The Effect of Implementing Kahoot-Based Quiz Media on Interest in Learning Mathematics

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Abstract

This research aims to determine the differences and increase of interest in learning mathematics before and after using Kahoot-based quiz media in class XI SMA Muhammadiyah 5 Yogyakarta. This type of research uses Quasi Experiment only using one class using a total sampling technique from class XI IPS 1. The data collection technique used a questionnaire. The sample of research respondents was measured using a Likert scale with a scale value category of 4. The results of the research can be concluded that: 1) There is a difference in influence between students' interest in learning mathematics before and after learning Kahoot-based quiz media, namely t_count= 3.27 and t_table= 1.725, so t_count is greater than t_table at the 5% significance level, namely 3.27>1.725. 2) there was an increase in students' interest in learning mathematics after using Kahoot-based quiz media. The average interest in learning mathematics for students before using Kahoot was 2.91 in the high category and the average interest in learning mathematics for students after using Kahoot was 3.04 in the very high category.

Keywords: Interest in Learning; Kahoot; Learning Media

Introduction

Education is the most important and relevant aspect throughout time, as through education, people gain knowledge that can be used as guidance in life. The Regulation of the Minister of Education, Culture, Research, and Technology of the Republic of Indonesia Number 16 of 2022 concerning Process Standards for Early Childhood Education, Primary Education, and Secondary Education in Chapter III related to the implementation of learning, Article 9 paragraph 1 states, "The implementation of learning as referred to in Article 2 paragraph (2) letter b is conducted in an interactive, inspiring, enjoyable, challenging, and motivating atmosphere that encourages students to actively participate and provides sufficient space for initiative, creativity, and independence in accordance with the talents, interests, and physical and psychological development of students." To achieve this, two things need to be considered in the world of education. First, the demand for the implementation of learning that is interactive, inspiring, and enjoyable. Second, education should be developed according to students' interests. By realizing these two aspects, it is expected that students will have creativity and independence, as one of the learning objectives in Indonesia. Therefore, efforts are needed to create an interactive, inspiring, and enjoyable learning process for students, especially in mathematics learning.

The increasingly rapid development of technology in the current era of globalization cannot be denied its influence on the world of education. World demands require the world of education to always & always adapt technological developments to efforts to improve the quality of education, especially adapting its use to the world of education, especially for learning. In the era of the industrial revolution 4.0, the use of smartphones or network-based technology instruments is part of a revolution that influences the cultural aspects of life in almost all aspects, including education (Dito & Pujiastuti, 2021).

Interest in learning mathematics is very important for students at school, and attention to learning has an influence on the level of student involvement in learning. The condition of students who lack enthusiasm for learning, do not want to learn, and experience failure is usually caused by a lack of attention to learning. The level of student attention to learning mathematics can be seen from the indicators of learning attention, which include attention, desire to learn mathematics, enjoyment during mathematics learning, and student satisfaction during the learning process (Sholehah et al., 2018). Not all children have good mathematics skills, which can give rise to students' negative perceptions of mathematics.

Based on previous observations at school, it was found that students were often distracted during learning and did not participate actively, such as asking, responding or answering the teacher's questions. After the teacher has finished explaining the material, students are given a quiz to complete with a piece of paper or exercise book. If the quiz is not completed during class time, students must complete the assignment at home. Learning like this can make students bored and lazy about doing assignments, so that their interest in learning decreases. Therefore, it is necessary to find a solution to make learning more active and foster interest in learning.

Kahoot is an online application where quizzes in the form of test questions can be submitted and presented as a "game". Point rewards will be awarded for correct answers and students participating in the game will be recorded in the player's log. Kahoot is a web-based media or educational service that can help teachers in the teaching and learning process in the classroom. The Kahoot application, as one of the applications that emerged in the era of the industrial revolution 4.0, is part of a response to developments in this era that are all practical and technology-based, but has positive implications, because its presence can be used in the process of forming constructive learning designs. The Kahoot application is an online application where quizzes can be developed and presented in game format (Sumarso, 2019). Apart from that, the Kahoot application is an online game that was developed to answer all challenges in the learning process, because Kahoot is an educational online page because it provides features that can be used as a learning medium. It is hoped that with learning based on the Kahoot application media, learning will become more enjoyable (Purba et al., 2019).

Based on the description above, researchers will conduct research on the effect of applying Kahoot-based quiz media on interest in learning mathematics. The problems in this research are as follows: (1) is there a significant difference between students' interest in learning before and after learning with Kahoot-based quiz media?, (2) is there a significant increase in learning interest before and after learning with quiz-based media? Kahoot?. The objectives to be achieved in this research are (1) to determine the significant difference between students' learning interest before and after learning with Kahoot-based quiz media, (2) to determine the significant increase between learning interest before and after using Kahoot-based quiz media. It is hoped that this research will provide input for classroom learning activities, especially in efforts to increase students' interest in learning mathematics.

Method

This research is quantitative research using a quasi-experimental approach with the aim of determining students' interest in learning mathematics at SMA Muhammadiyah 5 Yogyakarta using

Kahoot-based quiz media. Research methods are the methods used to collect data that are developed to obtain knowledge by proposing reliable and trustworthy procedures (Sugiyono, 2013). The research method that will be used in this research is the Quasy Experiment method, with a quantitative approach. The experimental design used was One Group Pretest Posttest Design. This design only compares the experimental group on pretest and posttest results.

This research was carried out on 20 February 2023 - 8 March 2023, academic year 2022/2023, even semester in class XI IPS 1 SMA Muhammadiyah 5 Yogyakarta for 3 meetings. The sample in this research was 21 students with the sampling technique being purposive sampling.

The research instruments used in this research are as follows: (1) question test, namely this test takes the form of multiple choice questions using Kahoot-based quiz media which is carried out at the summative evaluation at the end of each meeting. (2) The questionnaire that will be used in this research concerns students' interest in learning mathematics. Questionnaires were given before treatment and after treatment. Questionnaires were given based on a questionnaire grid that had been created via Google Form.

The data analysis technique in this research uses quantitative analysis, namely an analysis technique where the analysis is carried out using calculations. The data analysis carried out was pretest and posttest data analysis regarding the learning interest questionnaire. The data obtained must first be tested for normality and homogeneity, as a prerequisite test for analysis. Researchers measure this by giving student response questionnaires to each student using a Likert scale as follows:

Table 1 Student Response Scores

Criteria	Score	
	Positive	Negative
Strongly Agree	4	1
Agree	3	2
Disagree	2	3
Strongly Disagree	1	4

Results and Discussion

Results

This research was conducted at SMA Muhammadiyah 5 Yogyakarta. The meeting was held for 3 (three) meetings. However, before the learning process in class, the researcher first conducted classroom observations by providing an introduction to the use of the Kahoot application. This was done by researchers because the students were still laymen and had never used the Kahoot application before, so this was deemed necessary. The learning process in class XI IPS 1 is carried out on Thursdays and Fridays in the first and second hours. At the first meeting, students were asked to complete a pretest that had been prepared by the researcher and students were given a posttest at the third meeting to determine students' responses to their interest in learning after using the Kahoot application. The second meeting, which was scheduled to be held on Friday, February 24 2023, was not held. This is because at this meeting at school activities are being carried out that every student must take part in. So the second meeting could only be held the following week. In the end, this research could only be carried out for 3 meetings, which was originally to be held for 4 meetings. This is because after March 3 2023 there will be a 2 week Mid-semester Examination at school and after that the Ramadhan holiday will be held so that researchers can only take 3 meetings. The results of this study aim to determine the influence of interest

in learning mathematics in class XI IPS at SMA Muhammadiyah 5 Yogyakarta and the differences in learning before using the Kahoot quiz media and after using the Kahoot application quiz media.

The research schedule that the researchers have carried out is as follows:

Table 2. Research schedule for class XI IPS 1

No	Meeting	Day/Date
1	Observation	Monday/ February 20, 2023
2	First	Thursday/ February 23, 2023
3	Second	Thursday/ March 2, 2023
4	Third	Frida/ March 3, 2023

Data collection instruments in research are questionnaires and observations. Before conducting research, researchers validated the instrument and Learning Implementation Plan (RPP). Researchers carry out calculations or data processing after the student interest questionnaire data is obtained. From the results of the analysis of the data that has been collected, the value of t_{count} will be compared with t_{table}. If t_{count} is greater than t_{table} then the alternative hypothesis proposed in the research will be accepted. If, on the other hand, t_{count} is smaller than the t_{table} value then the alternative hypothesis is rejected and the null hypothesis is accepted.

Pretest and Postest Interest Questionnaire Scores

This research distributed questionnaires to students containing questions about interest in learning mathematics at the beginning of the meeting before the learning process (pretest), to measure the extent of interest in learning achieved, and at the end after the learning process, to measure the extent of interest in learning mathematics after learning (posttest). Details of the percentage differences in interest in learning mathematics questionnaires at the beginning and end can be seen in the following table.

Table 3. Differences in Interest in Learning Mathematics

No	Category	Pretest	Postest
1	Very High	33%	57%
2	High	53%	38%
3	Low	14%	4%
4	Very Low	0%	0%
5	Total Average	2,91	3,04

Based on the table above, there are differences in students' initial interest in learning mathematics (before using Kahoot-based application quiz media) and students' final learning interest (after using Kahoot-based application quizzes). The data obtained was that the average number for overall initial learning interest was 2.91 (High), while the average number for overall final learning interest was 3.04 (Very High).
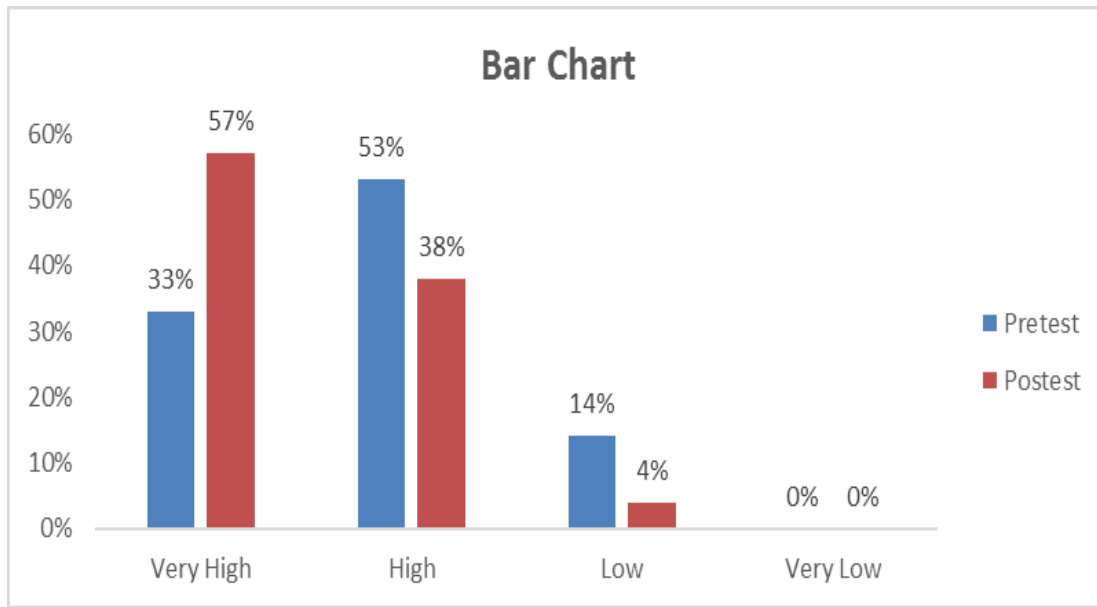
Picture 1. Differencess in Pretest and Postest Learning Interest Graps

Based on the graph and table above, there are differences in learning before using the Kahoot application media and after using the Kahoot application. Very high percentage at the beginning of 33% and very high percentage of learning at the end of 57%. The high percentage of learning at the beginning was 53% and the high percentage at the end was 38%. The initial low learning rate is 14% and the final learning rate is 4%. The percentage of very low initial learning is 0% and the final learning percentage is very low at 0%. The overall average total was 2.91 in the High category and the final average was 3.04 in the Very High category.

This shows that after implementing Kahoot-based quiz media, the very high percentage of learning increased by 24%, the high percentage did experience a decrease of 15%, but this was due to an increase in interest in learning in the "Very High" category, the low percentage of learning experienced a decrease of 10%, and a very low percentage of learning does not increase or decrease. The total average percentage score also increased by 0.13. So that the application of quiz media using the Kahoot application is suitable for increasing interest in learning mathematics, as stated by previous research (Efendi & Yudhi, 2022) that there is an increase in students' understanding of concepts and interest in learning before and after applying quizzes using Kahoot.

Data Analysis Technique

The normality test is used to determine whether the pretest and posttest data come from a normally distributed population or not, by formulating a hypothesis.

H_o = Pretest/posttest data comes from a normally distributed population

H_a = Pretest/posttest data comes from a population that is not normally distributed

The test criteria are at the significance level signifikansi α = 5% and n = 21 then H_o is accepted if L_{count} < L_{table} or reject H_o if L_{count} > L_{table}. The results of the normality test analysis using Excel can be seen in the following table.

Table 4. Normality Test of Interest in Learning Questionnaire

Test	Liliefors		Conclusion	Information
	L_{count}	L_{table}		
Pretest	0,132	0,190	Accept H_o	Normal
Posttest	0,165	0,190	Accept H_o	Normal

Based on the table above, it can be seen that the 2 questionnaires distributed had a normal distribution. Therefore, it can be concluded that the sample for this study came from a population with a normal distribution. Therefore, a homogeneity test was then carried out.

Next, a Homogeneity of Variance Test was carried out on the population using a variance difference test, the following results were obtained.

Table 5. Homogeneity Test

Variance Difference Test		Conclusion	Information
F_{count}	F_{table}		
1,56	2,08	Accept H_o	Homogen

Based on the table above $F_{count} = 1,56$ and $F_{table} = 2.08$. Because $F_{count} < F_{table}$ it can be concluded that the class has a homogeneous variance at the 5% confidence level.

After it was discovered that both had a normal distribution and had homogeneous variance, the researcher continued analyzing the data information to determine whether the differences were significant or not, so further tests were carried out. To identify the influence of synthetic learning using Kahoot-based quiz media on students' interest in learning mathematics, use the "t" test. Based on the calculation results $t_{count} = 3,27$, while $t_{table} = 1,725$ so $t_{count} > t_{table}$, both at the 5% significance level, namely $3,27 > 1,725$. Thus H_0 is rejected, and H_a is accepted. This means that there is a significant influence between students' interest in learning mathematics before and after scientific learning with Kahoot-based quiz media.

To identify the level of usability in this research, it was analyzed using questionnaire scores. As for the results of calculating the gain score for the initial learning interest questionnaire and the final learning interest questionnaire, the result was an increase in the average n-gain showing 0.117 and in the low category.

Discussion

The research was carried out at SMA Muhammadiyah 5 Yogyakarta, the researcher chose this school because previously carried out initial observations the school had never implemented kahoot. Before conducting research, first carry out initial observations by entering class XI IPS 1. Then introduce Kahoot-based quiz media in class At the time of this initial observation, students had shown interest in Kahoot.

Picture 2. Observation in Class

At the beginning, the researcher provided brief knowledge about Kahoot, and explained the features contained in the Kahoot application. Then explain to students regarding the use of the Kahot-based quiz media. At the end of the observation, the researcher also gave small gifts to students who entered at the Kahoot podium. Researchers also conducted demonstrations regarding the use of Kahoot for students so that when the research took place they would understand the use of Kahoot.

Then, based on initial observations, it was also decided that the material that would be used in the research would be material regarding derivatives of algebraic functions. In this case the researcher only continued the material that had been previously taught in class. For the material on deriving algebraic functions, one meeting was held by the teacher at school, so the researcher just had to continue with the next topic of discussion. Initially the researcher wanted to hold 4 meetings, but because at the second meeting the students in the class had school activities that required the researcher to carry out learning the following week. However, we could only hold 3 meetings because after that the school had already held mid-semester exams and then the start of Ramadhan holiday, then after that class XI students had a holiday because there would be a school exam for class XII students. As a result, only 3 meetings could be held.

Picture 3. Learning using Kahoot-based quiz media

At the first meeting, the researcher distributed an initial learning interest questionnaire to students and asked them to fill in according to the statements in the questionnaire. To find out the initial response

to interest before learning quizzes using the Kahoot application. The researcher gave a questionnaire via a Google Form link which the researcher provided via Power Point. Then the researcher explained the material to the students first and gave students the opportunity to ask questions when they did not understand the material presented. Then the researcher asked the students to work on and explain the questions given by the teacher in front of the class. then proceed to take a quiz on the material that has been explained using the Kahoot application. The first quiz consists of 8 multiple choice questions, and a set time is given to answer each question. Researchers also made observations on students from the beginning until the lesson was finished.

Picture 4. Students Work on Problems at the Front of the Class

At the second and third meetings, the researcher explained the material to the students first and gave students the opportunity to ask questions when they did not understand the material presented. After completing the explanation, then continue to take a quiz regarding the material that has been explained using the Kahoot application. The second and third quizzes are given 5 multiple choice questions, and a set time is given to answer each question. Researchers also made observations on students from the beginning until the lesson was finished.

Picture 5. Students Podium Results

At the third meeting, the researcher distributed the final learning interest questionnaire to students and asked them to fill in according to the statements in the questionnaire. To find out the final response to interest after taking the quiz using the Kahoot application.

Conclusion

Based on the results and discussion in the research that has been conducted, it can be concluded that: (1) there is a difference between students' learning interest before and after learning with Kahoot-based quiz media. This is proven by the calculation results obtained t_{count} = 3.27, while t_{table} = 1.725, so t_{count} is greater than t_{table}, both at the 5% significance level, namely 3.27 > 1.725. Thus, H_0 is rejected, and H_a is accepted. This means that there is a significant influence between students' interest in learning mathematics before and after learning with Kahoot-based quiz media. (2) there is an increase in students' interest in learning before and after learning with Kahoot-based quiz media with the average N-gain value showing 0.117 and categorized as low.

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