

Effectiveness Of Use Of Kahoot As A Media In Learning In The Scope Of Biological Scope

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Abstract : Kahoot is one of the media that can be used for teaching and learning. So that the learning atmosphere is not boring. This research was conducted to see the effect of the use of learning media, Kahoot, in the process of learning biology in the classroom. The material studied in this study is about the scope of biology. This research is a quasi experimental. Data analysis was performed based on students' pretest and posttest scores. Data were processed using SPSS version 22 to conduct independent T tests. The results showed a significant difference between the control group and the experimental group with the mean value in the control group being 76.72 and the experimental group at 85.21. Thus it can be said that the use of Kahoot as a learning medium can increase the value of student learning outcomes.

Key words: *Kahoot, Learning Outcomes, Biology Learning*

Introduction

In the era of globalization, the digital world is increasing very rapidly (Utama, Sajidan, Nurkamto, and Wiranto, 2019). The current education process has utilized digital technology wherein technology is utilized for the benefit of improving services and quality of education. A conducive learning process, fun and not boring for students is needed so that the learning goals and objectives expected in the learning process are easily achieved. The era of the Industrial Revolution 4.0 which is sweeping all life makes educational institutions must be able to adapt to technological developments, one of which makes it in a conducive and enjoyable learning process. Teachers, lecturers and Developers of Learning Technology have an important role in terms of developing innovations, ideas or ideas for the use of technology in learning.

The active participation of students and the expertise of teachers in positioning themselves in learning to achieve learning objectives is needed. Learning objectives can be achieved if students have mastered the entire learning material. To master the learning material can be done using the help of learning media. Learning media that are in line with student

learning styles (generation Z) in the Big Data era are utilizing the development of internet technology. Using the internet with all its facilities in learning makes it easy to access various information quickly. So that it can improve student understanding and influence on their success in learning. In order for the use of internet technology to provide maximum results in learning, teachers must have the ability to manage and choose technology intelligently.

Technology can assist students in learning in the era of big data like now, this is because students can make technology do whatever they need. If the teacher realizes this, the teacher can utilize their lifestyle to become their learning style in the classroom. To gain learning skills in the era of big data, students need to be encouraged to generate new ideas, evaluate and analyze the material being taught and be able to apply what they have learned. This can be achieved by providing opportunities for students to be more actively involved with interactive activities online. Many educators have begun to utilize technology application activities in the classroom as an effort to attract students' attention and motivate their class participation (Omar, 2017).

Rapid development in the field of technology can stimulate the emergence of competition in the environment. This condition can be exploited through the use of gamification methods in the classroom (Bicen and Kocakoyun, 2018). Gamification of learning can increase student interest in learning and stimulate students to become more motivated to succeed in various ways. Students will feel that collaboration is very important as long as gamification has the support and mutual assistance in the learning process. Students can see the results that have been obtained through gamification so that they can increase the value. In addition, innovation to combine gamification with learning methods in the learning process can help students to better material (Bicen and Kocakoyun, 2018). The use of gamification approach will be effective if applied to learning using Kahoot.

Kahoot is an alternative choice from a variety of interactive learning media that makes the learning process fun and not boring, both for students and for teachers. This is because the Kahoot application emphasizes learning styles that involve the active role of the participation of students with their peers in a competitive manner towards learning that is being or has been learned. Kahoot is an example of a technology assessment tool that includes student participation in answering multiple choice question types in a more competitive environment. Students' perspectives on the effectiveness of Kahoot's assessment of good feedback practices (Omar, 2017). Kahoot is one game with a unique concept, developed from the Lecture Quiz Research Project (Lin, Ganapathy, and Kaur, 2018). Kahoot was opened to the public in September 2013. Group games are the main design for the use of Kahoot can also be played individually. There are two Kahoot website addresses, <https://kahoot.com/> for teachers and <https://kahoot.it/> for students. Use and access to Kahoot is free, including its features. Quizzes, surveys, discussions, and online jumble are Kahoot platforms that can be used, where to play there are various ways. Learning to use the Kahoot Application requires internet devices, computers, infocus, and smartphones. Kahoot can be accessed at <https://getkahoot.com/> (Plump and LaRosa, 2017). Educators generally use the Kahoot application to create quiz questions, surveys and discussions based on games. To begin, teachers must register first to get an account by visiting <https://create.kahoot.it>. After that, teachers are given millions of free games that can be selected and adjusted to their needs, even teachers can also make their own games. The process is quite easy and can be used immediately. Educators can launch games that are created or selected for use in the learning process in the classroom. This is done by opening <https://create.kahoot.it>. Students can enter using the <https://kahoot.it> web address to access the platform. Kahoot is also very practical because it can be opened using a laptop computer, tablet, and even a smartphone (Plump and LaRosa, 2017). Students can also choose team mode if they will use one device per team or individual mode if they will use one device per person. They

must enter the game pin first where the pin will be given by the teacher. Students also do not need to download the application and register so that it will be easier to use. These facilities make this application effective and efficient (Plump and LaRosa, 2017). The main instructor tool displays multiple choice questions. Learners choose the appropriate answer from the existing device in accordance with the predetermined time duration. Students who choose to answer the fastest and the right get a higher score, competitively. At the end of the game the teacher can save the results of each student's answers on Google Drive or directly downloaded on his computer in the form of a streetspace, as an evaluation evaluation, so that more interesting teachers can also give rewards to students who get the highest score.

Research Method

Research design

This type of research is a quasi-experimental study, namely by applying the use of Kahoot in the experimental group, the treatment is carried out with a view to studying student learning outcomes as a result of treatment and without treatment with learning models without using kahoot in the control group. At the beginning of the study held a pre-test and the end of learning held a post-test to determine the learning outcomes. The detailed research design can be seen in Table 1.

Table 1 Research Design

Experiment Group	Pre Test	Learning to use Kahoot	Post Test
Control group		Learning without Kahoot	

Population and Sample

The method of determining the research sample is a way to determine the individual who will be the subject of research. The population is the whole object of research. In this study, the subject of the study were all 10th grade students in SMA Negeri 1 Yogyakarta. From the whole class, two classes are taken, experimental and control group. Determination of the control group and the experimental group is done by random sampling technique, which is a technique by drawing lots. The control group as a group that received learning without using Kahoot and the experimental group as a group that received treatment in the form of the use of Kahoot.

Data collection technique

Data collection is a systematic and standard procedure for obtaining data. Some techniques in data collection using tests. Tests carried out before and after learning is carried out in the form of pre-test and post-test. Pre test aims to measure how much knowledge students have before teaching and learning activities, while the post test to assess how much change in learning outcomes achieved by students after the learning process.

Research procedure

The steps of this research are as follows: (1) preparation, which is preparing a learning tool, making a quiz on kahoot; (2) determining the population with a purposive sampling area technique; (3) determine the research sample, namely the experimental group and the control group by lottery techniques; (4) provide pre-tests in the experimental group and the control

group before learning activities to determine students' abilities before the learning activities take place; (5) carrying out the teaching and learning process with different treatments namely the experimental group (using Kahoot) while the control group (not using kahoot); (6) provide a post test in the experimental group and the control group after learning activities to determine student learning outcomes after learning activities take place; (7) conducting interviews with several students as supporting data for the study; (8) analyzing data using SPSS for windows version 22.0; (9) discuss the results of data analysis supported by interview data; (10) draw conclusions from the results of research.

Results and Discussion

The low student learning outcomes need to be addressed immediately by finding the right solution. One solution is to use kahoot gamification. The integration of mobile devices in the classroom, such as devices, which are used by students every day, supports the teaching-learning process (Prieto, Palma, Tobías, and León, 2019). Kahoot is a learning medium that utilizes websites for free. Educators are facilitated by registering on the site and can immediately start designing various quiz designs or directly choose quiz designs on kahoot. Quizzes can be added to videos, images and music to the background. Kahoot adds to children's excitement with colors and music to facilitate learning (Asikhia, Vora, Chandra, and Myint, 2017). Quizzes that have been completed are immediately saved and can be accessed using the Internet. To access it, students can use a laptop, tablet or smartphone. After the game starts, time will run and students will get points for speed and accuracy in giving answers. Thus, Kahoot can increase student involvement through a competitive approach and provide more interesting assessment methods (Barnes, 2017).

Games like Kahoot are a good choice to apply to the learning process. Students are given access to cellphone equipment, Wi-Fi availability and also a computer or laptop. Such eLearning tools add support concept exploration, positive energy, and increase fun in the classroom, which seems to translate into increased understanding and motivation (Plump and LaRosa, 2017). Increased student learning motivation is expected to improve learning outcomes. Problem solving strategies of low student learning outcomes of SMA Negeri 1 Yogyakarta with the use of kahoot.

Statistics Analysis Results

The normality test of the pre-test and post-test values in the experimental and control groupes was carried out using the SPSS (Table 1). Based on the calculation of the distribution of the pre-test and post-test scores of the experimental group (using kahoot) and the control group (without using Kahoot) in the table above, it can be seen the significance for the pre-test experiment group is 0.200, post test of experimental group is 0.168, control group pre test 0.200 and control group post test 0.200. Because the probability value of all values is known to $p > 0.05$, it can be concluded that the value is normally distributed. Once the data is known to be normally distributed, it can be continued by using the parametric test (paired sample test and independent sample test) to analyze the research data.

Table 1 Test Results Normality Test Results Pretest and Post Test

	Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	Df	Sig.	Statistic	df	Sig.
Student learning outcomes	Pretest – Experimental group	.099	34	.200*	.980	34	.780
	Post Test – Experimental group	.129	34	.168	.978	34	.720
	Pretest – Control group	.101	36	.200*	.980	36	.747
	Post Test – Control group	.097	36	.200*	.980	36	.740

The mean difference between the two groups was measured by the paired t-test used (see Table 2). Based on the data in Pair 1, a sig (2-tailed) value of 0,000 is obtained. This value is below the value <0.05 , so the differences in learning outcomes for the pre-test experimental group and the post-test experimental group are in very different categories. Based on Pair 2 data, the significance value is 0,000, below 0.05. So it can be concluded that there are very different differences in the average learning outcomes of students for the pre-test control group with the post-test control group.

Table 2 T Test Results of the Control Group and Experiment Group

		Paired Differences							
		Mean	Std. Deviation	Std. Error	95% Confidence Interval of The Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pre test Eks – Post Test Eks	-29.029	4.694	.805	-30.667	-27.392	-36.064	33	.000
Pair 2	Pre test Cont – Post Test Cont	-20.111	7.562	1.260	-22.670	-17.552	-15.956	35	.000

Homogeneity test is used to determine whether the variance of the experimental group post test data using Kahoot and the control group post test data without using Kahoot are homogeneous or not (Table 3). Based on the output in table 4 above, the significance value (sig.) Based on mean is $0.503 > 0.05$ so that it can be concluded that the post test data variance of the experimental group and the control group are the same or homogeneous. Thus, one of the requirements of the independent t test is fulfilled.

Table 3 Homogeneity Test Results

	Levene Statistic	df1	df2	Sig.
Student learning outcomes	Based on Mean	.454	1	.503
	Based on Median	.471	1	.495
	Based on Median and with adjusted df	.471	1	.495
	Based on trimmed mean	.456	1	.502

To find out whether there are differences in learning outcomes from the experimental group post test (using kahoot) with learning outcomes from the control group post test (without using kahoot) using an independent sample t test. The results of the independent T test can be seen in Table 5. Data in Table 5, the significance value of $0.00 < 0.05$, it can be concluded that there are differences in average student learning outcomes between using Kahoot (experimental group) and not using Kahoot (group control).

Table 4 Independent T Test Results

		Levene's Test for Equality of Variances		t-test for Equality of Mean					95% Confidence Interval of The Difference	
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Learn ing outcom es	Equal variances assumed	.454	.503	4.644	68	.000	8.48366	1.82697	4.8379 9	12.12 933
	Equal variances not assumed			4.660	67.7 22	.000	8.48366	1.82054	4.8505 6	12.11 676

Based on the data in table 6. it can be seen that the average post-test of the experimental group using Kahoot is 85.21 while the average in the Control group is 76.72. There is an increase in the average value of 8.49 by using Kahoot in the scope of biology. Research on other material also has a significant influence. The use of kahoot on environmental change material has a significant effect on the biology learning outcomes of Muncar 1 High School students. The average post test score of the experimental group using Kahoot was 86.35 while the average in the Control group was 80.13 so there was an increase in the average value of 6.32 using Kahoot (Darmawan, 2019).

Table 6 Results of Descriptive Statistics Analysis

	N	Min	Max	Mean	Std. Deviation
Pre test – eks	34	40	73	56.18	8.073
Post test – eks	34	70	100	85.21	7.147
Pre test – Cont	36	37	73	56.61	8.603
Prost test – Cont	36	60	93	76.72	8.077
Valid N (listwise)	34				

This result is also in line with other research although the fields of study and material are different. The chemistry course showed a significant increase in scores and the number of students who passed the exam was more than the previous year's grades where Kahoot was not applied (Ares, Bernal, Nozal, Sánchez, and Bernal, 2018). Survey results show that generally more than 90% of students enjoy using Kahoot and are able to increase their understanding of Computer Programming (Abidin and Zaman, 2017). Medical schools are also recommended to start using Kahoot as an alternative formative assessment tool to improve student learning (Ismail and Mohammad, 2017). Technology can be integrated into the teaching environment to increase student motivation and involvement (Licorish, Owen, Daniel, and George, 2018). e-Learning can also provide an interesting learning environment that supports the learning process and increases student participation in class (Plump and LaRosa, 2017). The Kahoot and Quizizz applications increase student activity, which can stimulate students to be active in the classroom and have collaborative learning, which also increases student involvement in the learning process (Chaiyo and Nokham, 2017). Kahoot motivates and encourages students to engage in classroom interaction. Students recognize that the use of Kahoot in the learning process has a positive effect on understanding the material (Licorish, Owen, Daniel, and George, 2018). The use of Kahoot as an educational game in the classroom can minimize distractions, thereby increasing the quality of teaching and learning outside that provided in conventional classrooms.

85% of students' perceptions of Kahoot as learning media which means "Very Interesting" to be applied and used in the learning process, so that the problem of boredom, disinterest in learning and the teacher's dilemmas faced in the revolutionary 4.0 era can use Kahoot as a learning medium without reducing goals, content, and the quality of learning content (Rafnis, 2019). Kahoot, as a cognitive learning tool, can enable students to think more deeply and engage more actively so as to facilitate the development of students' reflection and cognitive knowledge (Correia and Santos, 2017). Kahoot can be said to be effective in encouraging and strengthening learning, especially those related to media concepts, analytic models, framework theories, media writing techniques, and media language tools (Plump and LaRosa, 2017). Learning is often considered complete when the answers produced by students are correct. Kahoot, as a closing activity for learning, can be an alternative tool to support long-term memory knowledge (Actekin, Çelebi, and Actekin, 2018).

Facilities and infrastructure in the form of computers / laptops and or internet-connected devices are an obstacle to using kahoot. The fact is that some students cannot access the internet, so they only take the questionnaire, but actually don't play the game (Cutri, Marim, Cordeiro, Gil, and Guald, 2016). Limited use of kahoot, especially the problem of wi-fi connection. The lack of a stable internet connection actually hampers their response to quizzes (Lin, Ganapathy, and Kaur, 2018). Not all students have a device that is connected to the internet is a barrier to e-learning in regular classes. This can be overcome by forming a group strategy so that one group only needs one internet-connected device (Darmawan, 2019). Meanwhile, for individual use, you can use a computer laboratory at school.

Conclusion

Kahoot application can be used as a medium in student learning processes to improve the value of learning outcomes. This study shows the average value of the experimental group post test using Kahoot by 85.21 while the average in the Control group is 76.72. So there is an increase in the average value of 8.49 by using Kahoot. Research into the use of Kahoot to improve learning outcomes can be continued in other science material.

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