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The Digital World in the Grasp of Elementary School Children: A Systematic Literature Review of Digital Literacy

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ABSTRACT

This study aims to examine the implementation of digital literacy in elementary schools through the Systematic Literature Review (SLR) approach. This research is motivated by the urgency of mastering digital literacy at the elementary school level to face the challenges of the 21st century. A total of 200 articles were identified and selected using the Google Scholar database with the help of the Publish or Perish (PoP) application, and 14 articles were obtained that met the inclusion criteria. The results showed that the most dominant approach was qualitative and developmental research (RnD), with the main subjects of primary school students (71.4%). The most studied component of digital literacy is access to technology (85.7%), while the dimensions of digital ethics and security still receive less attention (28.6% each). This shows the need for a more comprehensive approach so that students are not only able to access digital information, but also be able to use it responsibly and safely. This research contributes by mapping trends, challenges, and opportunities in the implementation of digital literacy in primary education, as well as offering practical recommendations in the form of developing digital literacy training for teachers and developing more contextual and sustainable digital learning strategies.

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1. INTRODUCTION

The development of information and communication technology has brought significant changes in various aspects of life, including in the world of education. The lives of today's generation cannot be separated from digital devices, such as smartphones, tablets, and computers which are now part of daily activities even from an early age (Rabbani & Najicha, 2023).

The children of the current generation are not spared from the flow of digitalization. They grow up in an environment that allows them to access a wide range of information via the internet and interact in digital spaces. The digital world is now completely in their grasp. This condition creates a new urgency in education, namely the need to strengthen digital literacy from the elementary school level. This is in line with the demands of the 21st century, where one of the basic components that elementary school students must have is digital literacy (Hidayati et al., 2024).

Digital literacy is not only limited to the ability to use technological devices, but also involves the ability to search, evaluate, analyze, and utilize digital information critically and responsibly (Turnip, 2023). The development of technology has brought significant changes in various aspects of human life, including in the world of education (Haleem et al., 2022). Technology is not only a tool, but also an interactive space that encourages active participation and co-creation from various parties (Santoso et al., 2021). The context of "technology readiness" in this project is related to the readiness of stakeholders in the learning process in the classroom (Kusumaningrum et al., 2022).

Education in today's digital era requires students to not only master traditional reading and writing skills, but also have adequate digital literacy. Digital literacy includes the ability to use digital technologies, communication tools, and networks to effectively access, evaluate, create, and share information (Hidayati et al., 2024). These skills are becoming increasingly important as the world of education and work increasingly relies on digital technology (Soufghalem, 2024).

However, research shows that the digital literacy of students in Indonesia is still low. According to the report *World Economic Forum* (WEF) 2020, Indonesia is ranked 85th out of 141 countries in terms of technology readiness and digital literacy (Nurfauziyanti et al., 2022). This shows that students in Indonesia are not fully able to utilize digital technology optimally in supporting the learning process. One of the reasons is the lack of innovation in the use of technology in the learning process, especially at the elementary school level (Lukman, 2023).

Based on findings that occurred in elementary school, it shows that many elementary school students are already familiar with digital devices such as smartphones and tablets, but tend to use them for entertainment purposes compared to educational purposes. Therefore, the development of information and communication technology opens up great opportunities to improve the quality of learning in the 21st century because it provides significant benefits. One of the benefits is that teachers can create more interesting learning and avoid boredom during the learning process (Resti et al., 2024). In the digital age, when digital skills are becoming increasingly important, websites and digital platforms have an important role in the context of education as a tool to provide and receive information (Suhari et al., 2024).

Therefore, it is important for educators to have a strong understanding of integrating technology into their teaching practices, to meet the changing demands of 21st-century learners (Arifin et al., 2024). States that numeracy literacy through Articulate Storyline-based media can improve practicality, time efficiency and visualization, making it easier for students

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to understand concepts. Based on previous research, technology is very supportive in improving literacy in elementary schools (Sukma et al., 2025).

Based on the study, it specifically identifies its application strategies in classroom practice in depth without providing a thorough mapping of the trends of the research approach used. Although digital literacy is increasingly relevant with the rapid development of technology, its implementation in elementary school learning still faces various challenges. In addition, no studies have been found that systematically map digital literacy research trends in the context of elementary schools using *the Systematic Literature Review* (SLR) approach.

Therefore, this study aims to identify and analyze the implementation of digital literacy in elementary school learning through the Systematic Literature Review (SLR) approach. By reviewing relevant previous studies, it is hoped that this study can provide a clear and comprehensive picture of trends, benefits, and challenges in the implementation of digital literacy among primary school students (Tedja et al., 2024).

On the other hand, a number of studies have been conducted to examine digital literacy among elementary school students. However, this research is still widespread and has not been systematically mapped. For this reason, a comprehensive literature review is needed to find out the extent to which digital literacy has been researched and applied at the elementary school level. By using *the Systematic Literature Review* (SLR) approach, this research is expected to make a significant scientific contribution in understanding the dynamics and direction of digital literacy development at the primary education level.

In addition, this research also aims to provide practical recommendations for educators and policy makers in developing more effective digital literacy-based learning strategies in elementary schools.

The research questions (RQ) in this study are as follows:

RQ1: The dominant approach or type of research used in the study of digital literacy

RQ2: The most researched subjects in digital literacy studies

RQ3: Components of digital literacy that are often studied in research

2. METHODS

A Systematic Literature Review (SLR) is a systematic, structured, and planned research method for identifying, assessing, and interpreting the entire literature relevant to a particular research question (Carrera-Rivera et al., 2022). SLR benefits researchers by providing clear motivation for new research, as well as for practitioners by presenting comprehensive evidence that can guide decision-making in the world of education (Saleh et al., 2021). This study uses the SLR method which aims to map previous research on digital literacy in elementary schools. This research was conducted to understand the developments, challenges, and strategies for the implementation of digital literacy in learning at the elementary level. Thus, this research can provide in-depth insights into digital literacy trends and their implications for basic education in the digital era.

The data of this study was taken on March 22, 2025 from the google scholar database. The researcher used google scholar as the main information because it is considered to have a wider scope than other indexes. In this study, the researcher analyzed documents related to digital literacy collected using the Publish or Perish (PoP) application, then processed using the PRISMA method (Haddaway et al., 2022).

The researcher collected data by searching for journal articles with the keywords "*digital literacy*" OR "digital literacy" in the google scholar database through the PoP application. This search process results in a number of articles that are then selected based on predetermined

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inclusion and exclusion criteria. The initial search results of the article can be seen in **Figure 1** below.

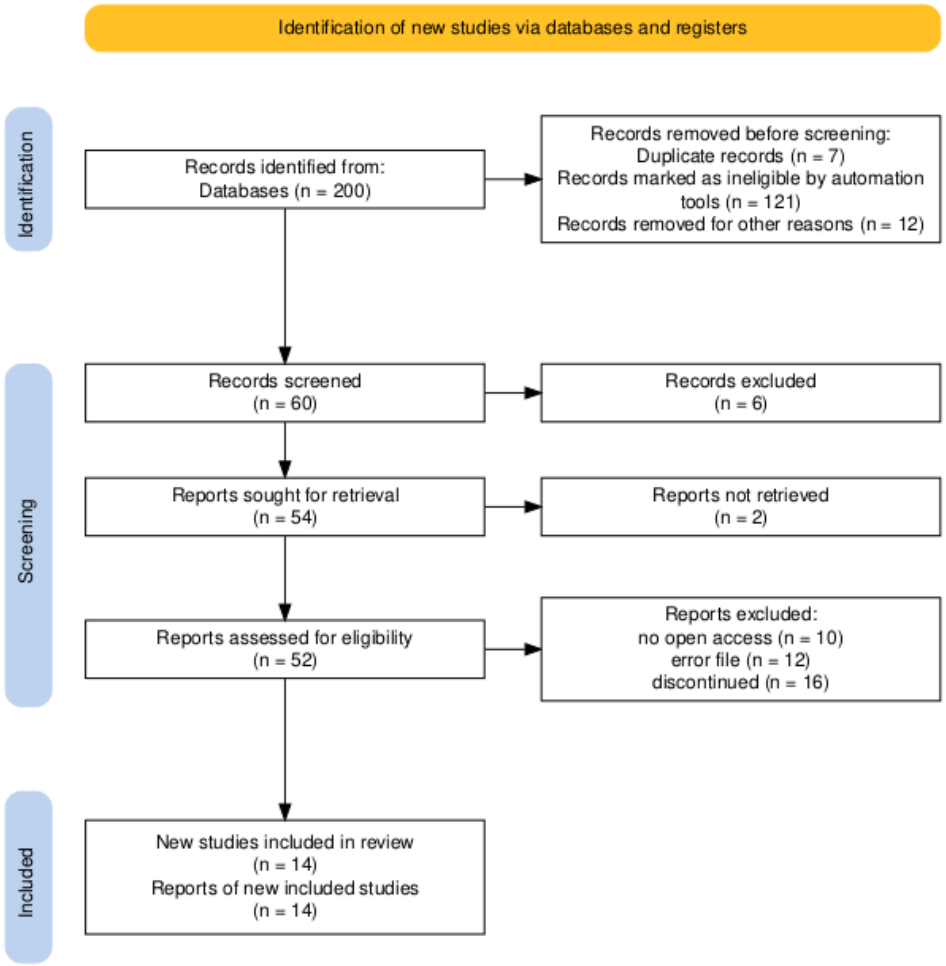


Figure 1. PRISMA Flowchart from this Study

In the analysis through prism flowcharts, the identification of new studies was carried out through the Google Schoolar database. The total number of records identified from Google Schoolar is 200. Before filtering, some records are deleted based on certain criteria. There were 7 records deleted due to duplicates, 121 records were marked as ineligible by the automation tool, 12 records were deleted for other reasons. After the screening process, the remaining records will be processed as many as 60 records. However, there are 6 records that are excluded from this analysis. A total of 54 reports were sought for collection, but only 52 were assessed as eligible for inclusion in the analysis. Then, further screening of the assessed reports is carried out. A total of 10 reports were excluded due to no open access, 12 reports were excluded due to file errors and 16 reports were excluded due to termination. Finally, the final result of this analysis is the 14 new study reports included in this study.

3. RESULTS AND DISCUSSION

The results of the article search of several databases covering the years 2020-2025 from 200 articles found, it was decided to review 14 articles on digital literacy. Based on the analysis of articles related to digital literacy in elementary schools, the answers to the following RQ1 research questions are presented in the following **Table 1**.

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Table 1. Article Analysis Results

No.	Writer	Heading	Research Methods	Result
1.	(Zulqadri & Nurgiyantoro, 2023)	Development of Web-Based Interactive Multimedia to Improve Cultural Literacy and Digital Literacy in Elementary Schools	Research and Development (RnD)	This research develops web-based interactive multimedia products, to improve students' cultural literacy and digital literacy based on product effectiveness tests using the T test.
2.	(William et al., 2025)	Digital Literacy in the Classroom: Exploring the Effects of Technology Integration on Literacy Skills in Philippine Elementary Schools	Mixed Method	The research findings show that the integration of technology in Philippine primary schools has a significant positive impact on literacy skills. The study reveals that educational apps, online learning platforms, and digital books are widely used, with tools such as Google Classroom and Edmodo being particularly effective in engaging students in literacy activities.
3.	(Marmoah et al., 2023)	Quality Management of Education in Elementary Schools in Improving Teachers' Digital Literacy in the Online Learning Era	Qualitative	These findings reveal an increase in teachers' digital literacy levels after implementing a structured education quality management model. This increase is attributed to the ongoing teacher digital literacy training program that includes planning, implementation, monitoring, and follow-up.
4.	(Ramadhani et al., 2024)	Utilization of Interactive Multimedia to Improve Digital Literacy in Elementary Schools	Qualitative	The results show that interactive multimedia, which combines various elements such as text, graphics, audio, and video, allowing students to engage directly with the learning material, can improve their understanding and retention of concepts.
5.	(Muna et al., 2023)	Development of Digital Literacy Game Media for Grade IV Elementary School Students	Research and Development (RnD)	From the results of the validity test of material experts, a score of 88% was obtained in the very high category and the validation results by media experts obtained a score of 85.6% in the very high category. So that the results show that digital literacy game media meets the requirements and is suitable for use.

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No.	Writer	Heading	Research Methods	Result
6.	(Rizqiyani et al., 2024)	Assistance in Strengthening Digital Literacy in Special Programs for Muhammadiyah Elementary Schools in Baturan and Muhammadiyah Plus Elementary School Malangjiwan	Qualitative	The results of the service show that there has been an increase in students' competence in understanding Microsoft Word, providing real experience to students for typing practice, and can foster good digital literacy.
7.	(Aqil Siroj et al., 2022)	The Effect of Digital Literacy on the Reading Interest of Grade V Students of SDN 1 Dasan Tapen for the 2021/2022 Academic Year	Quantitative	The results of this study show that digital literacy has a significant influence on reading interest. This can be seen from the results of a simple linear regression test with a significant value of 0.00 < α = 0.05. In addition, digital literacy has a strong influence on students' reading interest which is shown by a correlation coefficient (R) value of 0.795 which shows the level of relationship between the digital literacy variable and the reading interest variable of 79.5%.
8.	(Kamaliah, Lutfiyatul, 2025)	The Role of Education in the Development of Digital Literacy	Qualitative	The findings of this study show that students are quite proficient in using digital media, such as reading Wattpad, watching web cartoons, or completing assignments. Thus, this research was carried out, so that in the future digital literacy will be able to provide accurate knowledge, insights, and information for readers.
9.	(Amelia et al., 2025)	Empowering Future Educators: Analyzing Digital Literacy Skills in Elementary School Teaching Assistants (TAS)	Quantitative	Based on the analysis of preliminary data, it was concluded that the digital literacy skills of students in the Elementary School Teacher Education Program were categorized as "inadequate". Further interventions are needed to ensure that future educators develop the competencies necessary to adapt to technological advances and become proficient in a digital learning environment

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No.	Writer	Heading	Research Methods	Result
10.	(Rindrayani et al., 2025)	The Influence of Digital Literacy, Gadget Use, and Availability of Technology Media in Schools on Junior High School Student Learning	Research and Development (RnD)	The results of the study prove that students' digital literacy skills, supported by the use of gadgets to access learning resources and the availability of technology media in schools as learning resources, can increase students' motivation to learn
11.	(Kahyani & Jayant, 2021)	Digital literacy-based learning video with the topic of natural resources and technology in elementary school grade IV	Research and Development (RnD)	Digital literacy-based learning video media with the topic of natural resources and technology for grade IV elementary school is suitable for use in the learning process.
12.	(Kusumo et al., 2022)	Analysis of students' digital literacy with microsoft e-learning media	Quantitative Descriptive	The results show that students' digital literacy when using Microsoft-based e-learning products is in the middle category with an average of 75.2%. Thus, strengthening digital literacy in learning is also strengthened through creative and innovative digital learning media.
13.	(Hidayat et al., 2024)	Digital Literacy for Sundanese Culture-Based Elementary School Students	Quantitative	The results of the data analysis show that the digital literacy skills of elementary school students in Bandung are related to the internalization of Sundanese cultural values through YouTube animation videos.
14.	(Triandayani et al., 2024)	Improving Students' Digital Literacy Through the Use of the My Dream Google Cardboard Media Theme in Grade IV Elementary School	Research and Development (RnD)	The results of the study showed that digital literacy-based learning using Google Cardboard media in learning the theme of my ideals in cycles 1 and II was obtained that student learning outcomes increased

Based on reference sources obtained from journal or article search activities and several research results, there are different results regarding the role of digital literacy in handling learning.

The results of research conducted by Skulmowski and Xu (2022) show that the development of web-based interactive multimedia contributes to improving the cultural literacy and digital literacy of elementary school students (Zulqadri & Nurgiyantoro, 2023). In the theoretical perspective, interactive multimedia Cognitive Load Sweller can reduce students' cognitive load by presenting information in a structured manner. This research supports previous findings that the use of web-based technology can create a more engaging and effective learning experience (Skulmowski & Xu, 2022).

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Research conducted by William (2025) revealed that the integration of technology in learning in elementary schools in the Philippines has a significant positive impact on students' literacy abilities. This is in line with the theory *Technological Pedagogical Content Knowledge (TPACK)* which emphasizes that the effectiveness of technology integration in learning depends not only on the tools used, but also on teachers' understanding of how to combine content, pedagogy, and technology synergistically (Arifuddin et al., 2025).

Furthermore, marmoah's research (2023) revealed that this study found that the implementation of a structured education quality management model, which involves the planning, implementation, monitoring, and follow-up processes, has a positive impact on improving teachers' digital literacy (Marmoah et al., 2023). These findings are in line with the principle *Total Quality Management (TQM)* in education, which emphasizes the importance of a systematic and sustainable approach to improve the quality of the learning process (Rindrayani et al., 2025).

Ramadhani's research (2024) shows that the use of interactive multimedia in learning in elementary schools is significantly able to increase students' digital literacy. By combining text, image, audio, and video elements, interactive multimedia allows students to actively engage in understanding the learning material, which in turn improves understanding and retention of concepts (Ramadhani et al., 2024).

Muna Research (2023) strengthens the urgency of developing innovative learning media to support the digital literacy of elementary school students (Muna et al., 2023). Theory *Constructivist Learning* Piaget states that it is relevant, because the medium of play allows students to learn through exploration and interaction, which ultimately increases their cognitive engagement (Ulya, 2024).

In addition, the assistance to strengthen digital literacy at SD Muhammadiyah shows that there is an increase in students' competence in using Microsoft Word (Rizqiyani et al., 2024). This is in line with the concept of Technology Pedagogical Content Knowledge (TPACK) from Karampelas (2023) which emphasizes the importance of integrating technology in learning. The use of technology in learning not only helps students master digital devices, but also improves their understanding of academic materials (Karampelas, 2023).

Furthermore, the research Aqil Siroj et al. (2022), this shows that digital literacy has a significant influence on students' reading interest, with a correlation coefficient value of 79.5%. In Vygotsky's (1978) theory of social constructivism, the interaction between students and digital technology allows them to build a deeper understanding. With increased access to digital reading resources, students have more opportunities to develop reading and critical thinking skills (Sarbani et al., 2024).

Meanwhile, research (Kamaliah et al., 2025) found that students are quite proficient in using digital media such as Wattpad and web cartoons, but more efforts are still needed to ensure that digital literacy is able to provide accurate insights. These findings are in line with research conducted by Pratama (2023) which emphasizes that digital literacy is not only about the ability to use technology, but also about understanding, evaluating, and creating information critically (Pratama et al., 2023).

Amelia's research (2025) highlights the importance of digital literacy for prospective educators in the Elementary School Teacher Education Program. The results of their research show that students' digital literacy skills are still inadequate. This is in line with the concept of the Digital Competency Framework which emphasizes the need to strengthen digital skills for educators in order to create innovative and technology-based learning experiences (Amelia et al., 2025).

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Furthermore, the research (Ramadhani et al., 2024) This shows that the use of interactive multimedia can improve digital literacy in elementary schools by providing a more dynamic and effective learning experience. This is in line with research conducted by (Uswah et al., 2024) which states that the combination of text, images, and audio can improve student comprehension more effectively than a single medium. In addition, the study found that digital literacy-based learning video media with natural resources and technology topics are used effectively in the learning process (Uswah et al., 2024).

Research shows that the use of Microsoft-based e-learning improves students' digital literacy with an average score of 75.2% (Kusumo et al., 2022). This reinforces the concept of e-learning, which emphasizes the importance of using technology in creating a collaborative and adaptive learning experience to digital change.

Internalizing Sundanese cultural values through YouTube animated videos can improve students' digital literacy skills (Hidayati et al., 2024). These findings are also in line with research conducted by Patras, which states that culture-based learning can increase student engagement and understanding (Patras et al., 2023). Finally, the use of Google Cardboard in learning the theme "My Ideals" was able to significantly improve student learning outcomes (Triandayani et al., 2024). This is in accordance with Kolb's (1984) Experiential Learning theory, which emphasizes the importance of hands-on experience in improving student understanding.

Overall, the results of this study show that digital literacy plays an important role in improving the quality of learning in elementary schools. The use of interactive multimedia technology, Microsoft-based e-learning, and virtual reality has been shown to improve students' understanding of learning. In addition, the integration of local cultural values in digital-based learning also makes a positive contribution to building digital literacy that is more contextual and meaningful for students. Therefore, more innovative digital-based learning strategies are needed to support the improvement of digital literacy in elementary schools.

The Most Researched Subjects in Digital Literacy Studies

Figure 2 presents the findings of Research Question 2 (RQ2), which explores which subjects are most used as a research focus in the study of digital literacy at the primary school level. The analyzed studies show diversity in the selection of subjects, ranging from students, teachers, to prospective teachers. These findings show the tendency of researchers to place a particular subject as a central point in the development of digital literacy. The percentage distribution of the subjects studied is presented in **Figure 2** below.

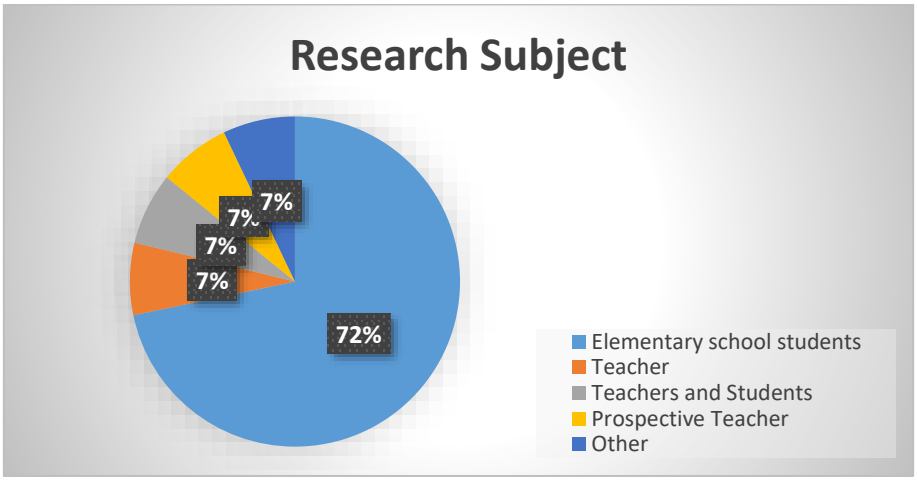


Figure 2. The Most Researched Subjects in Digital Literacy Studies

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Based on the results of the analysis of 14 articles discussing digital literacy at the elementary level, it is known that the most dominant research subjects are elementary school students. Of all the articles analyzed, 10 of them explicitly mentioned elementary school students as the main focus of the study. This shows that the researcher's attention to students' abilities and readiness in facing the digital era is still a top priority in various digital literacy studies. In addition to students, there are also 2 articles that examine teachers and the combination of teachers and students. Meanwhile, 1 article discusses prospective teachers or teaching assistants as research subjects, and 1 other article researches junior high school students. These findings show that elementary school students are more often used as research subjects because of their role as direct users of digital technology in the learning process, so the development of digital literacy in this age group is considered crucial and strategic.

Components of Digital Literacy Frequently Studied in Research

Answering Research Question 3 (RQ3) which discusses the components of digital literacy that are most often the focus of research at the elementary school level, an analysis was carried out on various relevant articles that cover several important components such as the ability to access information, security in the use of technology, digital ethics, and collaborative skills in the digital space (Silalahi et al., 2022). The analyzed studies show that most of the focus is on the components of technology access, digital security, as well as online ethics and behavior. This shows that fundamental issues related to the safe and responsible use of technology are still a major concern in the development of digital literacy in children. The distribution of research focus on the digital literacy component can be seen in **Figure 3** below.

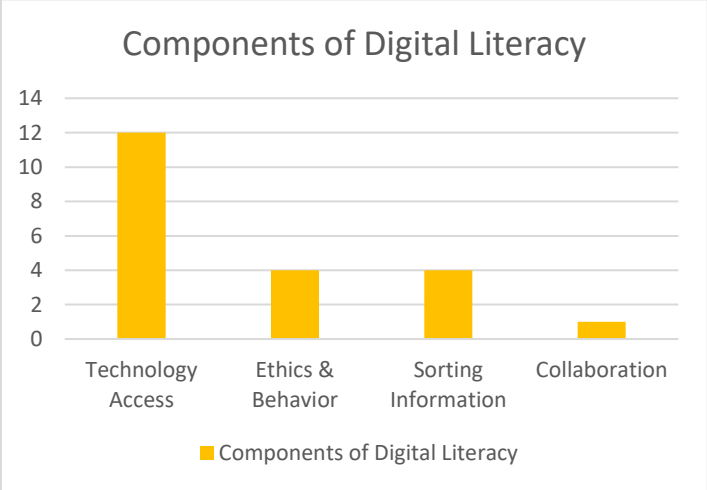


Figure 3. Components of Digital Literacy Frequently Studied in Research

The results of the analysis show that access to technology is the most studied component of digital literacy, as seen from 12 articles that highlight the use of digital devices and platforms in learning. Sorting out information and digital ethics/ behavior are discussed in 4 articles, showing the beginning of an increasing attention to the ability to filter information and behave wisely in the digital world. Meanwhile, digital collaboration only appears in one article.

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4. CONCLUSION

Based on this Systematic Literature Review (SLR) research, it can be concluded that out of the 200 articles identified, as many as 14 articles meet the inclusion criteria. Digital literacy research in primary schools is dominated by qualitative approaches and developmental research (RnD), with primary school students as the main subjects (71.4%). The most studied component of digital literacy is access to technology (85.7%), followed by digital ethics and digital security (28.6% each). The implementation of digital literacy is mostly carried out through interactive multimedia, e-learning, and the integration of local cultural values. The country with the most research contributions is Indonesia, which reflects the urgency of increasing digital literacy at the primary education level. The most frequently appearing keywords are digital literacy, elementary school, technology integration, multimedia, and learning. These findings show the need to develop more innovative digital-based learning strategies and digital literacy training for teachers to support student competencies in the digital era.

However, this study has some limitations. The number of articles that meet the inclusion criteria is still limited, so the mapping results are not representative of the entire spectrum of digital literacy research globally. In addition, most studies are still descriptive without in-depth exploration. For this reason, it is suggested that further research explore in depth the relationship between digital literacy and student learning outcomes, as well as develop a standard digital literacy assessment instrument. Future research can also expand geographic coverage and use a mixed-method approach to obtain a more comprehensive picture of sustainable development.

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