

THE EFFECT OF USING QUIZWHIZZER APPLICATION ON LEARNING OUTCOMES OF GRADE VII JUNIOR HIGH SCHOOL STUDENTS ON PYTHAGORAS THEOREM MATERIAL

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ABSTRACT

Mathematics is very concerned with understanding concepts in the process of working. There are still many students who are constrained in understanding the concept of a material because learning is a little monotonous and less interest, this has an impact on the low learning outcomes of students in mathematics. This study was conducted to see whether the QuizWhizzer application media could have a positive influence on student learning. This research was conducted in class VII.6 SMP IT Madani Islamic School Payakumbuh with the type of research that is a combination of quantitative and qualitative. Quantitative data is obtained from students' learning outcomes, starting from the pre-test and post-test. Qualitative data is obtained by describing the data obtained quantitatively and also explaining whether there is a positive influence or not. The results of this study indicate an increase in student learning outcomes in the Pythagorean Theorem material with an average of 81.67, so it can be said that QuizWhizzer is effectively used to improve student learning outcomes.

Keywords: Mathematics Education, Quizwhizzer, Mathematics Game

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INTRODUCTION

Mathematics education has become an important part of the education curriculum at various levels. This is because math lessons are able to develop the mindset of students so that in its implementation students are not only required to do problems, but also be able to think logically, critically and systematically. In addition, math lessons are also able to train students' reasoning and problem solving skills. However, there are still many students who consider math as a difficult and uninteresting subject (Hemmi, 2018). This can be caused by various factors, such as the abstract and complex characteristics of mathematical materials, as well as unpleasant learning experiences.

Based on the results of observations made by interviewing teachers at school, it can be concluded that the need for technology integration in learning, because teachers there are adapting technology to mathematics learning. Therefore, the researcher took the initiative to test the QuizWhizzer application-based game on the pythagoras theorem material (material

being studied in grade VII.6 SMP IT Madani Islamic School Payakumbuh). The integration of technology in learning is currently being promoted because it is remembered to meet 21st century skills (Kim et al, 2019). By achieving or meeting the criteria of these skills, the learning outcomes of students will follow. So that QuizWhizzer is one of the right alternatives to be tested in research, because it is able to train the speed and accuracy of students in answering the given questions. That way, students will use their time as efficiently and effectively as possible (Dohny et al, 2024).

To address this problem, math games have been developed as an effective way to increase students' interest in math lessons and reduce students' anxiety in learning. Quizwhizzer is an application that can help improve students' ability to play math games. This application can allow students to actively participate in interactive and fun math games. By using Quizwhizzer, students can understand math concepts more effectively and improve their logical and creative thinking skills. Quizwhizzer indirectly requires students to respond quickly to the questions given to be the best with their abilities or knowledge. The app enhances the motivation of math learning outcomes in such a way that learning is efficient and effective as well as improving students' research performance and participation in active peer role and competitive learning. This application is very effective in increasing student motivation and learning outcomes in the Phytagorean Theorem material (Susanto, 2022; Wafara, 2023).

In mathematics education, math games play an important role in improving students' abilities (Katmada, 2014; Vankus, 2021). Math games can help students understand math concepts more effectively and improve their logical and creative thinking skills. In addition, math games can also help students reduce anxiety and increase interest in math. In this context, the Quizwhizzer app can help improve students' ability to play math games. This app can enable students to actively participate in interactive and fun math games (Rahman, 2021). By using Quizwhizzer, students can understand math concepts more effectively and improve their logical and creative thinking skills. In the next chapter, we will discuss more about how the Quizwhizzer app can help improve students' ability to play math and how math games can help improve students' ability to think logically and creatively. QuizWhizzer displays a variety of questions by intensely bringing up the Phytagorean triples to familiarize students with the things that are very important in learning the Phytagorean Theorem material (Ekaputra, 2023; Liang, 2023).

METHOD

The type of research in this study is a combination of quantitative and qualitative research (Mustaqim, 2016). This research was conducted in class VII.6 SMP IT Madani Islamic School Payakumbuh with a total of 18 students, where they were divided into six groups with each group consisting of three members. Quantitative data is obtained from pre-test and post-test data, while qualitative data is obtained from the results of analyzing changes in pre-test and post-test whether there is an increase after being given a math game using the Quizwhizzer application. This research is also descriptive because it describes the results of the data obtained into a general and solution to the problem (Sujaweni, 2014). Post test data is used to see the level of effectiveness of the media used.

Table 1. Criteria of Effectiveness (Mahadiun, 2018)

Percentage	Criteria
81% – 100%	Highly Effective
61% – 80%	Effective
41% – 60%	Quite Effective
21% – 40%	Less Effective
0% – 20%	Not Effective

RESULTS AND DISCUSSION

The selection of Pythagoras Theorem material was chosen because the material is very urgent to improve understanding of the concept, because the basic material in continuing the next material. The Pythagoras theorem is always related to right triangles, this also affects students' understanding in learning the material of flat buildings, building spaces and other geometry materials. Examples of the application of the Pythagoras Theorem can be seen in determining the length of a ladder, estimating the height of an object or object and determining the angle of inclination.

Based on the research that has been carried out, researchers carry out contemporary math game trial activities using the Quizwhizzer application on Thursday, May 30, 2024 online via Zoom Meeting. The schedule of the research can be seen in Table 2.

Table 2. Schedule of The Research

No.	Activity	Time
1	Opening by the Moderator	5 minutes
2	Division of groups by the moderator	5 minutes
3	Giving pre test	10 minutes
4	Playing QuizWhizzer	10 minutes
5	Working on post test	10 minutes
6	Closing by the Moderator	10 minutes

Based on the rundown above, the following is the display when going to play the QuizWhizzer game, but before that, students are asked to do a pre-test. The pre-test uses a form sent via chat at the zoom meeting, then proceeds with playing the QuizWhizzer game, where when all groups have entered the link or barcode that has been distributed, a display appears like the participant's race path. Each group that answers correctly, the icon will move one box forward, if wrong, the icon does not move, the winner of this game is the group that answers the question correctly the most. The game has been set to count the first answer only, because in this game, the wrong question will reappear but if answered correctly, it does not count as correct, it only becomes an alternative to move forward to the finish line.



Figure 1. Game Display

Pre Test work for 10 minutes using a laptop and done in groups, this can be seen in Figure 2.



Figure 2. Taking a pre-test

Working on math problems through the QuizWhizzer application contains ten questions whose difficulty level is higher than the pre-test questions. The processing time is carried out for ten minutes, where QuizWhizzer encourages the speed and accuracy of students in answering the questions given to become the best group with the highest score. Game work with QuizWhizzer for 10 minutes using a laptop and done in groups, this can be seen in Figure 3.

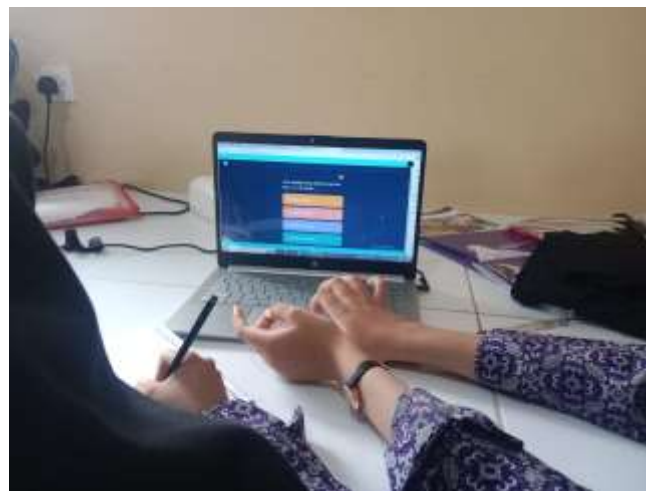


Figure 3. Math problem solving via QuizWhizzer

Post test work with SurveyHeart for 10 minutes using a laptop and done in groups, this can be seen in Figure 4.



Figure 4. Taking a Post Test

This test activity was carried out by giving a pre-test through a form created using the SurveyHeart application, the questions given were Phytagoras Theorem material with a total of ten questions in ten minutes, done in groups and using one account for one group, so there were six accounts that would be recorded on the results of this pre-test form. This aims to see the significance of the changes that occur whether there is an increase or decrease in learning outcomes after using application-based media, namely QuizWhizzer. This is seen from the average test results of each session displayed by all groups. Let's take a look one by one at how the average results of each test progressed. We will analyze how the media is able to affect the learning outcomes of students in each group. The results of the pre-test that have been carried out can be seen in Table 3.

Table 3. Pre Test Results Of Contemporary Quizwhizzer Game

No.	Name	Score
1	Group 1	70
2	Group 2	80
3	Group 3	60
4	Group 4	40
5	Group 5	50
6	Group 6	60

In table 3, it can be seen that the average result shown is 60. After students do the pre-test for ten minutes, then students are given a link to do math problems wrapped in the form of a game or competition system with the QuizWhizzer application. This is similar to the pre-test where each group only has one account, so there are six accounts that will be recorded in the QuizWhizzer results. When working, students are supervised through a zoom meeting led by a moderator and three supervisors. The following is presented the results of six groups in the QuizWhizzer application, the data can be seen in Figure 5.



Figure 5. QuizWhizzer result data

The red column is the wrong answer, the green column is the correct answer and the yellow column is the answer that is not filled (empty). The yellow column was also caused by time running out so students did not answer the question. Although students are given access multiple times when answering the wrong question, until the answer is correct on the question, the first time the answer is inputted and recapitulated into the group's results. Then based on these results, three groups with the highest scores were obtained which can be seen in Figure 5. The columns display all group answers presented in the QuizWhizzer application, presented in the form of a matrix of answer results.

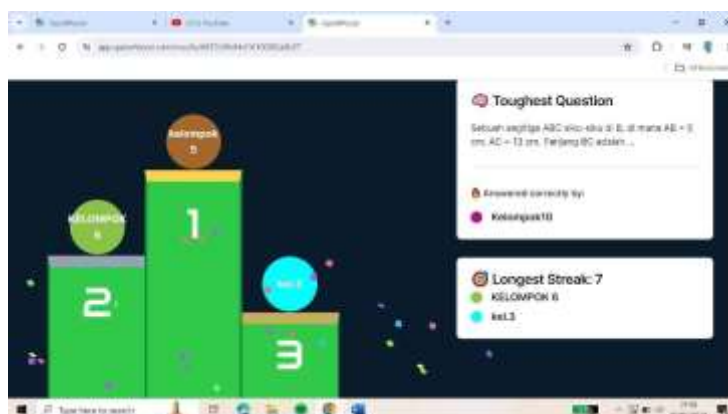


Figure 6. Three Groups With The Highest Scores on The QuizWhizzer app

In Figure 6, it can be seen that Group 5 achieved the highest score followed by Group 6 and Group 3 in 3rd position. Figure 2 also shows a question that was difficult for all groups to answer, as very few groups were able to answer the question. The question is labeled “Toughest Question”, the group that could answer the question was Group 1. Then, there were two groups that got it right 7 times in a row, namely Group 6 and Group 3. The three groups with the highest scores were recognized and the other groups were motivated to do better. This leaderboard was displayed via Zoom Meeting and witnessed by students, then the moderator appreciated the overall learning outcomes of the students and then provided motivation to all groups. Here are the QuizWhizzer game result in Table 4.

Table 4. Quizwhizzer Contemporary Game Test Results

No.	Name	Score
1	Group 1	50
2	Group 2	60
3	Group 3	50
4	Group 4	60
5	Group 5	70
6	Group 6	60

In table 4, when students work on math problems using the QuizWhizzer application, the average result is 58.34. There was a slight decrease in the average results produced, because in the game, the level of questions was increased. We can see that with students when working on game-based math problems with an increased level of questions, it is not much different from the results of the pre-test given. The last activity is giving a post test after students are given game-based math problems through the QuizWhizzer application. Then, students took the post test for ten minutes with the same group. Based on the activities that have been carried out and the results shown, it can be seen that there is an increase in learning outcomes after students use the QuizWhizzer application, this can be seen from the post test results presented in Table 5. The average result presented in table 5 is 81.67. It can also be seen that Group 1 scored a perfect score, three groups scored 90 (either one) and the lowest score was 70.

Table 5. Post Test Results of Contemporary Quizwhizzer Game

No.	Name	Score
1	Group 1	100
2	Group 2	90
3	Group 3	70
4	Group 4	80

5	Group 5	90
6	Group 6	90

Based on the research that has been done, it is obtained that the students' learning outcomes have increased after using the QuizWhizzer application media. This research was conducted in groups with three group members. The importance of technology integration in learning led the researcher to conduct this study to see its effect on students (Supianti, 2018; Cahyati et al, 2023). This research shows that there is a positive influence in the learning outcomes of students after using technology in learning mathematics, namely the QuizWhizzer application. Similar research has also been conducted by Juhaeni et al (2023) and Saraswandewi et al (2023) which shows that QuizWhizzer is able to improve student learning outcomes in mathematics learning. Juhaeni et al (2023) conducted research on addition and subtraction material, while Saraswandewi et al (2023) used derivative material.

Then, Faijah et al (2022) and Sari (2022) conducted a similar study on Pythagoras Theorem material, where the material was also used in this study. The difference is that this study saw the effect of the QuizWhizzer application media, while the research conducted by Faijah et al (2022) and Sari (2022) saw the effectiveness of the QuizWhizzer application media. Overall, all groups experienced an increase in learning outcomes (post test), so it can be seen that there is an influence after being given the QuizWhizzer application media.

CONCLUSION AND SUGGESTIONS

Based on the data that has been collected, it can be seen that there is an increase in learning outcomes after using QuizWhizzer to work on questions related to the Pythagorean Theorem material. This can be seen from the average pre-test results with a score of 60 and the average post-test results with a score of 81.67. Researchers strongly recommend that educators use the QuizWhizzer application in learning mathematics to improve student learning outcomes.

Suggestions for the future so that other researchers can benefit other researchers and also make innovations in learning mathematics. Because it is now in the age of technology, it is time for us to integrate technology in learning. Technology-enabled learning can enhance 21st century skills of communication, critical thinking, creativity, collaboration, research and problem solving. Then, in learning mathematics, it is better to adapt the use of technology so that students are proficient in the use of technology, especially now that digital literacy is very necessary considering the challenges ahead are increasing

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