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Digital Literacy Skills of Teachers in Elementary School in The Revolution 4.0

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Abstract. Digital literacy is an ability to acquire, understand and use information derived from various sources in digital. Along with the rapid development of information and communication technology in the revolution 4.0, the government requires teachers in schools through the national literacy movement, teachers are required to not only be able to use digital technology but also to assess the validity of information obtained from digital sources. The purpose of this research to know the information literacy skills of teachers in elementary school. This research used a qualitative research design descriptive. The sampling method is a stratified random sampling technique in 104 teachers from 5 elementary schools in Bogor. The results of this study indicate the level of digital literacy among elementary schools teachers in the city of Bogor is already middle in all aspects of competence, both on internet searching aspects, hypertextual navigation aspects, content evaluation aspects, and knowledge assembly aspect.

Keywords: digital literacy skills, revolution 4.0, teachers in elementary school

INTRODUCTION ~ the development of the 4.0 revolution was marked by digital technology which was widespread in society. Digital technology such as the internet is making a big difference to information access. The low use of the internet in the world of education causes a lack of education regarding the use of good digital technology, resulting in misuse of digital technology such as cyberbullying information, privacy violations, hooks, pornographic content, and violence. This abuse is considered a problem of the digital society at the moment due to the low culture of digital literacy. To overcome these negative impacts, adequate digital literacy culture is needed (Jenkins, 2009; Bawden, 2001).

In Indonesia, digital literacy is still considered new because it has not been fully understood by all groups. The government requires teachers in schools to make habituation in accessing, searching for, utilizing information intelligently, carefully and intelligently. Teachers must have a qualified level of digital literacy, so they can distinguish between true and false information to be informed to students. At school teachers teach how to sort out the truth of information and instill character to students in utilizing digital technology, so students can avoid the negative effects that can be obtained if it is not wise to use the internet.

Elementary School Teachers are one component related to literacy. Elementary teachers target students ranging in age from 7-12 years. Besides being equipped with good religious knowledge, elementary school teachers must be equipped with digital literacy in encouraging the industrial revolution 4.0.

(Buckingham, 2007; Allan, 2008). Students in elementary school are the main foundation in gaining formal knowledge and building the character of the nation so that the good and bad of the knowledge and character they have will greatly affect their abilities in daily life.

The biggest challenge in the application of digital literacy in schools comes from internal schools, including the inadequate ability of teachers in the field of digital literacy. During the development of millennial generation in the 21st century, known as Generation Z, it is a digital native that was born and grew up in the digital age. Ease of access and daily life surrounded by information and communication technology. Conversely, the use of digital media among teachers is only limited as a means of finding sources of information related to the provision of teaching and learning materials as well as communicating by teachers to students both personally and through group discussions (Emiri, 2015, Martin,2006).

This condition shows that the use of digital media is still low among professional teachers in Indonesia. Bogor City is one of the cities in Indonesia that implements smart city. A smart city is a concept of using information technology to encourage governments to create services that can improve the quality of life of their people. In line with the concept of smart city, every community must have good digital capabilities so that the use of information technology and media can be used productively. No exception teachers in the scope of the City of Bogor, to improve the learning process, to strengthen the character of students in accessing digital media, teachers must have qualified digital literacy skills to reinforce the characters of students. Based on the circumstances and problems that occur related to the use of the internet by teachers and the importance of planting character and knowledge early on in the digital age, this study was conducted to examine how the level of digital literacy competency of elementary school teachers in Bogor City is in order to build the nation's character to drive the 4.0 revolution.

The term digital literacy was coined first by Paul Gilster (1997) as the ability to use information effectively and efficiently from various digital sources. The ability of digital literacy is not only about the ability to read, but the process of thinking critically to synthesize information found in digital media. Gilster said there are 4 aspects of competence so that someone is said to be digital literate, the four aspects are aspects of searching on the internet, aspects of hypertext guidance, evaluation of information content and aspects of compiling the knowledge. According to Belshaw (2001), digital literacy is an ability to understand the information in the form of multimedia information. Digital literacy is not just the ability to use digital resources, but also the ability to think about information obtained from various multimedia sources effectively. Digital

literacy is the ability and knowledge of someone to use digital media, and communicate in using, searching, making information, and using it wisely, carefully, smartly, precisely, and obeying the law to foster communication and interaction in everyday life. Digital literacy is a life skill that must be possessed by various levels of society.

Someone with good digital literacy skills can someone access, understand content, inform, create and even update digital media. If someone has this ability, digital media can be used productively, not for destructive or even consumptive acts. Therefore digital literacy learning is needed in society (Graber, 2012). Digital literacy learning can be pursued with school education (formal) and society (informal and non-formal). At school, digital literacy can be developed into the learning process that is integrated into the curriculum with digital media such as through computers, the internet (blogs, social media, web), and smartphones. Students can be invited to understand and distinguish hoax news and true news that is spread on the internet. Also besides, teachers can provide useful sites for learning and how to use them, such as the home of the Ministry of Education and Culture and internet literacy programs (Mishra, R., N. & Mishra, C., 2010). In addition to students who need to improve their digital literacy skills, teachers also need to increase their knowledge and creativity in the process of teaching digital literacy, and the principal needs to facilitate teachers or education personnel in developing the school's digital literacy culture.

The teacher has an important role in the learning process. The learning process that is integrated with digital media must involve universal values that must be obeyed by each user such as maintaining privacy, expression, cultural diversity, intellectual rights, etc. Then the teacher needs to guide and teach students the character values that must be possessed so that they are wise in using digital media. Planting and strengthening the nation's character can be achieved well through digital literacy, because digital literacy makes teachers and students able to access, sort and understand various types of information that can be used to improve the quality of life such as health and care for children, families (Pischetola, 2011).

Some of the results of previous studies that can be used as a reference in this study include, research Muhammad Ragil & Dholina Inang (2018) in his research on digital literacy in learning in primary schools nearly 99% of students in the industrial revolution era have used smartphones before the age of 9 year. Activities that are often done are watching YouTube and playing games. From the results of Ragil and Inang's research, it can be concluded that the digital world has entered the world of the young generation including students in the elementary school domain. Therefore we

need data about the patterns of schools facing the development of the digital era in learning in schools.

Digital Literacy in Schools needs to be encouraged from every aspect, both in terms of students as well as teachers as educators. Siti Masitoh (2018) examines digital literacy as an effort to improve the quality of learning and towards the golden generation of 2045, and the results of his research can be concluded that 21st-century teachers and lecturers are challenged to be able to prepare learning components that can move literacy in schools. It turns out that in 2017 before Siti Masitoh, there was already a digital literacy study for teachers (SMA)/madrasa aliyah (MA) in the Central Jakarta area which was examined by Indah Kurniingsih, Rosini and Nita Ismayati (2017), the results of her study concluded that the teachers require information training to develop their ability to drive scientific literacy.

Sujana & Dewi Rachmatin (2019), discussed 21st-century digital literacy for PGSD students: what, why, and how. The results of his research can be concluded that entering the 21st-century education, digital literacy is not just adding technology to the learning process, but can be utilized to improve the quality of learning. The ability of digital literacy at this time is very important possessed by PGSD students as prospective elementary school teachers, to be applied when implementing learning in elementary schools.

Based on previous research studies that have been presented, that digital literacy is very important for students and teachers in facing the era of the industrial revolution in the 21st century. However, digital literacy research for elementary teachers has not been done so far. Therefore, researchers are interested in examining the digital literacy capabilities of elementary school teachers to strengthen the nation's character in the era of the industrial revolution 4.0. Researchers formulated several problem formulations to examine the digital literacy competencies of elementary school teachers in Bogor, namely: 1. What is the level of teacher competence in matters relating to the process of finding information from the internet, in terms of the ability to evaluate information content? and in terms of compiling knowledge in digital media?

METHOD

This research uses a quantitative approach with a descriptive type. The method used in data collection in this study was using a questionnaire as the main source and was supported by interviews directly with respondents. The sampling technique uses *a stratified* random sampling technique that obtained the results of 5 elementary schools in Bogor. Researchers took a sample of 104 teachers in the city of Bogor from 5 elementary schools to be respondents in this study. Data processing techniques carried out through several stages, namely editing, coding and tabulating using SPSS 25. This study uses a

frequency table and a table of scores at the level of digital literacy. The level of category given is very high, high, low, and very low with the following scores:

Table 1. Score Category digital literacy skills

Category	Score
High	3,26 – 4,00
Middle	2,51 – 3,25
Low	1,76 – 2,50
Very Low	1,00 – 1,75

(Gilster, 1997)

This researcher uses the theory of digital literacy competence that was raised by Paul Gilster in 1997 as a reference literature review. Gilster himself mentioned that there are 4 aspects of digital literacy competency that a person must possess to be said to be digital literacy. The four aspects are internet searching, hypertextual navigation, content evaluation, and knowledge compilation (knowledge evaluation) knowledge assembly).

RESULTS

This research was conducted to illustrate the level of digital literacy competency of elementary school teachers in Bogor city based on 4 aspects, namely internet searching, hypertextual navigation, content evaluation, and knowledge evaluation. assembly). The data obtained will be analyzed using Digital Literacy Competencies as stated by Gilster.

1. Internet Searching

Based on aspects of internet search, the level of teacher literacy competence is one's ability to use the internet (Gilster, 1997). Gilster explained that there are several activities that can be done in using the Internet, among others, using and managing email accounts that are owned regularly, joining newsgroups/mailing lists, conducting online activities, doing online transactions, using the internet to fulfill tasks, reading online news until use multimedia online such as listening to music, watching videos, and others. Hendricks Gerrits explained that the use of the internet among teachers was more dominated by the use of finding sources of information related to teaching materials and used to communicate with students.

Based on the data obtained scores from several aspects supporting the level of digital literacy competency based on aspects of searching on the internet (internet searching) namely the ability of web search with an average score of 3.13, the average score of the ability to search information on the internet by 3,09, and the average score of types of activity in using the internet is 2,88. The overall total average score obtained at the level of digital literacy competence of teachers in Bogor based on internet search aspects reached 3,03.

2. Hypertextual Navigation

Hypertextual guidance (hypertextual navigation) is a skill to read and understand hypertext directions. Hypertext is a type of electronic language text that is formatted to have the ability to connect to other text and other types of media (Gilster, 1997). Teacher competency level based on aspects of hypertext direction guidance (hypertextual navigation), based on the data obtained, found an average score of each aspect supporting the level of digital literacy competency based on aspects of hypertext direction guidance (hypertextual navigation) such as the ability to understand hypertext and hyperlink with an average score 3,10, the ability to understand the characteristics of hypertext with an average score of 2.74, the ability to understand differences in information on the internet with textbooks with an average score of 3.06, the ability to understand how the web works with an average score of 2.27, the ability understand the characteristics of web pages with an average score of 3.02. The average total score of the teacher's digital competency level based on the overall aspect of hypertextual navigation is a score of 2.84.

Based on the results obtained illustrating the ability of teachers to access hypertext guidance still requires a deeper understanding, this is in accordance with Rahman's (2008) opinion regarding the ability to access and learn hypertext among teachers in Malaysia showing that many teachers use material obtained from hypertext but the ability to understand hypertext is still minimal. 85% of respondents surveyed claimed that it was quite difficult to trace the number of available hyperlinks and choose hyperlinks to get to the information needed.

3. Content Evaluation

Content evaluation competence is a person's ability to think critically and analyze something obtained online along with the ability to identify and assess the validity and completeness of the information referenced by hypertext links (Gilster, 1997). It takes a fairly important set of competencies that a person must possess in the ability to titrate in the digital age, one of which is the ability to make decisions about something found online. Most of the information available on the internet is often not well filtered based on authorship and editorial aspects and tends to be open, so sometimes the information available on the internet is often questioned as to its validity. The art of critical thinking requires the user to make a balanced assessment between what is displayed on the screen and what is meant by the information content found online (Bawden, 2001).

In obtaining data on the level of digital literacy competence of teachers based on aspects of evaluation of information content (content evaluation), obtained scores such as the ability to distinguish display with information content with an average score of 3.11, the ability to analyze background information with an average score of 2.19, the ability to

analyze web pages with an average score of 3.01, the ability to function and use the FAQ in discussion groups with an average score of 2.38. Total Average overall score of the level of digital literacy competence of teachers in the city of Bogor based on aspects of the evaluation of information content (content evaluation) shows the number 2.67. Based on this it can be concluded that the majority of teachers still do not have the competence to think critically when dealing with evaluating the content of information found on the internet. The teacher still does not understand about not caring about aspects of the suitability of the domain with the contents of the available information, searching for links provided on a website, and the FAQ function that is in a discussion group.

Jones and Hafner (2012) explain that digital literacy is related to a person's ability to think critically in the face of information found on the internet. The way that can be done to decide the suitability of the information on the internet is to check the compatibility of information with other information from several different author sources. In addition, it is also necessary to consider the relevance of the source of information sought with information obtained in accordance with needs. There is another approach to digital literacy as described by Jones and Hafner (2012) which outlines that digital literacy also relates to how a person uses media (such as the internet) for their needs.

4. Knowledge Assembly

Gilster (1997) explains the competency of evaluating the preparation of knowledge (knowledge assembly) is a person's ability to compile knowledge, build a collection of information obtained from various sources with the ability to collect and evaluate facts and opinions well and without prejudice. Gilster (1997) reveals that in addition to thinking critically, it also requires the ability to learn how to assemble knowledge and to build a collection of information that has been obtained into a new knowledge that is based on reliable information from several different sources.

The level of digital literacy competence of teachers based on aspects of evaluating the formation of knowledge (knowledge assembly) obtained an average score of aspects of supporting digital iteration based on aspects of compilation of knowledge (knowledge assembly) including such as the ability to arrange teaching materials by joining into a newsgroup / mailing list / group discussion with an average score of 1.99, ability to analyze background information obtained with an average score of 3.07, ability to use several types of media to prove the truth related to information that has been obtained with an average score of 3.26, ability to conduct discussions in efforts to solve problems in order to compile teaching materials with an average score of 3.17, the ability to compile sources of information obtained in order to compile

teaching materials with an average score of 2.66. The overall average total score of the level of digital literacy competence of teachers in the city of Bogor based on aspects of the preparation of knowledge (knowledge assembly) shows the number 2.72.

Literacy in the digital age requires a person's self-awareness to care for others and the awareness to contact others to discuss and get help in addition to the ability to find information through the internet and be able to evaluate it. From the data generated, the level of digital literacy competence of elementary school teachers in Bogor as a whole is as follows:

Table 2. Competency Levels of Digital Literacy among Teachers in the City of Bogor

No	Aspects	Score Mean	Category
1	*Internet Searching*	3,03	Sedang
2	*Hypertextual Navigation*	2,84	Sedang
3	*Content Evaluation*	2,72	Sedang
4	*Knowledge Assembly*	2,67	Sedang

Digital literacy competencies are emphasized, namely the ability to think critically in finding information, processing and analyzing information on digital media which is located in the aspect of evaluating information content (Content Evaluation).

The aspect of information retrieval in the digital era (internet) must master the guidance of hypertext to explore unstructured links which at the same time is very influential to the process of finding information through digital sources (Fieldhouse and Nicholas, 2008). The ability to search for information, the direction of hypertext guidance and evaluation of information content is needed for one's knowledge to use digital media, and to communicate in using, searching, making information, and using it wisely, carefully, intelligently, precisely, and obeying the law in order to foster communication and interaction in daily life.

CONCLUSION

Based on the research it can be concluded that the Level of Teacher Digital Literacy Competency based on the Aspects of Searching on the Internet (Internet Searching) Total average score reaches 3.03 which in the total score is included in the level of digital literacy competency in aspects of searching on the internet (internet searching) classified as being Score is obtained from several components among them: Knowledge of web search components that are classified as very high with a score of 3.84, ability scores for searching information on the internet that is classified as high with a score of 2.72, as well as scores of types of

activities in using the internet classified as high with a score of 2.67.

In the next research the need to increase the strength of the evaluation of information content evaluation that can be done by examining information obtained on the internet critically by checking the validity, vulnerability and background of information makers found in digital media or by comparing other similar information either comparing with information in other media such as books or through other websites that have a credible record of discretion or can contact the librarian to provide a more credible reference. Research is also needed for teachers in rural areas or rural blood areas that have limited access to digital media to compare digital literacy competencies among teachers in urban and rural areas.

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