

Interactive Quizzes via Quizizz App with Mathematical Reasoning Abilities

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Abstract

This research was motivated by students not understanding mathematics subjects, especially in the material of rank numbers, root shapes and logarithms. Due to the pandemic, the implementation of learning is currently carried out remotely. The implementation of distance learning requires the right learning strategy to improve students' mathematical reasoning skills, namely by providing interactive quizzes through the quizizz application. This study aims to determine whether there is a correlation between giving interactive quizzes through the quizizz application with students' mathematical reasoning abilities. This study was conducted with correlation research method with cluster random sampling technique. The sample in this study consisted of 29 AP grade X students. The research instruments used are questionnaires and test questions in the form of essays. This research instrument was first tested for validity and reliability. The result of this study is that there is a positive relationship between giving interactive quizzes through the quizizz application with students' mathematical reasoning abilities.

Keywords: Interactive quiz, Mathematical reasoning abilities, Quizizz app.

1 INTRODUCTION

In mathematics learning activities in the classroom, each level of education is intended so that students have abilities, one of which is the ability to reason. The ability of mathematical reasoning is a person's ability to think critically, logically, and innovatively using sensory observations that will produce the right conclusion. By having mathematical reasoning skills, students are able to learn independently according to their potential and can make mathematics subjects meaningful. Faradillah, Hadi, and Soro (2020) stated that mathematical reasoning skills can help students see mathematics as something logical and reasonable, so that it can help develop students' beliefs that mathematics is something they can understand, think, justify, and evaluate. The results of the researchers' observations during the practice of field experience that student learning outcomes are still low, especially in the material of rank numbers, root shapes and logarithms. One tendency is that students do not understand and reason well in solving the problems given.

Indonesia is currently facing a pandemic. One of the important points in the circular letter of the Minister of Education and Culture regarding the implementation of education policies during the emergency period of the spread of coronavirus disease is the decision to learn from home through online or distance learning. During a pandemic like this, the implementation of online learning requires the right learning strategy. One learning strategy that is thought to be appropriate and can improve students' mathematical reasoning skills is to provide interactive quizzes in the learning process. Interactive quizzes are applications that contain learning materials in the form of questions or questions. Which allows students to increase insight into learning materials independently with just one press of a button on the application display (Ramadhona, 2019). Interactive quizzes are one of

the learning media that can stimulate the mind, attention and interest in achieving goals (Wibowo et al., 2023). The provision of this interactive quiz will be given through a learning application, the application is quizizz (Pudjiastuti, 2018). The quizizz application is a web tool that can be used to create interactive quiz games, which can be played using a device or computer and can be accessed through the website (Rahmawati et al., 2021).

With interactive and fun learning media (Lubis et al., 2021). The use of quizizz application learning media is one of the efforts to help learning problems from home in the midst of the COVID-19 pandemic which allows students to do the tasks given using their respective cellphones and can be done not only at school but at home or anywhere.

Based on the above problems, this study aims to determine whether there is a positive correlation between giving interactive quizzes through the quizizz application with students' mathematical reasoning abilities.

2 RESEARCH METHODS

This research was conducted on grade X students of SMK Uswatun Hasanah located on Jalan Raya Depnaker, Pinangranti, Makassar, East Jakarta. This research was carried out in the odd semester of the 2022/2023 academic year, namely in September-October 2022.

The subjects involved in this study consisted of 29 AP grade X students. The sampling technique used in this study is Cluster Random Sampling. This research was conducted using correlation research methods used to study the relationship between simultaneous measurements of two different variables. The purpose of this study was to find out the degree of relationship between a pair of variables.

The research instruments used in this study are: 1). A questionnaire that aims to determine the use of learning media for the quizizz application. 2). Student Mathematical Reasoning Ability Test which aims to determine the student's mathematical reasoning level. A test is a measuring instrument or procedure used in the context of measurement and assessment. Tests are widely used because they can also be interpreted as measuring tools with objective criteria, and can be used to measure and compare a person's psychological and behavioral state (Sudaryono, 2014). Test questions are arranged according to indicators of mathematical reasoning ability according to Iqbal and Inayatullah, namely presenting written mathematical statements, pictures, or diagrams, submitting conjectures and drawing conclusions, compiling evidence, providing reasons or evidence for several solutions (Gani, 2021). The questionnaire instrument and the test are tested first to find out whether the questions meet the standard requirements, because a good instrument must meet important requirements, namely validity tests, reliability tests.

The data are analyzed using descriptive statistics describing the characteristics of the data on each variable consisting of the lowest value, highest value, standard deviation and variance (Pudjiastuti, 2019). With prerequisite testing, namely normality test and linearity test. Hypothesis tests include correlation coefficient tests, correlation coefficient significance tests (t -tests) and meaningfulness tests.

3 RESULTS AND DISCUSSION

Some of the discussions and interpretations of the research results above are explained in depth below.

3.1 Instrument Test

Based on the calculation of the validity test on the variable of giving interactive quizzes through the quizizz application, 14 valid statements were obtained, where before being tested as many as 16 statements were tested on 27 students. 14 valid statements and 2

fallen statements. While the calculation of the validity test, 7 essay questions were obtained to be valid.

Based on the results of the calculation of the reliability test of the questionnaire on the use of learning media for the quizizz application, as many as 14 statements on 27 students were obtained, namely 0.779 with a good level of reliability. While the results of the calculation of the reliability test of 7 points of essay questions on students' mathematical reasoning ability in 27 students were obtained 0.702 with a good level of reliability. Then all question item items are declared reliable.

3.2 Descriptive Data

This research was conducted at SMK Uswatun Hasanah, using class X AP as many as 29 students as samples. This study used questionnaire sheets and question tests. The questionnaire sheet is used to determine the use of learning media for the quizizz application and question tests are used to obtain data on students' mathematical reasoning abilities.

The results of the study of giving interactive quizzes through the quizizz application using questionnaires with a total of 29 students and 14 valid questions obtained the highest score of 62, the lowest score of 39, the average of 52.55, variance of 2889.07, standard deviation of 53.75. The results of the study of mathematical reasoning skills obtained an average of 82.05, variance 71.11, standard deviation 8.43.

3.3 Analysis Prerequisite Testing

The process of testing the prerequisites for data analysis in this study is a condition that must be met so that the use of regression techniques included in the parametric statistical group can be applied for hypothesis test purposes. The results of the calculation of the normality test of the variables of giving interactive quizzes and the variables of students' mathematical reasoning ability are as follows:

Table 1. Test the Normality of Quiz Giving and Reasoning Ability

Variable	L_{obs}	L_{table}	Data Distribution
X	0.088	0.164	Normal
Y	0.083	0.164	Normal

From these data can be made graphs of histograms and frequency polygons as follows:

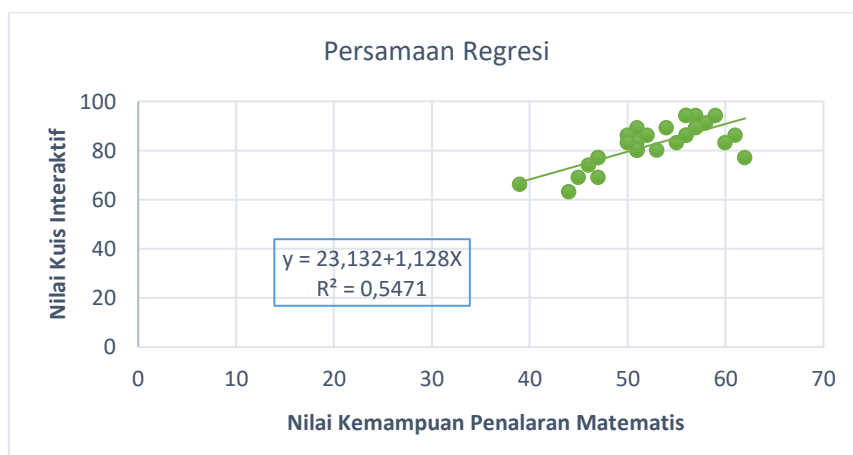


Figure 1. Regression Scatter Diagram

The regression line is a line that can be used to predict the value of Y if a certain value of X is known. Based on the calculation of the attached regression equation test, the value of $a=23.132$ and the value of $b=1.128$ so, the regression equation is $\hat{Y}=2.132+1.128X$.

Table 2. Linearity Test Variance Analysis Summary

Source	JK	MIN	RK	F_{obs}	$F_{table} (\alpha=0.05)$	P
Regression	1061.64	1	1061.64			
Tuna Match	361.91	16	22.62	0.435	3.01	$p<0.05$
Pure Error	571	11	51.9			
Total	1994.55	28				

Based on Table 2, showing a significant level of 5% then obtained $F_{obs}=0.435$ less than $F_{table}=3.01$ so it is means that the relationship between giving interactive quizzes through the quizizz application with linear mathematical reasoning abilities.

Based on the calculation of the hypothesis test, the correlation coefficient or product moment correlation is obtained $r_{obs}=0.740>0.381=r_{table}$ by producing $t_{obs}=5.711>1.703=t_{table}$ at a significant level of 0.05 this means. To strengthen this hypothesis, a coefficient of determination test was carried out and obtained in a percentage of 54.71%. So that the contribution of X and Y variables amounted to 54.71%, while the rest of the students' mathematical reasoning ability was influenced by other factors. The results of this study are relevant to the research of Rahmasari, Syaifuddin, and Azmi (2022) which states that knowing students' mathematical reasoning abilities can be seen from the use of the quizizz application. The higher the score of giving attractive quizzes through the quizizz application, the higher the student's mathematical reasoning ability.

Based on these results, it can be said that there is a positive relationship between giving interactive quizzes through the quizizz application with the mathematical reasoning ability of grade X students of SMK Uswatun Hasanah. Providing interactive quizzes through quizizz learning applications has a positive impact on students' mathematical reasoning skills.

4 CONCLUSION

Based on the results of the research conducted, it can be concluded that the provision of learning quizzes through the quizizz application can help teachers of mathematics subjects to analyze the level of student reasoning. In addition, the provision of this quiz provides stimulus to students to be able to take mathematical reasoning ability tests.

Looking at the results obtained, the correlation coefficient is 0.740 and the determination coefficient is 54.71%, which means that it can be concluded that there is a positive correlation between giving interactive quizzes through the quizizz application with students' mathematical reasoning abilities.

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