



Journal of Educational Sciences

Journal homepage: <https://jes.ejournal.unri.ac.id/index.php/JES>



P-ISSN
2581-1657

E-ISSN
2581-2203

The Effect of Using Quizizz Learning Media to Improve Student Learning Outcomes in Science in Grade V SDN 2 Sindue Tobata

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ARTICLE INFO

Article history:

Received: 13 June 2026

Accepted: 06 Aug 2026

Available Online: 15 Aug 2026

Keywords:

Quizizz

Learning Outcomes

IPAS

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Article Doi:

<https://doi.org/10.31258/jes.10.8.p.844-858>

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ABSTRACT

The integration of digital learning media has become an important strategy for improving student engagement and learning outcomes in elementary education. However, the use of game-based learning platforms such as Quizizz remains limited in elementary science classrooms. This study aimed to examine the effect of Quizizz learning media on the science learning outcomes of fifth-grade students at SDN 2 Sindue Tobata. A quantitative pre-experimental approach using a One Group Pretest–Posttest Design was employed. The participants consisted of 20 fifth-grade students selected through saturated sampling. Data were collected using validated achievement tests and analyzed through descriptive statistics, the Shapiro–Wilk normality test, the Paired Sample t-test, and the normalized gain (N-Gain) test. The findings indicate that Quizizz significantly improved students' science learning outcomes while increasing their motivation, participation, and engagement during classroom activities. The learning improvement reached a moderate level of effectiveness, demonstrating that Quizizz is an effective digital learning medium. This study provides empirical evidence supporting the integration of game-based learning media to promote student-centered science learning in elementary schools.

1. Introduction

Education is a planned process to create a learning atmosphere and learning process so that students actively develop their potential in terms of knowledge, skills, and attitudes. In an ever evolving global context, education not only serves as a means of knowledge transfer, but also as a means to prepare a generation that is adaptive to the changing times, including advances in information and communication technology (Ariyani et al., 2025; Prayoga et al., 2025; Sani et al., 2025). Therefore, the education system must be able to adapt and innovate, one of which is through the development of learning strategies that are effective and relevant to the needs of the times. Proper learning will help teachers in measuring student learning

outcomes and improve the overall quality of the learning process (Masruroh & Subiyantoro, 2024; Muslim, 2026; Rizki et al., 2022).

Learning outcomes are the level of success of students in learning subject matter at school which is expressed in scores obtained from the results of tests to recognize a certain number of subject matter (Azhahra & Jannah, 2025; Novitasari et al., 2023; Retnaningrum & Pamungkas, 2024). According to (Kusumawati & Apriani, 2026; Wulandari et al., 2026) The factors that affect student learning outcomes are divided into two, namely the Internal and factors External. The internal factors in question are factors that come from within students such as intelligence, interest and attention, learning motivation, perseverance, attitude, study habits, as well as physical and health conditions. Meanwhile, external factors are factors that come from outside which include the quality of teaching and learning media used by educators (Insani et al., 2026; Sani et al., 2025; Sofiana et al., 2025).

In the digital era of the 21st century, the development of information and communication technology has driven a major transformation in the world of education (Anggraini & Erviana, 2023). One of the impacts is the emergence of various innovations in learning methods, including digital-based learning media that support the achievement of students' cognitive goals (Khasanah et al., 2025; Ramadhan & Fadly, 2024; Reva et al., 2026). Natural and Social Sciences Education (IPAS), as an integrative subject that requires critical and analytical thinking skills, is very relevant if supported by interactive learning media to facilitate holistic understanding of concepts (Azhahra & Jannah, 2025; Khasanah et al., 2025; Masruroh & Subiyantoro, 2024). The paradigm shift from teacher-centered to student-centered learning is also a major factor in the integration of technology such as game-based learning media in learning and learning (Wulandari et al., 2026; Zahra, 2025).

Based on initial observations made by prospective researchers in grade V of SDN 2 Sindue Tobata on Monday, July 10, 2026, through interviews with science teachers in class V, the results were obtained that the use of conventional learning media such as daily assignments assisted by paper and pens was still found. The media is often considered boring by students, so it is unable to motivate them to study independently. Based on interviews with class V teachers, it is known that many students show an unenthusiastic attitude in carrying out learning, both daily learning and homework. They even tend to copy answers from the internet without understanding the content of the material first. This condition is certainly very worrying and requires a more innovative learning approach that involves the active participation of students. This phenomenon shows that there is a major problem in the learning and learning process, namely the low interest and involvement of students in conventional-based assessment activities. Learning should not only be a measure of learning success, but also an integral part of the learning process itself. If learning is done in a fun approach, then students are not only cognitively engaged, but also motivated to learn. Therefore, it is important for teachers to choose a learning strategy that is in accordance with the characteristics of the current digital generation.

Based on information obtained from grade V teachers of SDN 2 Sindue Tobata, the use of Quizizz as a learning medium is still relatively new and has not run optimally. Teachers are still in the learning stage using the features available on the platform, both in terms of technical implementation and in compiling questions that are in accordance with learning achievement indicators. This makes the use of Quizizz as a learning strategy in the school an interesting phenomenon to be researched further. The researchers saw an opportunity to examine the effectiveness of the use of Quizizz in helping teachers carry out more interactive learning, as well as how it impacted students' motivation and cognitive achievement. Taking this condition into account, this study is directed to analyze the use of Quizizz in social studies learning, in order to see the extent to which the media can contribute to improving the quality of learning and student involvement in the learning process.

Based on the description above, the researcher considers it necessary to raise the topic of the Influence of the Use of Quizizz as a Learning Media to Improve Student Learning Outcomes in Science Subjects Class V SDN 2 Sindue Tobata. This title was chosen because of the urgency to examine the effectiveness and influence of digital-based interactive media on students' motivation and cognitive abilities. By analyzing the implementation of Quizizz, this research is expected to provide empirical contributions and practical recommendations for teachers, especially in choosing learning media that is adaptive to the learning needs of 21st century students.

2. Methodology

In conducting his research, the researcher chose to use a quantitative approach with experimental methods. Experimental research is research that has a direct influence on the variables being studied and can show a causal relationship between independent variables and bound variables (Febriyanti & Andriani, 2025; Sofiana et al., 2025). The form of this research is Pre Experimental with a One Group Pretest-Posttest Design. The experimental group was given preliminary tests at the time of the study. Then it was continued with the teaching and learning process as usual. It ended with a final test using the quizizz application to find out the learning outcomes of students.

This type of research was chosen to determine the effect of the application Quizizz as a learning media for students at SDN 2 Sindue Tobata, Donggala Regency. It was chosen because there was no control class that the researcher used but only used Pretest and Posttest, but researchers still use quantitative research in managing data. Population describes a very large and extensive amount of data in a study (Marleni et al., 2022), where population is also the collection of all possible people, objects and other measures that are the object of attention in a study (Husna et al., 2024; Insani et al., 2026; Kusumawati & Apriani, 2026) The population in this study is all grade IV students of SDN 2 Sindue Tobata, Donggala Regency which consists of 20 students consisting of 8 male students and 12 female students. Samples are part of the population (Muslim, 2026; Yemifaira & Gagaramusu, 2026) The sample is determined by the researcher by considering several things, namely

by considering the problems faced in a research, the goals to be achieved in a research, the research hypothesis made, the research method and the instruments of a research. The sample in this study is all grade V students of SDN 2 Sindue Tobata, Donggala Regency who acted as an experimental class who received treatment using Quizizz As a learning medium with a total of 20 students consisting of 8 male students and 12 female students.

3. Results and Discussion

Based on the results of the validation of the research instrument carried out by the researcher with the validator, the results were obtained that the research instrument prepared had met the valid criteria and was suitable for use as a data collection tool in research. The validation process is carried out by examining the suitability between learning indicators, learning objectives, material taught, and question items used to measure student learning outcomes. Before being used in research, the instrument was first tested at SDN 11 Sindue Tobata as an instrument testing school to determine the feasibility level of the questions. Based on the results of the study and trial, the expert stated that the instrument consisting of 10 pretest questions and 10 posttest questions was in accordance with the competencies to be measured, had a proportionate level of difficulty, and was able to measure students' understanding of the learning material effectively. Furthermore, the instruments that have been declared feasible are used in the implementation of research at SDN 2 Sindue Tobata as a research school. Thus, the research instrument used has received approval from the validator and is declared feasible to be used in collecting research data on student learning outcomes.

The trial of the research instrument was carried out at SDN 11 Sindue Tobata on grade V students with a total of 12 respondents. This activity aims to test the feasibility of research instruments that will be used in experimental classes at SDN 2 Sindue Tobata. The results of the trial showed that students still had difficulty in doing the questions given, which was reflected in the low learning outcomes obtained. The average student pretest score is 35.83, while the average posttest score is 41.67. The findings show that the instrument has an appropriate level of difficulty to measure students' ability on the material being studied. Therefore, the results of the instrument pilot test serve as the basis for determining that the research instrument is suitable for use and that the research may proceed at the designated locations, as shown in table 1.

Table 1. Data on recapitulation of the results of the validation of pretest and posttest instruments for Class V Students

Criteria	Pretest	Posttest
Highest score	60	60
Lowest value	20	30
Quantity	430	500
Average	35,83	41,67

This study aims to determine the learning outcomes and the influence of the use of Quizizz as a learning medium for science subjects for grade V students at SDN 2 Sindue Tobata. The data collected in this study is the result data Pretest and Posttest in the experimental class through a written test. The data analyzed for hypothesis testing is the value of Pretest (before treatment) and the value of posttest (after treatment). The quantitative research procedure is the operationalization of the scientific method by paying attention to scientific elements. There are a number of quantitative research steps that must be taken that are expected to ensure the validity of the results (Sihotang et al., 2025). The stages in the implementation of this research are as follows:

Implementation of Quizizz Learning Media in Science Learning

The use of Quizizz learning media in this study was carried out systematically through three stages, namely preparation, implementation, and evaluation. The implementation of Quizizz served as the treatment provided to students in the experimental class to improve learning outcomes in Science (IPAS) subjects, particularly in Chapter 6 Indonesiaku Kaya Raya, Topic A Apa Saja Keajaiban Alam yang Ada di Sekitar Kita.

Preparation Stage

Before the learning activities were conducted, the researcher prepared learning materials, lesson plans, and assessment instruments that were aligned with the learning objectives and indicators. The researcher then developed a set of multiple-choice questions related to the learning material and integrated them into the Quizizz platform. Each question was designed according to the competencies to be achieved and was equipped with answer options and a predetermined time limit. After all questions had been uploaded to the Quizizz platform, the researcher tested the quiz to ensure that the questions, answer keys, scoring system, and display functioned properly. This preparation stage was conducted to ensure that the learning activities using Quizizz could run effectively and support the achievement of learning objectives.

Implementation Stage

The implementation of learning began with preliminary activities, including greeting students, checking attendance, motivating students, and conveying the learning objectives. The researcher then introduced Quizizz as the learning medium that would be used during the lesson. Students were instructed on how to access Quizizz using the game code provided by the researcher. After successfully joining the Quizizz session, students participated in learning activities that combined material explanation, discussion, and interactive quiz sessions. During the activity, students answered questions through the Quizizz platform using available digital devices. The Quizizz platform provided immediate feedback for each answer and displayed student scores automatically. This feature created a more interactive, enjoyable, and competitive learning atmosphere, encouraging students to participate actively in the learning process. Through the use of game elements such as points, rankings, and instant feedback, students became more motivated and engaged in learning activities.

Evaluation Stage

After the Quizizz activity was completed, the researcher reviewed the learning outcomes generated by the platform. Quizizz automatically recorded students' responses, scores, and participation levels, enabling the researcher to identify students' understanding of the material. The evaluation results were discussed together with students to provide reinforcement on concepts that had not yet been fully understood. Furthermore, the data obtained from the Quizizz activity were used as supporting information in analyzing the effectiveness of Quizizz learning media in improving students' learning outcomes.

Integration of Quizizz in the Research Procedure

In this study, Quizizz functioned as the treatment variable applied after the administration of the pretest. Students first completed a pretest to measure their initial understanding of the learning material. Subsequently, learning activities were conducted using Quizizz as an interactive learning medium. At the end of the learning process, students completed a posttest to determine changes in learning outcomes after receiving the treatment. The effectiveness of Quizizz learning media was measured by comparing pretest and posttest scores through statistical analyses, including the Paired Sample t-Test and N-Gain test. The results of these analyses were then used to determine the effect of Quizizz on students' learning outcomes in science subjects. The implementation process described above provides a clear picture of how Quizizz was used during the study and serves as a basis for interpreting the findings presented in the following sections as shown in the figure 1.

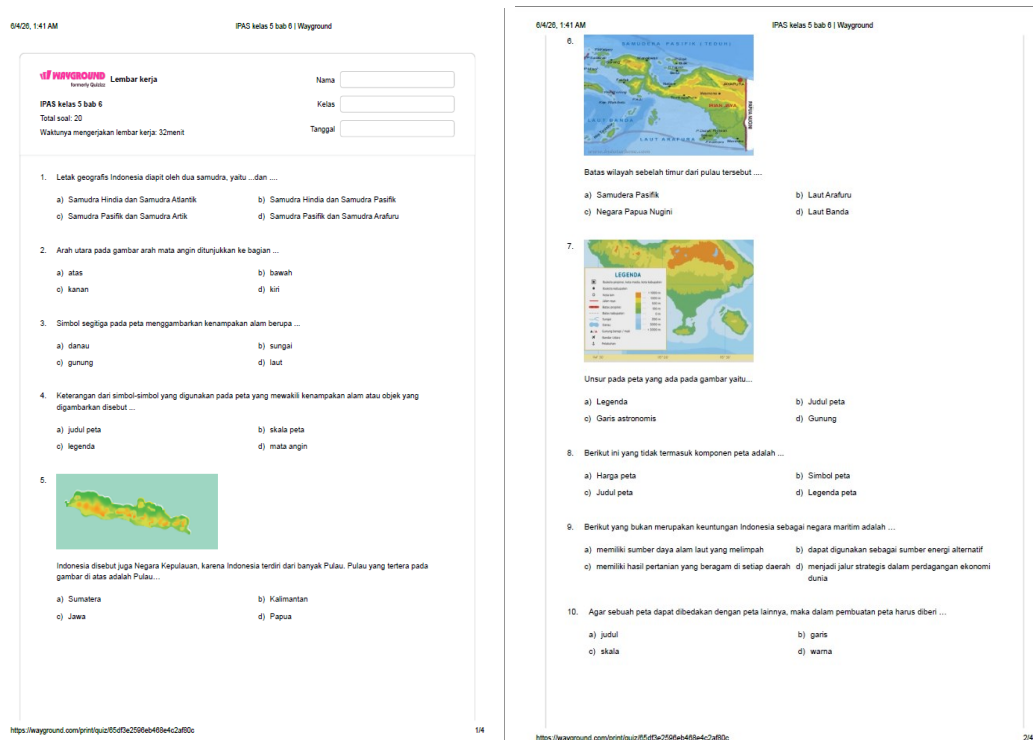


Figure 1. Quizizz Quiz Preparation Page

Figure 1 illustrates the preparation stage of the Quizizz learning media before it was implemented in the classroom. At this stage, the researcher designed and uploaded science learning questions into the Quizizz platform, adjusted the answer keys, scoring system, and time allocation for each item. This preparation ensured that the learning activities could be conducted systematically and in accordance with the intended learning objectives. After the quiz had been successfully prepared on the Quizizz platform, the next stage involved allowing students to access the activity using the game code provided by the researcher, as presented in Figure 2.

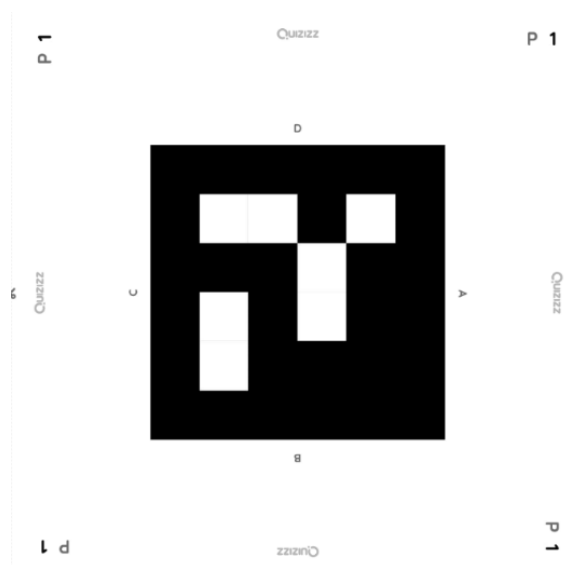


Figure 2. Students Joining Quizizz Using Game Code

Figure 2 shows students joining the Quizizz platform by entering the game code provided by the researcher. This step ensured that all students could participate simultaneously in the learning activity and access the same set of quiz questions. The login process also familiarized students with the digital learning environment before the lesson began. Once all students had successfully joined the Quizizz session, the learning process continued with students actively answering questions through the platform, as illustrated in Figure 3.



Figure 3. Students Participating in Quizizz Activity

Figure 3 presents students actively participating in the Quizizz-based learning activity. Students answered science questions individually through their digital devices while receiving immediate feedback from the system. The interactive features of Quizizz, such as automatic scoring, rankings, and instant feedback, encouraged active participation, increased learning motivation, and created a more engaging classroom atmosphere. After students completed all quiz questions, Quizizz automatically generated learning reports and scores, which were used to evaluate students' performance, as shown in Figure 4.

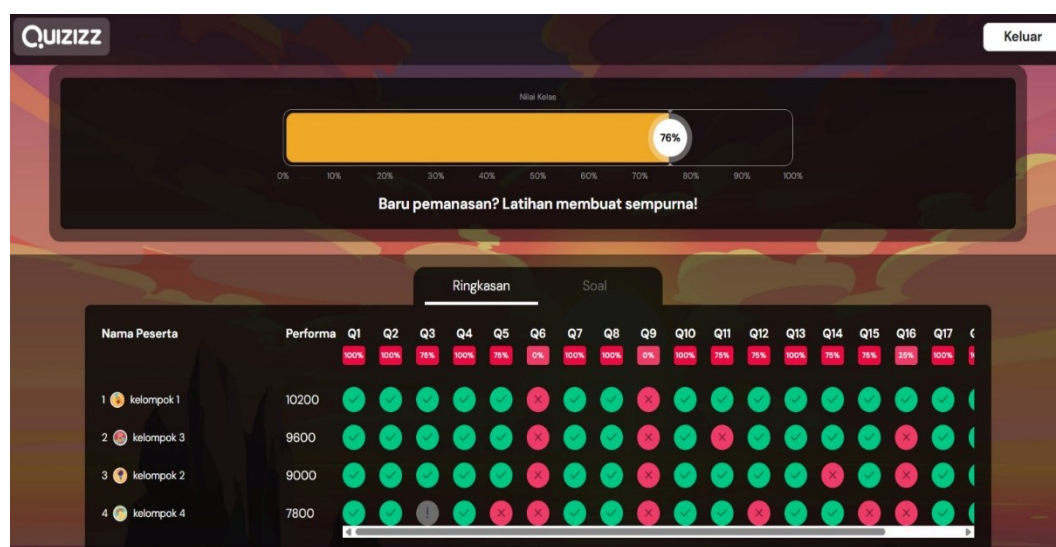


Figure 4. Quizizz Result Dashboard

Figure 4 displays the Quizizz result dashboard, which provides a summary of students' performance after completing the learning activity. The dashboard automatically records student scores, response accuracy, and participation data, enabling the researcher to evaluate learning outcomes efficiently. These results also served as supporting evidence for analyzing the effectiveness of Quizizz in improving students' science learning outcomes. The implementation process presented in Figures 1–4 demonstrates that Quizizz was systematically integrated into classroom learning. Based on this implementation, the next section presents the analysis of students' learning outcomes through the comparison of pretest and posttest scores.

Pretest

The pretest is an initial test to find out the learning outcomes and the influence of the use of Quizizz learning media in science subjects, especially in the material chapter 6 Indonesiaku rich raya topic A "What are the natural wonders that exist around us?", before being given treatment in the experimental class. The implementation of the pretest in the experimental class was carried out in class V with a total of 20 students. In the implementation of the Pretest, an instrument was given in the form of a written test sheet consisting of 10 questions.

Teaching Treatment

Treatment in the form of teaching in the experimental class after the *pretest* was carried out. The initial activity carried out in the experimental class was to give greetings and invite students to pray. Conduct attendance or attendance checks of students. Seeing the readiness of students in participating in learning. Then give an appension and give a triggering question while students listen to the teacher's perception and answer the questions that the teacher gives. Then conveyed the subject of discussion, namely "Indonesia is Rich" and the learning objectives of that day. The core activity is carried out in the experimental class where the learning process will use Quizziz as the medium. The steps are as follows:

1. Students will be divided into 4 groups
2. Researchers will reveal the rules of the game
3. Students were instructed to access the Quizizz platform using the game code provided by the researcher. After joining the quiz session, students answered the questions through their devices. The Quizizz system automatically recorded students' answers and displayed scores in real time.
4. After the game process is completed, students and teachers will evaluate together the questions they have worked on

Posttest

Posttest is the final test to find out the learning outcomes and the influence of the use of Quizizz learning media for students in social studies subjects, especially in the material chapter 5 of the story about my area topic A "Indonesiaku Kaya Raya", the posttest is carried out after being given treatment in the experimental class. The implementation of the posttest in the experimental class was carried out in class V with a total of 20 students. In the implementation of the posttest, a written test sheet was given with a total of 10 questions.

Learning Outcome Data Analysis

Based on the research that has been carried out, data on student learning outcomes in social studies learning for grade V students at SDN 2 Sindue Tobata was obtained. The data obtained is then analyzed to get a conclusion from the research results. The data of the recapitulation of the results of the pretest and posttest in the experimental class is in table 2.

Table 2. Data on the Recapitulation of Pretest and Posttest Results for Class V Students

Criteria	Pretest	Posttest
Highest score	70	100
Lowest value	20	50
Quantity	850	1.550
Average	42,50	77,50

Based on the data in table 2, it can be seen that the initial ability of student learning outcomes in the experimental class, can be seen from the average score of class V students as an experimental class of 42.50, the results of the experimental class pretest results obtained the highest score of 70 and the lowest score of 20. After being given treatment, it can be seen that the final ability of student learning outcomes in the experimental class, can be seen from the average score of class V students as an experimental class of 77.50, the results of the posttest of the experimental class obtained the highest score of 100 and the lowest score of 50. Based on the results of the analysis above, it can be concluded that the use of quizizz learning media can affect student learning outcomes in science science class V at SDN 2 Sindue Tobata. The difference in the increase in average scores in the pretest and posttest in the experimental class shows that the use of quizizz learning media can affect students' science subjects to improve student learning outcomes.

Normality Test

The normality test is carried out with the aim of assessing whether the data obtained is normally distributed or not. The normality test was carried out on the pretest and posttest data of students in the experimental gfs. The normality test in this study used the help of the IBM SPSS Statistic 25 program from a sample of 20 students. The criteria for testing normality are:

1. If the $\text{sig} > 0.05$ then the data is normally distributed
2. If the $\text{sig} < 0.05$ then the data is abnormally distributed.

The results of the normality test of *pretest* and *posttest* data for class V in this study can be seen in table 3.

Table 3. Results of Pretest and Posttest Data Normality Test for Experimental Classes

Data	Statistic	Df	Sig.
Pretest	0,948	20	0,344
Posttest	0,934	20	0,183

The data in table 3 of the results of the normality test using lilliefors (Shapiro-Wilk) with the help of the IBM SPSS Statistic 32 program shows that the pretest and posttest data in this study have a sig value of > 0.05 . The value of the experimental sig pretest was $(0.344 > 0.05)$. And the Sig value of the experimental posttest was $(0.183 > 0.05)$. Thus, it can be concluded that the pretest and posttest data are distributed normally.

Hypothesis Test

Hypothesis testing is used to test the statistical correctness of a statement and can draw conclusions about whether to accept or reject the statement. Testing the effect of using Quizizz as a learning medium to improve student learning outcomes in science subjects in grade V at SDN 2 Sindue Tobata using the T Paired Sample T-Test analysis. The analysis of the T Paired Sample T-Test was carried out with the

help of the IBM SPSS Statistic 32 program. The hypothesis of the T Paired Sample T-Test is as follows.

Ho = There is no influence of the use of Quizizz as a learning medium for grade V students at SDN 2 Sindue Tobata

Ha = There is an influence of the use of Quizizz as a learning medium for grade V students at SDN 2 Sindue Tobata.

Hypothesis testing was carried out at a significant level of 5% (0.05). The criteria for deciding whether to accept or reject Ho on this test is that if the significant value ≥ 0.05 then Ha is rejected or Ho is accepted, on the other hand, if the significant value is < 0.05 then Ha is accepted or Ho is rejected. The results of the analysis of the Hypothesis Paired Sample T-Test with calculations assisted by the IBM SPSS Statistic 32 program can be seen in the following figure 5.

Paired Samples Test										
		Paired Differences							Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	One-Sided p	Two-Sided p
					Lower	Upper				
Pair 1	Pretest-Posttest	-35.000	12.354	2.763	-40.782	-29.218	-12.670	19	<,001	<,001

Figure 5. Paired Sample T-Test Results

The results of the T Test in figure 5 are known to have a significant value of the T Paired Sample T-Test is 0.000. Because the significant value (2-Tailed) < 0.005 ($0.001 < 0.05$) was accepted and Ho was rejected. So, it can be concluded that the use of Quizizz learning media has an effect on improving student learning outcomes in Class V science subjects at SDN 2 Sindue Tobata.

N-Gain Test

In this study, the N-Gain test was carried out to see the high and low increase that occurred between before and after being given treatment in the experimental class. This study uses the help of SPSS version 32 with guidelines for the distribution of N-gain scores, namely if the n-gain score value is $g < 0.7$, then it is included in the high category, $0.3 \leq g \leq 0.7$ is included in the medium category and $g < 0.3$ is included in the low category. The following are the results of the data analysis conducted using SPSS version 32, as shown in table 4.

Table 4. N-Gain Test Results

Data	N	minimum	Maximum	red	Std. deviation
N-Gain Score	20	,17	1,00	,6164	,18018

Based on the results of the data analysis above, it can be seen that the average N-Gain score obtained is 0.6164 so that the effect of using Quizizz as a learning medium to improve student learning outcomes in Science Subjects Class V SDN 2

Sindue Tobata is in a medium classification, with the use of Quizizz learning media Provide opportunities for students to learn while playing in a way that they can participate directly so that it can have an effect on student learning outcomes.

Advantages and Limitations of Quizizz Learning Media

Based on the findings of this study, the use of Quizizz learning media provides several advantages in the learning process. First, Quizizz creates a more interactive and enjoyable learning environment through game-based features such as points, rankings, and instant feedback. These features increase students' motivation and participation during learning activities. Second, Quizizz enables students to receive immediate information regarding the correctness of their answers, helping them identify mistakes and improve their understanding of the learning material. Third, Quizizz facilitates teachers in conducting assessments because student responses and scores are recorded automatically by the system, making the evaluation process more efficient. The results of this study also indicate that the use of Quizizz contributes positively to the improvement of students' learning outcomes, as reflected in the increase in the average posttest score and the moderate N-Gain category obtained. This finding suggests that Quizizz can be used as an alternative digital learning medium to support science learning in elementary schools.

However, several limitations were also identified during the implementation of Quizizz. The effectiveness of Quizizz depends on the availability of digital devices and a stable internet connection. Technical problems such as limited internet access or device constraints may disrupt the learning process. In addition, some students require additional guidance when using digital learning platforms, particularly those who have limited experience with educational technology. Furthermore, the competitive features available in Quizizz may cause some students to focus more on achieving high scores than on understanding the learning content deeply. Therefore, teachers should consider students' technological readiness and learning characteristics when implementing Quizizz in the classroom. Proper guidance and supervision are necessary to ensure that the use of Quizizz not only increases student engagement but also supports meaningful learning outcomes.

4. Conclusion

This study concludes that the implementation of Quizizz learning media successfully improves Grade V students' science learning outcomes at SDN 2 Sindue Tobata. The interactive features of Quizizz encourage students to participate more actively, increase learning motivation, and create a more engaging classroom environment. These findings indicate that Quizizz can serve as an effective digital learning medium to support science instruction in elementary schools. Therefore, teachers are encouraged to integrate Quizizz into classroom activities to promote meaningful learning experiences while maintaining active student engagement.

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How to cite this article:

Mudzakir, Z. R., Pendit, S. S. D., Lapasere, S., Rahman, A., & Putriwanti. (2026). The Effect of Using Quizizz Learning Media to Improve Student Learning Outcomes in Science in Grade V SDN 2 Sindue Tobata. *Journal of Educational Sciences*, 10(8), 844-858.
