

## Game Based Learning Effectiveness with the Kahoot Application Viewed from Learning Interests and Learning Outcomes of Learners in Digital Simulation Subjects

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### Abstract:

The purpose of this study was to determine whether Kahoot-based game-based learning models can influence learning interest and learning outcomes of participants being educated. The sample used was students of class X in Clothing of SMK 3 Surakarta. This study used a quasi-experimental method (quasi-experimental design) with pretest-posttest control design. This study used two control and experimental groups. Control with conventional learning and experiment with Kahoot. Data collection is done by distributing questionnaires and learning outcomes tests. The hypothesis test used was a paired sample t-test and independent sample test using the error level of 0.05. The results showed interest in the control class decreased 6.6% and learning outcomes increased by 2.8%. The results of the experimental class study showed interest in learning increased by 6.7% and learning outcomes increased by 9.9%. Hypothesis testing shows the posttest value of both classes' learning interest  $0,000 < 0,050$  and posttest learning outcomes  $0,00 < 0,05$  which means there are differences in the results of the posttest of the two classes. Thus, there are differences and improvements with the use of Kahoot.

*Keywords: game based learning, Kahoot, learning interest, learning outcomes*

DOI: <https://doi.org/10.20961/ijie.v3i1.32116>



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## 1. Introduction

Lack of interest in learning in Digital Simulation subjects makes student learning outcomes less than optimal. Based on observations of researchers during PPL some students pay less attention when the teacher explains, lack of concentration and focus on learning. Learning becomes less effective because students pay less attention so the teacher needs to repeat to explain. One of the causes of a lack of interest in learning and student learning outcomes is a learning model. The learning model that is commonly applied in class is a lecture. Besides, learning media is less varied, so students are easily bored and not paying attention. Lack of attention from students makes learning ineffective and inhibited. This causes the learning outcomes of students are not optimal. Thus a learning model is needed that can generate interest in learning so that changes can occur in the learning outcomes of students. One such learning model is game.

Game-based learning can further enhance the interaction between students and teachers (Tsai & Peng, 2016). Involving games in learning makes the situation more enjoyable, motivated, not monotonous and more varied (Zarzycka-piskorz, n.d.). The use of Kahoot, Quiziz, and Goodle Form based learning models makes student concentration and participation increase. Kahoot, Quiziz, and Google Form present positive things (Chaiyo, n.d.). Kahoot is a platform that can be used to increase student learning motivation in learning (Ismail & Mohammad, 2017).

Learning outcomes with the Kahoot-based game model further improve learning outcomes compared to using media power points (Dyah, 2018). Kahoot based learning makes the atmosphere more enjoyable, active participation and more permanent ("Gamification in Biology Teaching: A Sample of Kahoot Application İ.Ümit Yapıcı 1, Ferit Karakoyun 2," 2017).

This study aims to determine whether or not there are (1) differences in the level of interest in learners' learning between the use of Kahoot's application-based game learning model and conventional learning models in Digital Simulation subjects; (2) differences in the level of learning outcomes of students between the use of Kahoot application-based learning game learning models and conventional learning models in Digital Simulation subjects; and (3) changes in learning interest and learning outcomes of students in the use of Kahoot's application-based learning learning model.

## 2. Research Method

This type of research uses a quantitative approach. A quantitative approach is a process of finding knowledge by using numbers to find information that you want to know (Darmawan, 2013: 37). The use of this method is based on the following reasons: first to examine the population or sample in particular. Both data collection uses instruments that aim to obtain data in the form of numbers. The three researchers can see the effect of the level of interest in learning and learning outcomes of students on Digital Simulation subjects with the help of Kahoot based learning models. Finally, researchers can determine effective methods for pre-existing research. The quantitative approach according to Zulfafrial (2012: 4) is a problem-solving strategy using statistical analysis based on quantitative data collected from research subjects.

The experimental method used in this study is the quasi-experimental design method. The quasi-experimental method (quasi-experimental design) is an experiment that perfects pre-experimental design, includes groups that usually occur, usually more than one group and has an element of observation rather than pre-experimental design (Andi Prastowo, 2011: 152). The experimental design used was the pre-test and post-test control design. In this design there are two groups, namely experiment, and control, then the two groups are given a pretest to know the initial ability, after that they are given treatment and followed by a posttest.

This research was conducted in one of the Vocational Schools in Surakarta by using a total sampling technique, namely class X in the Department of Clothing. Data collection techniques in this study used questionnaires and student learning outcomes.

Test this research instrument using a validity test and reliability test. The data analysis technique in this study used independent sample t-test and paired sample t-test with the previous conditions for normality test, homogeneity test and balance test with an error level of 0.05.

### 3. Results and Discussion

The results of the questionnaire instrument validity test obtained 32 of 50 valid statements with reliability test results of  $0.845 > 0.600$  which means the questionnaire instrument is reliable. While the results of the validity test of the items obtained 20 items in the pretest and 20 items in the valid posttest. The reliability test results obtained a value of 0.851 on the pretest and 0.732 questions on the posttest question, it can be concluded that the two items are reliable or reliable. Also, in the item tests were analyzed, then the questions were valid and fulfilled the conditions that could be used as research instruments, the following items were good and qualified.

Table 1. Conclusion of the Results of the Analysis of the Problem Question

Conclusion	<i>Pretest</i>	Questions used: 1, 2, 3, 4, 5, 6, 7, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 22, 24, 25 Drop: 8, 9, 10, 15, 23
	<i>Posttest</i>	Questions used: 1, 3, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 22, 25, 26, 27, 28, 29 Drop : 2, 4, 5, 6, 9, 17, 21, 23, 24, 30

After testing the validity, reliability and test instruments, then taking research data, following the results of research data that has been obtained:

#### Differences in learning interest between conventional learning and learning with Kahoot

From the data that has been obtained the results of the average learning interest are as follows:

Table 2. Average Results of Interest in Pretest-Posttest Learning

	Learning Interest
<i>Pretest</i> Kontrol	118,83
<i>Posttest</i> Kontrol	110,78
<i>Pretest</i> Eksperimen	113,31
<i>Posttest</i> Eksperimen	120,83

The results above show that the control class has an average pretest of 118.83 and posttest 110.78, there is a decrease in interest in learning by 6.7%, while in the experimental class the pretest averages 113.31 and posttest 120.83, there is an increase in interest study at 6.6%.

The results of the initial learning interest questionnaire (pretest) were used to test the balance of the two classes using the independent sample t-test test with the results sig.  $0,000 > 0,050$  which means that

there are differences in the initial results between the control class and the experimental class. After that hypothesis testing is carried out with the following results:

H0: there is no difference in interest in learning between the control class and the experimental class

Ha: there are differences in interest in learning between the control class and the experimental class

If Sig. (2-tailed) > 0.050 then H0 is accepted and Ha is rejected

If Sig. (2-tailed) < 0.050 then H0 is rejected and Ha is accepted

Table 3. Results of the First Hypothesis of Learning Interest

Test	Sig. (2-tailed)
Learning Interest	0,000

The results of the first hypothesis test, independent sample t-test using posttest data interest in learning both classes. The results of the first hypothesis test show the sig value. (2-tailed) 0,000 < 0,05 which means Ha is accepted and there are differences in interest in learning in the control class and experimental class.

Table 4. Results of the Second Hypothesis Test of Learning Interest

Group	Sig. (2-tailed)
<i>Pretest-Posttest</i> Kontrol	0,000
<i>Pretest-Posttest</i> Eksperimen	0,000

The results of the second hypothesis test, paired sample t-test learning interest in the control class showed the value of sig. (2-tailed) 0,000 < 0,050 which means there is a difference between the results of the pretest and posttest of the control class. Whereas, the results of the first hypothesis test, paired sample t-test of interest in the experimental class showed the value of sig. (2-tailed) 0,000 < 0,050 which means there is a difference between the results of the experimental class pretest and posttest. In the results above, it is known that the control class and the second experiment have different differences in the results of the pretest and posttest. However, when viewed from the average results, the control class experienced a decrease in interest in learning by 6.7%, while the average experimental class increased by 6.6%. Based on the results of the above research, it shows that there is an increase in interest in learning in the classroom with Kahoot based learning models. Endang Susilowati (2017) said that Kahoot attracted the attention and interest of students to always be involved in learning, besides competition to answer questions of increasing motivation to be the best in learning. Kahoot is a formative assessment tool that is feasible, practical and makes learning fun (Ismail & Mohammad, 2017).

### Differences in learning outcomes between conventional learning and learning with Kahoot

From the learning outcomes data, the average is obtained as follows:

Table 5. Average Results of Pretest-Posttest Learning Outcomes

	Learning Outcomes
<i>Pretest</i> Kontrol	76,80
<i>Posttest</i> Kontrol	79,00
<i>Pretest</i> Eksperimen	78,70
<i>Posttest</i> Eksperimen	85,94

The results above show the average learning outcomes of the pretest control class 76.8 and posttest 79, an increase of 2.8% in the learning outcomes of the control class. While the experimental class has an average learning outcome of pretest 78.7 and posttest 85.94, a fairly high increase of 9.9%. The results of the equilibrium test with the independent sample t-test of the learning outcomes of the pretest are  $\text{sig. } 0.431 > 0.050$  which means there is no difference between the two groups and balanced. Following is the learning outcome hypothesis test:

H0: there is no difference in learning outcomes between the control class and the experimental class

Ha: there are differences in learning outcomes between the control class and the experimental class

If Sig. (2-tailed)  $> 0.050$  then H0 is accepted and Ha is rejected

If Sig. (2-tailed)  $< 0.050$  then H0 is rejected and Ha is accepted

Table 6. Results of the First Study Hypothesis Results

Pengujian	Sig. (2-tailed)
Hasil Belajar	0,000

From the processing of data from the results of the first hypothesis test, the independent sample t-test of learning outcomes showed the value of sig (2-tailed)  $0,000 < 0,050$ , Ha was accepted which meant there were differences in the average in both groups.

Table 7. Second Hypothesis Results of Learning Outcomes

Kelompok Belajar	Sig. (2-tailed)
<i>Pretest-Posttest</i> Kontrol	0,243
<i>Pretest-Posttest</i> Eksperimen	0,000

Based on the results of the paired sample test, the second hypothesis obtained the significance value of the sig control class. (2-tailed)  $0.243 > 0.050$  which means there is no significant difference between the results of the control class pretest and posttest. While the results of the experimental class test sig. (2-tailed)  $0,000 < 0,50$  significance value is smaller than the error level, so H0 is rejected and Ha is accepted.

Thus it can be concluded that the results of the hypothesis testing are accepted, namely, there are differences in the average in the experimental class using Kahoot's application learning-based learning model with the control class with conventional learning models on Digital Simulation subjects. The use of Kahoot-based interactive quiz media further improves learning outcomes compared to powerpoint learning media (Dyah Gres, 2018).

## Increased interest in learning and learning outcomes with Kahoot based learning

The average results of the pretest control class questionnaire decreased learning interest by 6.7%. While in the experimental class there was an increase in learning the interest of 6.6%. The paired sample test results, the control class has a value of 0,000 <0,050 which means that there is a significant difference in the average between the results of the pretest and posttest with the posttest average <pretest. While the results of the paired sample test in the experimental class are 0,000 <0,050, which means that there is a significant difference between the results of the pretest and posttest with the results of the posttest> pretest. So it can be concluded that the interest in learning the experimental class is higher and increased than before by using a game learning model-based learning with the Kahoot application compared to the control class that uses conventional learning models.

The average value of the learning class of the control class increased by an average of 2.8%. While the average posttest of learning outcomes has increased significantly by 9.9%. The paired sample test results of the control class are Sig. (2-tailed) 0.243 > 0.050, which means there is no difference in the average between the results of the learning pretest and posttest of the control class. Whereas in the experimental class the results of paired sample t-test are Sig. (2-tailed) 0,000 <0,050 which means that there are significant differences in the mean at the pretest and posttest of the experimental class. On the other hand, the results of the independent sample t-test results of posttest learning interest and learning outcomes of the two classes showed that there were differences in the average with the Sig (2-tailed) value of 0,000 <0,050. Judging from the results of the hypothesis test the increase in the average interest in learning and learning outcomes in the experimental class with the game-based learning learning models using the Kahoot application is higher than the control class with the conventional learning model.

Based on observations during the study, the experimental class using the game-based learning model with the Kahoot application was more actively participating than the class using conventional learning models. Also, classes with the application of game-based learning models also have more curiosity in answering the questions given. The use of the Kahoot application increases students' interest in initially boring learning to be more fun and interesting. Students are more active in learning and more motivated. The participation of students in learning makes students' results increase more than usual.

## Conclusion

Based on the results of the research and discussion, it can be concluded that Kahoot's use in learning increases students' interest in learning. Increased interest in learning affects student learning outcomes. There are significant differences in learning interest and learning outcomes between conventional learning and Kahoot based game-based learning models. There was an increase in interest in learning by 6.6% and learning outcomes of 9.9%.

## References

- Chaiyo, Y. (n.d.). The Effect of Kahoot , Quizizz and Google forms on the Student s Perception in the Classrooms Response System .
- Dyah, G. (2018). Studi Penerapan Media Kuis Interaktif Berbasis Game Edukasi *Kahoot* terhadap Hasil Belajar Mahasiswa, *Jurnal Ilmiah Ilmu Pendidikan* 9 (1).
- Gamification in Biology Teaching: A Sample of Kahoot Application İ.Ümit Yapıcı 1 , Ferit Karakoyun 2. (2017), 8(4), 396–414. <https://doi.org/10.17569/tojq.335956>
- Halaman, V. N. (2018). *Jurnal Ilmiah Ilmu Pendidikan*, 9(1).
- Ismail, M. A., & Mohammad, J. A. (2017). Kahoot : A Promising Tool for Formative Assessment in Medical Education Study Setting and Population, 9(2), 19–26. <https://doi.org/10.21315/eimj2017.9.2.2>
- Susilowati, E., (2017). The Effectiveness of Kahoot in Supporting Grammar Class on Class a Year I Students Academy Year 2016/2017 of Diploma III of Nursing Ngudi Waluyo University. UNNES-TEFLIN National Seminar.
- Tsai, H., & Peng, J. (2016). Applying an eBook Tool with Lecturing Function and a Game-based Student Response System in Flipped Classroom for a Seminar Course. <https://doi.org/10.1109/ISET.2016.21>
- Zarzycka-piskorz, E. (n.d.). Kahoot It Or Not ? Can Games Be Motivating In Learning Grammar ?, 16(3), 17–36.
- Zuldafrial. (2012). Penelitian Kuantitatif. Yogyakarta: Media Perkasa