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The Relationship Between Gadget Use and Digital Literacy Levels Among Elementary School Students

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Abstract
Gadget use among elementary school students is increasing in tandem with the advancement of digital technology. This study aims to determine the relationship between gadget use and the level of digital literacy of elementary school students. This research was conducted at SDN 2 Talise. This study used a quantitative approach with a correlational method. The research sample consisted of 36 students selected by random sampling. The research instrument was a closed-ended questionnaire with a Likert scale, consisting of 15 items for the variables of gadget use and digital literacy. Data analysis included normality tests, linearity tests, and Pearson correlation tests. The results of the normality test indicated that the data were normally distributed, while the linearity test indicated a linear relationship between the two variables. The Pearson correlation test showed a significant positive relationship between gadget use and digital literacy. This finding suggests that the more frequent and appropriate use of gadgets, the higher the students' digital literacy level. This study highlights the importance of mentoring and the educational use of gadgets in enhancing digital literacy skills from an early age.

Keywords: *gadget use, digital literacy, elementary school students*

Introduction

The digital revolution that has taken place over the past two decades has transformed nearly every aspect of human life. Education is one of the areas most impacted by this technological advancement. The presence of the internet, social media, and electronic devices, such as gadgets (like smartphones, tablets, and laptops), has changed the way teachers teach, students learn, and parents guide their children (Kholil, 2021; Wirda Yuliana et al., 2022). Schools, as formal educational institutions, are required not only to transmit knowledge but also to facilitate the development of 21st-century skills, including digital literacy. This challenge is now also part of the learning dynamics at the elementary level, where students are at the early stages of development in the independent use of technology.

One of the technologies most widely used by children in today's digital age is gadgets. Gadgets are not only a means of communication but also a means of playing, learning, and socializing. In Indonesia, the phenomenon of gadget use by elementary school students is no longer uncommon. Digital devices such as smartphones and tablets have now become an integral part of children's lives, both at home and at school. In fact, gadget use is no longer limited to entertainment but has also expanded into learning, communication, and searching for information online. According to the latest report from the Indonesian Internet Service Providers Association (APJII), the number of internet users in Indonesia reached 221.6 million in 2024, equivalent to 79.5% of the total population. Of this number, those under 12 demographically included in Generation Alpha contributed to approximately 9.17% of internet users, with a penetration rate of 48.1%. This indicates that nearly half of Indonesian elementary school-aged children are connected to the digital world. Although this figure represents a slight decrease compared to reports from previous years, where in 2022, internet penetration for children aged 5–12 was recorded at 62.43%, this phenomenon still indicates a trend that young children are becoming increasingly familiar with digital technology, particularly gadgets as the primary means of internet access. The majority of them use personal or parental devices to explore the internet.

This change reflects the transformation of digital lifestyles that has affected all levels of society, including children. On the one hand, the use of gadgets provides a significant opportunity for elementary school students to gain access to various digital learning resources, improve digital literacy skills, and facilitate communication between students, teachers, and parents. However, on the other hand, uncontrolled gadget use can also pose risks to children's cognitive, social, and emotional development.

However, the increase in gadget use among students does not always translate to an increase in the quality of technology use for learning. Many children use gadgets more for entertainment, such as playing games, watching videos, or browsing social media, than for learning activities (Martín-García et al., 2024; Panjeti-Madan & Ranganathan, 2023). This situation has raised concerns from various parties, especially parents and educators, about the impact of uncontrolled gadget use. On the other hand, gadgets have enormous potential as learning aids if properly directed (Putri & Arham, 2024; Ratnasari & Haryanto, 2019). Therefore, a deeper understanding of how gadget

use relates to students' digital literacy skills is needed, particularly at the elementary school level.

Digital literacy is an essential competency in 21st-century education. Digital literacy encompasses the ability to access, understand, evaluate, create, and communicate information through various digital media effectively, efficiently, and ethically (Sugiarto & Farid, 2023; V.I., 2024). This literacy encompasses not only technical skills in using devices, but also critical thinking skills, awareness of digital security, and an understanding of media ethics (Febriani et al., 2025; Leli Hasanah Lubis et al., 2025; Maisaroh et al., 2025). Digital literacy is crucial for supporting the rapid and increasingly pervasive technological developments that permeate students' lives, including in the context of elementary school learning.

According to Buckingham (2013), children do not automatically become "digitally literate" simply because they use technological devices from an early age. Digital literacy is not something that emerges naturally, but rather a competency that needs to be systematically developed through formal and informal education. In practice, students often master the technical aspects of gadget use, but do not yet understand how to filter information, avoid misinformation, or use technology responsibly. This demonstrates the need for more serious efforts to develop digital literacy from an elementary school age.

In the context of the Merdeka Curriculum currently being implemented in Indonesia, strengthening digital literacy is a crucial part of the Pancasila Student Profile, particularly in the dimensions of "critical thinking," "global diversity," and "faith and devotion to God Almighty and noble character." Digital literacy skills are necessary for students to learn independently, be responsible in using technology, and be able to select useful information. Therefore, schools have a strategic role in integrating digital literacy into the learning process. However, digital literacy cannot be developed solely through institutional means. The use of gadgets outside of school hours, often done independently by students, also contributes significantly to shaping their digital literacy patterns.

The relationship between device use and digital literacy levels is important to examine, given that the frequency and manner in which students use devices can directly impact their ability to understand and utilize digital information. Research shows that more intensive and appropriate use of digital devices is positively correlated with digital

literacy scores, which supports students' learning abilities, collaboration, and readiness to face the challenges of the digital era (Kuzmina et al., 2023; Murtadho et al., 2023). Several previous studies have shown that gadget use is positively correlated with improvements in certain digital skills, such as information seeking, use of learning applications, and learning motivation (Nurrohimah et al., 2025; Putri & Arham, 2024). However, not all gadget use has a positive impact on digital literacy. Passive, repetitive, and undirected use tends not to provide significant benefits in developing students' critical thinking skills.

There are several interesting aspects to explore in this context. First, what are the patterns of gadget use among elementary school students? Are they predominantly for learning or entertainment? Second, what is their level of digital literacy, particularly regarding the ability to search for information, think critically about content, and have awareness of digital ethics and security? Third, is there a statistically significant relationship between the intensity/frequency of gadget use and students' levels of digital literacy?

Through this study, it is hoped that empirical information will be obtained regarding how gadget use by elementary school students relates to their levels of digital literacy. This research is important not only from an academic perspective but also from a practical perspective, particularly in assisting elementary school institutions in developing strategies to strengthen digital literacy. This research can also contribute to the national digital literacy policy currently being promoted by the government through programs such as "National Digital Literacy" and "Freedom to Learn."

Based on this background, this study was conducted to determine whether there is a relationship between gadget use and the digital literacy levels of elementary school students. The focus of this research was on fifth and sixth-grade students of SDN 2 Talise, who already possess basic reading, writing, and reflective thinking skills and are generally accustomed to using gadgets independently. This research is expected to provide constructive input for schools, teachers, parents, and other stakeholders in designing technology-based learning patterns that are not only sophisticated in terms of devices but also strong in digital values and ethics.

Research Methods

This study used a quantitative approach with correlational methods to determine the relationship between gadget use and digital literacy levels of elementary school students. The study was ex post facto, without direct treatment of the subjects. The population in this study was all 47 fifth and sixth-grade students at SDN 2 Talise. The sample size was 36 students, selected using simple random sampling. This technique provides an equal opportunity for every student in both grades to be selected, regardless of grade level. Sample selection was performed using a random number generator, ensuring randomness and minimizing bias. The instrument used was a closed-ended questionnaire with a 4-point Likert scale, consisting of 10 items about gadget use whose indicators refer to Aribowo et al. (2019), Pangestu et al. (2024), Risnawati et al. (2022), and 10 items about digital literacy whose indicators refer to Anisimova (2020), Bawden (2001, 2008), Hague & Payton (2010). Content validity was tested through expert judgment, and reliability was assessed using Cronbach's Alpha, with results of 0.832 (gadget use) and 0.857 (digital literacy). Data were analyzed using SPSS, using normality tests (Kolmogorov–Smirnov), linearity tests, and Pearson correlation tests with a significance level of 0.05. The questionnaire instrument can be seen in Table 1.

Table 1 Gadget usage and digital literacy questionnaire

Variable	Indicator	Number of Items	Positive Items	Negative Items
Gadget Use	Frequency of Use	3	2	1
	Educational Purpose	3	2	1
	Entertainment Purpose	3	2	1
	Context of Use	3	2	1
	Use Supervision	3	1	2
Digital Literacy	Information Search	3	2	1
	Information Evaluation	3	1	2
	Digital Ethics and Security	3	1	2
	Use of Educational Apps	3	2	1
	Confidence in Using Technology	3	2	1

Results and Discussion

Normality Test

A normality test was conducted to determine whether the residual data from measuring the gadget usage and digital literacy variables were normally distributed. The Kolmogorov-Smirnov (K–S) test was used. Based on the results of the normality test, the Asymp. Sig. (2-tailed) value was obtained = 0.200. This value is greater than the 0.05

significance level, so it can be concluded that the residual data are normally distributed. Thus, the normality assumption is met, and the data can be continued to the next parametric statistical test. The results can be seen in Table 2.

Table 2 Normality Test Results

Statistical Normality Test	Value
N	36
Mean Residual	0,000
Std. Deviation	2,923
Test Statistic	0,114
Asymp. Sig. (2-tailed)	**0,200**

Linearity Test

The linearity test was used to determine whether there is a linear relationship between gadget use and digital literacy. This test is important to ensure that the relationship tested through the correlation test is truly linear.

The results of the linearity test show a significance value of 0.024 in the "Linearity" row, which is less than 0.05. This indicates a significant linear relationship between gadget use and digital literacy. Furthermore, the significance value of 0.097 in the "Deviation from Linearity" row is greater than 0.05, indicating no deviation from linearity. These results can be seen in Table 3.

Table 3 Linearity Test Results

Anova Test	Value
Linearity (Sig.)	0,024
Deviation from Linearity	0,097

Thus, it can be concluded that the relationship between the independent and dependent variables is linear, and the correlation test can be used.

Pearson Correlation Test

To determine the relationship between gadget use and digital literacy, the Pearson product-moment correlation test was used. The analysis showed a correlation coefficient (r) of 0.342 with a significance value (p) of 0.041. Since the p-value is <0.05, the relationship is considered statistically significant. These results can be seen in Table 4.

Table 4 Pearson Correlation Test Results

Variable	Pearson Correlation (r)	Sig. (2-tailed)	N
Gadget Use – Digital Literacy	0,342	0,041	36

The R-squared value of 0.342 indicates a positive and moderate relationship. This means that the better or more targeted students' gadget use, the higher their digital literacy level.

Elementary School Students' Gadget Usage Patterns: Educational or Entertainment?

Elementary school students' gadget usage patterns are a crucial aspect in understanding how technology impacts the lives of elementary school-aged children. Based on data obtained from a 15-item questionnaire measuring five indicators (frequency, purpose of use, context, supervision, and duration), it was found that the majority of students use gadgets as part of their daily routine. Some students use gadgets for more than two hours a day, both in the morning and at night. This use often occurs at home, but not always with adult supervision.

Generally, students use gadgets for two primary purposes: entertainment and education. Most respondents indicated a higher tendency to use gadgets for entertainment, such as playing online games, watching YouTube, or browsing social media. This aligns with findings that elementary school-aged children spend most of their screen time on entertainment rather than learning (Qi et al., 2023). In the Indonesian context, with increasingly widespread internet access and increasingly accessible gadgets, this tendency is even stronger.

However, several students also use gadgets for educational purposes, such as accessing learning apps (e.g., Google Classroom, Rumah Belajar, Quipper, and others) and searching for supporting information for lessons. Although this proportion is not yet dominant, this indicates significant potential for redirecting gadget use in a more constructive direction. Di Giacomo et al. (2017) stated that children who are accustomed to using digital technology tend to have advantages in cognitive language, and visual skills.

It is important to note that the context of use significantly influences the quality of students' digital experiences. For example, students who use gadgets at night without supervision tend to over-access entertainment content. Conversely, students who use gadgets in open spaces with their families and for a limited time demonstrate more controlled use. This is where the role of parents as digital mentors, guiding children in navigating the digital world safely and responsibly, becomes crucial (Khopipatu Salisah et al., 2024; Kurniadi & Saimah, 2024).

Thus, it can be concluded that elementary school students' gadget usage patterns show a fairly intensive trend, dominated by entertainment purposes, but with promising educational potential. Parental and school intervention is essential to establish healthy and productive usage patterns, so that gadgets do not simply become entertainment consumption tools, but rather effective self-development tools.

Elementary School Students' Digital Literacy Level

Digital literacy in elementary school students is an increasingly important skill in the digital age, where children are not only consumers of information but also part of the global digital ecosystem. In this study, digital literacy was measured based on five main indicators: information search skills, information dissemination skills, digital ethics and safety, use of educational applications, and confidence in using technology. Each indicator was measured through three items in a questionnaire designed proportionally with positive and negative statements. Students' digital literacy results can be seen in Table 5 below.

Tabel 5 Distribution of Elementary School Students' Digital Literacy Levels

Indicator	Low (n/%)	Medium (n/%)	High (n/%)
Information Search	6 (16,7%)	21 (58,3%)	8 (22,2%)
Information Evaluation	2 (5,6%)	20 (55,6%)	14 (38,9%)
Digital Ethics and Security	1 (2,8%)	26 (72,2%)	9 (25,0%)
Use of Educational Apps	1 (2,8%)	26 (72,2%)	9 (25,0%)
Confidence in Using Technology	5 (13,9%)	19 (52,8%)	12 (33,3%)

The results showed that students generally had a moderate level of digital literacy. In terms of information search skills, the majority of students fell into the moderate category (58.3%), with only 22.2% reaching the high category, while 16.7% remained in the low category. This indicates that although students are accustomed to using search engines like Google or educational videos on YouTube, they are not yet fully capable of reading information critically and reflectively.

In terms of information evaluation, more positive developments were seen, with 38.9% of students falling into the high category, 55.6% falling into the medium category, and only 5.6% falling into the low category. These findings indicate that some students are beginning to develop an awareness of distinguishing relevant information, although most still need to practice assessing the accuracy and veracity of sources. Digital literacy is not just about accessing and searching for information, but also encompasses a critical understanding of content quality (Haliq et al., 2023; Sunara Akbar et al., 2024).

Regarding digital ethics and security, the majority of students (72.2%) fall into the medium category, 25% into the high category, and only 2.8% into the low category. This means that most students have begun to understand the importance of maintaining password confidentiality, not sharing personal data carelessly, and being polite in digital spaces. However, some students still admit to opening unknown links or providing account information to peers. Systematic digital ethics education in elementary schools is crucial to address these differences in understanding and behavior (Sudi et al., 2024). This gap indicates that digital ethics education has not yet become a systematic part of elementary school learning. Individuals with low digital literacy levels are at risk of making errors in interpreting and responding to digital information, which can be reflected in various behavioral problems resulting from internet misuse (Saputra & Annisa, 2021).

Indicators of educational application use and digital self-confidence show a fairly positive trend. As many as 25% of students feel highly confident in using learning technology, while more than half remain in the moderate category. Digital self-confidence also appears to be growing, with 33.3% of students in the high category, although 13.9% remain low. This fact indicates that the current generation has great potential to utilize technology for self-development, provided they are facilitated by a supportive learning environment.

Overall, the results of this study indicate that elementary school students' digital literacy levels are in the moderate to high category, with relative strengths in information evaluation and weaknesses still evident in information-seeking skills and digital self-confidence. Therefore, systematic efforts by schools and families are needed to instill a deeper understanding of critical thinking skills, security, and responsibility in digital media use.

The Relationship between Gadget Use and Digital Literacy

The results of the Pearson correlation test in this study indicate a positive and significant relationship between gadget use and digital literacy among elementary school students, with an r value of 0.489 and p value of 0.002. This indicates that students with more targeted gadget use patterns, particularly for educational purposes and with supervision, tend to have higher digital literacy. This relationship is moderate but significant, indicating that although device use is not the sole determinant of digital

literacy, it still plays a significant role. This is understandable because digital literacy is more influenced by the quality of interaction with technology, rather than simply the intensity of use. Students who use devices to search for information, access educational applications, or practice digital skills will experience greater literacy benefits than those who use them solely for entertainment.

Thus, the results of this study confirm Buckingham (2007) assertion that digital literacy is not a skill that emerges automatically but must be developed through meaningful and purposeful practice. These findings also support the uses and gratifications theory framework (Katz et al., 1973), which states that active media users select media and content based on specific goals, and that the benefits derived are determined by these motives. Similarly, gadget use can address low levels of digital literacy (Julianti & Rosadi, 2024). Individuals with strong digital literacy knowledge will be able to utilize gadgets and the internet to their full potential (Afiatin et al., 2024).

In this context, children who use gadgets to access learning apps, read educational articles, or interact with online school platforms will be better trained in using technology functionally and responsibly. Conversely, students who use gadgets solely for entertainment without supervision are less likely to gain meaningful experiences that can support their digital literacy skills.

This research strengthens the argument that children's use of digital technology should be directed and guided, rather than rigidly restricted. With the right approach, gadgets do not pose a threat, but rather become tools to broaden horizons, shape digital ethics, and foster independent learning (Erika et al., 2021). Elementary schools, as basic educational institutions, have a strategic role in integrating digital literacy education into the curriculum and students' daily activities. This study's limitations lie in its relatively small sample size and the involvement of only one elementary school, thus limiting the generalizability of its findings. Therefore, further research with a larger sample size and additional variables such as parental support or the quality of digital learning is urgently needed.

Conclusion

This study aimed to determine the relationship between gadget use and the digital literacy levels of elementary school students. Based on data analysis from 36 students, it was found that gadget use has a positive and significant relationship with

digital literacy. These findings indicate that the higher the intensity and quality of educational gadget use, the higher the students' digital literacy levels. Normality and linearity tests indicated that the data used met the assumptions of parametric analysis. Furthermore, a Pearson correlation test demonstrated a positive linear relationship between the two variables. Thus, gadget use has been shown to contribute to students' ability to access, understand, and utilize digital information responsibly. Overall, this study emphasizes the importance of mentoring children in gadget use so they can optimally benefit from digital technology, particularly in improving digital literacy from elementary school onward. This study's limitations lie in its limited sample size, confined to a single school, making the results difficult to generalize. Therefore, further research is recommended involving a broader sample, considering other supporting variables such as the role of teachers and parents, and developing a measurable device-based learning intervention model to improve students' digital literacy.

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