



Utilization of Interactive Multimedia to Improve Learning Interest and Learning Achievement of Child

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Received: 3 April 2018; Revised: 10 April 2018; Accepted: 2 July 2018

Abstract

This research aimed to find out (1) the effect of interactive multimedia on the learning interest, (2) the effect of interactive multimedia on the learning achievement, (3) the different effect of interactive multimedia and image media on the learning interest and learning achievement of grade IV students of elementary schools in Wonosari Gunungkidul. This research was a quasi experimental. The design was pretest-posttest control group design with two experimental groups taught by using interactive multimedia and one control group using the image media. The data analysis used the paired sample t-test and independent sample t-test. The result of the research showed that: (1) there was an effect of interactive multimedia on the learning interest at the significance level of $0.000 < 0.05$, (2) there was an effect of interactive multimedia on the learning achievement at the significance level of $0.000 < 0.05$, and (3) the high different effect of interactive multimedia and image media on the learning interest and learning achievement was the learning interest with the gained score 10.412 on the experimental class 1 and 13.004 on the experimental class 2, and the learning achievement with the gained score 8.703 on the experimental class 1 and 6.810 on the experimental class 2.

Keywords: the effect, interactive multimedia, learning interest, learning achievement.

How to Cite: Primamukti, A., & Farozin, M. (2018). Utilization of interactive multimedia to improve learning interest and learning achievement of child. *Jurnal Prima Edukasia*, 6(2), 111-117. doi:<http://dx.doi.org/10.21831/jpe.v6i2.19183>

Permalink/DOI: <http://dx.doi.org/10.21831/jpe.v6i2.19183>

Introduction

Education is basic need for every human being. Human being has already obtained education from family environment since the human born to the world. And then, education is developed broadly with management system, and created an institutional education or called as school. The learning in school must implement well in order the learning process effective implement. Learning process is an intentional condition created by teachers which aim to teach the students (Djamarah & Zain, 2010, p. 37). Teaching the students is not merely delivered the knowledge but also guides the students to reach the mature of conduct and knowledge. Thus, the learning atmosphere needs to create in a better condition due to will affect to students' future.

Recently, government has issued guide book, but, the teacher should develop the learning according to characteristic of community and students' condition. Education in school should

not be separated to condition of community, family, and country due to if education is not manifested from the community's condition, students will be peculiar to its education, and moreover, the education will become public enemy. Dewantara (2013, p. 4) stated that "if the teaching to our children does not manifested from nationality, surely they will not know on our interests both physical or mental; then they would not probably have the character of love to nation, and avoid their nation; and the last, they may become our enemy." Effort to reach the education goal may anticipated through the approach, method, and learning media appropriate to the need and developmental.

The effort to improve the learning quality may be through the approach, method and learning media. In curriculum 2013, it has made an approach and method in learning which is 'student centered', but not all teachers use the approach and method due to the difficulties in

preparing the learning media. Learning process of student centered without adequate learning media facility will affect to the low of students' learning interest. The low of students' learning interest will affect to the low of students' achievement, for example students of grade IV SD Negeri (Elementary School) Gugus I Wonosari, Gunung Kidul regency, Special Region of Yogyakarta Province.

Based on the observation on 2 – 10 august 2017, found that the teachers only teach using thematic book and lecturing method. Learning which does not use learning media will affect the low of students' interest. Students are less enthusiastic in following the learning, then the students is bored, play with other, talking to others during the explanation, passive, quiet when teacher ask, and teachers need to push them to ask and speak during the learning. Moreover, the average score of Middle test is 68, where the score is under the KKM (Minimal Standard Score). The solution of problems of the low of students' learning interest and the low of students' achievement is learning media.

The result of observation and interview to teacher class found the problem that students is difficult to gain the material of the teacher teaching, because the limitation of learning media and the learning only use the book, so those would not able to attract the students' interest. The low of students' interest is showed by the students' reaction to answer the teacher' question and most of students do not answer the question. The using of computer laboratory is limited to only computer extracurricular activity. The factor is; the Adobe Flash multimedia does not implement on the learning of thematic integrative, meanwhile, the CD interactive has already been available. But they never use the media because the teacher assumes the computer using in learning is not efficient. The teacher admitted, the CD interactive would probably attract the students' interest and increase the students' knowledge but it affects to the time efficiency of learning.

Based on the interview to teacher class, teacher assumes the images on the book has already sufficient toward the students' understanding, in fact, the students' score is under the KKM. Teacher needs media which is easy to use and able to increase the students' interest and achievement. Then, the effective and efficient media is needed to implement.

Learning media has advantages in the learning. Omeng & Priscah (2016, p. 1) stated,

“Instructional Media are the means for transmitting or delivering messages and in teaching-learning perspective delivering content to the learners, to achieve effective instruction.” Learning media may probably assist the teacher to build students' understanding, so the students' understanding will be more in-depth. Learning media also is able to attract the students' interest, so the students will focus to learning in the class.

A variety of learning media, Leshin (Arsyad, 2002, pp. 81–101) divided the learning media into five groups; human-based media, printed-based media, visual-based media, audio visual-based media, and computer-based media. In every media has strength and weakness. Printed media has provided to school through either learning book or non-learning book in the library. Visual-based media is important to help students understand the object of learning. Audio visual-based media is a mix between audio and visual, so the students will able to understand the material. And, computer-based media is appropriate to independent learning and construct the students' understanding on abstract material.

Jarolimek & Walsh (2002) stated, *“one of the major differences between computer and other structural media is the computer has the capacity to interact with student. The computer requires the operative instruction to do something unlike film, filmstrip, or a recording which present simple materials.”* The computer in the learning probably assists the teacher to make interactive learning. Computer media is important due to encourage the students to involve in the learning, so the students' learning motivation is high and affect to learning interest and achievement.

The development of technology is growing fast, so, the school may not probably to avoid the computer-based media in the learning. The computer role in learning is through the utilization of interactive multimedia. Multimedia is a utilization of computer to make and combine text, graph, audio, video and animation by combining the link and tool which allow the user to navigate, interact, create and communicate (Suyanto, 2003, pp. 20–21). Meanwhile, the term of interactive is an ability of two-ways communication or feedback. In sum, the interactive multimedia in learning may define as utilization of computer to make communication between software and user (students or teachers) which contain a set of material of videos, audios, images, games, etc.

Interactive multimedia learning according to Darmawan (2012, pp. 55–56), is able to

activate the students to learn with high motivation due to interest to system multimedia which display text, images, videos, audios, and animations. The media of interactive multimedia has advantages. Linds (Munir, 2013, p. 111) states, people remember 20% by what they see, 40% by what they see and listen, and 75% by what they see, listen, and doing in the same time. It means, the media would probably increase the students' interest and achievement.

Based on the background, the research aims to find out the effect of interactive multimedia on the students' learning interest and learning achievement.

Method

The research used quantitative approach with quasi experiment research type, and non-equivalent control group pretest-posttest design. The research conducted to grade IV of Sekolah Dasar (Elementary School) Gugus I Wonosari, Gunungkidul regency, special region of Yogyakarta province. The research conducted at first semester of academic year 2017/2018.

Population of the research was all the students of grade IV Sekolah Dasar (Elementary School) Gugus I Wonosari, Gunungkidul regency, which consist of five schools and 212 students. The sample of the research consisted of 3 class; 2 experimental class (interactive multimedia) and 1 control class (image media).

The research involved of independent variable and dependent variable. Independent variable is interactive multimedia of adobe flash and dependent variable is students' learning interest and achievement.

Data collection technique of the research was test and non-test. The test was written test in order to find out the students' achievement. The test conducted in the beginning of the learning (pretest) and after the learning (posttest). The test was multiple choices. The non test technique was questionnaire in order to obtain the information on students' learning interest.

Instrument validity was content validity and construct validity. Content validity and construct validity obtained by making instrument guideline, and the instrument was tested through expert judgment technique by lecturer. And then, the instrument was tested, and analyzed the instrument by product moment. Reliability of instrument was conducted by test the alpha cronbach coefficient $> \text{ or } = 0.70$.

Research design was pretest posttest control group design (Johnson & Christensen,

2012, p. 319). There were selected three groups randomly and assumed as homogeneity. Two groups were treated (experimental) and a group was the control. All those groups were given pretest to find out the initial students' ability, then the experimental groups were treated, and the last, the post test was given to find out the final ability. Students' learning interest and achievement on each group were compared. If there are significant differences between pretest and post test in the experimental group, then, there is effect of the treatment.

The research stages included; (1) observation and legal permit permission, (2) making, validating, and testing the research instrument, (3) making coordination with the teacher, (4) pretest both to experimental and control class in order to find out the initial ability, (5) implementing the learning using interactive multimedia to experimental group and image media to control group, and (6) post test.

Data analysis technique used descriptive statistic and inferential statistic. Descriptive analysis was used to display the data of pretest and posted on learning interest and achievement of experimental and control class. Inferential statistic used to test the hypotheses.

T-test was used to test the hypotheses by using data analysis technique. Paired sample t-test and independent sample t-test was used to test the hypotheses. The hypotheses testing was conducted to find out the effect of students' learning interest in interactive multimedia and image class, and students' achievement in interactive multimedia and image class.

Before conducted the inferential statistic test, the data must be tested by prerequisite analysis tests; normality and homogeneity. Kolmogorov-Smirnov was used to test the normality data in order to find out the data was normal or not. Homogeneity test was used to test the data were homogeneity or not. Data is normality and homogeneity if the significance score is > 0.05 . SPSS 20.0 for windows was used in testing the normality and homogeneity.

Result and Discussion

Descriptive Analysis

Descriptive analysis is used to describe the data. The result of average score of descriptive analysis of students' learning interest of interactive multimedia and image media is presented in figure 1.

Based on Figure 1, show that the improvement of average scores of students' learning interest of interactive multimedia is higher than image media. In sum, the interactive multimedia in experimental class has significant effect to students' learning interest.

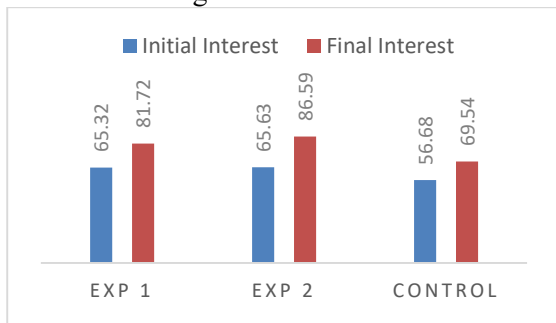


Figure 1. Diagram of average score of learning interest

The average score of students' achievement of interactive multimedia and image media is presented in Figure 2.

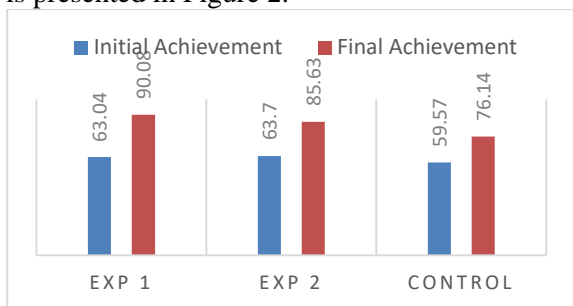


Figure 2. Diagram of average score of achievement

Based on Figure 2, show that the improvement of average scores of students' achievement of interactive multimedia is higher than image media. In sum, the interactive multimedia in experimental class has significant effect to students' achievement.

The Result of Prerequisite Analysis Tests

Before conducting the hypotheses test, prerequisite analysis tests must be performed; which are normality and homogeneity test to each group. The results of normality and homogeneity test are presented in a table. The normality test is presented in Table 1.

Tabel 1. Result of Normality Test

Variable	Significance		
	Kolmogorov-Smirnov Test		
	Exp 1	Exp 2	Control
Learning Interest	0,164	0,820	0,291
Learning Achievement	0,189	0,332	0,466

Table 1 show, the data of students' learning interest and achievement in the interactive multimedia class and image media class has significance score higher than 0.05, which means the data is normality. Meanwhile, the homogeneity test result is presented in Table 2.

Table 2. Result of Homogeneity Test

Variable	Significance of Levene's	
	Exp 1	Exp 2
Learning Interest	0,360	0,597
Learning Achievement	0,491	0,872

Table 2 show the data of homogeneity test in the interactive multimedia class and image media class has significance score higher than 0.05, which means the data is homogeneity.

Result of Hypotheses Test

After the test of normality and homogeneity, it continues to hypothesis test. The result of hypothesis test by paired sample t-test is presented in Table 3 and 4.

Table 3. Result of Paired Sample t-test

Class	Learning Interest		
	t _{count}	df	Sig.
Exp 1	-12,952	24	0,000
Exp2	-10,420	26	0,000
Control	-10,199	27	0,000

Table 4. Result of Paired Sample t-test

Class	Learning Achievement		
	t _{count}	df	Sig.
Exp 1	-18,682	24	0,000
Exp2	-19,630	26	0,000
Control	-12,781	27	0,000

Table 3 shows the significance score of hypotheses test is 0.000, which means the significance score is < 0.05, so Ho is rejected. In sum, there are significance effect on learning interest in experimental 1 and 2 after treated by interactive multimedia and control class treated by image media.

Table 4 shows the significance score is 0.000, which means the significance score is < 0.05, so Ho is rejected. In sum, there are significance effect on learning achievement in experimental 1 and 2 after treated by interactive multimedia and control class treated by image media. The result of Independent Sample t-test is presented in Table 5 and 6.

Table 5. Result of Independent Sample t-test

Class	Learning Interest		
	t _{count}	df	Sig.

Exp 1& Control	7,761	51	0,000
Exp 2& Control	10,369	53	0,000

Table 6. Result of Independent *Sample t-test*

Class	Learning Achievement		
	<i>t_{count}</i>	df	Sig.
Exp 1& Control	8,653	51	0,000
Exp 2 & Control	5,459	53	0,000

Table 5 shows the significance score is 0.000 on the hypotheses test, which means the significance score is < 0.05 , so the H_0 is rejected. In sum, there is significance different of experimental class and control class on learning interest.

Table 6 shows the significance score is 0.000 on the hypotheses test, which means the significance score is < 0.05 , so the H_0 is rejected. In sum, there is significance different of experimental class and control class on learning achievement.

Discussion

The Effect of Interactive Multimedia on Learning Interest

The research result shows that there is significance effect of interactive multimedia on students' learning interest of grade IV SD (elementary school) Negeri Gugus I Wonosari Gunung Kidul. It showed by the significance score of $0.000 < 0.05$. So, the research is able to prove the first hypotheses that "there is significance effect of interactive multimedia on students' learning interest of grade IV SD (elementary school) Negeri Gugus I Wonosari Gunung Kidul".

Based on the research result, there is significance different on the learning interest among three classes. Interactive multimedia class is higher influence to students' learning interest than image media class, because students learn in more interested and pleasure situation through interactive multimedia. Interactive media according to Garrand (2006, pp. 4–5): "User interactivity in multimedia is best defined as "the ability of the user to alter media he or she comes in contact with . . . Interactivity is an extension of our instinct to communicate, and to shape our environment through communication" (Jordan). Blowing up an alien in a computer game is altering the media. Customizing your broker's web page so that it presents only the financial information you want is altering the media, as is visually creating your dream car on an auto-maker's site. Shopping on television does

not qualify as interactivity under this definition." Interactive multimedia is designed to giving order to user to do an activity, so there is two ways interaction with the learning material. Learning material is displayed in an interactive way in order the students involve in the learning process.

Interactive multimedia is a combination of several media of text, image, graph, sound, animation, video, and others, which programmed into a digital file with tool and link, and equipped by controller tool in order user can control and select the next process. Interactive multimedia in learning can improve the students' learning motivation which affects to improving the students' learning interest. It is appropriate to Munadi (2013, p. 153) state; the advantages of interactive multimedia in the learning is to increase the learning motivation due to it is able to accommodate the students need. Moreover, the advantage of interactive multimedia according to Smaldino (2011) is to increase the students' participation in learning.

Research by Herlinah (2014) on the effect of utilization interactive multimedia on learning interest show that there is significance different of students' learning interest who taught with interactive multimedia and without interactive multimedia. The similarity of the research is research on interactive multimedia to students' learning interest. In contrast, the different of the research is on the research class; Herlinah (2014) conducted her research to students of university and the particular research conducted to students of grade IV elementary school.

The effect of Interactive Multimedia on learning achievement

The research result shows that there is significance effect of interactive multimedia on students' learning achievement of grade IV SD (elementary school) Negeri Gugus I Wonosari Gunungkidul. It showed by the significance score of $0.000 < 0.05$. So, the research is able to prove the second hypotheses that "there is significance effect of interactive multimedia on students' learning achievement of grade IV SD (elementary school) Negeri Gugus I Wonosari Gunungkidul".

Based on the research result, there is significance different on learning achievement among three classes. Interactive multimedia class is higher influence to students' learning achievement than image media class, because the students more understand the material. It is

appropriate to Munadi (2013, p. 152) stated, "Interactive, so, it may used by students individually, students are invited to involve on audio, visual, and kinetic, then the information may easy to understand." This kind of learning is certainly able to maximize the students' learning achievement.

The research result by Sharma (2013) on the research about the role of interactive multimedia to increase the students' achievement and retention, show that the both of methods are sufficient effective in teaching English to students of grade VII (first class of Junior High School). But, by the two methods, interactive multimedia is more appropriate to students' achievement score of English. When students are taught by conventional method and interactive multimedia, found that the students' retention are better when taught by interactive multimedia method.

The research result by Yuniasih & Setiawan (2016) on interactive multimedia in the integrative thematic learning shows that there is significant effect of interactive multimedia on students' learning achievement. The average score of posttest in experimental class is 66.76 and average score of posttest in control class is 72.04, so there is significant effect. The similarity of the research is research on the effect of interactive multimedia on learning achievement in the integrative thematic learning of students' grade IV elementary school.

The High of Significant Effect of Interactive Multimedia and Image Media on Learning Interest and Learning Achievement

The high of significant effect is showed by the result of data analysis based on the average score both of learning interest and learning achievement in the experimental and control class.

Learning interest in the experimental class 1, the average score of final learning interest is higher than initial learning interest; $81.720 > 65.320$. Learning interest in the experimental class 2, the average score of final learning interest is higher than initial learning interest; $86.593 > 65.630$. Learning interest in the control class, the average score of final learning interest is higher than initial learning interest; $69.536 > 56.679$. The average score of learning interest of experimental class 1 is 73.520 higher than the average score of control class is 63.108. And, the average score of learning interest of experimental class 2 is 76.116 higher than the average score of

control class is 63.108. The gain score of learning interest in the experimental class 1 to control class is 10.412, and the gain score of learning interest in the experimental class 2 to control class is 13.008.

Learning achievement in the experimental class 1, the average score of pretest is lower than posttest; $63.040 < 90.080$. Learning achievement in the experimental class 2, the average score of posttest is higher than pretest; $85.630 > 63.704$. Learning achievement in the control class, the average score of posttest is higher than pretest; $76.143 > 59.571$. The average score of learning achievement of experimental class 1 is 76.560 higher than the average score of control class is 67.857. And, the average score of learning achievement of experimental class 2 is 74.667 higher than the average score of control class is 67.857. The gain score of learning achievement in the experimental class 1 to control class is 8.703, and the gain score of learning achievement in the experimental class 2 to control class is 6.810.

In short, the third hypotheses that the significance effect of interactive multimedia has average score higher than image media is accepted. Means, the average score of interactive multimedia has higher score on students' learning interest and achievement than control class of image media.

Conclusion

The research result showed that: (1) there is an effect of interactive multimedia on students' learning interest, (2) there is an effect of interactive multimedia on students' learning achievement, and (3) the high of significance effect or improvement (before and after treatment) on students' learning interest in the interactive multimedia class is higher than image media, and improvement the students' learning achievement on interactive multimedia class is higher than image media.

In the integrative thematic learning, teacher may utilize the learning media that lead the students to actively involve in the learning process. Learning using interactive multimedia can create the pleasant learning atmosphere, so the students may directly involve in the learning process. Therefore, teacher may use interactive multimedia to increase the students' learning interest and achievement.

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