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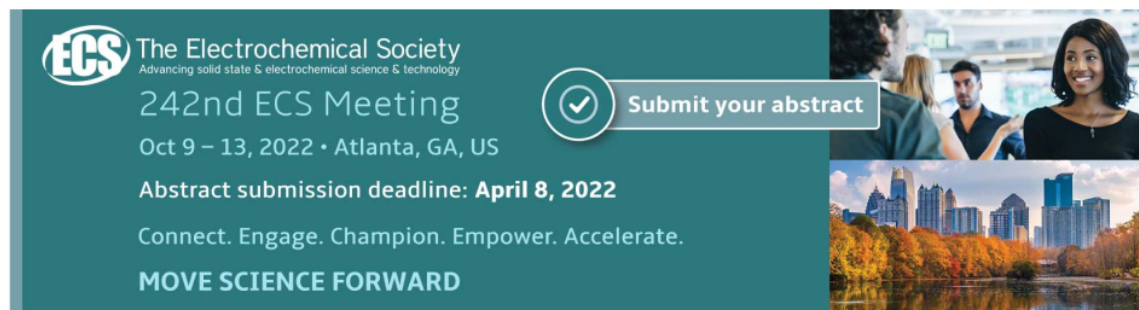
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Unlocking digital literacy practices of EFL teachers

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Abstract. Digital literacy practice is necessary for education since information and communication technology has developed rapidly, resulting in shifting to the era of digital technology. The digital literacy practices in school and especially in classrooms are required for preparing 21st-century students. This study aims to (1) determine teachers' perceptions of digital literacy practices in the level of classroom and school, (2) point out the digital literacy practices of English Foreign Language (EFL) teachers, and (3) investigate the challenges faced by the EFL teachers in applying digital literacy practices in the classroom. This study revealed the digital literacy practices of thirteen EFL Teachers in Yogyakarta using questionnaires and semi-structured interviews. The results uncovered that digital literacy was highly supported, evidenced by the facility, equipment, and the connectivity provided in all schools with a variety of free internet access. In the classroom level, these teachers practised digital literacy by using some digital tools. In implementing digital literacy, the teachers faced some challenges, such as defective equipment and Internet access and intrinsic factors such as teachers' knowledge in technology, their attitudes toward digital technology, and students' commitment to apply digital literacy. These findings are followed by recommendations for schools, teachers, and further research.

1 Introduction

Information and communication technology has developed rapidly, resulting in shifting to the era of digital technology, initially beginning with the creation of computers and the Internet. The Indonesian Ministry of Communication and Informatics released data that there were 83 million Internet users in 2014, placing Indonesia the sixth-highest Internet user in the world in 2013 [1]. This fact has changed many aspects of life, especially the way people access and share information. Despite the increasingly digital era, the use of the Internet has not been accompanied by user awareness to think critically [2]. Thus, skills and competencies are required to optimize the benefits of digital technology.

Education is one of the fields utilizing digital technology development, particularly in teaching and learning activities to accomplish educational goals. It is believed that 21st-century teachers must possess several competencies to become professional. They should integrate digital literacy into the teaching-learning process [3]. This challenge requires teachers' participation, which has a crucial duty



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in preparing future human resources. They can utilize technology to prepare and lead students to be digitally literate.

Generally, digital literacy refers to the ability to use technology to find, analyze, use, and create content, such as computer hardware, software, and the Internet [4]. Gilster introduced digital literacy by defining it as the ability to read, understand, and analyze the variety of digital sources [5]. Digital literacy incorporates any number of intelligent composing techniques across different media types, including words, messages, visual portrayals, movement illustrations, sound, videos, and multimodal positions. Like learners, literate technology users can utilize and create digital compositions [6].

Murtafi et al. state that the definition of digital literacy includes two issues, in a small sense, it is the ability to search valid and reliable information, while in a broad sense, it refers to the awareness to be safe while being online [7]. Moreover, Murtafi et al. define digital literacy as an ability covering three points: the competences and abilities to use applications of digital technologies, the abilities to understand digital media platforms and content objectively, and the knowledge and skills to build and interact using digital technology [7].

The Library of the University of Illinois at the Urbana-Champaign, as cited in Osterman, defines digital literacy in a broader sense [8]. Digital literacy implies (a) the capacity to utilize electronic innovations, specialized gadgets or systems to discover, utilize and make data; (b) the capacity to comprehend and utilize data from a wide assortment of sources in numerous arrangements when it is introduced through PCs; and (c) an individual's ability to perform undertakings proficiently in a computerized setting. Digital literacy requires the capacity to read and interpret data through automated control to recreate information and pictures and to break down and apply new information procured from advanced settings. In short, digital literacy covers understanding, reproducing, and manipulating the information.

Spires and Bartlett simplify digital literacy into three groups consisting of finding and consuming, creating, and interacting with digital content. Developing skills to locate, understand, and consume digital content on the Internet is critical [6]. However, integrating effective teaching and the creation of Web search capabilities in the classroom becomes more challenging [9]. Domain knowledge, information on how to use search engines, necessary reading skills, and general web-based machine tool information are required to use and locate the digital content. Creating digital content in the classroom may increase engagement and encourage the development of skills needed for a technological society. Digital content can be a useful educational medium if it is communicated effectively [5]. Durriyah & Zuhdi add that these categories highlight complex skills and abilities. Skills like critical thinking and value analysis are necessary for digital content location and consumption [10]. Subsequently, imagination, innovation, and contextual awareness are crucial to create and disseminate digital content.

The digital practice is necessary for education. The use of digital technology effectively requires not only the acquisition of technical skills but also a change in classroom practice. Teachers should be aware of the possibilities of methods and implementations through digital technologies and teaching-learning facilities [11]. One of the best ways to create digital literacy is through the use of Information and Communications Technology (ICT) [12]. In terms of content and pedagogical system, teachers have a higher degree of autonomy. However, if they are not technologically literate, it will be challenging to find ways to interact with new media [13].

Sharma states that in a digital era, a teacher plays a crucial role as a facilitator of learning [14]. Several general teaching skills as a facilitator of learning are (1) networking skills, (2) communication skills, (3) thinking skills, (4) nurturing skills, and (5) management of knowledge. Networking skills make collaborative learning possible. In the digital environment, this skill is necessary to facilitate the collaborative learning of students and the teacher, and between the teacher and other teachers in sharing the material. Communication skills help students develop technical skills, such as creating online content or short videos and increasing the possibility of reaching out to a broader community of people sharing their ideas, projects, or chatting through the Internet. It can also reach out to learners' communities to solve daily teaching problems.

The incorporation of digital literacy in and out of school offers benefits for English learners and teachers, which is in line with Marav's study. Marav states that English and digital literacy have been closely connected because they are mutually beneficial and supportive, and both are resources for the students to live and learn [15]. When students are online, web-based English influences them to use this language. Internet technology is a valuable tool to help students learning English. Furthermore, English and digital literacy are also useful for students' future living, such as getting jobs or studying abroad.

Despite the advantages, the challenges of digital practices likely exist. Mantiri et al. describe the challenges to digital literacy and the solutions to overcome the problems [12]. The first problem is the language in which students are expected to master technology in a language they are not comfortable or familiar. In this case, instructors or teachers should ensure that students understand the new vocabulary before any demonstration or hands-on participation with the software. The second challenge is limited access. Many language learners come from low-income families, causing them to have limited access to technology. To overcome this problem, learners can utilize any technology at school or the public library. The third challenge is the different levels of experience. Any educator verifies that students have a different speed of learning. The solution is by differentiating learning, supported by the strength of digital technology, having the ability to adjust to the students' needs. The next challenge is the school infrastructure, which is hard to solve as it deals with the funds the school has. The school can cooperate with students' parents and the community to find fundraisers. Thus, it can be a way out for school infrastructure shortages. The last problem is keeping up. Living in a constantly changing world requires everyone to update the technology. Teachers should keep up with the latest, affordable technology to help students learn for their success.

From the explanation above, it is clear that digital literacy includes technological and critical thinking skills in accessing various media sources and then digesting, incorporating, and presenting knowledge in a clear and accessible way. These crucial skills should be developed for both teachers and students for future education.

There has been an increasing number of studies focusing on digital literacy [16] [17] [18]. Akayoğlu & Korkmazgil investigated Turkish pre-service language teachers' understanding of digital literacy and their digital literacy practices to present their perceptions incorporated in their everyday lives and future teaching experiences [16]. The researchers offered two perspectives of digital literacies, technical and functional skills. In terms of technical skills, they investigated how to use digital tools, while for functional skills, they studied how to use the tools for professional and personal benefit. The researchers also explored teachers' understanding of digital literacy. In a discussion, they stated that self-evaluation of their digital literacy skills reflected the multiple and varied definitions. Several pre-service teachers only reported knowledge and use of digital tools, and others reported that they could use the tools for communication with others and in their teaching. Some of them also showed overconfidence in their skills and awareness of online safety. The digital tools used by pre-service teachers showed that they mostly used social media platforms, LMSs, and quiz activities in their activities both on campus and in their practicum schools. They used social media tools widely for communication, pleasure, academic, and language learning. They also used digital tools in their teaching as materials either to enhance input and skills development or to facilitate motivation, autonomy, creativity, group work, and engagement.

Another study was conducted by Kurniawati et al. on digital literacy practices in the Indonesian EFL classroom [3]. The researchers compared the praxis between digital-immigrant VS digital-native teachers. The findings revealed that both teachers were at the stage of digital literacy adaptation reflected in the use of digital media in teaching. The stage was based on the category proposed by ACOT. The five phases of digital use included entry, implementation, adaptation, acquisition, and innovation. The categorization was used as a measure of digital literacy exhibited by the teachers to draw on learning experiences and the technology usage in the classrooms. In conclusion, the digital-immigrant teacher appeared adaptable to the new media implementation. For the second issue, the

students responded positively to the teachers' use of digital technology as it could make the English class more enjoyable and understandable.

The results of the two studies conducted by Kurniawati et al. and Akayoğlu & Korkmazgil essentially describe how the digital literacy practices of in-service or pre-service teachers are. The researchers explored digital literacy practices from how the teachers used digital media in their classrooms, the purposes, and also the students' responses [3][16].

The two studies provided several insights into the area of digital literacy practices. Nevertheless, they did not precisely aim to explore the teachers' perceptions of digital literacy in the level of classroom and schools. Akayoğlu & Korkmazgil study, for example, explored the pre-service teachers' perceptions in the area of understanding of digital literacy definition. Moreover, both studies have not discussed the challenges the teachers faced in practising digital literacy in the classroom. This point is essential to find the solution to the problems that appeared in applying digital literacy in the classroom and school levels. The present study, therefore, was conducted to fill the gaps by offering a more comprehensive aspect of digital literacy practices of EFL teachers in Indonesia.

In this regard, the current study aims to (1) determine teachers' perceptions of digital literacy practices in the level of classroom and school, (2) point out the digital literacy practices of EFL teachers, and (3) investigate the challenges faced by the EFL teachers in applying digital literacy practices in the classroom.

2. Methodology

This study utilized qualitative paradigm and investigated teachers' perceptions of digital literacy practices in the level of classroom and school, how their practices in the classroom, and the challenges they faced in applying digital literacy. The participants of this study were 15 teachers participating in a five-meeting-in-service English teacher program conducted by the Ministry of Education and Culture in Yogyakarta related to the implementation of the teaching-learning process integrating character building and National Literacy Movement. The teachers came from eleven state and private high schools spread throughout Yogyakarta City. Furthermore, the researcher for this study was the in-service teacher training trainer appointed by the provincial education department to disseminate and educate teachers relevant to the application of the teaching-learning process combining character building and the National Literacy Movement. In addition to being the teacher mentor, the researcher is also an English teacher in a senior high school in Yogyakarta. Therefore, the researcher has a close connection to them before the study took place. Thereby, it was easy for the researcher to obtain participant information.

The research focused on finding out teachers' understanding of digital literacy, their classroom practices, and the challenges they faced in implementing digital literacy. Each participant was given a set of open-ended questionnaire to gather information about their perceptions, practices, and the challenges they faced [17]. The questionnaire was presented using Google Form for the sake of flexibility. This questionnaire was expected not to put pressure on participants so that the information given can be accurate and trustworthy.

Semi-structured interviews strengthened the data collection. The interview style offered benefits because the interviewer had formal guidelines. However, if unexpected problems emerge during the interview, the additional information is still accepted. Datko explains that the researcher guides the conversation, but the participants are free to change or elaborate on the topic of the conversation [19]. Besides, before starting the interview, the interviewer had informed the research participants of the research goal to avoid bias. Due to the COVID-19 pandemic suggesting physical distancing and the schedules of the participants, the semi-structured interviews were conducted through a phone call. Three participants were randomly selected for these semi-structured interviews. The interviews were recorded to assist the data analysis. The interview guide adapted from Beach was adjusted with the condition of Indonesian school, and the topic of this research.

To enhance the trustworthiness of the data, the researcher employed member checking. Member checking is described as a quality affirmation process by which researchers look to improve the

precision, believability, and legitimacy of what was accounted for during a research interview. The participants' check aimed to see if what they communicated during the interview was a "fact" or an accurate representation [20]. Member checks can include sharing all of the findings with participants and enabling them to examine the findings critically [21]. Thus, the time to start transcription immediately after the interview should be arranged so that the researcher could ask for clarification if necessary [20].

The data were analyzed by following the six steps proposed by Creswell consisting of (1) arranging and preparing data, (2) analyzing all data, (3) coding the data, (4) describing the data, (5) describing the qualitative narrative, and (6) understanding qualitatively [21].

3. Findings

The findings were organized according to the objectives of the research. The first part presents the teachers' perceptions of digital literacy in the level of school and classroom, followed by their digital literacy practices. The last section highlights the challenges faced by teachers in applying digital literacy.

Of the 15 teachers planned to be the research participants, only 13 responded to the questionnaire sent via Google Form. Following the analysis of Google Form results, three teachers were contacted to have semi-structured interviews through a phone call. The interviewees were chosen purposefully, for they were varying in teaching experience. Their names Dewi, Tina, and Naura are pseudonyms. The semi-structured interviews were held to support the triangulation purpose and obtain further information. The way the researcher obtained the data was limited through online communication due to the COVID-19 pandemic. However, the data were comprehensive and could be explored deeply by the participants.

The participants ranged from three to twenty years of teaching experience from 10 different schools. It was identified that four teachers had less than ten years of teaching experience, seven teachers experienced in teaching for less than 20 years, and two teachers had more than 20 years of teaching experience.

3.1. The teachers' perceptions of digital literacy practices in the level of classroom and school

Teachers' perceptions of school conditions, mostly students' economic and social conditions, were grouped into three. Private schools tend to have students from high-income families, and only a few students coming from low-income families. Most state schools have students either from low or high-level income families. The different students' backgrounds influence the teaching-learning process, mainly when they use facilities. However, the data showed that all schools supported digital literacy practices. The 13 teachers stated that their schools were equipped with computers, free Internet connections in school areas, and LCD projectors in each classroom.

Dewi stated that *"There are some computers we, I mean teachers, can use. The numbers of computers in the teachers' room are enough for all of us. Those computers are connected to the Internet. So, it helps us to do our jobs, for example, for browsing"*. Besides, Naura said, *"Our school has been equipped with an Internet connection that can be accessed from all school areas. The teachers and students usually utilize this facility when they are at schools for some purposes. For example, searching for information, social media, or online communication."*

Although these 13 schools provide an Internet connection, some teachers stated that this facility had a limitation regarding Internet connections due to school financial problems.

Tina said, *"Our school put some spots to access the Internet for everyone at schools. Of course, it is not sufficient for all of us because Internet users during school time are more than the school provided. We cannot reach all of the Internet sites. We have a good connection in the Information and Technology laboratory, but we cannot use it if the rooms are used."*

Based on the questionnaire, it was found that most teachers used their laptops or smartphones to access the Internet as the facility in teaching and learning activity when applying digital teaching literacy in the classroom.

Naura stated, *"I usually use my laptop or smartphone when I teach in the classroom. A laptop is a must for me in teaching. I can show the materials and find the information through the Internet". Tina also uttered the same ideas, "Nowadays we cannot teach without having a laptop in the classroom. It is because I use it for teaching preparation, lesson plans, teaching materials, and so on. A smartphone is also essential. It is used for communication and connection to the virtual world. We have WhatsApp group for MGMP (subject teacher coordination) for the sake of teaching-learning activity and information sharing."*

3.2. The practices of digital literacy of EFL teachers

The second point investigated in this research was the digital literacy practices of EFL teachers. The results of the questionnaire and interview revealed several digital technologies the teachers used. This information was grouped into a variety of digital technology based on its function. It was identified that all teachers used a presentation tool in the classrooms. Most of them used Microsoft Office Powerpoint combined with some pictures, audio, or audiovisual media. Another frequently used tool was e-resources, such as YouTube videos, Google, e-book, and any sites accessed by the Internet. The next category was the social media tool. There were 9 out of 13 teachers who chose social media tools. Unsurprisingly, the most commonly used social media were WhatsApp and Instagram. Almost all teachers in this study had either social media account or WhatsApp since it was built-in features in their smartphones. Five teachers were found to use the learning management system. They mentioned Google Classroom and the online learning system created by the school. Other technologies used were online storage such as email and Google Drive and quiz activities such as Kahoot and Quizzes.

The answers about the reasons for choosing the digital technology in the classroom were categorized into some items. The first reason was that digital tools were exciting. Many digital tools can be used, and teachers can choose the tools suitable for the learning goal. The next reason was that they were more efficient as presentations or e-book could save more papers.

Tina said, *technology helps me much in the teaching-learning process. When I use digital tools, the students are more interested. They want to participate actively in the lesson though they have studied some hours."*

Naura uttered, *"When I want to deliver the material, I use MS Office Powerpoint. When I want to test the students, I use Kahoot. I can also choose Youtube for uploading the speaking assignment or role play. So, there are many options to choose from."*

When asked about the students' responses toward the use of digital tools in the classrooms, there was a similar answer that the students become enthusiastic and more interested in following the learning. Eight teachers said that students were more excited when they used digital tools in the teaching-learning process. Four teachers stated that digital tools could make the students more interested in performing classroom activity, and one said that it would make students happy and enjoyable.

The questionnaire with open-ended questions and semi-structured interviews provided information that the teachers used digital literacy for some reason. The specific purposes of using digital literacy were related to teaching particular skills, whether as pre, while, and post-activity. They used digital literacy in teaching listening, speaking, reading, writing, and doing assessments. They got the benefits of digital literacy to provide authentic materials, increase students' motivation and creativity, and make a better teaching process in participation and engagement.

Naura remarked, *"I used digital literacy during the lesson. Sometimes I ask the students to find information as a warm-up activity. My purpose is to get students' attention and participation."* Dewi also argued, *"Since we are using the 2013 curriculum emphasizing the scientific approach, I use digital literacy in all learning strategies such as problem-based learning, discovery learning, or project-based learning. The objectives of digital literacy are that students become more creative, and the most important is that they will get a better understanding of the material discussed."*

3.3. *The challenges faced by EFL teachers in applying digital literacy practices in the classroom*

Although many teachers claimed that they obtained many benefits, there were some problems in using digital literacy in the classroom. Most teachers claimed that the main barrier was poor connectivity. Every school provided the Internet connection for all students, teachers, and officers at schools. Nowadays every student has a mobile phone connected to the Internet, and almost all teachers have laptops or mobile phones. They accessed the Internet for communication and teaching and learning activities. As a result, the high demand for Internet connectivity cannot be fulfilled by schools. As Dewi explained, *“We have significant numbers of school Internet users. There are 21 classes and 80 teachers in learning and teaching activities. Sometimes, we have difficulty accessing the Internet during school time.”*

The second problem was the teachers' knowledge of technology. It is understood that a teacher has to search through the Internet, operate the software, and use the digital classroom tools while technology is always changing. Therefore, teachers must equip themselves with such ability. So far, professional development and training are hardly held by educational institutions. Thus, there are still teachers illiterate with technology.

Tina stated, *“For five years I do my profession as a teacher, we rarely do training in teaching technology. As a result, not all teachers have an excellent ability to operate computers, laptops, or digital tools, except the teachers learning it by themselves or with their colleagues.”*

The next hindrance was the teachers' attitudes. Not all teachers welcomed the teaching-learning activity combined with digital literacy. They thought that the teaching-learning process still ran without digital tools. Their goal was to achieve students' competence. As Tina pointed out:

“I observed some teachers, mainly from elder ones, are not welcomed with technology. They tend to use traditional teaching strategies. They prefer teaching without using digital tools or asking students to do digital literacy.”

The last problem came from students. Practising digital literacy requires a strong commitment to do what they have to accomplish. They sometimes did not focus on their classroom works. Instead of doing schoolwork, they searched for other information or played games using their laptops or mobile phones.

Naura remarked, *“In general, students are interested and enthusiastic in technology, but some of them are not focusing on the materials or lessons. They will access other sites or Internet tools if teachers do control them.”*

4. Discussion

This study discusses how teachers' perceptions of digital literacy practices at the level of school and classroom. According to the research participants, the digital literacy practices were influenced by schools. Schools are the institutions supporting digital literacy by providing infrastructure, equipment, and connectivity. The results of the questionnaire and semi-structured interviews revealed that all schools had offered internet access, computer access, and LCD equipped in classrooms. It helped teachers in applying digital literacy, generally at school and specifically in the classroom. In a teaching-learning activity, teachers mostly used laptops and mobile phones, while students used mobile phones. Connecting to school internet access and personal access were alternative uses since the schools had limited access to the Internet. This condition was due to financial matters. Such a condition did not support the learning-teaching process. Johnson et al. explain that effective technology integration needs extensive access to equipment to run educational computer programs [22]. Inconsistent computer access caused the difficulty for teachers to apply technology into a classroom activity. It implies that school cannot rely on the Internet budget on government or school management finance. Still, it needs to find alternative funding like establishing partnerships with other institutions, local businesses, or universities.

The second aim of this study is to discover digital literacy practices in the classroom. The teachers stated that some digital technologies were used in their classrooms, such as Microsoft Office

Powerpoint. Although no longer categorized as a part of a new digital domain [16], it is a useful tool in learning and teaching activity. The following digital tools frequently used were YouTube videos, Google, and e-book. YouTube is known as one of the most popular online media. It helps students to get a better understanding of their lessons through a video presentation. According to Abdulrahman Almurashi, when students watch nature and real-life images, they receive positive indicators. Watching YouTube videos will help students to memorize the events [23]. Terantino notes that YouTube not only makes the learning process more meaningful but also fun [24]. Google, as a search engine, is another tool for digital literacy. Google is an example of a web-based tool to help everyone to find information. It is [gate](#) searching for information. The e-book was another source in digital literacy used by teachers. [An e-book is an electronic version of a printed book which can be read on a computer or a designed electronic device.](#) It can be downloaded to a computer or a laptop and is read on the screen. The reason for choosing e-book was that it was portable and used less space. Students did not need to bring the physical book to read it. The e-book is also searchable, meaning that a few clicks will provide a variety of wide range of subject areas. Teachers also used some online social media such as Instagram, WhatsApp, and Twitter. These media were very close and familiar with their daily usage on their mobile phones.

In terms of using digital technology in the classroom, teachers noted some reasons such as attractive for students, reducing students' boredom, and a variety of digital tools that could be used. These reasons are in line with Kessler, G., & Bikowski (2010), stating that computerized, interactive tools are motivating for learners. Warschauer and Healey (1998, as cited in Brown, 2001) declare that integrating digital technologies in the English language classroom allows for individualization in large classes, facilitates multimodal practice, encourages collaboration, and increases the fun factor learners. Regarding students' responses toward digital technology for literacy, they were enthusiastic, interested, and enjoying the teaching-learning process. It matches with teachers' reasons for using some digital tools. The use of digital literacy aims to get students to engage and participate and achieve the effectiveness of learning objectives. Rice, Cullen, & Davis (2011) explain that using technology tools gives essential and positive influences. Using technology in educational settings makes the learner more interested in the subject and decreasing learning time.

Teachers faced several challenges in using digital literacy in the classroom. The problems were divided into three categories. Defective equipment and Internet access is the first problem. If a teacher does not have a fast Internet connection, digital literacy practices are impossible [24]. Celik, S & Aytin, K argue that the lack of access to computers and [the Internet](#) are considered to be a significant problem [25]. The next barriers were categorized into [intrinsic factors such as teachers' knowledge in technology, their attitudes toward digital technology, and students' commitment to apply digital literacy.](#) The school and the teachers can solve this hindrance. To realize effective technology integration, school institutions should identify and provide training to meet students' and teachers' needs. Schools can facilitate training for the application of digital platforms, whether for a classroom activity or assessment. Teachers, as an individual or as a community, should increase their professional development in technology since it always changes and develops. Furthermore, to reach the goal of digital literacy practices in the classroom, there should be standardized rules for students in using mobile devices. Precise regulation and control from teachers can prevent students from browsing inappropriate sites.

5. Conclusions

Digital literacy has become a critical point to be included in teaching and learning activity. This ability is essential for students in the 21st century. Digital literacy not only makes students aware of the existence of technology and how to use it, but it can also prepare them to use the technology critically.

Our findings showed that digital literacy had been implemented in schools in Yogyakarta. Several schools supported the implementation of digital literacy by facilitating equipment and connectivity. There was no difference between state or private schools. They provided some equipment and Internet access to allow students and teachers to integrate digital literacy into teaching and learning activity.

The difference was on the amount of the connectivity the schools could afford. As a result, some schools faced problems in access constraints. It is suggested that schools establish a partnership with other institutions to grant a fast connection.

In terms of digital literacy practices in classrooms, teachers used some platforms such as Microsoft office Powerpoint, YouTube video, Google, e-book, Instagram, WhatsApp, quizzes, and school LMSs. The goal to achieve became a consideration in deciding the digital tools used. The digital tools were expected to help teachers in the engagement, participation, creativity, and effectiveness of the learning process. The digital tools they used were also implemented with specific learning strategies, as suggested in the 2013 curriculum for student-centred learning with character building and critical thinking.

Teachers faced difficulties in using digital literacy in the classroom, such as connectivity, teachers' knowledge, teachers' attitudes, and students' commitment. These constraints should be overcome together by school administrators, teachers, and local educational institutions.

For further research, it is highly recommended to study how digital literacy put into practice, especially for teaching and learning strategies. Consequently, technology will help students think critically, motivate them to take control of their learning, allow them to learn at their own pace through differentiated learning, and prepare them to be challenging 21st century generation.

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