

---

## Digital Literacy in 21<sup>st</sup> Century: A Portrayal of An Online Efl Class in Indonesia

Mela Nurmala<sup>1</sup>, Farouk Imam Arrasyid<sup>2</sup>, Zakky Yavani<sup>3</sup>

IAIN Syekh Nurjati Cirebon

<sup>1</sup>nmela97@gmail.com,

<sup>2</sup>faroukarrasyid@gmail.com,

<sup>3</sup>yavaniaja@gmail.com

---

### Article Info

#### Article History:

Received: January 6<sup>th</sup>,  
2022

Accepted: April 15<sup>th</sup>,  
2022

Published: May 11<sup>th</sup>,  
2022

---

#### Keywords:

Digital literacy, Online  
EFL class, 21<sup>st</sup> century,  
Students' Needs

### Abstract

*The dominance of technology in everyday life emphasizes the importance of digital literacy for people all over the world. Demand for digital literacy integration penetrates all aspects, including the teaching and learning process in Indonesia. Many researchers have already explored digital literacy in the classroom and observed it in English classroom-based learning. However, to depict more what factors are needed to develop digital literacy in online EFL classes are not many, mainly in the Indonesian context. To investigate the case, this study employed a qualitative case study approach using the following instruments; a semi-structured interview with a knowledgeable English teacher in utilizing technology, online classroom observation, and documentation. The data were then analyzed, interpreted, and presented using descriptive explanation. First, it was found that students used various digital tools and performed several digital literacy elements (cultural, cognitive, communicative, and critical) in English online learning. Nevertheless, the lack of technology sources and students' readiness in utilizing technology are regarded as barriers to implement digital literacy in practice. Second, to develop digital literacy in English online learning, students are required to use various digital tools and to recognize a variety of features across digital tools, communicate appropriately with teachers and classmates through digital tools, as well as use technology to evaluate information. So, the guidance from the teacher regarding aspects of digital literacy, and students' involvement in multiple digital environments are considered as the needs of students to develop digital literacy in the 21<sup>st</sup> century.*

faroukarrasyid@gmail.com yavaniaja@gmail.com
---

## INTRODUCTION

Presently, people live in a universe where technology develops and grows at an incredible rate. In this regard, technological development has been steadily increasing over time. In the digital age, digital technology is increasingly becoming a more and more essential part of our lives. People use many types of technologies in a variety of fields of life. All people from any kind of field can take a huge advantage from digital technology. Today, most young people's lives revolve around smartphones and other technologies and grow up with these technologies almost in everyday life. The necessity for technology use is increasing that digital literacy is needed. Furthermore, in order to adapt well in the digital age and participate effectively in 21<sup>st</sup> century learning, that digital literacy is totally needed. Digital literacy is vital that every human being should master in this day and age (Suhendra et al., 2019, p. 1214). The need for digital literacy integration affects all sectors of life, including the teaching and learning process in Indonesia. Furthermore, today, Indonesia is becoming

*Digital Literacy in 21<sup>st</sup> Century: A Portrayal of An Online Efl Class in Indonesia*

one of the coronavirus-affected countries. The virus's spread has remained a source of concern up until now. Almost the entire field, including the education field has been affected by the Coronavirus outbreak. The teaching and learning processes were significantly altered as a result of this phenomenon. The school shifted school learning into online learning. Then, until now, most schools in Indonesia have implemented long-distance classes with the help of digital technology to anticipate the spread of the Covid-19. To participate fully in long-distance learning, students need to utilize various digital tools that are usually used in the teaching and learning process. Students must be digitally literate in order for teaching and learning that incorporates technology to be successful (Tang & Chaw, 2016, p. 62).

Recognizing its importance, many studies on digital literacy have been conducted within Indonesian context. For instance, Suhendra, Iswara, and Sartono (2019) explore teacher's perspective on learning-based digital literacy. Elementary school teachers view digital literacy as more important to be mastered in life,

Mela Nurmala, et al.

including in the teaching and learning process. In this recent year, the importance of mastering digital literacy is just as crucial as understanding language. Meanwhile, Pratolo and Solikhati (2020) investigated digital literacy implementation of junior high school teachers and teachers' strategy to cope with the challenges in implementing digital literacy. They are explored that EFL teachers used computers and smartphones as digital literacy sources in the digital literacy classroom, teachers in school district faced some challenges in practicing digital literacy in the classroom and the teachers always prepared for the backup activity as teachers' strategy to cope with the challenges in implementing digital literacy in English classroom. Then, Sagita et.al (2019) investigated the students' digital literacy skill to solve learning problems and suggested that it is still needed the improvement of students' digital literacy skills, especially in aspects of composing knowledge and aspects of evaluating and criticizing the content of information. Nonetheless, the findings so far have not clearly addressed the description of an Islamic junior high school students' digital literacy implementation in online learning and the

need to develop students' digital literacy skills. Thus, this research was conducted to dig deeper into information about what factors are needed to develop students' digital literacy. In detail, this research attempts to answer the following questions: (1) how is the implementation of digital literacy skill of Islamic junior high school students in online EFL classes?, and (2) what factors are needed to develop students' digital literacy in EFL classes?

In the 21st century, literacy skills are one of the most crucial skill sets to be mastered by people worldwide. Some studies have defined digital literacy in several ways. According to Gilster, *digital literacy* means the ability to effectively understand and use information from various digital sources (Bawden, 2001, p. 18). In the 1990s, the concept of digital literacy was applied to perform the capability to both read and understand hypertext (Suhendra. et al., 2019, p. 1209). Suhendra. et al. (2009) stated that digital literacy is the awareness and abilities of individuals to apply, evaluate, analyze digital resources appropriately (p. 1210). Digital literacy requires the understanding of digital tools, critical thinking skills, and social engagement (Hague & Payton,

2010, p. 19). Further, Mantiri et al. (2019) clarified that being digitally literate is having the knowledge and ability to use various technology tools for various purposes (p. 1301). Simply put, digital literacy is one of the 21st-century skills that allow people to understand, use, analyze, and evaluate any technology tools and various digital resources appropriately and strategically for various purposes in everyday life.

According to Belshaw in his book, *The Essential Elements of Digital Literacies* (2014, pp. 43-58), digital literacy has eight essential elements, including cultural, cognitive, constructive, communicative, confident, creative, critical, and civic. The eight essential elements are essential and interrelated to each other.

- 1) Cultural element; it covers the ability to behave appropriately online, move effectively between different environments, and understand when the appropriate time and place to use various digital tools are (Belshaw, 2014, p. 45). It means that when people slip across different tools, people need to change how they act and how they interact with others. For

example, the way people communicate on WhatsApp group chat should be different from how they chat with their friends on WhatsApp personal chat.

- 2) Cognitive element; it focuses on comprehending the concept of computer literacy which entails the capacity to use multiple platforms, devices, and software as well as recognizing various features across digital tools (Belshaw, 2014, p. 47).
- 3) Constructive element; it refers to the ability to build and utilize someone's work that is stored digitally in responsible manner and invariably giving them credit for what they contributed to the project. It is also necessary to be knowledgeable about Copyright rules and the various types of Creative Common Licenses in order to be Constructive (Belshaw, 2014, p. 49).
- 4) Communicative element; it covers the ability to communicate through digital technologies and understanding and also applying specific norms and beliefs across

all digital devices (Belshaw, 2014, p. 49). To carry out proper communication, students can send the messages that are to the point, use good grammar, avoid abbreviations or inappropriate slang words and know the perfect time to send those messages (Ribble., et al, 2004, p. 8).

- 5) Confident element; it involves understanding and capitalizing upon ways in which the digital world differs from the analog. Developing the confident element of digital literacy involves solving problems and managing one's own learning in digital environments (Belshaw, 2014, p. 51).
- 6) Creative element; it is about using digital technologies and techniques to create or achieve new things ("not necessarily original") that somehow add value (Belshaw, 2014, p. 53). Fostering the creative element of digital literacy in the classroom involves applying element of creativity to subject knowledge, such as using digital technologies to perform audio-visual

presentations (Hague & Payton, 2010, p. 24).

- 7) Critical element; it is all about analyzing the power structures and assumptions that underpin literacy practices. Learning how to manage our personal literacy practices and considering how this affects our security and privacy is a necessary component of developing digital literacy (Belshaw, 2014, p. 56).
- 8) Civic element; it is about being able to use digital skills to help society and be a more considerate citizen, such as participating in civic acts using public and private digital service. Individuals must understand their digital rights and responsibilities as they grow in civic element. As digital technology users, we all have the responsibility to use various digital technologies in appropriate manner and the rights to privacy, security and freedom of expression in the digital world.

In sum, someone mastering digital literacy can use technology strategically to discover and evaluate information, connect and collaborate with family and friends,

produce and share authentic materials, and use the internet and technology tools to achieve various goals, including academic, professional, and personal goals. The digitally literate person can search and gather reliable information from various kinds of search engines and applications. The digitally literate person also can evaluate and analyze any kinds of information that floods on the internet and can differentiate between tangible information and fake information. Many researchers have examined at digital literacy in classroom-based learning but not in online learning, it becomes more crucial for students for being digitally literate when conducting online learning. All the students need to develop their digital literacy skill to be able to participate actively in online learning. Based on that issue, this study tries to identify what factors are required to improve students' digital literacy skills.

#### **METHOD**

The research employed a qualitative case study approach to obtain an exhaustive understanding on the implementation of digital literacy and the needs for digital literacy development of EFL Junior High School Students in the 21st century. The research is conducted in

an Islamic junior high school, particularly in first grade. The qualitative data were obtained from a face-to-face interview with a knowledgeable English teacher in utilizing technology and online classroom observation. A semi-structured interview was carried out to obtain the information on how digital literacy is implemented in EFL classroom and problems faced by students in doing digital literacy activities. Furthermore, online classroom observation was carried out to gain actual data about digital literacy activities performed by the students. Besides, documentation was also utilized to complete the data. The data were then analyzed, interpreted, and presented using descriptive explanation.

#### **RESULTS AND DISCUSSIONS**

The result of the study explored how the students implemented digital literacy and the barriers faced in implementing digital literacy, and also the needs of students to develop their digital literacy skills.

##### **1. The implementation of digital literacy during online English learning**

Based on the result of class observation and interviews with the research subject, it was found that both teacher and seventh-

grade students used computers and smartphones as digital sources. The findings also showed that teachers and students utilized various digital tools as learning media in English classrooms. Many different types of digital tools were employed as media in English online learning to meet learning objectives. In the teaching and learning activities, the teacher and students utilized various applications on their gadgets such as WhatsApp, Zoom Cloud Meeting, and YouTube. Besides, both teachers and students also used Learning Management System (LMS) in conducting online learning. The concept of using various platforms such as LMS, WhatsApp, and video conferencing supports the idea of Agustina and Nandiyanto (2021) that LMS, group chat feature in WhatsApp, and video conferencing such as Zoom meeting can facilitate distance learning (p. 97).

In the teaching and learning process, particularly in opening stage, the English teacher

utilizes an audio feature in WhatsApp to communicate with students. This finding reinforces the prior study of Wiratomo and Mulyana (2020) who revealed that WhatsApp is an excellent tool for discussion and communication in the online learning process (p. 70). The English teacher opened the class through WhatsApp audio feature by saying greetings, stating the lesson's purpose, explaining the activities that the teacher and students will do in the lesson, and also motivating the students to stay enthusiastic about learning even though the learning process is carried out online by providing an overview of the advantages of learning the lesson to be learned. Besides, teachers and students also used WhatsApp as a means in accommodating students' assignments. The teacher asked the students to take a photo of their notes and send it via a private chat on the WhatsApp application. Teacher and students use WhatsApp as a medium of learning since it is pretty easy to operate and the majority of

students have used it before. The use of digital tools by teachers and students shows that teachers and students mostly use the WhatsApp application. This finding supports the previous investigation of Djamdjuri & Kamilah (2020) who reported that almost all teachers and students use WhatsApp in the process of online learning (p. 69). Then, the teacher and students used LMS as a part of learning media since it is part of school policy. The teacher and students utilize various features in LMS to conduct an online learning. For instance, the teacher asks the students to fulfill their attendance by completing the institution's learning management system data.

Furthermore, the finding also shows that Zoom Cloud Meetings and YouTube applications were used by teachers and students to deliver English materials. The teacher explained the teaching materials, and the students were asked to observe and scrutinize the teachers' explanations about the materials. The English teacher explained the

teaching materials virtually through an online meeting application with an instant screen sharing concept named Zoom Cloud Meetings. Then, on another occasion, the English teacher also used YouTube as a medium of learning. The teacher recorded a video about the explanation of the lesson then uploaded the video on his YouTube channel. Then ask the students to watch the videos. The availability of YouTube video as a means for learning English online during the times of Coronavirus outbreak is really beneficial for students (Simanjuntak et al, 2021, p. 157). It enables students to watch English materials repeatedly, anytime and anywhere.

The findings also shows that teachers and students performed several digital literacy activities in conducting online learning. Some digital literacy elements which are performed by the English teacher and EFL students in conducting online English learning. Those digital literacy skills are as follows:



**a) Cultural element**

The cultural element is involved when the teachers ask the students to use a variety of digital tools while also being able to customize how they interact within these tools. However, several students do not apply this Cultural understanding in the English classroom. It is shown by students who do not know how to interact through the group chat room. Several students were sending non-class-related messages to the class group messages several times. Some students sent video links that were not related to learning materials, as shown in the Figure 1.

**b) Cognitive element**

Students' ability to utilize a range of digital tools is totally involved when both teacher and students used various devices as learning media in an online English classroom. Most of the students were able to operate the devices that were used as learning media. However,

students' ability to utilize digital technologies for learning purposes is not evenly distributed among them. To illustrate, several students are still confused in conducting CBT in the Learning Management System (LMS) and joining audio in Zoom Cloud Meeting application and requested extensive instructions from their teachers after experiencing difficulty in conducting middle test examination online and joining online meetings in Zoom applications.

**c) Communicative element**

During times of pandemic, when the teaching and learning process is mostly handled digitally, the teacher utilizes the feature of group chat rooms as a means to communicate with their students. Online communication is a bit different than communication in a face-to-face setting. In online communication, people, particularly teachers and students commonly communicate via written text

where the body language cues and immediate feedback from the interlocutor is missing. Therefore, to ensure the messages that we send are received correctly, it is significant for students to comprehend some common rules or norms in online communication. Nevertheless, the researchers noted that a number of students do not reflect have the ability to communicate with their teacher in an appropriate manner online. It may be seen in the way students communicate with their teachers, which is similar to how they communicate with their classmates. The students used many abbreviations, inappropriate slang words, stickers and emojis in their communications to their teacher in online group discussions such as WhatsApp group as shown in figure 2. Even though communication via social media such as WhatsApp has become

commonplace, students still have to pay attention to the existing ethics or norms when sending text messages to the teachers. If the group members want to send or reply to messages, they need to pay attention to some rules, for example communicate politely by using proper spelling and grammar (Jumiatmoko, 2016, p. 62).

**d) Critical element**

A lot of the information on the internet is credible. However, it is undeniable that much the information on the internet is misleading and fake news. This digital literacy element was involved when students receive and share any kind of information. Students need to make sure the information they share and receive is correct. Unfortunately, it showed that the students' ability to ensure the trustworthiness of the information that they share seems like it has not been mastered by all the English students yet. It is indicated by

a number of students that still share the fake news in WhatsApp groups, as shown in figure 3.

Further, the findings showed that the students in an Islamic junior high school experienced some crucial barriers when implementing digital literacy in English classrooms. The research's findings highlighted two main problems faced by both teachers and students in implementing digital literacy in EFL online learning in an Islamic junior high school. The first problem is the school has a lack of technical support in utilizing technology sources. The school has insufficient support in internet connectivity since the school limits the internet quota usage due to avoiding spending significant funds. The implementation of digital literacy in EFL classrooms must be supported by adequate infrastructure. Pratolo & Solikhati stated that adequate infrastructures have a significant role in enhancing learners' skills in

utilizing various types of technology (2020, p. 1511). Thus, to implement digital literacy run smoothly, then, the schools need to provide sufficient connectivity and equipment, such as the availability of computers in a school that match the number of student needs and smooth internet connection. Similar to Pratolo & Solikhati 's statement, that a school should provide high-performing technology to enhance students' digital literacy skills (2020, p. 1511).

The second problem is students are not ready to access technology. The students are not yet ready to implement digital literacy in EFL learning since some students do not have technology sources such as computers or gadgets as technology sources. It is caused because they live in a boarding school that forbids them to bring the devices or limits them in using the devices. Consequently, it is hard for them to follow online learning and experience digital literacy. Some students found the

difficult to join the class on a schedule that mostly runs in the morning until noon since they get a turn to use the gadget on weekends for students who live in the boarding school. Consequently, they missed a live meeting that their teacher held. Besides, students are not yet ready to access technology because of the poor internet connection. Some students have adequate devices, but they lack internet data since they come from low-income backgrounds. They do not have enough money to purchase an internet data package. Consequently, it is difficult for them to access the internet and experience digital literacy. Meanwhile, during the coronavirus pandemic in an Islamic Junior High school, the English classroom is conducted online through various applications on the smartphone that can be operated on if the users connect to the internet. Therefore, online learning or distance learning only works if both teachers and students have internet

access. A similar conclusion was reached in previous research of Handarini & Wulandari that online learning requires adequate facilities, such as devices and internet networks (2020, p. 502). The internet network holds a significant part as the facility to promote online learning's quality. With a sufficient internet connection, the students can access any application used as a medium of learning, and then the teaching and learning activities can run well. On the other hand, if the students do not have sufficient internet connection, they can run into trouble and get less effective online learning. As revealed by Djamdjuri & Kamilah that online learning might feel less effective because there are problems with internet signals and data connection (2020, p. 69).

Further, students are not yet ready to access technology because of the lack of students' ability to utilize technologies. Not all students have the skills in operating devices like gadgets to use as a medium in the English

online learning process. Most students can operate computers or gadgets for playing games, watching YouTube videos, and connecting with others, but in utilizing smartphones in online learning, their skills are still limited. Thus, it creates the opportunity to implement digital literacy in EFL learning slightly. Having the digital competencies such as utilizing technology sources creates more opportunities for students to take effective and efficient online learning. This belief reflects the conclusion in prior research of Shopova (2014) that students' digital literacy development is pivotal to increase the effectiveness and efficiency of the learning activities (p. 1).

## 2. The Needs Of Students To Develop Digital Literacy Skills

Based on the analysis, it can be concluded that there are several things that are needed by students to develop digital literacy in English classrooms; (1) the availability of adequate School Infrastructures, (2) Teachers' guidance, and (3) immersed into digital environments.

### a) The adequate school infrastructures

Considering the problems that there are some students who find the difficulties to experience and develop their digital literacy in English classroom since they lack technology sources, then, the availability of technology sources is genuinely needed. Adequate school infrastructures play essential roles in the success of digital literacy implementation in the classroom (Pratolo & Solikhati, 2020, p. 1510). Adequate school infrastructures allow students to get digital literacy experiences. The schools should expand access to digital technology for all students by increasing the availability of high-quality digital technology (Scottish Government, 2016, p. 19). The school facility has crucial roles in solving students' access to the school system and to enhancing students' digital literacy experiences. Thus, it is needed

an effort from the school to improve high-performing technology sources with stable internet connection that all of the students can openly access. So, the students who cannot access the technology and internet in their home, can come to the school and utilize the computers provided by the school to take online learning and develop their digital literacy skills. In many ways, digital technologies and online resources have enhanced studying more powerful. The integration of technology in the classroom has beneficial impacts on students' motivation and confidence, as well as on their ability to improve their technology skills (Costley, 2014, p. 9). Therefore, the school needs to provide adequate school infrastructure for students to enhance students' technology skills and help the students experience digital literacy especially in English classrooms.

**b) Teachers' guidance**

Considering that several students in the English classroom do not reflect having digital literacy skills and knowledge, then, besides the school providing technologies that can accessed by all the students, it is no less important to involve students in discussion on digital literacy. Students require the direction from educators in order to achieve the understanding and skill of digital literacy. The teacher needs to socialize how to behave online and introduce students with the guidelines for using multiple platforms devices in the English classroom. As stated by Sharp in her study (2014, p. 77) that students should be taught digital rules of behavior that spells out what is and is not acceptable in terms of technology use. The students need to require guidance or direction from their teachers regarding any aspects of

digital literacy in order to enhance their digital literacy.

**c) Immersed into digital environments**

Belshaw (2014, p. 48) stated that the all elements of digital literacy can be developed through immersion. It means that to acquire digital literacy, it can be through being immersed in numerous online environments and fostering students to use a variety of devices, applications, and features. Furthermore, Hague & Payton (2010, p. 21) claimed that developing digital literacy in school context refers to provide the opportunity for all students to utilize digital technologies that support the encouragement of their digital literacy skills and help them to achieve their learning objectives. Therefore, students need to immersed into digital world to develop their digital literacy skills. Hence, to foster and expand the use of technology by students, the English teacher need to

empower students to engage in the digital world and incorporate digital technology into teaching and learning activities. As a result, it is necessary for teachers as classroom manager for planning and organizing method of teaching that support the encouragement of students' digital literacy.

**CONCLUSION**

The dominance of technology usage in our daily activities emphasizes the significance of digital literacy for most of the world's population. In the school settings, the implementation of digital literacy in English classroom was actualized by using and utilizing WhatsApp application, Google form platforms, Learning Management System, Zoom Cloud Meetings, YouTube and online quiz platforms to accommodate students' assignments. Furthermore, in the process of implementing digital literacy in English classroom, the students faced with two main problems, including (1) the lack of school facilities and (2) students not ready to access technology. Further, in order to build their digital literacy skills, students must be involved in the digital

environment. As a response, it is necessary to provide every student with the chance to use digital tools, as well as teaching and learning methods in the classrooms that involve components of digital literacy.

#### REFERENCES

- Agustina, S. & Nandiyanto, A. B. D. (2021). The effectiveness of distance learning using learning management system media and WhatsApp groups at senior high school. *Indonesian Journal of Multidisciplinary Research*, 89-98
- Bawden, D. (2001). Information and digital literacies: a review of concepts, *Journal of Documentation*, 57 (2), 218-259
- Belshaw, D. (2014). *The Essential Elements of Digital Literacies*. Retrieved from <http://digitalliteraci.es>
- Costley, K. C. (2014). The positive effect of technology on teaching and student learning. *Arkansas tech University*.
- Djamdjuri, D. S & Kamilah, A. (2020). WhatsApp media in online learning during covid-19 pandemic, *English Journal*, 14 (2), 69-74
- Hague, C & Payton, S. (2010). *Digital literacy across the curriculum*, available in [www.futurelab.org.uk/projects/digital-participation](http://www.futurelab.org.uk/projects/digital-participation).
- Handarini, O. I & Wulandari. (2020). Pembelajaran daring sebagai upaya study from home (SFH) selama pandemi covid-19, *Jurnal Pendidikan Administrasi Perkantoran*, 8 (3), 496-503
- Jumiatmoko. (2016). WhatsApp Messenger dalam tinjauan manfaat dan adab, *Wahana Akademika*, 3 (1), doi: 10.21580/wa.v3i1.872
- Mantiri, O., Hibbert, G. K., Jacobs, J. (2019). Digital literacy in ESL classroom. *Universal Journal of Educational Research*, 7(5), 1301-1305 doi: 10.13189/ujer.2019.070515
- Pratolo, B. W., & Solikhati, H. A. (2020). The implementation of digital literacy in Indonesian Suburban EFL classes. *International Journal of Scientific & Technology Research*, 9(1), 1508-1512
- Ribble, M. S., Bailey, G. D & Ross, T. W. (2004). Digital Citizenship, *Learning and Leading with Technology*, 32 (1), 7-12
- Sagita, D. D., et al. (2019). Students' digital literacy skill to solve learning problems, *International Journal of Innovation*, 5 (6), 112-122
- Sharp, L. A. (2014). Literacy in the digital age, *Literacy in the Digital Age*, 24, 74-85
- Shopova, T. (2014). Digital literacy of students and its improvement at the university, *Journal on ERIES*, 7 (2), doi: 10.7160/eriesj.2014.070201
- Simanjuntak, U. S., Silalahi, D. E., Sihombing, P. S. R., & Purba, L. (2021). Students' perceptions of using YouTube as English online learning media during Covid-19 pandemic, *JOLLT Journals of Languages and*

*Digital Literacy in 21<sup>st</sup> Century: A Portrayal of An Online Efl Class in Indonesia*

Mela Nurmala, et al.



- Language Teaching*, 9(2), 150-159, DOI: <https://doi.org/10.33394/jollt.v%vi%i.3567>
- Suhendra, I., Iswara, P. D., & Sartono. (2019). Teachers' perspective on learning based digital literacy. *The 2<sup>nd</sup> International Conference on Elementary Education*, 2(1), 1204-1216
- Tang, C. M & Chaw, L. Y. (2016). "Digital literacy: A prerequisite for effective learning in a blended learning environment?" *The Electronic journal of e-learning*, 14(1), 54-65
- The Scottish Government. (2016). *Enhancing Learning and Teaching Through the Use of Digital Technology*. Edinburgh: OGL.
- Wiratomo, Y. & Mulyatna, F. (2020). Use of learning management systems in learning efforts during a pandemic. *Journal of Mathematical Pedagogy*, 1(2), 62-71