

The Effect of the Use of Quizizz Learning Media Based on Information and Communication Technology (ICT) on Student Learning Outcomes

Suci Aulia^{1*}, Mustari Lamada², Fathahillah²

¹Undergraduate Program, Faculty of Engineering, Universitas Negeri Makassar, Indonesia

²Faculty of Engineering, Universitas Negeri Makassar, Indonesia

*Email address of corresponding author: suciaull14@gmail.com

ABSTRACT

This research uses a quantitative approach to the type of experimental research with the design of a non-equivalent pretest-posttest control group. The total sample in this study is 60 students consisting of 30 students from class IX A and 30 students from class IX D. The research data is obtained from tests and documentation, and the analytical techniques used are descriptive statistical analysis and hypothesis testing. Based on the results of the research carried out, it was obtained: (a) Student learning outcomes in the experimental class before applying the Quizizz learning medium averaged 75.83, (b) Student learning outputs in the Experimental class after polishing the average learning medium Quizizz averaged 93.5, and (c) Hypothesis test results with the Man-Whitney test used as an alternative to the independent T-test, while to evaluate improvement in the score in the same group, the Wilcoxon test was used as a alternative option for two pairing sample t-tests. Man and Whitney test results showed a significance value of 0,000 which is less than the level of 5% ($0,000 < 0.05$), which means that there is an influence of the use of Quizizz information technology-based learning media and communication on the learning outcome of students at MTs Madani Alauddin.

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1. Introduction

The development of science and technology has significantly impacted various dimensions of human life, including economic, social, cultural, and educational life[1]. *"The educational process is the process of developing the potential of students' potential so that they become inheritors and developers of the nation's culture"* [2].

To keep up with the challenges of digital-based learning, along with the development of Technology and Information, thus encouraging the creation of innovative, effective, and efficient utilization of learning media that is innovative, effective, and efficient [3].

The utilization of this technology has changed the way teaching and learning become more interesting and innovative [4]. The success of an education can be through a fun learning process, the learning process is also expected to improve learning outcomes.

However, the current reality is that the components that can improve the quality of education have not been fully met in every school [5].

Creating fun learning can be done by using media in learning. Based on the observation conducted by the researcher, it was revealed that at Madrasah Tsanawiyah Alauddin, learning was carried out face-to-face with a 100% student attendance rate. The application of learning in ICT classes mostly uses the lecture method. During the learning

process, there is no use of learning media, which causes a lack of student interest in learning because it is considered less interesting. The impact of this is that students' understanding of the material taught is still lacking resulting in unsatisfactory student learning outcomes and did not meet the minimum score that all students must achieve before they are considered to have completed their learning. The ICT teacher in class IX of Madrasah Tsanawiyah Alauddin stated some of the obstacles she often faces, namely the lack of response from some students, which is caused by the lack of diversity of interesting learning media. During the learning process, the teacher only conducts lectures using package books or LKS books from school. The use of learning media such as Quizizz has never been done due to limited time for the preparation of learning media, so all assignments are transferred to the LKS that students have purchased. Meanwhile, students also experience obstacles in the learning process, where some of them find ICT lessons quite boring. This is due to the lack of attractiveness in the presentation of learning and the lack of variety in the use of learning media, which causes some students to be sleepy and less focused during learning. For students to be more motivated to learn, the use of learning media must be updated. Students will not be motivated to learn if teachers are not creative in creating a learning atmosphere. Students may not focus on their lessons or be unprepared to learn about what is being taught. Students will also be bored with the same lessons. The academic success of students will be affected by their level of motivation. Quizizz is an attempt to overcome the problems of learning media in Indonesia that cannot be applied to other traditional

information technology and computer-based learning.[7]. Therefore, Quizizz Learning Media, an interactive learning platform based on games and technology, can be an option of choice for teachers.

Quizizz is a quiz-based platform that allows users to play as a means of learning. Quiz has millions of quizzes from various fields that can be accessed by teachers and students [8]. In addition, Quizizz makes learning more student-focused because it involves them actively. Quizizz can be used by teachers and students on laptops, computers, or smartphones. Quizizz provides ready-to-use quizzes that users can access and use, including quizzes with various topics and levels of difficulty [9]. Quizizz can be used by teachers to practice questions at the beginning and the end of the lesson and to track students' activity performance. Teachers can set the time for the quiz questions asked to their students so that they can train their students to give precise but quick answers.

Based on the results of interviews conducted with the ICT subject teacher of MTS Madani Alauddin, Mr. Andi Ramadhani, S.P.D., M.P.D., mentioned that learning media affects student learning outcomes. Teachers must understand the media standards that must be used to have an impact on the level of learning outcomes of students so that they can be liked and accepted by students.

In contrast to previous studies, this research has a special focus on cognitive aspects, especially in observing student learning outcomes after using Quizizz learning media. In contrast to research conducted by Lina, (2021) [10], it was found that the use of Quizizz learning media can increase students' concentration and learning interaction, and research by Nurfaizah AP, (2022), it was found that there was an effect

of using Quizizz learning media on the effectiveness of learning media [11]. Based on the explanation above, the problems in this research are :

- 1) Is there an influence on student learning outcomes, especially in ICT subjects using Quizizz media?
- 2) What is the average value of student learning outcomes in the influence of using Quizizz learning media in ICT subjects in Class IX D MTS Madani Alauddin?

2. Material and Methods

In this study, the researchers will experiment to evaluate the impact of the use of Quizizz learning media on student learning achievement. This will be done by applying an experimental research method with an experimental design pretest-posttest non-equivalent control group.

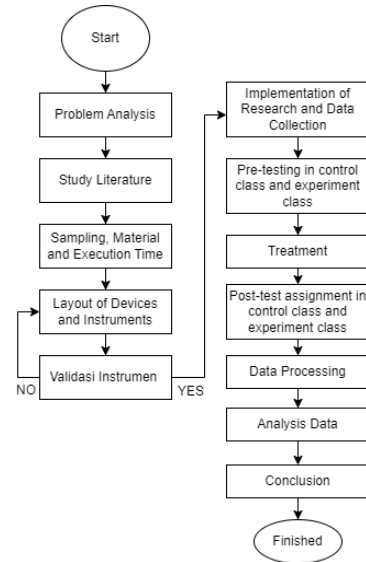
Table 1: Non-Equivalent Control Group Design

Pretest	Treatment	Posttest
01	X	02
03	-	04

Source: (Sugiyono, 2018 : 116)

Description:

- 01: Pretest given to the experimental class
- 02: Posttest given to the experimental class
- 03: Pretest given to the control class
- 04: Posttest given to the control class
- X: Treatment in the experimental class by using information and communication technology-based learning media Quizizz
- : Treatment in the control class using conventional learning media



Source: (Processed primary data, 2024)

Figure 1: (Flow Diagram)

The research steps that will be undertaken by the researchers will be presented in the form of flow diagrams, starting from the phase of problem analysis, continued with a review of literature, determination of samples, materials, and timetable for the implementation of the research, preparation of research tools and instruments, as well as validity testing. Then do research and collect data, which is then processed and analyzed, which then concludes the results of the analysis.

Research activities will be conducted in control classes only using conventional learning methods, while experimental classes will use Quizizz, an information, and communication technology-based learning medium. Each class will receive a pre-test and post-test to measure student learning results.

3. Results and Discussion

3.1. Validation Test Results

The validity test tool is used to determine the validity of the instrument in question. To evaluate the validity of this study, the SPSS program is used to test the product moment. According to the criteria, when r counts $>$ r table, it is declared valid, and when r count $<$ r table it is stated invalid.

Table 2: Results of Validity Test of Pre-test and Post-test Instrument Questions

No	Rcount	Rtable	Criteria
1	0.532	0.361	Valid
2	0.410	0.361	Valid
3	0.485	0.361	Valid
4	0.438	0.361	Valid
5	0.470	0.361	Valid
6	0.343	0.361	Invalid
7	0.488	0.361	Valid
8	0.366	0.361	Valid
9	0.441	0.361	Valid
10	0.452	0.361	Valid
11	0.541	0.361	Valid
12	0.452	0.361	Valid
13	0.447	0.361	Valid
14	0.452	0.361	Valid
15	0.466	0.361	Valid
16	0.360	0.361	Invalid
17	0.444	0.361	Valid
18	0.488	0.361	Valid
19	0.466	0.361	Valid
20	0.522	0.361	Valid

Source: (Data flow results in SPSS, 2024)

According to the data contained in Table 2 regarding the results of the item validation test related to improving student learning outcomes, it is known that validity testing was carried out involving 30 respondents who were tested with 20 questions. The results showed that of the 20 items tested, 18 items were declared valid and 2 items were not declared valid by the r table with $N = 30$ and a significance level of 5%, namely r table = 0.361

After verifying its validity, the data is then tested for its reliability. To evaluate the reliability of a research instrument, the Cronbach Alpha test is used through SPSS software.

Table 3: Reliability Test Results

Reliability Statistics	
Cronbach's Alpha	N of Items
0,793	20

Source: (Data flow results in SPSS, 2024)

In Table 4 above, the test results show that the overall reliability value of the test is 0.793, greater than 0.60, so the data is declared reliable.

3.2. Data Analysis Results

For this study, researchers used two classes, namely Class IX A and Class IX D. In Class IX A, 30 students became the control group, while in Class IX D, 30 students became the experimental group. The experimental class received learning that applied Quizizz learning media, while the control class received learning with conventional models. To evaluate the effect of using Quizizz learning media on student learning outcomes, researchers will carry out pretest and posttest tests in both classes, namely the control class and the experimental class. Data from the

pretest and posttest results will be presented in tabular form, as shown in the example table below:

Table 4: Test Results of Control Class and Experimental Class

Data	Control Class		Experiment Class	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Max Value	80	100	85	100
Min Value	60	70	70	80
Mean	67,6	80,83	75,83	93,5
N-Gain	0,73		0,41	

Source: (Data flow results in Excel, 2024)

After descriptive analysis, it was found that the average value of the pre-test in the experimental class was 75.83. Meanwhile, the mean value of the post-test in the experimental class after descriptive analysis was 93.5. The mean value of the pre-test in the control class was 67.6. Furthermore, the average value of the post-test in the control class after descriptive analysis was 80.83.

3.2.1. Test of Normality

In this study, the normality test used the Kolmogorov-Smirnov test with a significance level of 5%. The data measurement criteria in this study are as follows: if the data has a normal distribution, then the significance value will exceed the predetermined alpha level (0.05). Conversely, if the significance value is less than 0.05, it indicates that the data does not have a normal distribution.

The results of the normality test show that the pretest significance value for the experimental class is 0.000 which means the value is smaller than 0.05, indicating that the data can be considered abnormal. For the

experimental class posttest significance value, it is 0.004, which means it is smaller than 0.05, indicating that the data cannot be considered normal. The pretest significance value for the control class is 0.000 which is smaller than 0.05, so the data cannot be considered normal either. Furthermore, the significance value of the posttest for the control class is 0.002, which is also smaller than 0.05, so the data cannot be considered normal.

Table 5: Test Results of Normality

Class		Kolmogorov-Smirnov ^a		
		Statistic	df	Sig.
Learning outcomes in ICT subjects	Pre-test Experimental (Quizizz)	0,230	30	0,000
	Post-test Experimental (Quizizz)	0,198	30	0,004
	Pre-test Control (Conventional)	0,242	30	0,000
	Post-test Control (Conventional)	0,208	30	0,002

Source: (Data Flow Results in SPSS, 2024)

Normality tests were carried out on pretest and posttest data that had been given to students. The purpose of this normality test is to determine whether the data obtained from the test has a normal distribution or not. The results of the normality test show that the pretest significance value for the experimental class is 0.000 which means the value is smaller than 0.05, indicating that the data can be considered abnormal. For the experimental class posttest significance value, it is 0.004, which means it is smaller than 0.05, indicating that the data cannot be considered normal. The pretest significance

value for the control class is 0.000 which is smaller than 0.05, so the data cannot be considered normal either. Furthermore, the significance value of the posttest for the control class is 0.002, which is also smaller than 0.05, so the data cannot be considered normal.

3.2.2. Test of Homogeneity

The homogeneity test was conducted using Leven's statistical method using SPSS software in this study. The decision criteria for homogeneity of the two groups are as follows: if the significance value on "Based on Mean" is less than 0.05, then the two types of population groups are considered not homogeneous. Conversely, if the significance value on "Based on Mean" is greater than 0.05, then the two types of population groups are considered homogeneous.

The homogeneity test is used to assess whether the data variances of the two research sample groups are similar or not. In this study, the data used to test class homogeneity were the post-test scores of the experimental and control classes. The results of the homogeneity test calculation show a significance value of "Based on Mean" of 0.377. Because this value is greater than 0.05, the conclusion that can be drawn is that the data from the two groups can be considered homogeneous.

3.2.3. Hypothesis Test

After conducting the prerequisite test, hypothesis testing was carried out to see if there was an effect of using Quizizz learning media based on Information and Communication Technology (ICT) on the learning outcomes of ninth-grade students of Madrasah Tsanawiyah Alauddin in ICT

subjects. After the normality test was carried out, it was concluded that the data did not have a normal distribution, with a value (.sig) < 0.05 in the normality test output. Therefore, since the data is not normally distributed, researchers use non-parametric testing as an alternative. To examine the differences between the two groups, the Man-Whitney Test was used as an alternative option to the Independent t-tests, while to evaluate the improvement in scores within the same group, the Wilcoxon Test was used as an alternative option to the two paired sample t-tests.

Table 6: Results of the Man-Whitney Test

Questions	Test Statistics	
	Mean Rank	Sig. (2-tailed)
Pre-test Control & Pre-test Experimental	19,80 & 41,20	0,000
Post-test Control & Post-test Experimental	19,00 & 42,00	0,000

To test the first hypothesis, the Mann-Whitney test was conducted to determine the difference in scores between the experimental and control classes. Based on the "Test Statistics" output, it is known that the Asymp sig. (2-tailed) of 0.000 is smaller than 0.05, it can be concluded that "the hypothesis is accepted" Thus it can be said that there is a difference in scores between the experimental class using Quizizz learning media and the control class using conventional learning media. Because there is a significant difference, it can be said that "there is an effect of using quizizz learning media based on information technology and computers on student learning outcomes".

Table 7: Results of the Wilcoxon Test

Class	Mean	Sig Value
Pretest and Posttest Experimental Class	75,83 & 93,5	0,000
Pretest and Posttest Control Class	67,6 & 80,83	0,000

Source: (Data Flow Results in SPSS, 2024)

Furthermore, to evaluate the hypothesis of the same value difference in each class, the Wilcoxon test was conducted. The test results for pretest and posttest scores in the control class showed a difference in scores between the pretest and posttest after the use of conventional learning media in ICT subject learning for class IX MTs Madani Alauddin students. Furthermore, the test results for the pretest and posttest scores in the experimental class showed a difference after the use of Quizizz learning media in ICT subject learning.

After data analysis, the results showed that the average pretest score for the control class was 67.6, while the posttest score was 80.83. Meanwhile, the average pretest for the experimental class was 75.83, with the posttest score reaching 93.5. In addition, the difference in pretest and post-test scores for the control class was 13.23, while for the experimental class, it was 17.67. From these results it can be seen that there was an increase in pretest and post-test scores which was 4.44 points higher in the experimental class compared to the control class.

Based on the output test statistics, it is known that Asymp sig. (2-tailed) is 0.000, because the value of 0.000 is smaller than 0.005, it can be concluded that "Hypothesis accepted".

This means that there is a difference in learning outcomes between student learning outcomes for the pre-test and post-test, so it can also be concluded that "There is an effect of using Quizizz learning media on student learning outcomes."

3.2.4. N-Gain Testing

After understanding the differences in learning outcomes obtained by students from both research classes, the next step is to calculate the Gain Effect using the N-Gain Test equation. This test aims to determine whether the difference in learning outcomes achieved by students can be considered effective or not in each research class.

The results of the average N-Gain value of testing from the experimental class of 0.73 is included in the high category so that it is declared effective and the test results from the control class show a moderate level of effectiveness of 0.41. Based on the results of this study, the use of Quizizz learning media in the learning classroom is very appropriate and effective. The use of this media can be considered as the right solution to overcome the problems faced by students. Many students have difficulty understanding the material being studied directly. Because working on questions in groups is less interesting, students tend to divide tasks in turn, which results in a lack of a thorough understanding of the material. This has an impact when students have to work on questions individually. This experience was felt by students in the control class which resulted in ineffective scores.

4. Conclusion

The effect of using Quizizz learning media has an impact on the learning outcomes of both research classes, both control and

experimental classes, which show an increase in learning outcomes. that the average pretest score for the control class was 67.6 and the post-test score was 80.83. Meanwhile, the average pretest score for the experimental class was 75.83 and the post-test score was 93.5. The distance between the pretest and posttest scores for the control class was 13.23, while for the experimental class, it was 17.67. From these data, it can be seen that the distance between the pretest and posttest scores in the experimental class is higher than in the control class, with a difference of 4.44. This finding shows that the use of Quizizz learning media has a better impact on improving the learning outcomes of 9th-grade MTS Madani Alauddin students than conventional learning media. In addition, student learning outcomes in the experimental class were also better than those in the control class, indicating that the use of Quizizz in informatics learning can significantly improve student learning outcomes.

From the results of the research conducted by the author, it was found that the effectiveness of using Quizizz learning media reached 0.73, indicating a high level of effectiveness. On the other hand, the effectiveness of using conventional learning media, which was generally used in the control class, only reached 0.41, indicating a moderate level of effectiveness. Therefore, it can be concluded that the use of Quizizz in learning is more effective compared to the use of conventional learning media.

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