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Comparison of student learning outcomes using problem-based learning (PBL)-Based Kahoot and Quizizz media on materials

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ABSTRACT

This study aims to determine differences in student learning outcomes and the magnitude of differences in student learning outcomes using Kahoot and Quizizz learning media in Animalia material in class X SMA Kartika I-4 Pematangsiantar 2022/2023 Academic Year. The total population is 181 students consisting of 4 classes and the sample is taken by Cluster Random Sampling so that 2 classes are obtained. Experimental class 1 is class X-MIA 3 with 45 students and class 2 is class X-MIA 4 with 44 students. Experimental class 1 was treated using the Problem Based Learning learning model and after that it was given a final test or post test using Kahoot and experimental class 2 was treated using the Problem Based Learning learning model on Animalia material. After that, a final test or post test will be given using Quizizz. Data analysis was performed by finding the average ($\overline{X}$), standard deviation and testing the hypothesis (t test) at the significance level α = 0.05. From the research results, it was obtained that the average pre-test value for the experimental class 1 was 29.78 and for the experimental class 2 was 32.39. The average value of the post test for the experimental class 1 was 79.11 and for the experimental class 2 was 78.98 with a difference in value of 0.13. From the results of testing the hypothesis using the t test obtained tcount (0.178) < ttable (1.66256) it can be concluded that there is no difference in student learning outcomes using Kahoot and Quizizz learning media based on Problem Based Learning on Animalia material for class X SMA Kartika I-4 Pematang Siantar in year 2023.

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INTRODUCTION

Learning is basically a process of pedagogical communication (Ananga, 2020). Where the media is very important because in the act of obscurity the material presented can be helped to act as a media agent. the complexity of the material delivered to students can be simplified with the support of instructional media and learning media can also represent a lack of teachers in explaining material that is abstract in nature (Mandasari & Wahyudin, 2019).

Learning to use learning media can have different results for each student. It depends on their learning style, abilities and other factors such as their environment and motivation (Inayah et al., 2021). Studies have shown that students who learn using interactive learning media such as videos, simulations and games can better understand concepts and be more involved in the learning process compared to learning through text or static presentations (Courts & Tucker, 2012). However, some students may prefer to learn through reading materials or discussions with teachers or peers (Vaughn et al., 2001). Therefore, it is important to use a variety of learning media to meet the diverse learning needs of each student.

Learning media are tools or facilities used in the learning process to help convey information and reinforce the concept being taught (Puspitarini et al., 2019). The main function of learning media is to strengthen understanding and enrich student learning experiences, facilitate the transfer of knowledge and strengthen information retention, and make learning more fun and interesting (Leow & Neo, 2014).

Learning outcomes in education are the results of the learning process as measured through tests, assignments, presentations, or other forms of evaluation. Learning outcomes can be in the form of knowledge, skills, or attitudes achieved by students after participating in the learning process (Maba, 2017). It shows the level of mastery of the material and students' progress in understanding the subject matter. Learning outcomes can also be used to assess the quality of learning and assist in planning the next lesson (Iqbal et al., 2021).

Student learning outcomes are influenced by teachers who use the right media. Utilization of learning media is not only useful for helping teachers in providing material but also has the goal of making it easier for students to understand the material presented (Prasongko, 2021). The way that can be done to make students more active and improve student learning outcomes is by using interesting learning media when the teaching and learning process takes place (Sudarsana et al., 2019). Examples of learning media that are considered interesting are digital learning media Kahoot and Quizizz (Aýun & Irwansyah, 2022). It is hoped that the two learning media will be able to make students active and increase students' understanding of the material being studied. The results of the research are expected to be able to see a comparison of student learning outcomes using kahoot and quizzz problem based learning (PBL) media on Kingdom animalia material.

RESEARCH METHODOLOGY

This research was conducted at SMA Kartika I-4 Jalan Kartini No. 8 Pematang Siantar from March to April 2023. Sampling in this study was taken using the Cluster Random Sampling technique adopted from research (Etikan & Bala, 2017); (Bhardwaj, 2019); (Simkus, 2022) and obtained a total of 92 students with class X MIA 3 as experimental class 1 totaling 45 students and class X MIA 4 as experimental class 2 totaling 44 students (Etikan, 2017). The research design used in this study is a quantitative research design in which the observations are measured in numbers, then processed using statistical analysis (Rogers & Revesz, 2019). This research is a type of experimental research that is analyzed based on differences in student learning outcomes in Experiment 1 class using the Kahoot learning media and Experiment 2 class using the Quizizz learning media based on Problem Based Learning. The number of students in each experimental class of this study is presented in the Table 1. Below:

Table 1.
Experiment class and number of samples

	Class X MIA 3 (Experiment 1)	Class X MIA 4 (Experiment 2)
Total students	45	44
Model Of PBL	Kahot	Quizizz

The type of instrument in this study was a test of students' learning outcomes in Biology subject with the subject matter of Kingdom Animalia. The research instrument was an objective test

in the form of multiple choice with 5 answer choices. In accordance with the form of an objective test, the assessment criteria in this instrument are to give a value of 10 for the correct answer and 0 for the wrong answer. The number of questions applied in this instrument is 20 questions and All data obtained will be processed using SPSS.

RESULTS AND DISCUSSIONS

After processing the data, the normality test is obtained using a significance level of α= 0.05. The data is declared normal if the Sig value is > 0.05 and vice versa the data is declared abnormal if the Sig value is <0.05. Based on Table 2 below, sig value of 0.22 is obtained, which means that a Sig value of 0.22 > 0.05 means that the data is declared normal. If the data is normally distributed, it can be assumed that the data are taken randomly from the normal population.

Table 2.
Normality Test from Pre Test and Post Test data

One-Sample Kolmogorov-Smirnov Test					
		PreTets Kelas Eksperimen 1	PostTest Kelas Eksperimen 1	Pre Test Kelas Eksperimen 2	Post Test Kelas Eksperimen 2
N		45	45	44	44
Normal Parameters[a,b]	Mean	29,78	79,11	32,39	78,98
	Std. Deviation	11,330	7,854	10,144	9,858
Most Extreme Differences	Absolute	,114	,123	,124	,109
	Positive	,114	,122	,103	,095
	Negative	-,108	-,123	-,124	-,109
Test Statistic		,114	,123	,124	,109
Asymp. Sig. (2-tailed)		,171[c]	,086[c]	,085[c]	,200[c,d]
a. Test distribution is Normal.					
b. Calculated from data.					

From the results of testing the hypothesis using the t test on the post test data obtained t_{count} (0.178) < t_{table} (1.66256) at the significance level α=0.05 with degrees of freedom (dk) = 45+44–2=87 then Ha is rejected and Ho is accepted this means that there is no difference in student learning outcomes using the Kahoot and Quizizz learning media based on Problem Based Learning Animalia in class X SMA Kartika I-4 Pematang Siantar in 2023. The value of t_{count} can be seen in Table 3 below.

Table 3.
Hypothesis Test of Post Test data

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	X (MIA 3) X (MIA 4)	,341	12,731	1,919	-3,530	4,212	,178	43	,860

Based on the results of the study, the class pre-test values were obtained using Kahoot and Quizizz with an average value of 29.78 and 32.39. In accordance with completeness (70), none of the students from the two classes were able to achieve completeness on the pre-test questions (100% did not achieve completeness) because material about the animal kingdom had never been conveyed. Class post test scores using Kahoot and Quizizz with average values of 79.11 and 78.98. Where 45 students in the class used Kahoot, students who achieved a completeness score (70) totaled 42 students (93.3%) and students who did not achieve completeness totaled 3 students (6.7%) while of the 44 students in the class who used Quizizz, students 38 students (86.4%) achieved completeness scores (70) and 6 students (13.6%) did not achieve completeness. internet network and 4 students who still don't understand material about animalia in classes using Quizizz.

CONCLUSION

Based on the results of research and data analysis, it can be concluded as follows: (1) In the experimental class 1 students who achieved the KKM totaled (70) totaling 42 students (93.3%) and students who did not reach the KKM totaled 3 students (6.7%) with the highest score of 95 (4.4%) and the highest score the lowest is 65 (6.7%) and the average value is 79.11. In the experimental class 2 students who achieved KKM totaled (70) totaling 38 students (86.4%) and students who did not reach KKM totaled 6 students (13.6%) with the highest score of 100 (2.3%) and the lowest score of 60 (4.5%) and an average value of 78.98; (2) Based on the post-test results for experimental class 1 and experimental class 2, there is a difference in value of 0.13. The results of hypothesis testing using the t test obtained tcount (0.178) < ttable (1.66256) then Ha is rejected and Ho is accepted meaning that there is no difference in student learning outcomes using Kahoot and Quizizz learning media based on Problem Based Learning on Animalia material class X SMA Kartika I-4 Pematang Siantar Year 2023. From the results of processing the data above, this research is related to research conducted by: (Rosmilasari & Adoe, 2020); (Ismail et al., 2019); (Diana et al., 2021); (Mohan et al., 2018); (Jiménez et al., 2020); (Firdaus & Pahlevi, 2022); (Astuti et al., 2021); (Mosquera Feijóo et al., 2021). The obstacle to using the kahoot and quizizz applications is that they use a data package, so that some areas still have not reached the maximum signal. The advantage of using the kahoot and quizizz applications is that they make learning easy because they are not limited by space and time.

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