

The Influence of The Quizizz Paper Mode Application on Mathematics Subjects on The Learning Outcomes of Class VI students of SDIT Wihdatul Ummah Takalar

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Abstract

This study examines how the influence of the quizizz paper mode application on the learning outcomes of elementary school students. This study uses a quantitative research type with an experimental method. The form of research *pre-experimental* with *one-group pretest-posttest* design. The population in this study were students of SDIT Wihdatul Ummah Takalar with a sample of 26 female VI_B class students. The results of the study showed that the average pretest score was 53.19 and the average posttest score was 82.54, with normally distributed data based on the results of the normality test. The calculation of the hypothesis test obtained a sig (2-tailed) result of $0.000 < 0.05$ which indicates that there is an effect of the quizizz paper mode application on mathematics subjects on the learning outcomes of class VI grade students of SDIT Wihdatul Ummah Takalar. Based on the results of the *N-Gain* test, the average value of increasing learning outcomes is 61.82% which is included in the effective category, indicating that the quizizz paper mode application effectively improves student learning outcomes.

Keywords: quizizz paper mode; learning outcomes; mathematics subject

1. Introduction

The implementation of an interesting teaching and learning process in the classroom is one of the supporting factors in creating a pleasant classroom atmosphere. Students are active in class, and their high curiosity makes the classroom atmosphere productive, especially for mathematics lessons. Lack of student response is one of the main causes of low student learning outcomes in class. Therefore, to teach this mathematics lesson, teachers must use several fun learning methods or models. The teaching and learning process activities in the classroom are largely determined by the role of a teacher, where the teacher must be able to create a conducive classroom atmosphere during the learning process, so that later students feel comfortable and can receive the material well (Fatikhatus Nisa, Wakhida; Evendi, 2023). Mathematics can stimulate students' thinking processes systematically and logically to solve mathematical problems and problems in everyday life (Nurhasanah et al., 2022). Mathematics learning in elementary school is never separated from arithmetic operations, both addition, subtraction, multiplication and division, all of which are related to number material (Diro, 2024). According to Reys Mathematics is: (1) Study of patterns and relationships; (2) way of thinking; (3) an art; (4) language; and (5) a tool. Considering that mathematics is very important in human life, mathematics is always taught at every level of education. The mathematics topics taught in schools are adjusted to the mathematics learning curriculum at the school (Simanungkalit et al., 2023).

The development of technology has a significant impact on the development of education. In Permendikbud number 22 of 2016, it explains one of the learning principles used, namely by using information and communication technology to support the effectiveness and efficiency of learning (Kurniawan & Hidayah, 2021). The use of technology can have a positive influence if used properly. Students' interest in technology is also increasing, for example in teaching and learning activities combined with the use of applications that can attract students' attention. One of the applications that can be used is quizizz application. The quizizz application can be used as one of the fun learning media. According to Gegne (1970: 1) in (Junaidi, 2019) media are various kinds of components that can stimulate students to learn. Learning media in the teaching and learning process has an important role, learning media that is in accordance with the needs and characteristics of students will result in an effective and efficient learning

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process so that it will make the material conveyed by the teacher can understand students well (Liandri & Mutiara, 2024).

The use of the quizizz application in the teaching and learning process can increase students' motivation and interest in the material being taught. Quizizz is a web tool in the form of an interactive test that is used in classroom learning, for example for formative assessment. Quizizz is also a game-based application that makes learning activities more concentrated and enjoyable (Mukharomah, 2021). The Quizizz application is a web-based learning tool that students can use inside and outside the classroom. To keep students engaged as they work through the practice questions or quizzes provided, the application has interesting theme and music characters. In the quizizz application there are several features such as one of them is the game feature where the game feature can increase students' interest in learning so that they are more enthusiastic about participating in teaching and learning activities (Selian & Rambe, 2022). One of the features in the quizizz application is quizizz paper mode or "quizizz paper mode". Quizizz Paper Mode allows students and teachers to interact through questions and answers displayed on the screen and filled in on paper by students. In this mode, students can see the questions and answer options on the screen and write their answers on the paper provided. This tool has attracted the attention of educators as an effective tool to increase student interaction and engagement in learning. In addition, Quizizz Paper Mode also provides benefits for teachers. Teachers can easily track the progress of each student through the answer sheets collected (Fauziah & Hadi, 2023). This application can be used as an alternative solution to improve student learning outcomes. According to Sudjana, learning outcomes are competencies obtained after going through the learning process (Nazila et al., 2024). Meanwhile, according to Hamdan and Khader, learning outcomes are the basis for measuring and reporting student academic achievement, and are the key to developing more effective subsequent learning designs that have alignment between what students will learn and how they will be assessed. As a final product of the learning process, learning outcomes are assessed to show what students have known and developed (Motoh et al., 2022).

Based on an interview, one of the mathematics teachers at SDIT Wihdatul Ummah Takalar stated that the obstacles often faced by teachers related to low mathematics learning outcomes are the lack of curiosity, students' enthusiasm for learning, and students' low problem-solving abilities in mathematics lessons. Thus, a pleasant learning atmosphere can be one solution to this problem, by using the quizizz paper mode application of course.

2. Literature Review

The rapid development of technology has a significant impact on the world of education, especially in terms of the use of media and learning methods. The quizizz application is one application that can be used both online and offline to increase student motivation. Quizizz is an online game based on interactive quizzes that can be accessed via computers and smartphones using the web or applications with adequate internet networks that can be used as learning media that can make classes more fun and interactive, this is in line with the opinion (Purba, 2019 : 33) that Quizizz is an educational quiz application based on games that bring multiplayer activities into the classroom and practice in class becomes interactive and fun. Quizizz with the Paper Mode feature uses a QR Code on a sheet of paper that can be used in offline learning to facilitate teachers and students in creating innovative face-to-face learning based on interactive and efficient quizzes (Rini & Zuhdi, 2023). This study is in line with the study on "The Effect of Quizizz Paper Mode Media on Learning Outcomes of the Application of Pancasila Attitudes Material for Class IV UPT SD Negeri 220 Gresik" by Rini et al. (2023), found that the quizizz paper mode application can improve student learning outcomes, but this study focused on Pancasila Education lessons. Another relevant study, "The Effect of Using the Quizizz Application on the Learning Outcomes of Grade IV Elementary School Students" by Fitri et al. (2023), found that the use of the quizizz application had a significant effect on student learning outcomes. This study focuses on the quizizz application only, not specifically using paper mode.

Previous research that is also relevant is by Nafi' Mukharomah (2021), finding that teachers are able to carry out student knowledge assessment activities in distance learning by utilizing the quizizz application. There are weaknesses and advantages to this quizizz paper mode application. According to Destiana et al., the disadvantages of paper-based tests or paper and pencil tests are that they require considerable costs for procuring paper and duplicating questions so that they are less economical. In addition, the questions from printing or photocopying are sometimes of low quality, less attractive, blurry and the writing is not clear, so that the technical errors will have an impact on students, namely students will have difficulty reading the questions and it takes time to correct the questions (Maharani et al., 2023). Other weaknesses are: (a) Teachers use 2 devices, namely cellphones and laptops; (b) Teachers must download and install the Quizizz application on their cellphones; (c) Quizizz paper mode can only be used for multiple-choice quiz questions with 2, 3 and 4 answer options. Meanwhile, the advantages of quizizz paper

mode are (a) Quizizz Paper Mode students do not need gadgets and do not need an internet network; (b) Teachers can scan barcodes or Q-Cards (Quizizz Cards) of students' answers and teachers can immediately find out which students have answered correctly and incorrectly; (c) Barcode sheets or Q-Cards (Quizizz Cards) answers for students can be used repeatedly with different quiz materials; (d) Each student has 1 sheet of Q-Cards answers; (e) Q-Cards sheets between students are different so that students cannot copy their friends' answers (Rini & Zuhdi, 2023).

3. Research Method

This study uses a quantitative research type with an experimental method. According to Creswell, quantitative research is a systematic and objective approach to data collection and analysis that involves the use of numerical data to collect and analyze valid and reliable information about a particular phenomenon or problem (Waruwu et al., 2025). Meanwhile, according to Bryman (2005) The quantitative research process starts from theory, hypothesis, research design, selecting subjects, collecting data, processing data, analyzing data, and writing conclusions (Ali et al., 2022). The form of research is pre experimental with one-group pretest-posttest design. This experimental research can be interpreted as a research method used to find the effect of treatment on others under controlled conditions (Wahyuningrum et al., 2021). There is only an experimental class by giving an initial test to measure student learning outcomes before being given treatment, continued learning using the quizizz paper mode application, then giving a final test to measure whether there is an effect of the quizizz paper mode application on student learning outcomes.

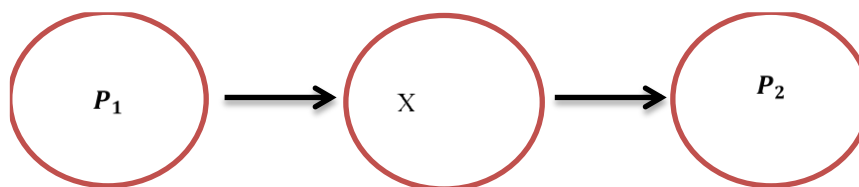


Figure 1. Research Design One-Group Pretest-Posttest Design

Keterangan:

P_1 = Pretest

X = Treatment (Learning with the quizizz paper mode application)

P_2 = Posttest

The population in this study were SDIT Wihdatul Ummah Takalar students, with a sample of 26 female VI_B class students. The sample determination was carried out using the technique purposive sampling. Purposive sampling is a way to obtain samples by selecting samples from among the population according to what the researcher wants. In this technique, researchers choose purposive samples subjectively. The selection of “purposive samples” is done because researchers may have understood that the information needed can be obtained from a particular target group that is able to provide the desired information because they do have such information and they meet the criteria determined by the researcher (Asrulla et al., 2023). The main instrument in this study was a learning outcome test in the form of 20 multiple-choice questions, which were used in the pretest and posttest. According to Suharsimi Arikunto, data collection instruments are tools used by researchers to make the process of collecting data easier and more orderly. This opinion is supported by Sumadi Suryabrata who explains that instruments are tools for recording various conditions or activities related to a person's psychological aspects, usually in the form of numbers or quantitative data (Zayrin et al., 2025).

The data analysis used was descriptive analysis, normality test, hypothesis test (paired sample t test), and normalized n gain test. Descriptive analysis was used to present data on whether there were differences in pretest and posttest data such as (mean, median, mode, etc.). The results of Siyoto and Sodik's (2015) study explain that descriptive statistics are statistics used to analyze data by describing or depicting the data that has been collected as it is without intending to make conclusions that apply to the public or generalization (Asmaul et al., 2021). Furthermore, the normality test was used to determine whether the data was normally distributed or not. Normal distribution means whether the data is spread symmetrically and forms a bell-like curve. In this study, because the sample was small ($n < 50$), the normality test was obtained using the test *Shapiro Wilk* on SPSS 26, with a significance level of 5% with the criteria, namely if *Asymp Sig* $> \alpha$ (0.05), then the data is normally distributed, whereas if *Asymp Sig* $< \alpha$ (0.05), then the data is not normally distributed (S. Siregar, 2014: 167 in (Rini & Zuhdi, 2023)). The Shapiro-Wilk method was proposed by Samuel Stanford Shapiro and Martin Wilk in 1965. This method emerged as an alternative statistical

procedure for testing complete samples for normality (Sintia et al., 2022). After the normality test is continued with a hypothesis test using paired sample t test with a significance level of 5%. Paired sample t test used to determine whether there is a difference in the average pretest and posttest data. The hypothesis test in this study was to determine whether or not there is an effect of using the quizizz paper mode application in mathematics subjects on student learning outcomes, with the criteria if the significant value is <0.05 then it is rejected (H_0 : There is no significant effect of using the quizizz paper mode application in mathematics subjects on student learning outcomes in class VI_B SDIT Wihdatul Ummah Takalar) and H_1 is accepted (H_1 : There is a significant effect of using the quizizz paper mode application on student learning outcomes in class VI_B SDIT Wihdatul Ummah Takalar). Conversely, if the significant value is > 0.05 then it H_0 is accepted and H_1 is rejected. To measure the increase in learning outcomes that occurred between before and after quizizz paper mode learning, a normalized gain test was carried out on SPSS 26. The Table 1 show the gain score level criteria (Rini & Zuhdi, 2023):

Table 1. Gain Score Level Criteria

Mark	Criteria
$G \geq 0.7$	Tall
$0.3 \leq G < 0.7$	Currently
$G < 0.3$	Low
$G = 0.0$	There was no increase
$-1.00 \leq G < 0.0$	There was a decline

4. Results and Discussion

The study was conducted in several stages. The sample taken was 26 female VI_B class students. Before conducting research, researchers made observations first. The main research instrument used is a learning outcomes test, in the form of 20 multiple choice questions which have previously tested the validity, reliability, difficulty level and differentiating power of the questions which aim to see whether the questions are suitable for use or not. The data obtained by giving an initial test to determine the students' initial abilities, after that the implementation of learning using the quizizz paper mode application for 3 meetings on the material of spatial shapes, then a final test was given to determine the students' abilities after being given learning using the quizizz paper mode application. The results of the descriptive data analysis obtained from the results of the initial and final tests shown on Table 2.

Table 2. Descriptive data analysis

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
PreTest	26	18.00	85.00	53.1923	15.43507
PostTest	26	67.00	100.00	82.5385	8.48165
Valid N (listwise)	26				

Based on the data in table 2, the average value of the students' initial test has not reached the minimum completion criteria value, with a minimum value of 18 and a maximum value of 85. After being given treatment with quizizz paper mode application-based learning, the average value of students increased and reached the minimum completion value, with a minimum value of 67 and a maximum value of 100. This shows that there is a change between the pretest and posttest values in the experimental class.

Next, a normality test is carried out which aims to determine whether the data is normally distributed or not. In other words, this normality test has an important role before conducting further data analysis. According to Ghasemi and Zahediasl, the importance of the normality test lies in its ability to ensure the accuracy of the analysis results by minimizing bias that may arise due to deviations from the normal distribution. Meanwhile, according to Arifin & Bakar, in the context of education, normality testing is often carried out on student grades to determine whether the data can be analyzed using a parametric approach, which generally provides stronger and more valid results (Sari et al., 2024). The results of the normality test processed using SPSS 26 shown on Table 3.

Based on the data in table 3 using the Shapiro-Wilk test, the significant value is greater than 0.05 on the pretest ($0.622 > 0.005$) and on the posttest ($0.705 > 0.05$) in other words, the data is normally distributed and can be tested next (parametric test) to determine whether there is an effect of the quizizz paper mode application on student

learning outcomes. After the normality test, it is continued with a hypothesis test using the paired sample t test. The results of the paired sample t test using the application SPSS 26 shown on Table 4.

Table 3. Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
PreTest	.970	26	.622
PostTest	.973	26	.705

Table 4. Paired Sample t test

Paired Samples Test									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	PreTest - PostTest	-29.34615	14.71582	2.88601	-35.29000	-23.40231	-10.168	25	.000

In table 4 it can be seen that the significant value (2-tailed) is $0.000 < 0.05$, which means H_0 is rejected and H_1 is accepted, so it can be concluded that there is an increase in student learning outcomes after using the quizizz paper mode application seen from the pretest and posttest values. Furthermore, a normalized n gain test was carried out to determine the increase in student learning outcomes which are presented in the following table:

Table 5. Normalized N Gain Test

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
NGain_Score	26	.31	1.00	.6182	.19382
NGain_Persen	26	31.11	100.00	61.8216	19.38190
Valid N (listwise)	26				

Based on table 5, it shows that the average value of the increase in learning outcomes in the normalized n gain test is 0.6182 from the average pretest value and the average posttest value, which is included in the effective category. So it can be concluded that the use of the paper mode quizizz application is effective in increasing the learning outcomes of grade VI students of SDIT Wihdatul Ummah Takalar.

This research is in line with previous research conducted by Rini et al. (2023) which proves that the quizizz paper mode application has an influence on improving student learning outcomes in the application of attitudes material. The results of this study are also in line with research conducted by Fitri Maharani et al. (2023) which proves that the use of the application quizizz has a significant influence in improving the social studies learning outcomes of grade IV elementary school students.

5. Conclusion

Quizizz paper mode application has a significant effect on the learning outcomes of female VI_B class students of SDIT Wihdatul Ummah Takalar. Based on the results of the research and discussion, it can be seen that, in the results of the hypothesis test with paired sample t test obtained a significant value (2-tailed) of $0.000 < (\alpha = 0.05)$, so that H_0 rejected and H_1 accepted which means there is a significant influence on the use of the application quizizz paper mode on student learning outcomes. This can also be seen from the increase in student learning outcomes in the pretest and posttest results, the average value obtained in the posttest is higher than the average pretest value. Furthermore, from the test results N-Gain The average value of the increase in learning outcomes was 61.8216%, which is included in the effective category, indicating that the quizizz paper mode application is effective in improving student learning outcomes.

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