

Implementation of Digital Literacy in Learning in Elementary Schools

Nuryati¹, Djalal Fuadi², Ahmad Muhibbin³, Laili Etika Rahmawati⁴, Endang Fauziati⁵

Postgraduate University of Muhammadiyah Surakarta
Correspondence Email: q200200008@student.ums.ac.id

Abstract

This research is to examine the obstacles experienced by teachers and students in the application of digital literacy in learning Mathematics in Elementary Schools. The method used in this research is qualitative. This research was conducted on teachers, and students. Data collection techniques used are (1) observation, interviews and documentation. Instruments of data analysis were carried out by (1) collecting data; (2) data reduction; Researchers carry out the process of selecting or selecting, focusing or focusing, simplifying, and abstracting all types of information that support research data. (3) Presentation of data; a collection of information that gives the researcher the possibility to draw conclusions and take action. (4) Withdrawal of Conclusions/Verification; Researchers must try to find meaning based on data that has been dug carefully, completely, and deeply. The assessment technique to check the validity of the data is using triangulation. The triangulation used is source triangulation and method triangulation. Results: The results of this study indicate that the digital media infrastructure in schools is an obstacle in the application of digital literacy in learning Mathematics in Elementary Schools.

Keywords: implementation of digital literacy, learning, digital media, Elementary School

1. INTRODUCTION

The industrial revolution 4.0 has indirectly expanded the world of education in Indonesia. This facilitates the entry of knowledge and information that can be accessed throughout the world for those who access it. Ease of accessing information is a threat to teachers. Teachers can be replaced by technology. The technology that is a threat to the world of education is Artificial Intelligence (artificial intelligence). Jack Ma at the 2018 World Economic Forum said (Asmara, 2019) Education will be a tough challenge for the next 30 years. Heavy challenges in the world of education can be overcome, if teachers are able to develop their creativity in teaching, namely through increasing competence in mastering technology.

Teacher creativity has an important role to answer the challenges of the times in the era of the industrial revolution 4.0. This can be done by teachers through activities that can answer the challenges of today's progress, namely in the form of literacy activities. The government itself has also launched a literacy movement that focuses on digital literacy, technological literacy, and human literacy. Why is literacy important? Because based on the results of tests conducted by PISA, seen from the results of the International Student Assessment Program (PISA) test which has been conducted every three years, it is stated that the average reading test results of students in Indonesia are in the low category compared to other ASEAN participating countries (Habibi & Superman). , 2020). Problems that arise in addition to low reading literacy are also students' information technology skills which are still limited to games (online games) and communication only. This can be seen from internet search engines in accessing information that is rarely used by students. In addition, lack of understanding of a website and lack of new knowledge with information obtained through the internet. This is due to his desire to create new knowledge from various information obtained from the internet.

Digital literacy itself includes three abilities, namely competence in using technology, interpreting and understanding digital content and assessing its credibility and how to create, research, and communicate with the right tools (Dinata, 2021). According to Mayes and Fowler, Paul Gilster, Douglas A.J. Belshaw (Rullyana, 2018, Farida et al., 2020, Bahri, 2021) digital literacy is summed up as an individual's interest, attitude, and ability to use digital technology and communication tools to access, manage, integrate, analyze and evaluate information, build knowledge new, creative and communicate in mastering information both from print and digital sources.

The learning process is a process of interaction between students and educators and learning resources in a learning environment. The function of learning in general is to stimulate and succeed in the learning process to achieve learning objectives, the learning function itself utilizes learning resources optimally to achieve learning objectives, namely the occurrence of changes in students. The final result of the learning process will determine whether or not the learning objectives are achieved. If the learning objectives have not been achieved, then in the learning process there are indicators that cause failure in learning. Failure in this learning is considered a learning difficulty. According to Masroza (Ety Muklesi Yeni, 2015) learning difficulties are disorders that actually exist in children related to general and specific tasks, which are thought to be caused by neurological dysfunction factors, psychological processes or other causes so that children who have learning difficulties in learning. a class shows low learning achievement.

Difficulties in learning Mathematics have been considered as commonplace and have become a reality. This view of mathematics as a subject is a frightening subject for most children. While this is generally considered to be the case, learning difficulties should be addressed from an early age. If left unchecked, it will affect the child's academic career. In line with the research of Patimah, et al. (Patimah et al., 2020) Learning mathematics in elementary schools is the foundation for further education. In addition, planting the concept of the learning process must also be fun so that it can attract students to be interested in Mathematics subjects (Nawafilah & Masruroh, 2020). The teacher's role in learning does not only provide information, but also directs and provides learning facilities so that the learning process is more meaningful.

Digital literacy in the mathematics learning process can use the Blended learning approach. Blended learning is a learning process by combining conventional learning with online learning (e-learning). One of them is the learning process carried out by utilizing digital service products (multimedia) (Putera Permana & Nourmavita, 2017). Multimedia itself is referred to as a means of communication or sharing information in the form of sound, images, and videos, as well as text. Multimedia is very helpful for teachers in teaching and learning activities.

Learning with a blended learning approach that has been applied by the 5th grade teacher of SD Negeri Sumogawe 01 Semarang Regency in learning Mathematics. This blended learning is a follow-up to learning activities during the COVID-19 pandemic to the post-covid-19 pandemic. During the Covid-19 pandemic, face-to-face learning is limited to schools. This limited face-to-face activity, students have entered in full with a reduced number of study hours. This limited face-to-face activity is carried out according to health protocol standards. The goal is that students are not too long in direct contact with friends and teachers in class. The limited time of students at school becomes a dilemma in learning. This has an impact on the learning outcomes of most students who are less complete and understanding of the material is also lacking. For this reason, the teacher presents interactive multimedia from digital products as a solution to student learning difficulties. One of the digital learning media that can be applied is the Google site. Google sites can be used interactively by using a google account. In line with research (Ramadhan Anggit Sastrawan, 2021) the use of web-based learning media is effective and efficient because it improves student learning outcomes.

The process of learning Mathematics by utilizing interactive multimedia on the Google sites website in elementary schools is still experiencing many obstacles in its implementation. This can be seen when the use of digital media whose number of units is not the same as the number of students. These constraints hinder the process of implementing digital literacy in mathematics learning so that the expected digital literacy results cannot yet become a habit.

2. METHOD

The research method used is a qualitative method. The research approach is descriptive qualitative research. The purpose of this research is to raise and systematically describe the facts, circumstances, variables and phenomena that occur about the obstacles experienced in the application of digital literacy in learning Mathematics in Elementary Schools. Qualitative method is a method used to examine the condition of natural objects, where the researcher is the key instrument, and the results of qualitative research emphasize meaning rather than generalization (Dewantara & E-mail, 2011)

The place of research is at SD Negeri Sumogawe 01, Semarang Regency. The research time starts from February 2022 to May 2022. The data source in this study is the research subject from which the data was obtained. According to Suharsini Arikunto (Rezky Zakiyah Aprilia, 2020) the data source is the subject from which the data is obtained. Sources of data in the form of words and actions, both obtained through interviews (situational data sources) or through observation.

Document data sources can be obtained from the relevant agencies. According to Lofland (Krisdiana et al., 2014) the main data sources in qualitative research are words and actions, the rest is additional data such as documents and others. Sources of data in the form of subjects whose data were obtained were: a. Sources of data in the form of humans, namely 1 principal, 1 teacher and 37 students. b. Sources of data in the form of questionnaires and interviews about the needs analysis of interactive learning media development. c. Data collection techniques using observation techniques, interviews and documentation.

Data analysis was carried out in three stages, namely (Shidiq & Choiri, 2019), (1) Data collection; conducted during the pre-study through observation. (2) Data reduction as a selection process, seeking attention to simplification, abstraction, and transformation of “rough” data that emerges from written notes in the field. (3) Presentation of data. Then the presentation of the data can be described briefly, in the form of a chart, the relationship between categories of narrative text. (4) Summarizing data; The initial conclusions put forward are still tentative, and will change, with strong evidence to support the next stage of data collection.

Presentation of data can be done in the form of brief descriptions, relationships between categories, and others. Miles and Huberman (Nugrahani, 2014) state that to present qualitative research data, narrative text can be used and to conclude the data is taken from the essence of the data presentation that has been organized in the form of short sentence statements and contains a broad understanding.

Test the validity of the data in this study using triangulation. Researchers in triangulating the data try to test the data. How to find out data by collecting data from various sources. Researchers use triangulation of sources and methods (Syafuddin, 2017). Source triangulation is triangulation that is used to explore further data from sources with many data sources such as archives, books, documents, observations and interviews. Method triangulation is triangulation carried out by collecting data by other means or methods. Collecting data using interview, survey and observation methods.

3. RESULTS AND DISCUSSION

RESULT

The results of the study were obtained from observations and interviews conducted by researchers with teachers and fifth grade students of SD Negeri Sumogawe 01, Semarang

Regency, Central Java. The factors that hinder the application of digital literacy in learning Mathematics in Elementary Schools are as follows: The results of interviews with teachers and principals at SD Negeri Sumogawe 01, Semarang Regency, Central Java regarding the infrastructure supporting digital literacy as follows: (1) Computers for activities There are 10 learning units. (2) Aid of 15 units of chrome books from the government. (3) internet connection in the form of a wifi network from indiehome. Infrastructure facilities are used to support student learning activities. But not fully maximized. These 10 computers are used by the school for computer extracurricular activities for students in grades 1 to 6. This computer extracurricular is intended to increase students' knowledge of information technology. The hope is that if students are able to operate digital media, it will make it easier for teachers to apply digital-based learning in learning.

The results of the implementation of digital literacy in the Mathematics learning process in grade 5 with 37 students based on the level of student mastery of the digital media used are as follows: (1) There are 50% or 19 students who are able to operate digital media in learning Mathematics. (2) There are 30% or 11 students who are quite capable of operating digital media. (3) Students who are less able to operate digital media are 20% or 7 children.

DISCUSSION

Facilities and infrastructure in digital literacy activities are factors that support the implementation of digital literacy activities in schools. Supporting suggestions for digital literacy activities are computers, laptops, cellphones, and projectors (LCD projectors). These infrastructures play an important role in influencing teachers in the use of digital media in learning. Digital media Digital media is media whose content is in the form of a combination of data, text, sound, and various types of images that are stored in digital format and disseminated through networks based on broadband optical cables, satellites and microwave systems (Flew, 2008). Digital media in its use requires an internet network as a tool to be able to convey information from teachers to students.

This digital media is one way for digital literacy activities in schools. Digital literacy popularized by Paul Gilster (I Putu Gede Sutrisna, 2020) is defined as the ability to read, understand, and analyze various digital sources. Meanwhile, according to Bawden (Rumata & Nugraha, 2020) it offers a new understanding of digital literacy which is rooted in computer literacy and information literacy. Eshet (Muslimin & Eid, 2020) emphasizes that digital literacy must be more than the ability to use various digital resources effectively. So it can be concluded that digital literacy is the ability to find, work on, evaluate, use, create and utilize wisely, carefully, intelligently according to its use.

Implementation of digital literacy in learning at SD Negeri Sumogawe 01 Semarang Regency using a chrome book. The use of this chrome book is connected to an internet network connection. Chrome books are used by students to access learning resources from the internet. As a driving school in Semarang Regency, students access chrome books using a learning.id account. Apart from being a means to access learning resources, it is also a medium of learning in the classroom.

The use of chromebooks as a digital medium for learning Mathematics in grade 5 is used to access digital media links that have been created by the teacher. The purpose of digital media or interactive media is to allow two-way communication between teachers and students. Interactive digital media implemented are media from website-based Google products, namely Google Sites. This Google site is run using a Google account. This is in line with research conducted by Ramadhan Anggit Sastrawan (Ramadhan Anggit Sastrawan, 2021). The use of web-based learning media is very effective and efficient to improve student learning outcomes. The digital media website google sites that is applied in grade 5 uses chrome books and internet networks. Students access a google account and then enter a google site link from the results of the google site publication link that has been created by the teacher. The link to the results of this publication will be accessed by students. Before accessing the teacher, the teacher provides instructions for using digital media on the Google site. The benefit of using Google's digital

media site is that students can learn regardless of time and place. The material can be accessed at any time, so that students' understanding of the material will be deeper. Although in it there are obstacles in the form of facilities and internet networks. Because not all students have information technology facilities and a good internet network at home.

Utilization of digital media with the availability of infrastructure in schools. The number of chromebooks owned is 15 units and the internet network is in the form of wifi with a speed of 20 MBPS. The number of grade 5 students is 37 students. The ratio of students and the chrome book used is 1 to 2 or 3 children. 2 or 3 students use 1 chrome book as a digital medium for learning Mathematics. This causes learning not to run optimally. Students who have the ability and knowledge to operate digital media will dominate the use of chrome books. Meanwhile, students who are less able to operate chrome book digital media tend to be silent and even play alone. In addition to the number of chrome books that are still lacking, an internet network that only has a speed of 20 MBPS when used simultaneously will weaken its speed.

Facilities and infrastructure that do not yet support the implementation of digital literacy in mathematics learning at SD Negeri Sumogawe 01, Semarang Regency make schools continue to develop and improve facilities and infrastructure gradually. To support the improvement of facilities and infrastructure, there are digital aids in the form of chrome books and Performance School Operational Assistance as driving schools. The performance of School Operational Assistance is expected to be able to improve digital facilities in schools. Considering that as a driving school, schools are required to be digital-based schools.

Although the availability of digital media is still limited, this is one of the school's efforts to make changes to students in responding to the challenges of the industrial revolution 4.0. This is in line with Ki Hadjar Dewantara's thought that education grows and develops in children as a result of the nature of the times (Apriliyanti, 2020). This research is also in line with research on infrastructure supporting digital literacy activities in schools (Ulum et al., 2019), (Jessica et al., 2020), (Herlambang et al., 2021) that the process of implementing digital literacy activities needs to be supported by facilities. and adequate school infrastructure such as wifi networks, computers, LCD projectors, and laptops.

CONCLUSION

Digital facilities and infrastructure in the form of computers, laptops, LCD projectors and internet networks are the main factors supporting digital literacy activities in schools. Inadequate facilities and infrastructure will be an obstacle in the application of digital literacy in learning in schools. For this reason, it is necessary to reform the infrastructure, although gradually. In addition to facilities and infrastructure, improving the quality of human resources, namely teachers, also needs to be improved. Teacher competence plays an important role in supporting the implementation of digital literacy in learning in schools.

BIBLIOGRAPHY

1. Apriliyanti, F. (2020). Relevansi Pemikiran Pendidikan Dan Kebudayaan Ki Hadjar. *Prosiding Seminar Nasional & Call Paper Psikologi Sosial 2019, May*, 215–221.
2. Asmara, Y. (2019). Penguatan Pendidikan Karakter Melalui Pembelajaran Sejarah di Era Revolusi Industri 4.0. *INA-RXiv Papers*, 448–458.
3. Bahri, S. (2021). Literasi Digital Menangkal Hoaks Covid-19 Di Media. *Jurnal Ilmu Komunikasi* /, 10(1), 16–28.
4. Dewantara, K. H., & E-mail, S. (2011). Deskripsi Kualitatif Sebagai Satu Metode Dalam Penelitian Pertunjukan. *Harmonia: Journal of Arts Research and Education*, 11(2), 173–179. <https://doi.org/10.15294/harmonia.v11i2.2210>
5. Dinata, K. B. (2021). Analisis Kemampuan Literasi Digital Mahasiswa. *Edukasi: Jurnal Pendidikan*, 19(1), 105–119. <https://doi.org/10.31571/edukasi.v19i1>.
6. Dr.J.Raco. (2010). *Metode penelitian kualitatif: jenis, karakteristik dan keunggulannya*. <https://doi.org/10.31219/osf.io/mfzuj>

7. Ety Muklesi Yeni. (2015). Kesulitan Belajar Matematika di Sekolah Dasar. *Jurnal Pendidikan Dasar (JUPENDAS)*, 2(2), 1–10.
8. Farida, U., Adhi, A. N., & Artikel, I. (2020). Keefektifan Literasi Digital UPT Perpustakaan Universitas Semarang di Masa Pandemi. *Information Science and Library*, 1(2), 81–86. <https://doi.org/http://dx.doi.org/10.26623/jreb.v12i3.1758>
9. Habibi, H., & Suparman, S. (2020). Literasi Matematika dalam Menyambut PISA 2021 Berdasarkan Kecakapan Abad 21. *JKPM (Jurnal Kajian Pendidikan Matematika)*, 6(1), 57. <https://doi.org/10.30998/jkpm.v6i1.8177>
10. Herlambang, Y. T., Abidin, Y., Irianto, D. M., & Yuniarti, Y. (2021). Peningkatan Profesionalisme Guru Melalui Pelatihan Membangun Desain Pembelajaran Online dengan Memanfaatkan Multiplatform : Sebuah Gerakan Literasi Digital. *Massagi : Masyarakat Multiliterasi Pedagogi*, 1(1), 1–8. <https://ejournal.multiliterasi.com/index.php/mmp/article/view/6>
11. I Putu Gede Sutrisna. (2020). Gerakan literasi digital pada masa pandemi covid-19. *Stilistika*, 8, 268–283. <https://doi.org/10.5281/zenodo.3884420>
12. Jessica, A. R. A., Harmianto, S., & Mareza, L. (2020). Penerapan Literasi Digital dalam Pembelajaran Kurikulum 2013 Berbasis E-Learning Tema 8 Bumiku Kelas VI SD Negeri 2 Purbalingga Lor. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, 2(2), 139–146. <https://doi.org/10.36232/jurnalpendidikandasar.v2i2.529>
13. Krisdiana, I., Apriandi, D., & Setiansyah, R. K. (2014). Analisis Kesulitan Yang Dihadapi Oleh Guru Dan Peserta Didik Sekolah Menengah Pertama Dalam Implementasi Kurikulum 2013 Pada Mata Pelajaran Matematika (Studi Kasus Eks-Karesidenan Madiun). *JIPM (Jurnal Ilmiah Pendidikan Matematika)*, 3(1). <https://doi.org/10.25273/jipm.v3i1.492>
14. Muslimin, R., & Idul, A. (2020). Pengaruh Budaya Literasi Digital Terhadap Pembentukan Sikap Dan Karakter Masyarakat Dalam Pembatasan Sosial Akibat Pandemi Covid-19. *JBSB*, 10(3), 21–36.
15. Nawafilah, N. Q., & Masruroh, M. (2020). Pengembangan Alat Permainan Edukatif Ular Tangga Matematika untuk Meningkatkan Kemampuan Berhitung Anak Kelas III SDN Guminingrejo Tikung Lamongan. *Jurnal Abdimas Berdaya : Jurnal Pembelajaran, Pemberdayaan Dan Pengabdian Masyarakat*, 3(01), 37. <https://doi.org/10.30736/jab.v3i01.42>
16. Nugrahani, F. (2014). dalam Penelitian Pendidikan Bahasa. In *Buku* (Vol. 1, Issue 1). <http://ejournal.usd.ac.id/index.php/LLT%0Ahttp://jurnal.untan.ac.id/index.php/jpdpb/article/viewFile/11345/10753%0Ahttp://dx.doi.org/10.1016/j.sbspro.2015.04.758%0Awww.iosrjournals.org>
17. Patimah, S., Lyesmaya, D., & Maula, L. H. (2020). Analisis Aktivitas Pembelajaran Matematika pada Materi Pecahan Campuran Berbasis Daring (Melalui Aplikasi Whatsapp) di Masa Pandemi Covid-19 pada Siswa Kelas 4 SD Pakujajar CBM. *Jurnal Kajian Pendidikan Dasar*, 5(2), 98–105.
18. Putera Permana, E., & Nourmavita, D. (2017). *Pengembangan Multimedia Interaktif Pada Mata Pelajaran IPA Materi Medeskripsikan Daur Hidup Hewan di Lingkungan Sekitar Siswa Kelas IV Sekolah Dasar*. <https://doi.org/https://doi.org/10.33369/pgsd.10.2.79-85>
19. Ramadhan Anggit Sastrawan, H. (2021). Pengembangan Media Pembelajaran dengan Aplikasi Google Sites Berbasis Ensiklopedia Materi Teks Eksplanasi Kelas VIII SMP. *Seminar Nasional SAGA*, 3(1), 137–144. <http://seminar.uad.ac.id/index.php/saga/index>
20. Rezky Zakiyah Aprilia. (2020). Upaya Guru Dalam Meningkatkan Aktifitas Belajar Pada Pembelajaran Tematik Siswa Masa Pandemi Covid-19 Kelas V Sekolah Dasar Negri 44/X Rantau Rasau. In *UIN Sutha Jambi* (Vol. 43, Issue 1). UIN SUTHA JAMBI.
21. Rullyana, G. (2018). Gerakan Literasi Digital Sebagai Gerakan Literasi Informasi di Sekolah. *Academia : Prosiding Seminar Nasional Literasi Digital Dalam Agama Dan Sains*. <https://core.ac.uk/download/pdf/287318946.pdf>
22. Rumata, V. M., & Nugraha, D. A. (2020). Rendahnya tingkat perilaku digital ASN kementerian kominfo: Survei literasi digital pada instansi pemerintah. *Jurnal Studi Komunikasi (Indonesian Journal of Communications Studies)*, 4(2), 467. <https://doi.org/10.25139/jsk.v4i2.2230>

23. Shidiq, U., & Choiri, M. (2019). Metode Penelitian Kualitatif di Bidang Pendidikan. In *Journal of Chemical Information and Modeling* (Shidiq, U., Vol. 53, Issue 9).
24. Syaifuddin, M. (2017). Implementasi Pembelajaran Tematik di Kelas 2 SD Negeri Demangan Yogyakarta. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 2(2), 139.
<https://doi.org/10.24042/tadris.v2i2.2142>
25. Ulum, B., Fantiro, F. A., Mochamad, &, & Rifa, N. (2019). Pemanfaatn Google APPS di Era Digital Pada Siswa Sekolah Dasar. *Lentera Jurnal Ilmiah Kependidikan*, 14(2), 22–31.