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ANALYSIS OF DIGITAL LITERACY OF STUDENTS OF GRADE IV SDN 2 SUKOWILANGUN IN SCIENCE LEARNING

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Abstract*—The effectiveness of the educational process depends on how well students complete their assignments. Understnding student behavior greatly affects their learning process. Based on the result of a preliminary study at SDN 2 Sukowilangn, technology has been implemented in the learning process. The purpose of this study is to describe the level of digital literacy of grade IV students at SDN 2 Sukowilangun and to describe the factors that influence the digital literacy of elemnetary school students in the learning process. Data collection techniques used observation, interviews, field notes, and documentation. The data analysis techniques used were data collection, data reduction, data presentation, and data verification or conclusions. The results showed that students had a good understanding of using digital technology, especially learning platforms such as wordwall and padlet. Factors that influence digital literacy include access to technology, parental support, tecaher competence in using technology, availability of school infrastructure, and integration of digital literacy in the curriculum. With good digital literacy, students can learn independently, critically, and creatively, so that they are able to adapt to the increasingly rapid development of technology.*

Keywords—*Digital Litercy; Science; Elementary School Students*

I. INTRODUCTION

The effectiveness of the educational process depends on how well students complete their assignments (Abdullah, 2018). Understanding student behavior greatly affects the learning process. Learning is an interactive process involving teachers and students (Inah, 2015). Changing behavior, increasing knowledge, improving skills, abilities, and knowledge are learning objectives. According to Wakhyudin & Azizah, (2024) stated that by using interesting and educational media that is interactive and utilizing digital technology such as laptops or cellphones, teachers can motivate student learning activities in class. Thus, it can be seen in terms of learning strategies, class dynamics, general student abilities, free time, and so on.

In this era of globalization, the development of information and communication technology (ICT) affects almost all aspects of life, including in the world of education (Mukhsin, 2020). Digitalization has changed the way we find information,

communicate, and learn. Amidst the rapid development of technology, digital literacy is a very important skill to master, especially for the younger generation who will face the challenges of an increasingly digital era (Widayanti et al., 2024). Digital literacy not only includes the ability to use technological devices, but also includes the ability to search for, disseminate, and utilize information in cyberspace wisely and responsibly (Tuna, 2021). One of the main characteristics that students need to have in today's digital world is digital literacy (Rachmatin, 2020).

Digital literacy includes not only the capacity to utilize technology but also the ability to find, share, and use information in an ethical and efficient manner. According to Fajri, (2021) the capacity to understand, use, send, and produce information using digital technology is known as digital literacy. Since almost every element of life, including communication, work, and education, now depends on digital technology, this literacy is becoming increasingly important in the era of globalization and digital change. In addition, according to Law, N., Woo, D., de la Torre, J., & Wong, K., (2018) there are 4 indicators of digital literacy of elementary school students that can be integrated into students' abilities, namely being able to access basic operations of hardware and software, understanding, communication, and privacy security. Digital literacy helps students learn independently, critically, and creatively so that they can adapt to the needs of the ever-changing modern world (Cynthia & Sihotang, 2023). According to Rahmat Syah, Daddy Darmawan, (2019), there are 5 factors that influence digital literacy in elementary school students that can be integrated into the learning process, including access to technology, parental support, the role of teachers in using technology, availability of school infrastructure, curriculum and learning materials.

The results of interviews with teachers of SDN 2 Sukowilangun, namely for learning in grade IV students at SDN 2 Sukowilangun have implemented technology in the learning process. Learning uses *wordwall* and *padlet* media platforms for the learning process, utilizing social media to maximize learning, also including the use of audio, video, and PPT. Based on the results of the interview, it shows that electronic media has been used in learning in grade IV. Therefore, to ensure that students are wise in literacy, it is important to know the level of digital literacy and what factors influence the digital literacy of elementary school students in the learning process.

This study was driven by a study conducted by Mukhlishina & Danawati, (2023) entitled "Analysis of Digital Literacy in Learning for Grade III Students of SD Muhammadiyah 8 Malang" which revealed that teachers have utilized digital devices in learning. The similarity with previous research is that both studied digital literacy in elementary schools. The difference with previous research is the implementation of digital literacy in learning for grade III students of SD Muhammadiyah 8 Malang, while this researcher studied the level of digital literacy in learning and factors that influence digital literacy in the learning process.

Based on the previous explanation and research, the research entitled "Analysis of Digital Literacy of Grade IV Students of SDN 2 Sukowilangun in Science Learning" is important to be carried out. This research is believed to function as a guideline for teaching digital literacy to elementary school students, so that they have more knowledge about digital literacy. So the purpose of this study is to describe the level of digital literacy of grade IV students of SDN 2 Sukowilangun and describe the factors that influence the digital literacy of elementary school students in the learning process.

II. METHOD

This study uses a qualitative descriptive approach. According to Suwendra, (2018) explains that qualitative research is a research approach that produces descriptive data in the form of written or spoken words from people, as well as observable behavior. The purpose of qualitative descriptive research is to find out as much as possible about a person, a group, or an event while describing, illustrating, explaining, and providing more detailed answers to the problems being studied (Salam, 2023). Qualitative research on humans uses writing as a research tool, and written results are expressed in the form of words or phrases that accurately reflect the situation (Majid, 2017). This study describes the level of digital literacy of grade IV students of SDN 2 Sukowilangun along with the factors that influence the digital literacy of elementary school students in the learning process.

There are several requirements for the data sources of this study. According to Syamsuardi & Hajerah, (2018) the conditions required are the availability of data sources that must be used appropriately, both human resources and institutions, meeting the needs of selecting data sources. Data sources can be obtained from primary data sources and secondary data sources (Wahidmurni, 2017). In this study, the secondary data sources were through interviews with informants and direct observations of activities at the level of students' digital literacy and factors that influence digital literacy in learning carried out by research subjects during the teaching and learning process in the classroom, and these data sources will be recorded in writing. The primary data sources in this study were grade IV teachers and grade IV students of SDN 2 Sukowilangun. In this study, the secondary data were documentation photos during the study. This secondary data source was carried out to strengthen the primary

data so that the data collected became valid data. Secondary data sources in the form of documentation photos when conducting observations to determine the level of digital literacy in learning in grade IV students of SDN 2 Sukowilangun and interviews with grade IV teachers and grade IV students of SDN 2 Sukowilangun. The research instruments used in this study can be seen in table 1.

Table 1. Research instruments used

Data Type	Instrument	Filled In By
Digital lieracy level	- Observations sheet - Teacher and student interview sheet	- Observer - Observer
Digital literacy factors	- Observations sheet - Teacher and student interview sheet	- Observer - Observer

Data analysis techniques include four stages, namely data collection, data reduction, data presentation, and data verification (Miles, 1994). To obtain accurate data, researchers use data checking through technical triangulation, source triangulation, and time triangulation. Technical triangulation through various data collection techniques, namely observation techniques, interview techniques, and documentation techniques (Sriwijaya, 2020). Source triangulation through primary data sources and secondary data sources, namely the principal, grade IV teachers, grade IV students of SDN 2 Sukowilangun, interviews with informants, and direct observation. Time triangulation includes conducting research for some time until the data is valid and saturated.

III. RESULTS AND DISCUSSION

The purpose of this study was to describe the level of digital literacy of fourth grade students of SDN 2 Sukowilagun and to describe the factors that influence the digital literacy of elementary school students in the learning process. The results of the data recap from the observation sheet of the level of digital literacy in science learning in fourth grade students can be seen in table 2.

Table 2. Results of data recap from the observation sheet of digital literacy levels of grade IV students
(Indicators modified from (Law, 2018)

Digital Literacy Indicators	Implementation	Yes	No	Notes
Hardware and Software Operation	This relates to the basic operation of digital devices, such asturning them on and off, understanding basic concepts of hardware and software.	√		All fourth grade students can use hardware and software operations correctly and appropriately.
Understanding Literacy and Information	Skills in searching for digital information effectively.	√		Most fourth grade students can search for lesson materials correctly and appropriately.
Communication in Sharing Information	Involves interaction through digital technology and sharing.	√		All fourth grade students can use discussion rooms correctly and

				appropriately.
Privacy Security	This relates to the importance of protecting personal information (full name, address, telephone number, mobile phone password)	√		All fourth grade students can maintain the security of their personal information correctly and appropriately.

Meanwhile, the results of the recapitulation of data from the observation sheet of factors influencing digital literacy of grade IV students can be seen in table 3.

Table 3. Results of data recap from the observation sheet of digital literacy factors for grade IV students *(Indicators modified from (Law, 2018)*

Indicator	Implementation	Observation
Access to Technology	Have access to technology devices at home (cellphone, tablet, computer, laptop)	√
	Use the internet for learning purposes	√
	Have basic skills in using technology devices	√
	Use technology to complete school assignments	√
Parental Support	Parents give permission and support in the use of technology for learning	√
	Parents supervise the use of technology by children	√
	Parents guide children in using technology wisely	√
	Parents provide internet access at home	√
Teachers' Role in Using Technology	Teachers use technology in classroom learning	√
	Teachers teach how to use technology for learning	√
	Teachers give assignments that utilize technology	√
	Teachers provide ethical guidance in the use of technology	√
Availability of School	The school has a computer lab or access to technology	

Infrastructure	devices	
	The school provides internet access for learning activities.	√
	The school has multimedia facilities to support learning	√
	The school has a policy on the use of technology in learning	√
Curriculum and Subjects	School subjects have incorporated the use of technology in learning	√
	Students are taught basic skills in using technology	√
	Technology is used to enhance understanding of subjects	√
	Curriculum supports the use of technology in learning	√

The implementation of this research covers the level of digital literacy of elementary school students and factors that influence students' digital literacy in the learning process at SDN 2 Sukowilangun. The level of digital literacy includes hardware and software operations, information and data literacy, communication, and privacy security. While factors that influence the digital literacy of elementary school students include access to technology, parental support, the role of teachers in using technology, the availability of school infrastructure, curriculum and learning materials. Data sources from the study include grade IV teachers and grade IV students. The research instruments used were teacher interview sheets, student interview sheets, field note sheets, and documentation sheets.

The level of digital literacy in learning includes hardware and software operations, information and data literacy, communication, digital content creation. The following is an explanation related to the level of digital literacy in learning at SDN 2 Sukowilangun. In the first indicator regarding hardware and software operations, data obtained from interviews with grade IV teachers, grade IV students, and observation results in learning found that hardware operations and software operations can be mastered fundamentally by grade IV students. Most students can operate hardware and software and there is one student who still has a little difficulty in operating software such as understanding. Researchers see directly starting from the implementation of the learning process where teachers have prepared technological media, namely wordwall media (educational games) with facilities that support learning activities that have been provided by the school such as laptops, LCD projectors, and internet networks.

Not only teachers who hold laptops but students also hold laptops on their respective desks. Teachers always supervise students starting from turning on and off the laptop, using the keyboard and mouse for basic navigation, and being able to open the Google website in searching for images or materials (according to the teacher's instructions). Not only that, students can also type answers using wordwall media obtained from links that have been shared by the teacher using the Padlet website. This was conveyed by the fourth grade teacher, namely:

"At this age, children begin to have more logical thinking skills and high curiosity. As an educator, I also teach students about the importance of turning on and off digital devices in the right way to keep the device durable as a basis for the level of hardware and software operation".

Figure 1. Interview with Grade IV Teacher

The results of interviews with fourth grade students obtained the following data:

"To turn on the laptop, I usually press the power button on the device and wait for the laptop to turn on. If I turn off the laptop, I close the files or applications that are already open, after that I turn off the device by selecting 'Shut Down' via the Start menu or the power icon and I can also type to answer questions from the media that the teacher provides".

Figure 2. Interview with Grade IV Students

Observation results in Class IV teachers have provided digital literacy teaching at the hardware and software operating level. However, in class IV there are still students who still have difficulty applying software such as typing. The level of basic hardware and software operation in digital literacy in classroom learning can be said to be very good. This is in line with research by Ilham et al., (2022) which states that teachers have succeeded in providing basic teaching in using digital devices using wordwall media as an interactive media that can be used by students starting from turning on the laptop, typing answers on the wordwall media, to turning off the laptop.

In the second indicator, namely understanding information literacy during the learning process in grade IV in science learning which is inseparable from the use of digital devices that students get at each of their desks. Teachers always provide strict supervision when teachers instruct students to search for information based on the right sources and usually they get it on Google and wordwall media in searching for images or materials in science learning, of course, they always get guidance from the teacher. Based on the results of interviews with grade IV teachers as follows:

"To introduce digital information search skills effectively to fourth grade students, the first step is to understand the abilities and needs of students according to their age, such as practicing search skills, of course with valid sources".

Figure 3. Teacher Accompanies Students in Searching for Information

Therefore, in the learning process in the classroom in science learning, researchers see directly how students search on software such as *Google* and *wordwall* media. In line with the research of Kamila et al., (2022) which states that in the learning process, teachers always provide direction to students when using searches on the web so that students remain in accordance with the teacher's directions. In this study, students appeared to focus on the laptops in front of them and none of them played with friends beside or behind them. In searching for information in science learning, only one child still seemed to have difficulty following the directions given by the teacher.

The level of understanding of basic literacy of students by understanding literacy information always gets guidance from teachers so that students get the right information and can answer questions in science learning such as looking for pictures of ice cubes melting when left outside for too long. As the results of interviews with grade IV students are as follows:

"The first thing I do to search for information on the internet is to search for topics according to the instructions. If the teacher asks me to search for a picture of melting ice cubes, I also type in a picture of melting ice cubes. After that, I choose the right picture and the right source and the teacher always supervises me when I search or browse through science learning materials".

Understanding information literacy has been carried out by class IV SDN 2 Sukowilangun, including teachers providing assistance to students so that students obtain information from the right sources. Most students have been able to understand information literacy in digital literacy as can be said to be very good. However, there is one student who still does not understand information literacy in searching for material instructed by the teacher.

In the third indicator through communication in sharing information is one of the processes of conveying knowledge, data, or facts to others, either directly or through various media (Pradana, 2018). Communication in sharing information can be done by students using the *padlet* web link which students use to share information with teachers and peers. Researchers saw directly or observed that students could post content such as text, images, or videos on the same digital board, thus facilitating more active interaction and discussion. Based on the results of the fourth grade teacher interview as follows:

"So students do not only interact or communicate with teachers, but students can share information they get that can be shared in the padlet space that the teacher has prepared. So students can discuss what they get, of course always under the direction of the teacher and become active students but not noisy".

The observation results show that teachers at the communication level in sharing information have shown that group learning or joint discussions can be done using the Padlet web so as to train students in digital literacy. The results of interviews with grade IV students are as follows:

"I am very happy and never get bored of being able to share pictures and learning materials with my peers because the pictures I get are different from my friends and I can also share the search for materials that I think are right for what the teacher instructed".

Figure 4. Interview with Students

The results of interviews with fourth grade students obtained data that students did not seem bored when discussing using the *padlet* web because it made students excited and enthusiastic to discuss with teachers and peers. Communication in sharing information has been applied to fourth grade students at SDN 2 Sukowilangun, including directions from teachers when discussing using the Padlet web and teachers can also monitor the results of discussions in the Padlet room so that it can be said that the level of communication in sharing information can be categorized as very good.

In the fourth indicator through privacy security on the protection of a person's personal information from unauthorized access, use, or distribution. This includes various steps and technologies to ensure that personal data, such as identity, financial, and communication information, remains safe from threats such as hacking, data theft, or protection by unauthorized parties (Jum'ah, 2018). Students are often the target of cybercrime. Cybercrime is an illegal act carried out via the internet such as online fraud (Suratman, 2015). In addition to parental supervision at home, the role of teachers is also very important so that students do not become victims of cybercrime (Herawati et al., 2022). Researchers saw that teachers always provide education on the importance of maintaining personal data security to avoid sharing threats, such as fraud, identity forgery, and other dangerous things in cyberspace. Based on the results of interviews with grade IV teachers as follows:

"At school we always advise students not to play with gadgets excessively and there is communication between teachers and parents".

The results of observations of class IV show that teachers educate the importance of maintaining privacy security by giving examples in the use of digital devices. Based on the results of interviews with class IV students.

"I know about fraud and identity theft because my parents told me. I have never experienced it".

Cybersecurity as part of the digital literacy level in elementary school students requires cooperation between teachers and parents. Teachers have given advice to students about the importance of maintaining privacy security by giving relevant examples. However, no fourth grade students of SDN 2 Sukowilangun have experienced cybercrime.

The level of digital literacy has been implemented in all learning. However, all aspects of digital literacy are not always apparent in one learning session but rather during learning that takes place more than 3 times. Factors that influence the digital literacy of elementary school students in the learning process at SDN 2 Sukowilangun. Based on data obtained through interviews, observations, and documentation, several main factors were found that influence elementary school digital literacy.

The first factor through access to technology in students who have access to digital devices such as computers, tablets, or smartphones at home shows a higher level of digital literacy compared to students who only rely on school facilities. Results of interviews with grade IV teachers.

"Students can access digital devices as a learning process that can be done at home, of course, must be accompanied by parents".

Based on the results of interviews with grade IV students as follows:

"I often use my cellphone to search for materials or answer assignments that I don't understand during home learning".

Based on the results of interviews with grade IV teachers and grade IV students, the use of digital devices in the learning process at home has become part of students' learning habits. Teachers said that students can access digital devices as a means of

learning at home, but this requires guidance from parents. This guidance is important to ensure that students use digital devices effectively and in accordance with learning objectives, and to avoid misuse of technology that can hinder their academic development. Meanwhile, from interviews with grade IV students, it is known that they often use cellphones to search for learning materials and answer assignments that they do not understand when studying at home.

This shows that students are accustomed to using technology as an additional learning resource outside of school. The use of these digital devices helps them gain a better understanding of the material taught in class. However, the success of digital learning at home is highly dependent on several factors, such as the availability of adequate devices, the quality of internet access, and the active role of parents in accompanying and directing children in their use (Ulfah, 2020). In line with Septiani's research, (2022) said that if there is not enough supervision, students have the potential to be distracted by things other than learning needs, such as playing games or accessing content that is not appropriate for their age.

The second factor through parental support can be done by providing assistance in the use of technology at home contributing to students' digital literacy (Wicaksono et al., 2019). Students who receive more intensive guidance tend to be more skilled in using digital devices wisely.

The results of the fourth grade teacher interview are as follows:

"Parental support is very important to guide students to type at home so that students are more skilled in using digital devices wisely".

Based on the results of interviews with grade IV students as follows:

"Parents' support always provides direction and guidance so that I can utilize technology according to my needs".

From the results of interviews with teachers and fourth grade students, it is clear that parental support plays a very important role in helping children develop skills in using technology wisely and responsibly. From the teacher's perspective, parental guidance at home is the main factor that can support the development of students' digital skills (Marpaung et al., 2024). Teachers realize that although students receive learning about technology at school, the use of digital devices at home also needs to be directed properly so that children are not only proficient in using them, but can also use them in a positive and productive way. Without proper supervision, it is possible that children will use technology unwisely, for example only for excessive entertainment without paying attention to educational aspects. Therefore, parental involvement is a crucial aspect in ensuring that children remain on the path of healthy technology use and support their academic and social development.

Meanwhile, from the students' perspective, they feel the direct benefits of parental support and guidance in using technology. Students stated that their parents always provide guidance and assistance in utilizing technology, so that they can use it according to their needs. This shows that parents do not only provide access to technology, but also play an active role in directing how children use digital devices so that they remain in accordance with useful purposes, such as for learning and searching for relevant information.

From both statements, the relationship between school and family is very important in shaping children's habits in using technology. Teachers have a role in providing an understanding of the use of technology in the school environment, while parents have a responsibility to ensure that children apply the learning properly at home. According to Saputra et al., (2023) stated that collaboration between schools and families is the key to success in forming a young generation that is digitally competent, able to use technology for positive things, and has the awareness to avoid misuse of digital devices.

The third factor through the role of teachers in the use of technology is that teachers who have good digital competence tend to be more effective in teaching digital literacy skills to students. Teachers who actively use technology in learning can improve students' understanding of digital concepts.

Results of the fourth grade teacher interview.

"Of course, in the learning process, I often use technological devices, both through videos and PPT, the aim is so that students can understand science learning materials and can achieve learning objectives without getting bored".

Based on the results of interviews with grade IV students.

"In the learning process, teachers often use technological devices. Usually, in addition to wordwalls and padlets, they also use videos and PPT".

Based on the results of interviews with grade IV teachers, that in the learning process, especially in the Natural Sciences (IPA) subject, teachers actively utilize technological devices as learning media. The use of this technology includes various aids such as videos and PowerPoint (PPT), which aim to improve students' understanding of the material being taught. Teachers realize that conventional approaches to teaching can cause boredom in students, so they try to create a more interactive and interesting learning atmosphere by utilizing technology. This is done so that students not only understand the concepts presented

but also remain motivated in the learning process. Meanwhile, the results of interviews with grade IV students showed that they also confirmed the use of technological devices in learning carried out by teachers.

Students mentioned that in addition to videos and PPTs, teachers also utilize interactive learning platforms such as *wordwall* and *padlet*. The use of these platforms provides a more varied and enjoyable learning experience for students, as it allows them to learn in a more visual, exploratory, and interactive way. From both interviews, the application of technology in learning in grade IV has become an integral part of the teaching process. Teachers understand the importance of technology as a tool in delivering material to make it more interesting and easy for students to understand. Students also feel the benefits of using this technology, which helps them understand the material better and makes the learning process more interesting. Thus, the integration of technology in learning in grade IV has a positive impact on the effectiveness of learning and students' learning experiences.

The fourth factor through the availability of school infrastructure at SDN 2 Sukowilangun has adequate technological facilities, such as laptops, LCD projectors, and stable internet access, allowing students to practice more in using digital technology.

The results of the fourth grade teacher interview are as follows:

"In this digital world era, of course, adequate facilities have been met and can be used by teachers and students, of course, to train digital literacy during learning".

The results of the fourth grade student interviews are as follows:

"During the learning process using technology, I was lent a laptop by the school, so that I could not only see the teacher's instructions but I could also directly practice the teacher's instructions".

The interview results illustrate the importance of technology integration in the learning process in the digital era. The fourth grade teacher revealed that adequate facilities to support digital literacy are available, both for teachers and students. This shows that access to technology and digital devices is good enough to be used in teaching and learning activities, providing opportunities for students to hone their digital literacy skills, which are very important today. Meanwhile, the statement of a fourth grade student explains his direct experience in using technology in learning. The student revealed that he was given a laptop by the school, which allowed him not only to receive explanations from the teacher but also to directly practice the material taught.

This shows that the use of technology not only functions as a tool in providing information, but also as a practical means to deepen students' understanding through direct application. Overall, this interview illustrates that the use of technology in education has a positive impact on both teachers and students. Teachers have adequate means to practice digital literacy, while students get a more interactive and applicable learning experience, which enriches their learning process. Technology has enabled learning that is more interesting, more practical, and more relevant to the times, which contributes to improving the quality of education in this digital era (Jenita et al., 2023).

The fifth factor in curriculum and learning materials can help students understand how to use technology effectively for learning. Curriculum that supports the use of technology tends to improve students' digital skills.

The results of the fourth grade teacher interview are as follows:

"Integrating digital literacy into the curriculum is essential to help students understand how to use technology effectively in learning. With a curriculum that supports the use of technology, students not only gain academic skills but also improve their digital capabilities".

Results of interviews with grade IV students.

"With the use of technology media in learning, I am very happy, don't get sleepy easily, and can use a laptop to practice the directions given by the teacher".

Based on the results of interviews between teachers and fourth grade students regarding the integration of digital literacy in learning, the application of technology in the curriculum has a positive impact on the teaching and learning process. This is in line with Sisco's research, (2023) which states that from a teacher's perspective, the integration of digital literacy is very important because it gives students the opportunity to not only develop their academic skills, but also improve digital abilities that are very relevant in today's digital era. Teachers emphasize that with a curriculum that supports the use of technology, students can utilize digital tools effectively in learning, which helps them to better understand the material being taught.

Meanwhile, students also expressed that the use of technology media in learning made them feel more enthusiastic and involved. With technology, they feel more enthusiastic in participating in learning and do not get bored or sleepy quickly. In addition, students can practice the instructions given by the teacher directly via laptop, which improves their understanding of the material being studied. This is in line with research by Indahsari & Sumirat, (2023) which states that the use of this technology provides a more interactive and enjoyable learning experience.

Overall, both teachers and students agree that technology and digital literacy are very useful in the educational process. Teachers see the importance of integrating digital literacy into the curriculum to improve students' digital skills, while students feel more motivated and engaged in learning thanks to the use of technology. This is in line with research by Hakim & Abidin, (2024) who stated that the integration of technology in education not only enriches the learning process but also prepares students to face the challenges of a world that is increasingly dependent on technology.

Research findings show that the learning environment, both at home and at school, has an impact on the digital literacy of elementary school students in addition to personal aspects. The main determinant of how quickly students acquire digital skills is their access to technology. However, this access needs to be supported by teacher skills and the role of parents in teaching digital literacy by providing appropriate guidance. This is in line with research by Adha & Ulpa, (2021) which states that in addition to teachers, parents also have an important role in supporting students' digital literacy. Parents need to provide appropriate guidance at home, such as monitoring technology use, helping children choose educational content, and teaching them about safe internet use. Support from parents strengthens digital challenges in a responsible manner.

In addition, schools have an important role in providing infrastructure that supports digital-based learning. Curriculums that include aspects of digital literacy also contribute to improving students' skills in utilizing technology for learning. Thus, the level and factors that influence digital literacy of grade IV elementary school students at SDN 2 Sukowilangun require cooperation between various parties including schools, teachers, parents, and the students themselves. Good integration between technology and learning will have a positive impact on the development of students' digital skills from an early age.

IV. CONCLUSION

Based on the results of the research conducted, it can be concluded that the level of digital literacy of students at the school is very good. Most students are able to operate basic hardware and software, understand digital literacy information, and communicate through digital media used in learning. Teachers have also played an active role in providing supervision and assistance to students in using digital technology appropriately and effectively. In addition, the school has provided adequate infrastructure such as laptops, LCD projectors, and internet networks that support digital-based learning processes.

However, there are still some challenges in implementing this digital literacy, such as some students still have difficulty typing or understanding how to find valid information. In addition, external factors such as support from parents, access to technology at home, and student readiness to receive digital-based learning also affect the effectiveness of this digital literacy program.

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REFERENCES

[1] Abdullah, W. (2018). Blended Learning Model in Improving Learning Effectiveness. Education, 7.
[2] Adha, M. M., & Ulpa, E. P. (2021). The Role of Parents and Teachers in Developing the Character of Children/Students in the Modern Era. Global Citizen Journal: Scientific Journal of Civic Education Studies, 10(2), 90–100
[3] Cynthia, R. E., & Sihotang, H. (2023). Stepping Together in the Digital Era: The Importance of Digital Literacy to Improve Students' Critical Thinking and Problem Solving Skills. Education, 7, 31712–31723.
[4] Fajri, D. L. (2021). Understanding Digital Literacy According to Experts and Its Benefits. Katadata. Co. Id. Retrieved May, 8, 2022.
[5] Hakim, M. N., & Abidin, A. A. (2024). Merdeka Mengajar Platform: Technology Integration in Vocational Education and Teacher Development. Kharisma: Journal of Educational Administration and Management, 3(1), 68–82.
[6] Herawati, N., Sri, D., & Rusmana, A. (2022). The Role of Teachers as Opinion Leaders in Overcoming Degradation. Education, 3(1), 14–29.
[7] Ilham, A., Kom, S., & Kom, M. (2022). Digital literacy.
[8] Inah, E. N. (2015). The Role of Communication in Teacher-Student Interaction. Education, 2015, 150–167.
[9] Indahsari, L., & Sumirat, S. (2023). Implementation of augmented reality technology in interactive learning. Cognoscere: Journal of Communication and Educational Media, 1(1), 7–11.
[10] Jenita, J., Harefa, A. T., Pebriani, E., Hanafiah, H., Rukiyanto, B. A., & Sabur, F. (2023). Utilization of Technology in Supporting Learning: Interactive Training in Improving the Quality of Education. Community Development Journal: Journal of Community Service, 4(6), 13121–13129.
[11] Jum'ah, M. N. Al. (2018). Security and legal analysis for privacy data protection. 1(2), 39–44.
[12] Kamila, J. T., Nurnazhiifa, K., Sati, L., & Setiawati, R. (2022). Teacher Development in Facing the Challenges of Education Policy in the Era of the Industrial Revolution 4 . 0. 6(2), 10013–10018.
[13] Law, N., Woo, D., de la Torre, J., & Wong, K., I. P. (2018). A Global Framework of Reference on Digital Literacy. Education, 51.

[14] Majid, A. (2017). Qualitative Research Data Analysis. Aksara Timur Publisher.
[15] Marpaung, R. W., Matematika, P., Musamus, U., Belajar, M., Digital, E., Creativity, S., & Era, D. (2024). Implementation of Independent Learning in Improving Student Creativity and Innovation in the Digital Era. Education, 4, 550–558.
[16] Miles, M. B. (1994). Qualitative data analysis: An expanded sourcebook. Thousand Oaks.
[17] Mukhlishina, I., & Danawati, M. G. (2023). Analysis of Digital Literacy in Learning for Grade III Students of Muhammadiyah 8 Elementary School, Malang Introduction. Education, 7(1), 63–77.
[18] Mukhsin. (2020). The Role of Information and Communication Technology in Implementing Village Information Systems in Village Information Publication in the Era of Globalization. Education, 3(1), 7–15.
[19] Pradana, Y. (2018). Attribution of Digital Citizenship in Digital Literacy. 3(2), 168–182.
[20] Rachmatin, D. (2020). 21st century digital literacy for PGSD students: what, why, and how. June.
[21] Rahmat Syah, Daddy Darmawan, A. P. (2019). Analysis of factors influencing digital literacy skills. Education, X, 60–69.
[22] Salam, A. (2023). Qualitative research methods. CV. Azka Pustaka.
[23] Saputra, A. M. A., Tawil, M. R., Hartutik, H., Nazmi, R., La Abute, E., Husnita, L., Nurbayani, N., Sarbaitinil, S., & Haluti, F. (2023). Character Education in the Millennial Era: Building a Superior Generation with Positive Values. PT. Sonpedia Publishing Indonesia.
[24] Septiani, A. (2022). The Role of Family Education in Islam as an Effort to Form Character. IAIN Ponorogo.
[25] Sisco, R. (2023). Increasing Digital Literacy Among Students: Introduction and Practice. 6, 2302–2310.
[26] Sriwijaya, U. (2020). The Art of Managing Data: Application of Triangulation Techniques, Sources and Time in Social Education Research. 5(2), 146–150.
[27] Suratman, Y. P. (2015). The Use of Counter Intelligence Operation Strategy in Facing National Cyber Threats. Education, 1–18.
[28] Suwendra, I. W. (2018). Qualitative research methodology in social sciences, education, culture and religion. Nilacakra.
[29] Syamsuardi, S., & Hajerah, H. (2018). The use of learning models in kindergartens in Makassar City. CARE Journal (Children Advisory Research and Education), 5(2), 1–7.
[30] Tuna, Y. (2021). Digital literacy in elementary school learning as an effort to improve the quality of educators. 2005(November), 388–397.
[31] Ulfah, M. (2020). DIGITAL PARENTING: How Can Parents Protect Children from Digital Dangers? Edu Publisher.
[32] Wahidmurni, W. (2017). Exposure of qualitative research methods. Education.
[33] Wakhyudin, H., & Azizah, M. (2024). Strengthening Technological Literacy through Interactive Learning Using Kahoot Media in Grade V Elementary School. 5(3), 790–796.
[34] Wicaksono, D., Rakhmawati, Y., & Suryandari, N. (2019). The Role of Parents in the Digital Era (Digital Literacy Activities for Parents in Burneh Bangkalan). E-Proceedings SNasTekS, 1(1), 9–14.
[35] Widayanti, N. A., Budiarti, W. N., Riwanto, M. A., & Naeni, A. (2024). Implementation of Digital Literacy in Elementary School Students. 5, 234–240.
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