The Influence of digital Literacy on Critical Thinking Skills and Social Studies Learning Outcomes

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Abstract: This study investigates the influence of digital literacy on critical thinking skills and social studies learning outcomes among seventh-grade students at SMPN 1 Lenek. Employing a quasi-experimental pretest-posttest control group design, the research involved both experimental and control groups, with the experimental group receiving digital literacy-based interventions. Data were collected using descriptive and inferential analyses, including normality, homogeneity, and hypothesis testing with SPSS software. The results revealed that students in the experimental group achieved higher post-test scores in both critical thinking skills (M = 74.44) and social studies learning outcomes (M = 84.44) compared to the control group (M = 55.56 and M = 59.44, respectively). The findings confirmed that digital literacy significantly improves students' critical thinking abilities and academic achievement in social studies. This study highlights the importance of integrating digital literacy into classroom instruction to foster higher-order thinking skills and enhance learning outcomes.

Introduction

The evolution of social studies education is undergoing modifications in terms of resources and learning activities based on students' circumstances and environments. Students' environments have now been shaped by the technological advancements of their time. The current group of students is Generation Z, where young people wake up and immediately check their smartphones or tablets, both of which are connected to the internet. Many messages come from various media that they monitor and receive while they sleep (Huriah Rachman, 2014). This shows that today's students are those who cannot be separated from the use of smartphones, because they can see a wider world without having to go anywhere.

Social studies learning, often considered boring, demands creativity in all areas. Innovation is found not only in the curriculum (government sector), but also in educators (teachers), who need to innovate in managing social studies education. Innovative educators

are individuals who consistently present fresh concepts emerging from diverse backgrounds (Rachman, 2014). Creative educators involve utilizing their surroundings to enhance the learning experience. Teacher creativity is crucial for managing social studies education in the classroom effectively and enjoyable. Creativity in teaching can focus on social studies learning design, which includes defining learning objectives, selecting content, selecting learning strategies, selecting learning materials, creating processes, and developing assessment tools (Gafur, 2019). Furthermore, advances in new learning models that incorporate information technology can also help social studies teachers facilitate learning experiences, both inside and outside the classroom. An educational model is a set of teaching techniques designed to achieve specific learning objectives (Wahab, 2017).

Specifically, the use of digital literacy in social studies learning is expected to build their knowledge capacity by improving higher-order thinking skills, including critical thinking, decision-making, and problem-solving (Miri B, 2007). Critical thinking is also a constructive thinking process to find solutions, while argumentative people may like to argue just to win their arguments. Critical thinking is defined as an effective skill that enables students to succeed in a changing world by playing a role in the development of their thinking (Aktoprak, A., & Hursen, 2022). Therefore, it is important for everyone to improve adaptive literacy with various changes. Everyone must always hone their critical thinking skills to be able to make reasonable, logical, and well-thought-out judgments.

Therefore, the application of digital literacy is anticipated to be suitable for this study due to its characteristics, as this education focuses on critical thinking skills characterized by a higher complexity of fundamental learning components and a greater emphasis on meaningful techniques in the educational process, which ultimately improves student achievement. Furthermore, learning through digital literacy is developmental, emphasizing the process and significantly presenting problems that are then addressed through discussions, which ultimately allows the formulation of solutions based on observed technological advances. Considering this context, the main focus of this study is to determine whether digital literacy affects critical thinking skills and Social Studies Learning Outcomes at SMPN 1 Lenek.

Research Method

This study used a pretest-posttest control group design as its methodology. Experimental research designs typically consist of an experimental group and a control group. The control group receives no therapy at all, while the experimental group receives treatment (Simbolon, 2021).

(Ruhana, Zaini, and Meiliyadi 2023) The study "The Effect of Digital Literacy on Critical Thinking Skills and Social Studies Learning Outcomes" used a quasi-experimental approach. This type of comparison, which assesses the extent to which an intervention (treatment) affects the subjects (experimental group), is known as a quasi-experiment. A characteristic of the quasi-experimental approach is that the experimental and control groups are not randomly selected.

Like experimental research, quantitative research examines cause-and-effect interactions. Consequently, a relationship acts as a cause in experimental research, and when the cause is identified, an effect emerges. A different perspective on experimental research is

held by (Ruhana, Meiliyadi, and Zaini 2023), who define it as a study conducted under controlled conditions and conducted methodically, rationally, and comprehensively. This implies that the treatment given to the experimental group is based on the most reliable experimental research literature. Furthermore, comparisons are made with a selected control group to evaluate the treatment of the experimental group.

The goals of experimental research are as follows: 1. To evaluate the research hypothesis. Of course! Please provide the text you wish to paraphrase. 2. To anticipate future events or experimental results to establish broader relationships between variables. In general, experiments will evaluate all proposed hypotheses, regardless of their accuracy.

The researchers used two types of data analysis techniques: descriptive analysis and inferential analysis. The purpose of this data analysis was to assess the variables studied and use them as a tool to measure their compliance with predetermined standards (Juliyantika and Batubara 2022). The research data included improvements in writing learning outcomes and critical thinking skills. However, prior to this, a preliminary assessment and hypothesis evaluation were necessary.

Result and Discussion

Using independent sample t-test and parametric statistical tests, the test of equality of means was analyzed by examining the estimated value of Equal Variance obtained from students' initial critical thinking data (pre-test) in both classes..

Table. 1 Critical Thinking Ability Pretest and Posttest Results

Class	Pretest	Postest
Experiment	42.78	74.44
Control	51.67	55.56

The results of the analysis of student observations regarding critical thinking skills in the experimental class showed that the pre-test results for this group were 42.78% and the control class had results of 51.67%. The control group obtained an average score of 55.56% on the final test, while the experimental group obtained an average score of 74.44%. Based on these findings, it can be concluded that the implementation of learning interventions with increased digital literacy in the educational process can improve students' critical thinking skills, because there is a significant difference in critical thinking abilities between the experimental class and the control class.

Table 2. Pre-test and post-test results Social Studies Learning Outcomes

Class	Pretest	Postest
Experiment	38.33	84.44
Control	41.67	59.44

For the results of the observation analysis of the social studies learning outcomes of experimental class students, it shows that for the pretest results the average presentation was 38.33% and the control class the average was 41.67%. Meanwhile, for the average presentation

results of the experimental class posttest results were 84.44% and the control class posttest results were 59.44%. From these results, it can be said that by providing treatment using digital literacy reinforcement in learning activities, it will be able to improve students' social studies learning outcomes because there is a significant difference in students' social studies learning outcomes between the control class and the experimental class.

Furthermore, to assess the normality of critical thinking skills and social studies educational outcomes, the researcher used SPSS 21.00 software with the Kolmogorov-Smirnov method at a significance threshold of 0.05. The Kolmogorov-Smirnov test was chosen because it can evaluate both small and large sample sizes (n). Furthermore, the information in this study was measured on an interval or ratio scale. The results of the normality test are shown in the table below:

Table 3. Normality Test Results

Variant	Class	Sig.
Critical thinking skills (pretest)	Control	0.143
Critical thinking skills (Post-test)		0.200
Critical thinking skills (Pretest)	Experimental	0.135
Critical thinking skills (Post-test)		0.200
Learning outcomes (pre-test)	Control	0.077
Learning outcomes (post-test)		0.154
Learning outcomes (pre-test)	Experimental	0.058
Learning outcomes (post-test)		0.080

The normality test data shown in Table 3 shows that the significance level of the critical thinking skills and social studies learning outcomes variables for both the experimental and control groups exceeds 5% or 0.05. Therefore, from these results, it can be concluded that the analysis criteria have been met because all collected data are normally distributed. A homogeneity test was conducted in this study to assess the similarity between samples. In the homogeneity test, the researcher used SPSS 21.00 software with a one-way ANOVA test method at a significance level of 0.05. The results of the homogeneity test are illustrated below.

Table 4. Tabel Homogenitas

		Lavene Statustic	df1	df2	Sig.
Critical thinking	Mean	2.563	1	33	.199
	Median	2.250	1	33	.143
	Media and with adjusted df	2.250	1	32.944	.143
	Based on trimmed mean	2.506	1	33	.123
Learning outcomes	Mean	1.404	1	33	.245
	Median	.927	1	33	.343
	Median and with adjusted df	.927	1	32.133	.343
	Based on trimmed mean	1.517	1	33	.227

Based on the homogeneity test data, each variable exceeds 5%. The conclusion is that the samples from both variants are homogeneous (H0 is rejected) and the analysis of the test requirements has been met. Data analysis from the results of the hypothesis test shows that the

premise of this study is "Digital literacy has a significant effect on critical thinking skills and social studies learning achievement of grade VII students of SMPN 1 Lenek." The results of this hypothesis are evaluated based on the findings of the research data that have been collected. This can be seen from the average post-test results of the experimental group and the control group.

The next step is to test the hypothesis of critical thinking skills and social studies learning outcomes of students in the control and experimental classes. Using SPSS for Windows 25.0, an independent sample T-test was used as a hypothesis test. In decision making, the rule of thumb is that if the Sig value is greater than 0.05, then the implementation of digital literacy has no effect; if the Sig value is less than 0.05, then the implementation of digital literacy has an effect.

Table. 5 Hypothesis Testing
Paired Samples Test

	Mean	Std. Deviatio n	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pairing Abilities	-	15.243	3.593	-17.580	-2.420	-	17	.013
1 Critical Thinking - Social Studies Learning Outcomes	10.00 0					2.783		

Based on Table 5, the paired t-test mentioned produces a significance value of 0.013, with 0.013 < 0.05, which meets the criteria for rejecting H0 and accepting Ha.

Discussion

The findings of this study demonstrate that the implementation of digital literacy in social studies classrooms significantly enhances both students' critical thinking skills and their academic achievement. The improvement in post-test results for the experimental group compared to the control group confirms that digital literacy fosters more active, meaningful, and student-centered learning experiences.

These results align with previous research emphasizing the role of digital literacy in promoting higher-order thinking skills such as analysis, evaluation, and problem-solving. By engaging students with digital resources, educators can create interactive and contextualized learning environments that stimulate critical inquiry and knowledge construction. The use of digital literacy not only provides access to diverse information but also encourages students to evaluate sources, synthesize ideas, and apply knowledge in real-world contexts.

Furthermore, the study confirms that digital literacy supports the development of 21st-century skills, which are crucial for preparing students to face global challenges. Students exposed to digital-based learning demonstrated improved ability to interpret data, formulate arguments, and solve problems collaboratively. This suggests that integrating digital literacy into the

curriculum can transform the traditionally monotonous perception of social studies into a dynamic and engaging subject.

However, the effectiveness of digital literacy also depends on the readiness of teachers to design innovative learning strategies and the availability of adequate technological infrastructure. Therefore, future studies should explore how different levels of teacher competence and school facilities influence the impact of digital literacy on learning outcomes. In addition, investigating its application across different subjects and educational levels could provide a broader understanding of its benefits and limitations.

In conclusion, the results of this research reinforce the idea that digital literacy is a powerful tool to enhance both critical thinking and learning outcomes in social studies. Its integration in teaching practices is essential to equip students with the cognitive and practical skills needed to succeed in the digital era.

Conclusion

The application of digital literacy in the learning process resulted in an average score of 74.4 for students' critical thinking skills related to human activities to meet life's needs, based on research conducted and the results of the researcher's data analysis. Meanwhile, the average score for students' cognitive learning outcomes when using digital literacy was 84.44. The results of the hypothesis test obtained a sig. $0.005 < 0.05$ value for critical thinking skills and a sig. $0.001 < 0.05$ value for social studies learning outcomes indicating the impact of the application of digital literacy on social studies learning outcomes in the material of human activities to meet life's needs. Thus, based on the facts presented, it can be said that digital literacy has a significant impact on social studies learning outcomes and critical thinking skills.

Recommendation

Based on the findings of this study, several recommendations can be proposed. First, school principals are encouraged to provide policies and support that motivate teachers to integrate digital literacy into their instructional practices. Teachers should be trained and guided to design innovative and technology-based learning models that foster critical thinking and improve student achievement. Second, educational institutions should ensure the availability of adequate technological infrastructure, such as internet access, digital devices, and appropriate learning platforms, to maximize the effectiveness of digital literacy in the classroom. For future research, it is recommended to expand the scope by involving larger and more diverse samples across different schools and grade levels. Studies may also explore the integration of digital literacy in various subjects beyond social studies to identify its broader impact on learning outcomes and cognitive development. Additionally, further investigations should examine the challenges teachers face in applying digital literacy, including limited training, resource constraints, and students' varying levels of digital competence. By addressing these aspects, digital literacy can be more effectively implemented, not only to improve academic performance but also to prepare students with essential 21st-century skills for lifelong learning.

Acknowledgement

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