

The Analysis of Student's Digital Literacy with Microsoft E-Learning Media

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Abstract

Digital literacy is important to deal with digital disruption wisely. The ease of accessing the internet makes digital literacy an important thing. digital literacy can prevent the bad condition in digital era. The students can prevent all bad sector of digital world like hoax, cyberbullying, cybercrime, violence, and the others. This study aims to determine the level of digital literacy students during the implementation of Microsoft e-learning media that is used for learning in elementary schools, especially in fifth grader. The population is the elementary students of SD Ihsaniyah 1 Tegal. This study used a simple random sampling and data collection was in the form questionnaire, which was distributed to students. There are 30 respondents for sampling. This research uses descriptive quantitative research using survey method research to determine the level of digital literacy of students. The results show that the digital literacy of students while using Microsoft-based e-learning products is in the medium category with an average of 75.2%. So, the strengthening of digital literacy in learning is also strengthened through creative and innovative digital learning media. Through the analysis, students have the potential to access the digital because digital literacy skills are at the medium stage.

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INTRODUCTION

The learning process can occur inside and outside the classroom, the use of computer and internet technology is a major component of e-learning (Aboagye et al., 2020). During this tough time, the concern is not about whether online teaching–learning methods can provide quality education, it is rather how academic institutions will be able to adopt online learning in such a massive manner. Based on that explanation we know how importance think called E-learning. E-learning can be tools for learning. The results of initial observations at SD Ihsaniyah 1 Kota Tegal show that on average students already have technological devices such as smartphones, laptops, and internet at home. The school has computer lab and internet to get access about e-learning too. So, e-learning can be implemented at this school and home for this purpose of research.

E-learning also related to students' digital literacy skills. According to Ferarri (2013), the need for technology and information in the social environment requires digital literacy as a competency needed today. According to Buckingham as quoted by Calvani et al. (2010), it was revealed that media literacy, ICT literacy, digital literacy has emerged in recent decades with new technologies to develop students' critical understanding of digital information which is the impact of using ICT. Digital literacy is important to deal with digital disruption wisely. The ease of accessing the internet makes digital literacy an important thing. According to Nugroho & Sosialita (2020), Digital literacy as an ability to understand and use information from various digital sources is not only related to reading characters, but also the process of thinking and evaluating information found in digital sources. Thus, digital literacy can prevent the bad condition in digital era. The students can prevent all bad sector of digital world like hoax, cyberbullying, cybercrime, violence, and the others.

Information disorders are grouped into three types, namely mis-information, dis-information and mal-information (Wardle &

Derakhshan, 2017). Mis-information is misinformation that is shared without the intention of harming others. Dis-information is information that is intentionally misrepresented and then shared intentionally to harm others. Mal-information is true information that is shared with the intention of harming others, often by transferring information designed for private consumption into the public sphere. Disinformation and mal-information are also known as hoaxes. Hoax is information or news that contains things that are not certain or which are not facts (Juditha, 2018). The word Hoax comes from English which means deception, deceit, fake news, fake news or rumors spread by someone (Simarmata et al., 2019).

Digital literacy is the ability to use technology and information from digital devices effectively and efficiently in various contexts such as academic, career and daily life. Riel et al. (2012). If you look at the opinion of Bawden (2001) above, digital literacy is more associated with technical skills in accessing, compiling, understanding and disseminating information. Another view was put forward by Martin (2008) which states that digital literacy is a combination of several forms of literacy, namely: computer, information, technology, visual, media and communication. According to Gilster (1997), digital literacy is the ability to understand and use information from various digital sources. According to Fitriana, Wijayati & Utanto, (2022), the intensity of the application and use of digital literacy in learning activities carried out by students is also categorized as very good. This demonstrates that students are better able to use digital literacy as a bridge to understand the science material that has been presented after experiencing android-based learning in science sessions. So, it does not only include the ability to read, but also requires a critical thinking process to evaluate the information found through digital media. Digital literacy is needed for the future generation. The students can solve problem in society in the digital era. According to Kardiyem, et al (2019) Students are expected to be able to implemented the theories to against real problems that happened in the community.

So, the teachers must give learning about the digital literacy in this era for prepared students to solve problem in their society.

Based on the various understandings above, it can be concluded that digital literacy is the ability to manage information in the digital world and present digital information through critical thinking processes. In line with Aesaert et al. (2015), digital literacy skills are these application skills including the basic use of software, the ability to be creative and innovative, solve problems and think critically with the internet and computers. Therefore, it is important that digital literacy skills are given a place in the elementary school curriculum. In line with Xu (2013), there is a need for an exploratory approach to integrate digital literacy skills with an elementary school-based curriculum.

This is a challenge for a teacher in introducing digital literacy skills. In the curriculum during this pandemic, e-learning is carried out regardless of the digital literacy of teachers and students. So this is of course a formidable challenge for all elements of the school to implement online learning effectively. According to Li & Ranieri (2010), understanding the basic level is a big challenge for teachers in introducing digital literacy education, previous research for the intermediate level has passed well and very well. However, according to Arke & Primack (2009), this can make educators understand what information and how they need to teach. However, measuring digital media literacy remains a critical challenge and there are not enough empirical studies measuring digital primary school learners.

According to Twing as quoted by Zhang & Zhu (2016), digital literacy is the ability to operate effectively as a 21st century citizen, including having an understanding of the nature of digital technology and the impact of digital identity, being able to interact securely in the digital world, being able to discover, manage, understand, evaluate, analyze, and present information back using digital technology. According to Zhang & Zhu (2016), there are

four components in digital literacy, namely technical skills, critical understanding, creation and communication and social participation. Technical skills are basic abilities to manage digital media such as understanding language and words in digital media. According to Koltay (2011), critical understanding is the ability to assess the quality of digital media content. In line with Claro et al. (2012) the ability to critically understand is the most important thing in the process, digital literacy involves reading and writing in the context of digital media. According to Buckingham (2007), creation and communication is the ability to produce digital media that is able to interact with other people. Social participation is the ability to use media to promote the environment and provide space for opinion even in diversity with digital media (Park, 2012). According to Hobbs in Zhang et al. (2016) a media literacy framework that covers a wide range of cognitive, emotional and social competencies including use of texts, tools and technology, critical thinking and analytical skills, message composition and creativity practices, the ability to engage in reflection and ethical thinking, and active participation through teamwork and collaboration.

Digital literacy is a skill that needs to be developed in e-learning, without digital literacy the learning process does not run effectively. According to Alkalai as quoted by Blau et al. (2019), effective learning in a digital environment, students are required to develop a set of skills known as digital literacy. According to Ferrari as quoted by Blau (2019), digital literacy is the most frequently discussed context in the education system. Digital literacy according to Alkalai as quoted by Blau et al consists of (1) photo-visual thinking, which is an ability to understand information visually; (2) real time thinking, a student's ability to process information quickly and effectively; (3) information thinking, the ability to collect information from various sources and evaluate digital sources; (4) branching thinking, the ability to navigate various media; (5) Reproduction thinking, the ability to design content or combine existing content into a

content with a new interpretation; (6) social emotional thinking, an ability to understand the rules in cyberspace and apply that understanding in digital communication and teamwork. According to Kim et al. (2014), there is a relationship between digital literacy and students, that the use of Information Communication and Technology (ICT) has a positive effect on digital literacy of students in elementary schools. In addition, in order to integrate digital literacy into the learning process, it is very important to know the factors that affect the digital literacy of elementary school age students. There are two influencing factors, namely internal and external factors. These factors are (1) gender; (2) ages; (3) Students' Digital Media Experience; (4) parental mediation; (5) parental educating background.

Nasikhah, Raharjo & Kustiono (2022), stated digital literacy is an individual's interests, attitudes, and abilities in using digital technology and communication tools. Digital literacy is used to access, manage, integrate, analyze and evaluate information, build new knowledge, create and communicate with others. It aims to be able to participate effectively in society.

Based on the explanation about digital literacy, digital literacy is a person's ability to understand various data, gadget, computer digital sources to process in new way definition. According to Nasikhah, Raharjo & Kustiono (2022), digital literacy ability to read, write, and relate to information using the technology and formats that existed at the time.

These are the factors that affect digital literacy, (1) Gender, (2) Age, (3) Student's Digital Media Experience, (4) Parental Meditation, (5) Parental Education Background

1. Gender

According to Meeliseen & Drent (2008), gender is a factor regarding the use of ICT. Activities related to ICT are not always related to gender. However, one study said that ICT is more attached to the male gender. Men are closer to the use of ICT. According to Vekiri & Chronaki (2008), male students are more

confident and do not panic in using ICT than female students. In line with Li & Kirkup (2007), male students also use computers more than female students. In other studies, according to research by Chang & Liu (2011) and Aesaert & van Braak (2015), female students express more positive perceptions related to digital media application skills, learning with media and attitudes towards digital media. Therefore, gender can be ignored in the use of ICT between male and female students. Volmen et al. (2015). According to Kim et al. (2014), there is a relationship between digital literacy and students, that the use of Information Communication and Technology (ICT) has a positive effect on digital literacy of students in elementary schools.

2. Age

Findings from various studies suggest that it is difficult to isolate age as a major factor influencing ICT-related activities. Chang and Liu (2011) stated that students from various elementary grade levels obtained almost the same level of knowledge and skills and had the same attitudes and perceptions towards media literacy. Li and Ranieri (2010) investigated the digital media literacy of Chinese secondary school students, and the results showed that age had a significant influence on technical and cognitive aspects. Appel (2012) reports that high-grade students have better theoretical and practical computer knowledge than younger students.

In this research we got Fifth Grader students to testing their digital literacy. Fifth grader are in the operational concret. According Piaget's Theory Piaget (Ibda, 2015) suggests that there are four stages of cognitive development, namely; (a). 0 – 1.5 years is a sensorimotor stage, the main feature of its development is based on action and step by step, (b). 1.5 – 6 years is the pre-operational stage, the characteristics of its development are using symbols or sign language and intuitive concepts, (c). 6-12 years or more is a stage of concrete operations, the characteristics of its development using clear or logical and reversible rules and

immunity, (d). 12 years or more is a stage of formal operations, the characteristics of its development are abstract, purely symbolic, deductive, inductive and logical. Fifth grader of elementary school students are in the concrete operational stage, so that in providing subject matter, teachers are expected to focus more on teaching aids or media that are more concrete and logical. Involvement and acceptance in the life of the elementary school age group is an interest and concern for positive and productive social competencies that will develop at this age.

By considering the cognitive characteristics of fifth grader of elementary school students with all aspects of their developmental dimensions, it is hoped that the developed teaching system will be able to serve meaningful learning needs for students. Through the delivery of appropriate subject matter, students can follow the lesson well, so that students are enthusiastic about learning, making science a fun lesson and the learning objectives themselves can be achieved maximally and satisfactorily.

3. Student's Digital Media Experience

The experience of using ICT by students more often will increase students' digital literacy. According to research Aesaert et al. (2015) and Kim et al. (2014) stated that students' digital media experience refers to the frequency with which students use and experience digital technology, such as the Internet, tablets, desktops, mobile devices, not only in the school context, but also at home. The ICT experience of elementary school students at home is considered an influential factor with digital literacy.

4. Parental Meditation

Digital literacy is also related to the role of parents in guiding their children in the daily use of ICT. According to A' Ivare, et al (2013), defines that parental guidance such as instructions for use, time limits for using and mentoring content / content in ICT including parental mediation. In line with Lee (2012), that mediation of parents and children can limit the

time to use ICT online and reduce the risk of being online. According to Erstad & Gilje (2008), many young people use digital media outside of school. Based on this, it is necessary to control the use of online digital media. According to Valcke et al (2010), parents can mediate their children's internet use. Current research also shows that parental mediation is important in influencing children's digital world. (Nikken & Jansz, 2014).

5. Parental Education Background

The last factor is the educational background of the parents. The educational background of parents affects the use of children's digital competencies at home. According to the Australian Council for Education (2011), reports that parents with a bachelor's degree or higher have higher scores than those without.

Digital Literacy Dimension

Based on Nahdi & Jatisunda (2020), digital literacy can be divided into 4 dimensions, namely (1) basic internet skills, (2) the ability to find and obtain information, (3) frequently used sources of information, and (4) the ability to use information effectively. Based on Martin (2008) formulate several dimensions of digital literacy, namely (1) Digital literacy involves digital action abilities that are tied to work, learning, fun and other aspects of daily life; (2) Individual digital literacy varies depending on the daily situation he experiences and also a lifelong process as well as the individual's life situation; (3) Digital literacy is formed by but is broader than information communication technology literacy; (4) Digital literacy involves the ability to collect and use knowledge, techniques, attitudes and personal qualities as well as the ability to plan, execute and evaluate digital actions as part of solving problems/tasks in life; (5) Digital literacy also involves a person's awareness of his level of digital literacy and the development of digital literacy. Based on Gilster's opinion (1997), he classified digital literacy into four core competencies that a person needs to have so that it can be said to be digitally literate, namely (1)

Internet searching (internet searching), (2) Hypertext Navigation (Hypertextual Navigation), (3) Evaluation of Information Content (Content Evaluation), (4) Preparation of Knowledge (Knowledge Assembly). Based on Pratama, Hartini & Misbah (2019), digital literacy ability is seen from four indicators, namely (1) the intensity of the application and use of digital literacy in learning activities, (2) The amount and variety of reading materials and digital-based teaching aids, (3) Frequency borrowing digital themed books, (4) the number of presentations of school information using digital media or web sites.

Purpose of this research to determine classification of elementary school student's digital literacy. Firstly, a measurement tool related to the digital media literacy of primary students is developed and tested. Secondly, the digital media literacy of the 5th grader in elementary school. According to Zhang & Cu (2016), In addition, the results reveal that the instrument used for measuring the digital media literacy of primary students. So with this research the instrument can be used in another field of education to testing student's digital literacy. Yessi et al. (2021) stated e-learning with android resources generally helps students develop their digital literacy, particularly in the

areas of processing and evaluating information, disseminating research findings through digital media, and having excellent digital citizenship. The use of technology to locate, utilize, and spread.

METHODS

This study uses quantitative descriptive research to determine the level of digital literacy of students. This study aims to describe certain symptoms, phenomena or events. Data collection is used to obtain information related to certain phenomena, conditions or variables and is not intended to strengthen the hypothesis. The simplest form of descriptive research is research with one variable. Data analysis was carried out by providing digital literacy questionnaires to students. In the questionnaire there are 5 aspects, namely internet searching (internet searching), hypertext navigation (hypertextual navigation), information content evaluation (content evaluation), knowledge assembly (knowledge assembly) and feelings in presenting information to determine students' digital literacy while using media. Microsoft based e-learning. Students fill out a questionnaire with scoring guidelines according to the following Table 1.

Table 1. Score Guideline (Sugiyono, 2016).

Qualitative data	Skor
Very good	4
Good	3
Not Enough	2
Bad	1

a. Change the digital literacy score of students in each aspect in the form of a percentage with the formula:

$$\text{Percentage (\%)} = \frac{\text{Total Score Obtained}}{\text{Total Score}} \times 100\%$$

b. Interpret the percentage of each aspect according to the Table 2 as follows.

Table 2 Criterias (Mulyani et al., 2021)

No	Percentage (%)	Category
1	81-100	Very Good
2	61-80	Good
3	41-60	Enough
4	21-40	Not Enough
5	< 21	Bad

c. Interpret the percentage to digital literacy score

Table 3. Table of Interpret the percentage to digital literacy score (Anggrasari, 2020)

No	Percentage (%)	Description	Category
1	55-69	The ability to operate and access learning media is not too high, the ability to analyze media content is not too good, and the ability to communicate and express opinions through media is limited	<i>Basic</i>
2	70-84	The ability to operate and access learning media is quite high, the ability to analyze and evaluate media content is quite good, and is active in producing media content and participating socially	<i>Medium</i>
3	85-100	Ability to operate and access learning media is very high, have high knowledge so as to be able to analyze media content in depth, and be able to communicate actively through media	<i>Advanced</i>

RESULTS AND DISCUSSION

Data analysis was carried out by providing digital literacy questionnaires to students. In the questionnaire there are 5 aspects, namely internet searching (internet searching), hypertext navigation (hypertextual navigation), information content evaluation

(content evaluation), knowledge assembly (knowledge assembly) and feelings in presenting information to determine students' digital literacy while using media. Microsoft-based e-learning. The results of the digital literacy analysis of students on the product are presented in the following table.

Table 3. Digital Literacy Recapitulation Table

No	Aspect	Percentage of Agreement (PA)	Category
1.	<i>Internet Searching</i>	76%	Medium
2.	<i>hypertext (hypertextual navigation)</i>	74%	Medium
3.	<i>Content Evaluation</i>	75%	Medium
4.	<i>Content Assembly</i>	75%	Medium
5.	Feeling to Present Information	76%	Medium
	Average	75.2%	Medium

Based on the tables above, the results show that students while using Microsoft-based e-learning products are in the Medium category. According to Anggrasari (2020), that students in the medium category have the ability to operate and access learning media quite high, the ability to analyze and evaluate media content is quite good, and is active in producing media content and participating socially. This categorization is also based on the experience of students in accessing the digital world during this pandemic. So the strengthening of digital literacy in learning is also strengthened through creative

and innovative digital learning media so that students are also enthusiastic about learning and can use technology wisely. Through the analysis and observations of researchers in the development of this product, students have the potential to access the digital world quickly because digital literacy skills are at the medium stage. Therefore, the development of Microsoft-based e-learning learning media continues to be developed to facilitate students using more useful and positive content. In detail, the results of the digital literacy data analysis for each indicator are presented in the following Table 4.

Table 4. Data analysis for each digital literacy indicator.

Dimension	No	Indicator	Percentage
Internet searching	1.	Ability to find information using search engines	75%
	2.	Ability to use the internet	77%
Hypertext Navigation	1.	Have to know of www. , http, url and .com	75%
	2.	Understanding for function of website menu	72%
	3.	Know differences about text book and website information	72%
	4.	Interesting about find information by browsing the internet	76%
Content Evaluation	1.	Student's ability to critic about the information validity	66%
	2.	Ability to distinguish between display and information content.	78%
	3.	Ability to analyze background information.	77%
	4.	Knowledge of FAQs in a newsgroup/discussion group.	80%
Knowledge Assembly	1.	The ability to search various media to obtain the truth of an information	82%
	2.	Ability to create a personal newsfeed (subscribe)	70%
	3.	Ability to recheck the information obtained	70%
	4.	Ability to reconstruct knowledge from the information obtained	79%
	5.	Ability to read and understand information	73%
Feeling to present information	1.	Feelings of pleasure in seeking information	73%
	2.	Feeling happy after finding information and presenting it in the discussion forum.	78%

The results show that while students are using Microsoft-based e-learning media, on the internet searching dimension with the indicator Ability to find information using search engines, 75% results and the ability to use the internet results in 77% so that the average on this dimension is 76%, this shows that the internet searching dimension is in the medium category. Students during online learning prefer to look for material on the internet rather than books, information search is often done by students through search engines such as yahoo, ask, google, and now it is a new habit for students to use the internet to learn and access information. Based on the research of Muasyaroh and Lucia (2020) it can be seen that on average each individual has a fairly good digital literacy ability, especially in finding, understanding, and using references from the internet. This will support each individual when participating in the implementation of online learning during the Covid-19 pandemic.

Dimensions of hypertext navigation with indicators have knowledge of the site in the form of www. , http, url, and .com results obtained 75%, Understanding the function of the menu on a website by 72%, understand the difference in textbooks and sources on the internet 72%. Interest in digging deeper sources of information by browsing the internet 76%. based on the results of these studies obtained an average of 74%. This shows that the hypertext guide indicator is in the medium category. Students can search for various information through a web browser by paying attention to bandwidth, the information obtained from a web browser gives the same results. In addition, regarding further search for hypertext and hyperlink information, students are not interested. This is in line with Sari's research (2019) regarding the low knowledge of students regarding hypertext and hyperlinks which are new terms for students even though they have accessed the internet every day.

Dimensions of evaluation of information content with indicators of students' critical abilities in testing the validity of information by 66%, ability to distinguish between display and

information content 78%, ability to analyze background information 77% and knowledge of FAQs in a newsgroup/discussion group by 80%. Based on the results of the study obtained an average result of 75%. This shows that the indicator is in the medium category. During online learning, students often spend time looking for information on the internet. Students use online news portals as references to find information marked with certain pages, such as using .com, .net, and others. Students have the ability to verify information received from internet media, as well as confirm the truth of the information with friends, parents and teachers to avoid hoax information. Confirmation in digital literacy is very important to strengthen the ability to search and disseminate information responsibly. According to Novanda (2019) information on academic activities obtained in digital media must first be ensured for accuracy.

The Knowledge Assembly dimension is the compilation of knowledge with indicators of the ability to search for various media to obtain the truth of an information 82%, the ability to create a personal newsfeed (subscribe) 70%, the ability to re-examine the information obtained 70%, the ability to rearrange knowledge of the information obtained 79%, the ability to read and understand information 73%. Based on the results of the study obtained an average result of 75%. This shows that these dimensions are in the medium category. Students in getting truth information always look for it through well-known online news portals, and some students always include reference sources when doing assignments. Based on Irhandayaningsih's (2020) research on the aspect of information users, respondents can cite sources related to the material and can distinguish the contents of several references used in compiling assignments that are followed during online learning. In addition, students convey information using sentences that are easy to understand and attach relevant pictures or videos to everyone, so that the information can be understood and trusted. This shows that, in addition to using text

elements, students convey information accompanied by appropriate pictures or videos.

Dimensions Feeling to present information with indicators of feeling happy in seeking information by 73%, feeling happy after finding information and presenting it in discussion forums by 78% so that based on research results obtained an average of 76%. This shows that these dimensions are in the medium category. Based on Bawden (2001), in digital literacy, feeling comfortable and having access to communicate and publish information is one aspect of digital literacy. So that the feeling when presenting information is also important in assessing the level of digital literacy of students.

Online learning can improve students' digital literacy skills which can be seen from internet searches, hypertext directions, evaluation of information content, and knowledge compilation. According to Tang and Chaw (2016) each individual must have digital literacy or prerequisite skills to be able to learn effectively in participating in online learning because during online learning students receive materials and instructions indirectly by the teacher through technological devices. According to Yasid (2020) digital literacy needs to be integrated into the learning system during the pandemic, so that students in interpreting the character of digital literacy can become intelligent, tough, and wise individuals.

Based on Bawden's opinion, (2001) it is known that digital literacy involves several aspects, namely (1) knowledge assembly, namely the ability to build information from various reliable sources, (2) the ability to present information including critical thinking in understanding information with awareness of its validity and completeness. source from the internet. (3) The ability to read and understand non-sequential and dynamic information material, (4) Awareness of the importance of conventional media and connecting it to networked media (internet), (5) Awareness of people's network access that can be used as a resource referrals and assistance, (6) Use of filters for incoming information, (7) Feel

comfortable and have access to communicate and publish information. Based on the various operational definitions above, the researchers determined the digital literacy indicators as follows: (1) Internet searching, (2) Hypertext Navigation (Hypertextual Navigation), (3) Content Evaluation, (4) Preparation of Knowledge (Knowledge Assembly), (5) Feelings in presenting information.

Teachers can improving digital literacy, if they are implementing e-learning media in the class. teachers can make e-learning media with web service or using platform known as Microsoft. According to Fitriana, Wijayati & Utanto, (2022). E-learning android-based learning in science lessons effective impact on increasing motivation and digital literacy skill of elementary school students. So, we can using another platform to increasing that skills to in learning.

CONCLUSION

Based on the research conducted, it was found that the digital literacy of students while using Microsoft-based e-learning products was in the Medium category.

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