. In addition, lecturers must become role models for promoting the innovative practices of digital literacy to university students. Further research focusing on lecturers' digital literacy practices would be worthwhile.

ACKNOWLEDGMENTS

This work is dedicated to Indonesia Endowment Fund for Education (*Lembaga Pengelola Dana Pendidikan*, or abbreviated as LPDP). Also, our special appreciations are delivered to anonymous reviewers whose comments have improved the quality of this manuscript.

REFERENCES

Adeleke, D. S., & Emeahara, E. N. (2016). Relationship between information literacy and use of electronic information resources by postgraduate students of the University of Ibadan. *Library Philosophy & Practice (e-journal).* https://digitalcommons.unl.edu/libphilprac/1381/

Akayoglu, S., Satar, H. M., Dikilitas, K., Cirit, N. C., & Korkmazgil, S. (2020). Digital literacy practices of Turkish pre-service EFL teachers. *Australasian Journal of Educational Technology*, *36*(1), 85–97. https://doi.org/10.14742/ajet.4711

Ankrah, E., & Atuase, D. (2018). The use of electronic resources by postgraduate students of the University of Cape Coast. *Library Philosophy & Practice (e-journal)*. http://ugspace.ug.edu.gh/handle/123456789/27104

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

Bawden, D. (2008). Origins and concepts of digital literacy. In C. Lankshear & M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 17–32). Peter Lang.

Belshaw, D. A. J. (2012). *What is 'digital literacy'?: A pragmatic investigation*. Durham University.

Black, R. W. (2005). Access and affiliation: The literacy and composition practices of English-language learners in an online fanfiction community. *Journal of Adolescent & Adult Literacy*, *49*(2), 118–128. https://doi.org/10.1598/JAAL.49.2.4

Black, R. W. (2009). English-language learners, fan communities, and 21st-century skills. *Journal of Adolescent & Adult Literacy*, *52*(8), 688–697. https://doi.org/10.1598/JAAL.52.8.4

Colton, J. (2020). Social, innovative and deep: Exploring digital literacies in a year 9 English classroom. *Changing English*, *27*(3), 270-284. https://doi.org/10.1080/1358684X.2020.1766946

Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). Sage publications.

De Groot, F. O. (2017). *Integrating out-of-class digital literacy development and English literacy practices with classroom language learning and teaching in Thailand* [Unpblished doctoral dissertation]. University of Reading.

Dudeney, G., & Hockly, N. (2016). Literacies, technology and language teaching. In F. Farr & L. Murray (Eds.), *The Routledge handbook of language learning and technology* (pp. 115–126). Routledge.

Dudeney, G., Hockly, N., & Pegrum, M. (2013). *Digital literacies: Research and resources in language teaching*. Pearson.

Eshet, Y. (2004). Digital literacy: A conceptual framework for survival skills in the digital era. *Journal of Educational Multimedia and Hypermedia*, *13*(1), 93–106.

García-Gómez, A. (2020). Learning through WhatsApp: Students' beliefs, L2 pragmatic development and interpersonal relationships. *Computer Assisted Language Learning*. https://doi.org/10.1080/09588221.2020.1799822

Gee, J. P. (2008). *Social linguistics and literacies: Ideology in discourses* (3rd ed.). Taylor & Francis.

Gee, J. P. (2015). The new literacy studies. In J. Rowsell & K. Pahl (Eds.), *The Routledge handbook of literacy studies* (pp. 35–48). Routledge.

Gilster, P. (1997). *Digital literacy*. Wiley Computer Pub.

Hague, C., & Payton, S. (2010). *Digital literacy across the curriculum: A future lab handbook*. Futurelab. https://www.nfer.ac.uk/publications/futl06/futl06.pdf

Hobbs, R. (2010). *Digital and media literacy: A plan of action.* The Aspen Institute.

Janssen, J., Stoyanov, S., Ferrari, A., Punie, Y., Pannekeet, K., & Sloep, P. (2013). Experts' views on digital competence: Commonalities and differences. *Computers & Education*, *68*, 473–481. https://doi.org/10.1016/j.compedu.2013.06.008

John, G. (2014). *Exploring ESL students' perceptions of their digital reading skills* [Unpublished doctoral dissertation]. University of Nottingham.

Kohnke, L., & Moorhouse, B. L. (2020). Facilitating synchronous online language learning through Zoom. *RELC Journal*. https://doi.org/10.1177/0033688220937235

Krumsvik, R. J. (2008). Situated learning and teachers' digital competence. *Education and Information Technologies*, *13*(4), 279–290. https://doi.org/10.1007/s10639-008-9069-5

Larson, J., & Marsh, J. (2005). *Making literacy real: Theories and practices for learning and teaching.* Sage.

Lea, M. R., & Jones, S. (2011). Digital literacies in higher education: Exploring textual and technological practice. *Studies in Higher Education*, *36*(4), 377–393. https://doi.org/10.1080/03075071003664021

Lewis, C., & Fabos, B. (2005). Instant messaging, literacies, and social identities. *Reading Research Quarterly*, *40*(4), 470–501. https://doi.org/10.1598/RRQ.40.4.5

Martin, A. (2008). Digital literacy and the "digital society." In C. Lankshear & M. Knobel (Eds.), *Digital literacies: Concepts, policies and practices* (pp. 151–176). Peter Lang.

Meurant, R. C. (2008). The key importance of L2 digital literacy to Korean EFL pedagogy: College students use L2 English to make campus video guides with their cell phone videocams, and to view and respond to their videos on an L2 English language social networking site. *International Journal of Hybrid Information Technology*, *1*(1), 65–72.

Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). SAGE Publications.

Morrell, E. (2012). 21st-century literacies, critical media pedagogies, and language arts. *The Reading Teacher*, *66*(4), 300–302. https://doi.org/10.1002/TRTR.01125

Özdemir, E. (2017). Promoting EFL learners' intercultural communication effectiveness: A focus on Facebook. *Computer Assisted Language Learning*, *30*(6), 510–528. https://doi.org/10.1080/09588221.2017.1325907

Reyna, J., Hanham, J., & Meier, P. C. (2018). A framework for digital media literacies for teaching and learning in higher education. *E-Learning and Digital Media*, *15*(4), 176–190. https://doi.org/10.1177/2042753018784952

Rinekso, A. B., & Muslim, A. B. (2020). Synchronous online discussion: Teaching English in higher education amidst the covid-19 pandemic. *JEES (Journal of English Educators Society)*, *5*(2), 155–162. https://doi.org/10.21070/jees.v5i2.646

Rowsell, J., & Pahl, K. (2015). *The Routledge handbook of literacy studies*. Routledge.

Saldaña, J. (2015). *The coding manual for qualitative researchers* (3rd ed.). Sage Publications.

Shariman, T. P. N. T., Razak, N. A., & Noor, N. F. M. (2012). Digital literacy competence for academic needs: An analysis of Malaysian students in three universities. *Procedia-Social and Behavioral Sciences*, *69*, 1489–1496. https://doi.org/10.1016/j.sbspro.2012.12.090

Smith, J. J., & Dobson, E. (2011). Beyond the book: Using Web 2.0 tools to develop 21st century literacies. *Computers in the Schools*, *28*(4), 316–327. https://doi.org/10.1080/07380569.2011.620939

Sparks, J. R., Katz, I. R., & Beile, P. M. (2016). Assessing digital information literacy in higher education: A review of existing frameworks and assessments with recommendations for next-generation assessment. *ETS Research Report Series*, *2016*(2), 1–33. https://doi.org/10.1002/ets2.12118

Street, B. (2009). The future of "social literacies." In M. Baynham & M. Prinsloo (Eds.), *The future of literacy studies* (pp. 21–37). Palgrave Macmillan.

Tour, E. (2019). Teaching digital literacies in EAL/ESL classrooms: Practical strategies. *TESOL Journal*, *11*(1), 1–12. https://doi.org/10.1002/tesj.458

Wang, H., & Chen, C. W. (2020). Learning English from YouTubers: English L2 learners' self-regulated language learning on YouTube. *Innovation in Language Learning and Teaching*, *14*(4), 333–346. https://doi.org/10.1080/17501229.2019.1607356

Wang, J. (2012). The use of e-dictionary to read e-text by intermediate and advanced learners of Chinese. *Computer Assisted Language Learning*, *25*(5), 475–487. https://doi.org/10.1080/09588221.2011.631144

Weaver, N. (2012). *What about the teachers?: Exploring secondary English teachers' literacies*. University of Rochester.

Yin, R. K. (2016). *Qualitative research from start to finish* (2nd ed.). Guilford publications.