

The Effectiveness of Using Kahoot in Basic Graphic Design Subject to Students' Attention Levels and Learning Achievement

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ABSTRACT

The research aims to (1) find out the differences on attention levels of students between using Kahoot and without using learning media in Basic Graphic Design subjects, (2) knowing the effectiveness of using Kahoot in Basic Graphic Design subjects compared to without using learning media in terms of student learning achievement, (3) knowing the level of students' attention between using the Kahoot compared to without using learning media in Basic Graphic Design subjects. The population of this research were students of Multimedia class in SMK Negeri 3 Surakarta. The sample were from X MM 1, X MM 2, and XI MM 1. This type of research is quantitative research. This research uses the quasi-experimental design method, with pretest-posttest control design experiment. The sampling technique uses simple random sampling. Research data collection techniques use tests to determine student learning achievements before and after being given treatment, and questionnaires to determine the level of attention of students before and after being given treatment, other than that carried out observations and interviews as supporting data. The research data use test and questionnaires which were distributed to the experimental class and the control class consisted of 36 students for each class. Hypothesis testing uses an independent t-test to see the differences of attention levels between students who follow the learning process by using Kahoot and those who follow the learning process without using learning media. Then a normalized gain test was carried out to see the effectiveness of using Kahoot to improve student learning achievement. The result showed that: 1) there were differences in the attention levels between the experimental class and the control class as evidenced by the results of the t-test $> T_{table}$ 6.699 $>$ 2.6479(70). 2) using Kahoot is effective to improve student learning achievement as evidenced by the results of the normalized gain test in experimental class which has a medium criterion of 0.60 compared to the control class which has a low criterion of 0.03.

Keywords: Kahoot, learning achievement, attention levels, graphic design

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1. INTRODUCTION

SMK Negeri 3 Surakarta is a vocational school that has a Multimedia program. Vocational competence in first grade includes Basic Graphic Design subjects that must be learned in early semester. The problem found during the learning process is that students do not focus on teacher instruction when the lesson started, especially in learning theory. Moreover, students have not been directly involved in learning. During the learning theory, students tend to not pay attention to what is instructed by the teacher. It causes less interaction between the teacher and students. The lack of media used by teachers to support the teaching process also affects the attractiveness of students in paying attention to the lesson.

According to Darmadi [1] that the learning process must involve students in totality, it means involving the mind, vision, hearing, and psychomotor. Fun things can explore and develop students' motivation, while motivation is influenced by the level of material difficulties, it means motivation can be reduced if the learning material has a high level of difficulty or in reverse. The intellectual emotions of students can be built

by giving games or puzzles and stories related to the material to be taught because students are interested in things that are real and pleasant.

The use of Kahoot in this research to enhance students' attention during the learning process. Moreover, using Kahoot can also improve students' learning achievement because it can contain questions related to theory. This research investigates the effectiveness of using Kahoot to students' attention levels and learning achievement.

Theoretical Basis

1.1. Learning Model

The learning model is a design for teaching material in achieving certain goals [5]. The function of the learning model is as a guide for instructional designers and teachers in the learning process. Learning model is chosen according to the material properties to be taught and influenced by the objectives to be achieved in teaching and adjusted to the level of students' ability [10].

The learning model used in the first grade of Multimedia class is a discovery learning. According [1], discovery learning is a learning theory that is interpreted as a learning process that occurs when students are not given learning material in the final form but must organize themselves or find out for themselves. Students are required to play an active role in learning. The use of discovery learning changes the conditions of learning that passively become active and creative, change the teacher-oriented becomes student oriented.

1.2. Kahoot

Kahoot is an application that involving students to respond quizzes, discussions, and surveys. It can be accessed directly through a web browser on gadgets, laptops, or computers. Quizzes, discussion forums, or survey forms can be created after the teacher creates a new account on the Kahoot page. The quiz contains multiple choices available in four choices. Quizzes are not only in the form of written questions but can be inserted images, videos, and songs to support students' thinking power in understanding the quiz. Questions and answers are arranged by the number of characters, which is limited to 80 characters for the question and 60 characters for each answer choice. Another feature available in the Kahoot is the answer time can be set as needed [2]. According to Thomas (2014) quoted [2] that speed and ease of access Kahoot benefit students and teachers in reviewing new and old lessons. Kahoot can be used for various types of assessments and assignments including formative assessment, diagnostic assessment, research projects, and presentations.

1.3. Attention

Gazali states that attention is the activity of the soul that is directed towards an object or a set of certain things [8]. According [11], attention is a concentration of individuals towards a set of objects so that the attention is truly realized by the individual concerned. Attention is the main function of the media that is attracting and directing the students' attention to concentrate on the learning process. According to Bandura (1971) quoted by Firmina (2017), there are 4 components that influence learning and students' behavior, namely attention, retention, motor production, and motivation. Attention process is a new behavior that cannot be obtained unless the behavior is observed and perceived carefully.

Based on research by [4] that according to the definition of attention it can be classified into two aspects, namely (1) Concentration, and (2) Awareness. Concentrate on learning process develops students to experience firsthand, observe and research to compile and draw a conclusion [8]. Awareness is alertness to cognitive response that can be happened from environment and ourselves (Robert, 2007). It was concluded that the students' attention in learning through aspects of concentration and awareness, namely (1) being calm and orderly, (2) paying attention to the lesson, (3) the willingness of students to do the task, (4) the willingness of students to answer teacher questions, and (5) activeness of students in group discussions.

1.4. Learning Achievement

Learning achievement is the best results achieved by students which consist of three aspects, namely cognitive, affective, and psychomotor. The learning achievement of a student is obtained from the learning process that is followed, measured from test instruments and other relevant instruments. Assessment of learning outcomes can be expressed in the form of numbers, letters, or sentences that reflect the results achieved by students. Ways to improve student learning performance are seen through internal and external conditions. Internal conditions include health, skills possessed, and abilities, while external conditions include the surrounding conditions, as well as learning infrastructure [1].

This research was conducted to review the learning achievements of students in theoretical learning on Basic Graphic Design subjects through the cognitive aspect. The cognitive aspect research conducted through pretest and posttest.

1.5. Basic Graphic Design

Graphic design or multimedia design according [7] is a subject that discusses the basic knowledge of multimedia, including understanding to the manufacture of product design. These subjects are included in the Multimedia class of Computer and Informatics Engineering program. Based on the 2013 Revised Curriculum

2017 the Basic Graphic Design subjects were delivered in the first grade of Vocational High School. Basic Graphic Design subjects contain topics including (1) Picture shapes, (2) Perspective images, (3) Color theory, (4) Design elements and principles, and (5) Layout. Learning activities include the activity of studying material descriptions, observing product samples, doing formative tests to assignments or experiments.

Literature Review

Research by Iwamoto, [3] in the first semester of psychology department conducted with the quasi-experimental method, the result is that there are differences in test scores between the experimental class and the control class. Kahoot is applied in the experimental class and has a significant effect on academic performance compared to the control class that receives learning from lectures and discussion groups. Besides that, qualitative research was also conducted, the results showed that the experimental class using Kahoot was more effective in involving students to give feedback during the learning process than the control class.

The research was also conducted by Yapici & Karakoyun in the department of biology education (2017) the results showed significant differences between the pretest and posttest in the experimental class [12]. The use of the Kahoot increases the achievement and motivation of students to be involved in learning. Teachers who participated in the study also revealed that the use of the Kahoot is more entertaining and interesting for students, and contributes to improving learning perseverance and strengthening students' knowledge.

2. RESEARCH METHOD

Data were compared between experimental class that used Kahoot and control class that did not use learning media. The number of samples includes X Multimedia 1 class as many as 36 students, X Multimedia 2 as many as 36 students, and XI Multimedia 1 as many as 35 students. XI Multimedia 1 class as a trial class by distributing multiple choice test instruments and questionnaires to test the validity of the instrument. The method used in this research is the quasi-experimental design method. The experimental design used was a pretest-posttest control design, in this form there were two groups each selected randomly, the experimental group treated with Kahoot and the control group treated without learning media.

Table 1. Reseach Design

Class	Pre test	Treatment	Post test
Experimental	P ₁	X ₁	Q ₁
	P ₂		Q ₂
Control	P ₃	X ₂	Q ₃
	P ₄		Q ₄

Information:

P1 : Pre-test attention levels of experimental class

P2 : Pre-test learning achievement of experimental class

P3 : Pre-test attention levels of control class

P4 : Pre-test learning achievement of control class

X1 : Treatment (using Kahoot)

X2 : Without treatment (without Kahoot)

Q1 : Post-test attention levels of experimental class

Q2 : Post-test learning achievement of experimental class

Q3 : Post-test attention levels of control class

Q4 : Post-test learning achievement of control class

Research data and hypothesis begins with the validity and reliability test of the instrument, then homogeneity and normality test were conducted from the results of the pretest. Then the prerequisite test, attention level tendency test, and hypothesis test were carried out. Hypothesis test aims to find out whether there are differences between the experimental group and the control group on learning achievement and the level of attention of students in each class.

3. RESULT AND ANALYSIS

3.1. RESULT

- 1) There are differences in the attention levels of students between using the Kahoot and without using learning media in Basic Graphic Design subjects

Hypothesis t-test

H₀ : there are no differences in the attention levels between experimental class and control class

H₁ : there are differences in the attention levels between experimental class and control class

Data formed from the results of the posttest questionnaire in experimental class and control class. The hypothesis was carried out by the independent t-test using the SPSS 24 program.

Table 2. Result of t-test

Instrument	Methods	$\alpha = 5\%$	Tcount	Sig value	Criteria	Conclusion
Questionnaire of Attention Levels	Experimental	0.05	6.699	0.000	$6.699 > 2.6479_{(70)}$; $0.000 < 0.05$	H ₁ accepted
	Control					

Based on table 2, it can be concluded that between the experimental class and the control class after being given the posttest, the results of Tcount > Ttable were $6.699 > 2.6479_{(70)}$, and sig < 0.05, H₀ was rejected and H₁ was accepted. So, there are differences in the level of attention of students between the experimental class using the Kahoot application and the control class without using learning media.

2) Using Kahoot is more effective to improve students' learning achievement compared to without using learning media

The comparison of learning achievement between the experimental class and the control class is counted with gain index analysis to find a general condition between pre and post-learning process with the following formula:

$$\text{Normalized Gain (g)} = \frac{(\text{posttest score} - \text{pretest score})}{(\text{ideal score} - \text{pretest score})} \quad [9]$$

Table 3. Average Comparison with Normalized Gain Test

Instrument	Methods	Gain	Criteria
Test	Experimental	0,60	Medium
	Control	0,03	Low

Based on table 3, it can be seen that the gain score for the experimental class is 0.60 (medium) and the control class is 0.03 (low). So, it can be concluded that learning using Kahoot is more effective and can improve students' learning achievement compared to without using learning media.

3) Comparison of the students' attention levels between the experimental class and the control class

The students' attention levels based on the posttest data of the questionnaire instrument as shown in Figure 1.

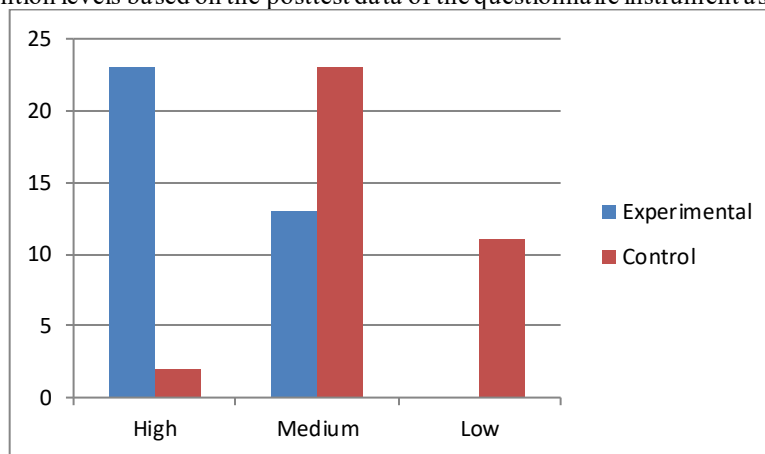


Figure 1. Students' Attention Level of Experimental and Control Class

Based on Figure 1, it can be concluded that the experimental class has a tendency to upper or higher attention levels as evidenced by the number of frequencies, 23 students (63.9%) and the control class has a tendency to attentiveness level as evidenced by the frequency of 23 students (63.9%).

3.2. ANALYSIS

Based on the data that has been collected, the results of the hypothesis, and data analyzing that has been done, conclusions can be drawn to answer the problem formulation. The research conclusions are as follows:

1) There are differences in the students' attention levels between using Kahoot and without using learning media in the Basic Graphic Design subjects, it is evident from the results from the average posttest

questionnaire instrument score which increased by 86 compared to the pretest with an average of 71.8333. Then the results of hypothesis testing were carried out by independent t-test, $T_{count} > T_{table}$ $6.699 > 2.6479$ (70), and $sig < 0.05$ so H_0 was rejected and H_1 was accepted. So, there are significant differences in the students' attention levels between the experimental class and the control class.

2) Using Kahoot is more effective to improve students' learning achievement compared to without using learning media. Based on the hypothesis test with the normalized gain test it is known that the experimental class has a medium criterion of 0.60 compared to the control class which has a low criterion of 0.03, thus indicating that using Kahoot is more effective to improve student achievement than without using media learning.

3) The students' attention levels between using Kahoot compared to without using learning media in the Basic Graphic Design subjects was proven by testing the tendency of attention levels which included the upper group, medium group, and low group. The results showed that the experimental class had a tendency to upper or higher attention levels as evidenced by the number of frequencies, 23 students (63.9%) and the control class had a tendency to attentiveness levels being proven by the number of frequencies, 23 students (63.9%). Also, the results of interviews in the experimental class stated that using Kahoot in learning affects students to be more motivated in paying attention to the lesson.

4. CONCLUSION

Based on the research results, it can be concluded that 1) there are differences in the students' attention level between using Kahoot without using learning media as evidenced by the results of the t-test $> T_{table}$, $6.699 > 2.6479$ (70). 2) using Kahoot is effective to improve students' learning achievement as evidenced by the results of the experimental class gain test which has a medium criterion of 0.60 compared to the control class which has a low criterion of 0.03.

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