



Digital Literacy Analysis of Elementary School Students Through Implementation of E-Learning Based Learning Management System

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ABSTRAK

Pandemi covid-19 yang telah melanda dunia mengakibatkan perubahan dalam segala aspek kehidupan termasuk dalam aspek pendidikan. Penyelenggaraan pendidikan awalnya diselenggarakan secara tatap muka, dikarenakan adanya pandemic covid-19 tersebut pembelajaran secara tatap muka mulai dibatasi. Pembelajaran tatap muka diganti dengan pembelajaran dalam jaringan (e-learning) berbasis learning management system (LMS) sehingga siswa diharapkan tetap dapat belajar meskipun dari rumah. Pelaksanaan e-learning dalam proses belajar-mengajar di sekolah membutuhkan kompetensi literasi digital. Melalui e-learning siswa dapat mengakses berbagai informasi yang ada di internet sehingga kemampuan literasi digital merupakan salah satu solusi dalam menjawab tantangan kemajuan teknologi. Penelitian ini bertujuan untuk menganalisis kemampuan literasi digital siswa sekolah dasar melalui penerapan e-learning berbasis LMS. Penelitian ini merupakan analisis deskriptif. Subjek dalam penelitian ini adalah siswa kelas lima sekolah dasar yang menerapkan pembelajaran e-learning berbasis LMS sebanyak 25 siswa. Sedangkan metode pengumpulan data yang digunakan adalah survey dan wawancara. Metode analisis data yang digunakan antara lain pengumpulan data, reduksi data, penyajian data, dan pengambilan keputusan. Hasil penelitian menunjukkan terdapat tiga aspek sebagian besar siswa memiliki kemampuan literasi digital yang cukup dan terdapat empat aspek yang sebagian besar siswa memiliki kemampuan baik. Jadi dapat disimpulkan bahwa kemampuan literasi digital siswa sebagian besar berada pada kategori cukup dan baik. Dengan demikian pembelajaran e-learning dapat berdampak pada kemampuan literasi digital siswa

ABSTRACT

The COVID-19 pandemic that has hit the world has resulted in changes in all aspects of life, including the education aspect. Initially, education was held face-to-face, due to the COVID-19 pandemic, face-to-face learning began to be limited. Face-to-face learning is replaced with online learning (e-learning) based on a learning management system (LMS) so that students are expected to still be able to learn even from home. The implementation of e-learning in the teaching and learning process in schools requires digital literacy competencies. Through e-learning students can access various information on the internet so that digital literacy skills are one solution in responding to the challenges of technological advances. This study aims to analyze the digital literacy skills of elementary school students through the application of LMS-based e-learning. This research is a descriptive analysis. The subjects in this study were fifth grade elementary school students who applied LMS-based e-learning as many as 25 students. While the data collection methods used are surveys and interviews. Data analysis methods used include data collection, data reduction, data presentation, and decision making. The results showed that there were three aspects, most of the students had sufficient digital literacy skills and there were four aspects where most of the students had good abilities. So it can be concluded that the students' digital literacy abilities are mostly in the sufficient and good category. Thus, e-learning can have an impact on students' digital literacy skills.

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1. INTRODUCTION

Education is one of the most important parts of a person's life process because this education can lead a person to the maturation process that will be brought into everyday life. The importance of this education has been realized by the community so that many parents have provided early education for their children. Education continues to develop from time to time and is accompanied by the development of science and technology (Tan, 2017; Thorvaldsen & Madsen, 2020). The Covid-19 pandemic that has occurred has had a major impact on human life in various aspects, both in terms of aspects (Menabò et al., 2021). The impact of Covid-19 is the implementation of social and physical distancing, a ban on going home and moving at home. One aspect that is

getting the biggest impact due to this pandemic is the education aspect. Conditions like this have an impact on the implementation of education at various levels of education ranging from kindergarten, elementary school, junior high school, high school and university. Various policies in the education sector were issued in the form of circulars, namely: firstly, prevention and handling within the Ministry of Education and Culture, secondly prevention in Education Units, thirdly education policies during the emergency period for the spread of the coronavirus disease-19.

The implementation of face-to-face education in schools has begun to be limited, to tackle the spread of COVID-19. This results in learning not only through limited face-to-face but also through distance learning or what is also commonly referred to as electronic learning (e-learning) (Bubb & Jones, 2020). E-learning is distance or virtual learning that involves technology in it (Yazon et al., 2019), so the implementation of e-learning requires good collaboration between teachers and students. E-learning or distance learning was developed as a learning medium that can connect online between educators and students in a virtual classroom without having to physically be in one room (Nahdi & Jatisunda, 2020). Through e-learning, students have the flexibility of learning time and can study anytime, anywhere so that through this learning students can participate in learning even though the student is at home (Ozturk & Ohi, 2018).

E-learning is a learning method that uses an Internet-based interactive model and a Learning Management (LMS) both in formal and informal learning (Mpungose & Khoza, 2020). A Learning management system (LMS) is software that can automate the administration of an activity (Demmans Epp et al., 2020). This is one of the new ways in teaching and learning activities that utilize electronic devices, especially in internet network access (Maria Josephine Arokia Marie, 2021; Saxena et al., 2018). In addition, the LMS used by students can be given a variety of learning resources, multimedia and games that can help students learn (Hobbs & Tuzel, 2017; Hsu et al., 2019; Molina et al., 2018; Rakimahwati & Ardi, 2019; Sukendro et al., 2020). The purpose of holding e-learning is to provide quality learning services in a massive and open network so that it can reach a wider and wider range of enthusiasts (students) (Sofyana & Rozaq, 2019).

The implementation of e-learning requires the readiness of qualified technology from a teacher so that it can be accessed smoothly by students (Shively & Palilonis, 2018). In addition to the aspect of technology that is easily accessible (Delacruz, 2019; Pangrazio et al., 2020), the implementation of e-learning also requires students' digital literacy in its implementation. In the current era, students are a generation who are familiar with technology in their lives since they were born and are commonly referred to as digital natives (Iivari et al., 2020; Porat et al., 2018; Vélez & Zuazua, 2017). So that the implementation of learning in schools must also be adapted to the current development of student life where students will be able to easily get access to information from various digital sources that are abundant through the digital facilities they have (Kerkhoff & Makubuya, 2021; Kurnianingsih et al., 2017). Included in the implementation of e-learning students will be able to easily learn through digital media. This has resulted in the need for students to have digital literacy skills in the digital transformation process (Reichert et al., 2020; Temdee, 2019).

Digital literacy is an awareness of a person's attitudes and abilities to be able to use digital facilities properly in identifying, accessing, managing, evaluating, analyzing and inferring a digital resource, adding new knowledge, creating expressions and communicating with others in living conditions (Noh, 2017). Certain things to be able to allow a constructive social action (Delacruz, 2019; Nahdi & Jatisunda, 2020; Peled, 2021). Digital literacy does not only involve the ability to apply tools such as computers and cell phones, but also skills to adapt to the capabilities and limitations of tools in certain circumstances. So that not only teachers have high digital literacy, but as a student they must also have digital literacy to be able to understand and use information in various forms (text, online video, audio recordings, digital libraries and databases) and from a very wide variety of sources, and accessed through digital tools. Digital literacy is one of the efforts in responding to the challenges of technological development (Radovanović et al., 2020; Vélez et al., 2017).

In addition, with digital literacy students will be able to work critically in absorbing various available information, especially through the implementation of e-learning (Polizzi, 2020). The implementation of e-learning really requires students' digital literacy skills, because e-learning is identical to the use of the internet (Binali et al., 2021). While the internet has positive and negative impacts for its users (Techataweewan & Prasertsin, 2018), including elementary school students. For elementary school students, digital literacy skills are an absolute must and must be developed further so that students can use digital devices well and can use information on the internet properly. So that this can minimize the negative impact of the development of science and technology. The low digital literacy skills possessed by students will also have an impact on negative things in digital activities, such as incorrectly concluding information, errors in choosing sources of information and the dissemination of incorrect information (Abdulai et al., 2020). This is what makes it important to have digital literacy skills for digital transformation (Isnawati et al., 2021; Maureen et al., 2018; Radovanović et al., 2020; Temdee, 2019). On this basis, the author sees the need to analyze the digital literacy skills of elementary school students in implementing Learning Management System (LMS)-based e-learning. Previous research explains that the existence of learning facilities greatly affects the level of digital literacy of

students. (Kerkhoff & Makubuya, 2021; Radovanović et al., 2020), In addition, the ability of digital literacy of teachers can also affect the quality of technology-based learning provided to students (Reisoğlu & Çebi, 2020). In addition, previous research also explored the ability of digital literacy of teachers (Quaicoe & Pata, 2020), and there has been no research on digital literacy skill especially in elementary school students in the implementation of e-learning so it is necessary to analyze the digital literacy skills of elementary school students. This research aims to analyze students' digital literacy skills through the implementation of e-learning based on learning management systems. It is very interesting to conduct a study on the effectiveness of e-learning in improving students' digital literacy skills. It is also very important to know the obstacles in implementing e-learning, especially in elementary schools. It is hoped that this research can provide a solution to the problem of low digital literacy and related problems in implementing LMS-based e-learning in elementary schools.

2. METHOD

The type of research used is descriptive analysis. The purpose of this study is to describe the digital literacy of elementary school students who are doing online learning using a learning management system (LMS). The subjects of this study were fifth-grade elementary school students, totaling 25 students. Data were collected through interviews and surveys. Meanwhile, the instrument used in data collection is a digital literacy questionnaire which has been declared valid and reliable after testing the instrument. Data collected through questionnaires include: 1) ability to join LMS class, 2) ability to understand symbols used in LMS, 3) ability to read and understand the information in LMS, 3) ability to read and understand the information in LMS, 4) ability to communicate in LMS, 5) ability to select information from the internet, 6) ability to produce reliable sources of information, 7) ability to think critically in deciphering the information received. The questionnaire used uses a score of 1-5 which is adjusted in Table 1. Data analysis used includes data collection, data reduction, data presentation, and decision making. This research is more focused on students' digital literacy skills in using digital technology during online learning activities that utilize a learning management system (LMS).

Table 1. Criteria for Digital Literacy Ability

No	Interval	Category
1	$84 < X \leq 100$	Very good
2	$68 < X \leq 84$	Good
3	$52 < X \leq 68$	Enough
4	$36 < X \leq 52$	Not enough
5	$0 < X \leq 36$	Very less

(Pratama et al., 2019)

3. RESULT AND DISCUSSION

Result

The digital literacy ability of elementary school students is obtained by using a questionnaire after learning in a network-based learning management system for fifth grade elementary school students. The achievement of digital literacy skills is divided into 7 components, including the ability to join the LMS class, basic skills in understanding the symbols used in the LMS, the ability to read and understand information, the ability to communicate in the LMS, the ability to produce reliable sources of information, the ability to choose information on the internet, the ability to think critically in deciphering the information received. The results of digital literacy skills after LMS-based e-learning applications can be seen in Table 2.

Table 2. Digital Literacy Ability After Applying LMS-Based E-Learning

No	Aspect	Category (%)				
		Very	Not Enough	Enough	Good	Very Good
1	Ability to join LMS class	23.14	12.15	52.11	7.5	5.1
2	Ability to understand symbols used in LMS	17.45	21.17	45.6	11.68	4.1
3	Ability to read and understand the information in LMS	19.9	21.2	20.19	35.51	3.2
4	Ability to communicate in LMS	17.56	11.17	14.45	53.12	3.7
5	Ability to select information from the internet	20.16	14.25	23.24	32.95	9.4

No	Aspect	Category (%)				
		Very	Not Enough	Enough	Good	Very Good
6	Ability to produce reliable sources of information	19.19	20.67	6.75	50.19	3.2
7	Ability to think critically in deciphering the Information received	11.14	17.13	40.13	21.48	10.12

Based on [Table 2](#), it can be seen that the digital literacy abilities of elementary school students after the implementation of e-learning based on a learning management system are mostly in the sufficient category. In the first indicator, namely the ability to join the LMS class, there are 52.11% of students in the sufficient category. This is because before learning to use LMS-based e-learning, the teacher has communicated to students and parents so that teachers can provide tutorials on how to enter the LMS class that is used for learning. However, even though they have been given speech and training in entering the LMS class, there are still many students who have difficulty entering the LMS. Several factors make it difficult for students, including students not paying attention when given the instructions given by the teacher and another factor being network constraints. So that 35.29% of students are under the sufficient category. While the rest, namely 64.71% of students are in the quiet, good and very good categories.

The second indicator is the basic ability to understand the symbols used in the LMS, students who are in the sufficient category are 45.6%. This is because in the LMS many features or symbols that result in students having a little difficulty in understanding the symbol. This can be overcome if students are used to using the LMS and are accustomed to using the features that exist in the LMS. In addition, the teacher also provides various features in learning so that students can take advantage of these features. So that there are 38.62% of students in the category below enough. While the rest, namely 61.38% of students are in the quiet, good and very good categories. The third indicator is the ability to read and understand the information in the LMS, students who are in the good category are 35.51%. This is because the teacher gives clear instructions so that students can easily understand the instructions. In addition, the information presented on the LMS is given in a simple, concise, concise and clear form so that students can easily capture the information provided. The information provided is adjusted to what students need at the time of learning. So that there are 41.1% of students in the category below the sufficient category. While the rest, namely 58.9% of students are in the sufficient, good and very good categories.

The fourth indicator is the ability to communicate in LMS, the highest percentage is in a good category, namely 53.12%. This is because teachers continue to motivate and train students in discussion forums located in the LMS. Every e-learning meeting using the LMS there is always a discussion forum that must be followed by every student in the LMS class. This is so that even though learning is done through LMS, students can still communicate with friends and teachers. So that there are 28.73% of students under the sufficient category. While the remaining 71,27% of students are in the category of quiet, good, and very good. The fifth indicator is the ability to choose information from the internet, the highest percentage, namely 32.95% of students, is in a good category. This is because students have been given information to be careful in choosing sources of information on the internet. Students have been told how to choose responsible sources of information on the internet, for example students are directed to go to the online library owned by the school. So that there are 34.41% of students in the category below enough. While the remaining 65.59% of students are in the category of quiet, good, and very good.

The sixth indicator is the ability to produce reliable sources of information, the highest percentage, namely 50.19% of students, is in a good category. This is because students from the beginning have tried to be able to choose reliable and responsible information. The selected information is then understood and analyzed by students so that students know which information is right and wrong. From the information received, students can finally make new information that can be justified. So that there are 39.56% of students under the sufficient category. While the rest, namely 60.14% of students are in the quite, good, and very good categories. The seventh indicator is the ability to think critically in deciphering the information received, the highest percentage of which is 40.13% of students in the sufficient category. This is because students have difficulty in reasoning critically. Some of the factors behind these difficulties, one of which is that students are not accustomed to doing critical reasoning. The teacher continues to guide students so that students can think critically in solving problems presented by the teacher. So that there are 28.27% of students under the sufficient category. While the rest, namely 71.73% of students are in the sufficient, good, and very good categories.

Discussion

Based on the description above, it shows that the use of e-learning based on a learning management system (LMS) can well provide an increase in the digital literacy skills of elementary school students and can be beneficial in providing 21st century skills to students ([Ghomi & Redecker, 2019](#); [Neumann et al., 2017](#); [Sadaf &](#)

Gezer, 2020). Based on the seven indicators studied, the 4 highest indicators are in the good category, and the 3 highest indicators are in the sufficient category. Learning in a network-based learning management system (LMS) goes well and can be followed by all students. There are some students who can follow the lesson very well and some students have difficulty. This is because each student has different digital literacy abilities. The results of this study are in line with previous research. Implementing e-learning for student learning can affect students' digital literacy skills and will also affect student behavior in the use of digital information (Anggrasari, 2020; Jessica et al., 2020; Noh, 2017; Pratama et al., 2019). Implementing e-learning, there are several advantages, one of the main advantages is that it gives teachers the freedom to add, change or use more innovative learning platforms and follow student needs (Kong et al., 2017). The implementation of e-learning also allows students to be able to communicate with each other so that this can minimize students' attitudes. But on the other hand there are also obstacles or obstacles in the implementation of e-learning, namely the problem of networks and facilities that are not evenly owned by every student it is influenced by the socioeconomic status of the parents. (Lazonder et al., 2020; Qazi et al., 2020). It is undeniable that learning facilities will also have an impact on the quality of education (Putria et al., 2020). The results of this study are in line with previous research. Implementing e-learning for student learning can affect students' digital literacy skills and will also affect student behavior in the use of digital information.

Digital literacy is something that is very much needed by students today who are very close to technology so that teachers need to provide more experience so that students have good ability in using digital technology (Thorvaldsen & Madsen, 2020). The implementation of LMS-based e-learning can support the development of students' digital literacy skills. In addition to improving students' digital literacy competencies, teachers must first have qualified digital literacy competencies. With teachers having high digital literacy, they will be able to bring and guide students in developing their digital literacy competencies (Blevins, 2018). Digital literacy skills are not only developed in learning activities, but can also be developed through other supporting activities. For teachers, for example, through certain training that can support. For students, especially elementary school students, it involves components that exist in school and outside of school (Moreno-Morilla et al., 2021). In addition, one of the things that is very important in digital literacy is the ability to read digital information (Isnawati et al., 2021) which can be done anywhere. This cannot be separated from the role of parents at home as revealed in previous research (Bubb & Jones, 2020; Kulju & Mäkinen, 2019). Parents can continue to guide and supervise their children in their digital activities. This research provides knowledge of the results of digital literacy analysis of students in the implementation of e-learning and also knows the challenges faced, so that with this challenge will also be found solutions in solving existing challenges. Recommendations for further research in order to develop a way or method that can improve the digital literacy of students, especially elementary school students. This study provides information regarding which digital literacy indicators need to get more attention to improve digital literacy skills. The limitation in this study is that in this study only analyze students' digital literacy skills in the use of e-learning without researchers doing treatment on learning in order to get better digital literacy skills.

Digital literacy is an awareness of a person's attitudes and abilities to be able to use digital facilities properly in identifying, accessing, managing, evaluating, analyzing and inferring a digital resource, adding new knowledge, creating expressions and communicating with others in living conditions (Noh, 2017). Certain things to be able to allow a constructive social action (Delacruz, 2019; Nahdi & Jatisunda, 2020; Peled, 2021). Digital literacy does not only involve the ability to apply tools such as computers and cell phones, but also skills to adapt to the capabilities and limitations of tools in certain circumstances. So that not only teachers have high digital literacy, but as a student they must also have digital literacy to be able to understand and use information in various forms (text, online video, audio recordings, digital libraries and databases) and from a very wide variety of sources, and accessed through digital tools. Digital literacy is one of the efforts in responding to the challenges of technological development (Radovanović et al., 2020; Vélez et al., 2017).

4. CONCLUSION

The results of this study indicate that improving the digital literacy skills of elementary school students is something important and needs to be developed. The development of students' digital literacy skills can be done through the implementation of e-learning based on a learning management system. However, the development of digital literacy skills for elementary school students can not only be done through academic activities at school but can also be done in other supporting activities. So that elementary school students not only need guidance and supervision from teachers but also need the role of parents. Meanwhile, based on the results of the survey, it was found that overall elementary school students have basic skills in using an internet connection, besides that they can create and select information from the internet.

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