



The Effect Of Flash-Based Interactive Learning Multimedia On The Thematic Learning Outcomes Of Grade 5 Students In Elementary School

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INFORMASI ARTIKEL

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ABSTRAK

Penelitian ini bertujuan untuk menentukan efek pembelajaran multimedia interaktif berbasis flash pada hasil pembelajaran integratif tematik siswa sekolah dasar kelas lima. Jenis penelitian ini adalah studi kuantitatif dengan jenis Desain Eksperimental Sejati dari desain kontrol posttest-only. Populasi dalam penelitian ini adalah 180 siswa kelas lima. Sampel yang digunakan dalam penelitian ini adalah 40 siswa kelas V. Teknik pengambilan sampel yang digunakan adalah cluster sampling. Teknik pengumpulan data menggunakan tes berupa soal pilihan ganda untuk mengukur hasil belajar tematik integratif siswa kelas eksperimen dan kelas kontrol. Uji hipotesis yang digunakan adalah uji-t, hasil analisis uji-t menunjukkan bahwa pembelajaran multimedia interaktif berbasis flash berpengaruh terhadap hasil belajar tematik integratif siswa kelas V SD..

ABSTRACT

Keywords:

Learning Multimedia
Thematic Learning
Elementary School



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This study aims to determine the effect of flash-based interactive multimedia learning on the fifth-grade elementary school students' thematic integrative learning outcomes. The study is a quantitative study with a True Experimental Design type of posttest-only control design. The population was 180 fifth-grade students, with 40 fifth-grade students chosen as samples using cluster sampling. The data collection used multiple-choice questions to measure the results of integrative thematic learning of the experimental and control class. The hypothesis test used is t-test. The results of the t-test analysis show that flash-based interactive multimedia learning affects the integrative thematic learning outcomes of fifth-grade elementary school students.



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INTRODUCTION

Learning in elementary schools is currently required to use integrative thematic learning. This learning integrates various fields of knowledge that are considered similar or suitable in the context of efforts to develop children's knowledge and skills (Björklund & Ahlskog-Björkman, 2017). In learning, students must be able to develop the potential that exists in themselves, in addition to learning the 2013 curriculum not only aims to hone aspects of student knowledge but also must be in harmony with developing students' affective and psychomotor aspects. Guided by the 2013 curriculum that integrative thematic learning is said to be successful if the cognitive, affective, and psychomotor domains of students get the desired results. The three domains/aspects will be developed into thematic learning competencies. Integrative thematic learning is one of the learning strategies used by teachers in delivering learning by integrating several related competencies contained in various subjects on a particular theme (Hidayah et al., 2015). These themes become a unifying tool for the diversity of material from various subjects. This thematic learning emphasizes learner-centered learning here, the teacher's role is only as a facilitator. In thematic learning, the selection of themes is also based on the surrounding environment, so that it is easy to understand concepts and connect them with concepts that they already have.

In helping students to develop their competencies, teachers should design learning as well as possible to make it easier to achieve these competencies. Before starting learning, the teacher should prepare the learning tools needed. Accuracy in choosing learning models and methods can make it easier for students to achieve learning competencies. In addition to using appropriate and innovative models and methods, teachers also use learning media. Because if you don't use learning media, it will hamper the learning process (Sumarsih & Mukminan, 2016). The selection of appropriate and innovative learning media certainly helps students achieve learning competencies (Boslaugh, 2013). In addition, innovative and interesting learning media can also generate student motivation in learning (Afiani & Faradita, 2021). In some cases, the expected competency is not achieved because students are not interested and are not motivated to learn. Learning media is one thing that can support the achievement of learning success in schools because using learning media makes it easier for teachers to transfer information to students and can help students express their opinions (Khairani, 2016). Using digital media in the learning process, can give students flexibility in learning and hone their competencies (Kingry et al., 2015; Russell & Hannon, 2012).

The rapid development of information and communication technology in all sectors of human life has become an important point that must be considered, especially in the world of education (Batka & Peterson, 2005; Greer et al., 2013). This also has an impact on the education sector. Learning for students is expected to be in tune with the development of communication and information technology. In current learning, students are already actively using smartphones and laptops to support their learning activities (A. Y. L. Lee, 2016). Learning media based on communication and information technology is expected to meet the learning needs of students at this time and can also be used anywhere, including in facilitating learning activities in students' homes (Dyah

Worowirastri Ekowati, 2021). One of the innovative learning media based on information and communication technology and has attracted the attention of many researchers is learning multimedia based on Macromedia Flash (Çakiroğlu et al., 2020; Rahimi & Allahyari, 2019; Umam, 2016; Yayuk et al., 2021). Multimedia can be defined as the presentation of information with a combination of at least two types of media and with the use of multimedia students will get information from various sources (Izmirli & Kurt, 2016; Liu, 2018). Teachers will be greatly helped by the use of multimedia learning in delivering material to students (M. P. K. Kunchayono, 2019). The use of this media can provoke students' knowledge and provide a stimulus for manipulating abstract learning materials (Domagk et al., 2010).

Although research on flash-based media has been widely carried out, such as the development of media through Adobe flash (Sofnidar & Yuliana, 2018; Rahmaibu et al., 2016; Yayuk et al., 2021), the development of flash-based interactive media in electronics (Mawaidz, 2016), the development of adobe flash-based science media (Oktafiani et al., 2020), the use of adobe flash-based multimedia in the field of entrepreneurship (Heryadi et al., 2017), but the research that discusses the influence of adobe flash media so far has never been done by other researchers. Therefore, this research is very important to do, especially in the thematic learning of elementary school children.

METHODS

This research is a type of quantitative research that uses experimental research methods. This study uses a True Experimental Design research design. In this design the researcher uses 2 samples of schools which will then be used as an experimental class and as a control class, the experimental class is a class that uses flash-based interactive multimedia learning. The following is a research design using the Posttest Only Control Design experiment (Sugiyono, 2017):

Table 1. Research Design Posttest-Only Control Design

| Class | Variable | Posttest |
|----------------|----------|----------------|
| R (Experiment) | X | O ₁ |
| R (Control) | Y | O ₂ |

Description :

R = Random Sampling

X = Treatment (using interactive flash-based learning multimedia).

O₁ = Posttest in Experiment Class.

O₂ = Posttest in Control Class

This study uses a sampling technique, namely cluster sampling, which is a sampling technique in which the sample is taken based on certain criteria. The sample used in this study amounted to 40 students. This study uses 1 independent variable and 1 dependent variable. These variables were tested to know the effect of using flash-based interactive multimedia learning on the thematic integrative learning outcomes. The data collection technique used is a test that serves to collect data on student learning outcomes. The instrument in the form of this test is to measure the ability of student learning outcomes. The researcher gave a test in the form of a posttest to the experimental class and the control class. The aim is to determine the extent of the influence of flash-based interactive multimedia learning on the thematic integrative learning outcomes of fifth-grade elementary school students. The test used is a written test in the form of multiple choice.

The instrument used is a test to measure the thematic integrative learning outcome variable. Students are asked to choose the most correct answer from the 4 available answers. If the correct answer for each question is given a score of 1 and if it is wrong a score of 0. The prerequisite test is carried out first before the analysis test is carried out with the t-test. The prerequisite test is to test for homogeneity and normality. The final test analysis is by testing the hypothesis. This study uses the t-test hypothesis test (t-test).

RESULT AND DISCUSSION

Before conducting research, researchers must test the feasibility of the questions that have been made first. The feasibility test is used to find out whether the questions that have been made have met the prerequisites and have met the quality of the questions that are good or not. The feasibility test consists of a Validity test, Reliability test, Discriminatory power test, and Difficulty level test. After the researchers get the results of the feasibility test, they will find questions that are suitable for use in research. The following are the thematic learning outcomes from the posttest of the control class and experimental class students:

1. Control Class Thematic Learning Outcomes

Data on cognitive, affective, and psychomotor learning outcomes in the control class can be seen in the table below:

Table 2. Thematic learning outcomes in the control class

| No. | Interval Value | Frequency of Thematic Learning Outcomes | | |
|-----|----------------|---|-----------|-------------|
| | | Cognitive | Affective | Psychomotor |
| 1. | 31-40 | 1 | 2 | 0 |
| 2. | 41-50 | 1 | 3 | 6 |
| 3. | 51-60 | 7 | 3 | 3 |
| 4. | 61-70 | 11 | 4 | 8 |
| 5. | 71-80 | 8 | 8 | 5 |
| 6. | 81-90 | 1 | 5 | 1 |
| 7. | 91-100 | 1 | 5 | 7 |
| | Total | 30 | 30 | 30 |

The following will present the value of cognitive, affective, and psychomotor results carried out in the control class through the following graph:

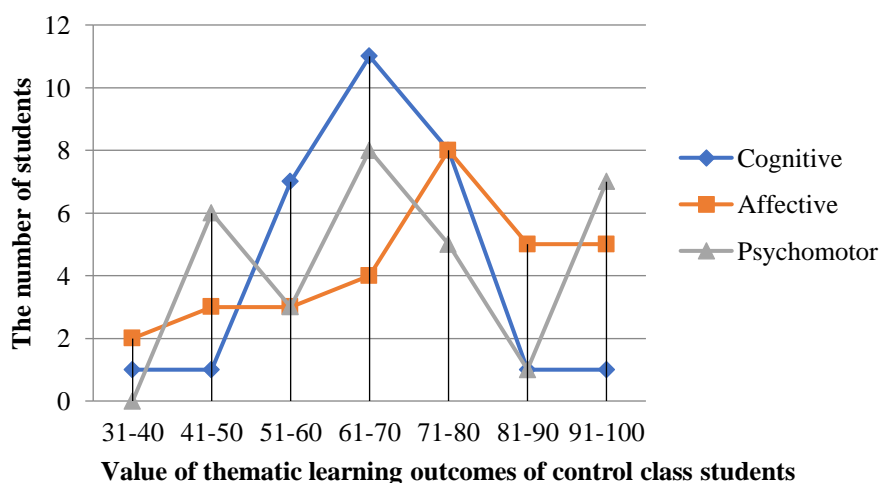


Figure 1. Thematic learning outcomes for the control class

- Integrative Thematic Learning Outcomes in the Experimental Class
 Data on cognitive, affective, and psychomotor learning outcomes in the experimental class are presented in Table 2 which is below:

Table 3. Thematic learning outcomes in the Experiment class

| No. | Interval Value | Frequency of Thematic Learning Outcomes | | |
|-----|----------------|---|-----------|-------------|
| | | Cognitive | Affective | Psychomotor |
| 1. | 41-50 | 0 | 1 | 0 |
| 2. | 51-60 | 1 | 0 | 0 |
| 3. | 61-70 | 2 | 0 | 1 |
| 4. | 71-80 | 11 | 6 | 6 |
| 5. | 81-90 | 9 | 10 | 11 |
| 6. | 91-100 | 7 | 13 | 12 |
| | Total | 30 | 30 | 30 |

The following will present the value of cognitive, affective, and psychomotor results carried out in the experimental class through the following graph:

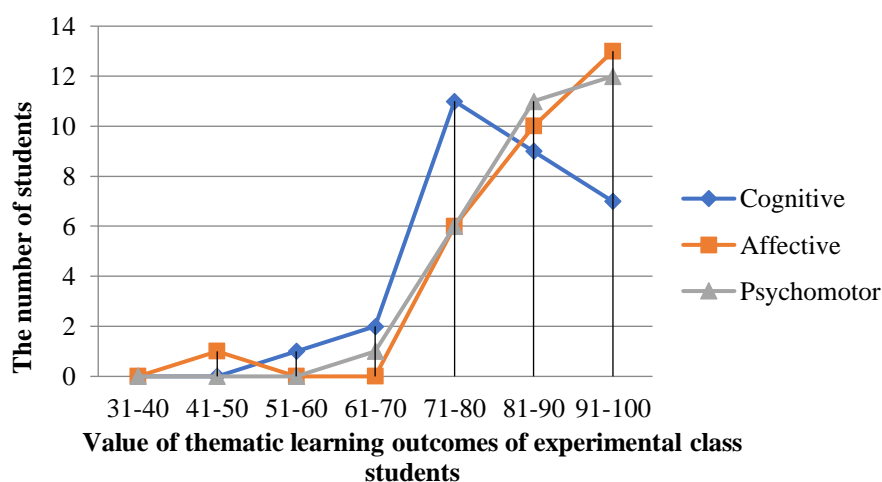


Figure 2. Thematic learning outcomes for the control class

- Comparison of Experimental and Control Class Thematic Learning Outcomes
 The following are the results of the comparison of the values of the three domains namely cognitive, affective and psychomotor students which are presented in the table below:

Table 4. Comparison of thematic learning outcomes of experimental and control classes

| No. | Interval Value | Frequency of Thematic Learning Outcomes | |
|-----|----------------|---|---------------|
| | | Experiment Class | Control Class |
| 1. | 41-50 | 0 | 1 |
| 2. | 51-60 | 0 | 3 |
| 3. | 61-70 | 1 | 10 |
| 4. | 71-80 | 5 | 12 |
| 5. | 81-90 | 17 | 2 |
| 6. | 91-100 | 7 | 2 |
| | Total | 30 | 30 |

The following will present the value of cognitive, affective, and psychomotor results carried out in the control class through the following graph:

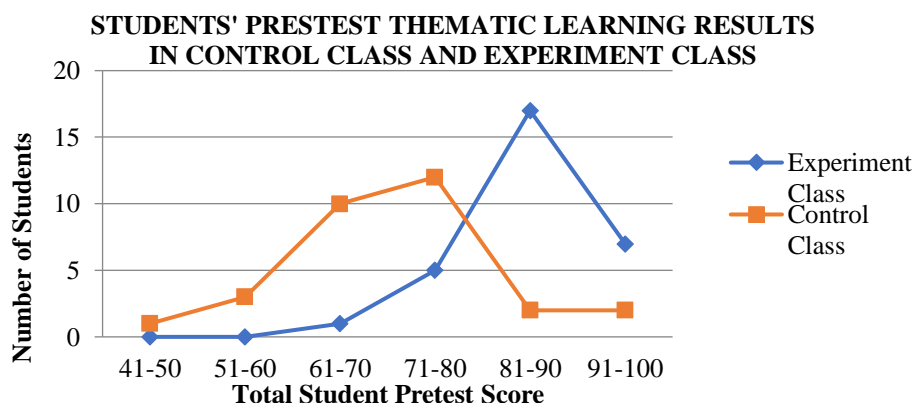


Figure 3. Thematic learning outcomes of the control class and experimental class pretest.

Then the thematic learning outcomes obtained in the two classes, namely the experimental class and the control class, were then processed. The results of data processing using the SPSS program can be seen as follows:

1. Normality Test Results

Table 5. Normality Test Results for Control and Experiment Class

| No. | Class Criteria | Statistic | df | Sig. |
|-----|-----------------------------|-----------|----|-------|
| 1. | Control Class (VAR00001) | 0,109 | 30 | 0,200 |
| 2. | Experiment Class (VAR00002) | 0,131 | 30 | 0,197 |

These data prove that the value of the control class is $0.109 < 0.190$ and the value of the experimental class is $0.131 < 0.190$. So that the two data can be declared normally distributed and by predetermined criteria.

2. Homogeneity Test Results

Table 6. Homogeneity Test Results for Control and Experiment Class

| | | Levene Statistic | df1 | df2 | Sig. |
|--|--------------------------------------|------------------|-----|--------|-------|
| Thematic Learning Outcomes of Control Class and Experiment Class | Based on Mean | 2,835 | 1 | 58 | 0,098 |
| | Based on Median | 2,819 | 1 | 58 | 0,099 |
| | Based on Median and with adjusted df | 2,819 | 1 | 54,217 | 0,099 |
| | Based on trimmed mean | 2,895 | 1 | 58 | 0,094 |

Therefore, the results of the calculations can be concluded that the Account of the control class is 0.098 and the Fount of the experimental class is 0.099. So it can be stated that if the two classes have Fount $>$ from 0.05 then H_0 is rejected or homogeneous. Because the control class gets the sig. $0.098 > 0.05$ and the experimental class $0.099 > 0.05$.

Table 7. T-Test Analysis of Thematic Learning Outcomes

| | Class | N | Mean | Std. Deviation | Std. Error Mean | |
|----------------------------|-------------------|----|-------|----------------|-----------------|--------|
| Thematic Learning Outcomes | Control Class | 30 | 71,10 | 11,290 | 11,290 | 2,061 |
| | Exsperiment Class | 30 | 85,70 | 7,910 | 7,910 | 1,1444 |

Based on the data obtained from data processing using the SPSS program, it shows that the two groups have 30 samples of each student. The experimental class group test

got a higher mean or average score of 85.70 and the control group test got a mean or average score of 71.10. In addition, the significance value of 2 variables (t-tailed) is $0.000 < 0.05$. So it can be stated that by using interactive learning multimedia there is a difference in point scores which means the experimental class has increased and gets a higher score. The experimental class gets an increase because the average value of the control class < experimental class is $71.10 < 85.70$ so the experiment has an effect or H_0 is rejected with a value of account $>$ table, namely $-5.801 > 1.70113$.

This research arises because the learning media used today are largely not in line with the development of information and communication technology. In addition, the learning media used did not provide a stimulus to make students interested and motivated in participating in learning. The learning media used are not yet based on information and communication technology, so there is still a lack of digital literacy for elementary school students. The use of multimedia learning is considered a very important step at this time (Molina et al., 2018). Therefore, flash-based interactive learning media answers the current problems because this media is based on information and communication technology, besides that it can also motivate students to learn (Hernaningtyas et al., 2016).

This interactive learning multimedia based on information and communication technology, apart from being used by students to study at school, can also be used by students to study at home. This is very helpful for students to study independently at home. Operating this interactive learning multimedia is very easy and can be operated by elementary school students. In this media, besides students being able to read learning materials, students are also presented with pictures, videos, and sound recordings which will certainly help students understand the learning material (S. Kuncahyono, 2018).

In the experimental class, learning is carried out using flash-based interactive multimedia. This aims to determine the results of the class that was given treatment and the class that did not use the proposed treatment. The testing stage consists of a question feasibility test and a data analysis test. The feasibility test is used to test the questions that have been made by the standard questions needed in the study. In the feasibility test, the questions consist of a validity test, a reliability test, a discriminatory power test, and a test of the difficulty level of the questions. The feasibility test of the questions was carried out at the earliest stage before researching in the experimental class and control class. Questions will be said to be valid, reliable, or consistent, have good or acceptable criteria, and have a level of difficulty according to the questions needed by students, which will be known through the four tests. If in the research, the questions made do not match the criteria needed by the students, the research cannot be carried out or the questions must be remade or corrected to get the appropriate and appropriate questions. Determination of questions that are valid or invalid can be known by comparing the values of count and table, namely account table (invalid) and count $>$ table (valid). In addition, if in each section the total score for each student from question 1 to the last question there is an asterisk above the total score that has been obtained by the student, it can be stated that the question is valid and if there is no asterisk then the question is invalid.

Testing the validity of using the SPSS program found that out of the 15 questions that had been made, there were 10 valid questions. After conducting the validity test, the next is the reliability test which is used to strengthen the questions and get consistent or reliable answers. The number of respondents or samples (N) analyzed in the reliability test in the SPSS program was 15 students. Because there is no unfilled or empty data, the valid number is 100%. After doing the reliability test, the next test is the difference power test. To find out whether there is a need for improvement in the question or not, a different

power test is carried out on the question. Determination of decision-making is adjusted to the criteria of a different power that has been determined. The results of the discriminatory test stated that eleven questions were classified as good questions, two questions that were classified as rejected criteria, one item was accepted and one item that was classified as corrected questions. The final test of eligibility is the level of difficulty test. The difficulty level test is to determine that the questions that have been made are included in the criteria for moderate, difficult, and easy questions. The results of the difficulty level test can be stated that of the 15 questions that have been made, they are classified as medium questions. The t-test is used to test the difference in average that occurs between the two classes, namely the control class and the experimental class. Before testing the hypothesis or t-test, the researcher must perform a normality test and a homogeneity test. A normality test is a test used to determine whether the data from the experimental class and control class are normally distributed or not. While the homogeneity test is a test used to determine the variance of the two groups (control class and experimental class) is the same or not. The level of significance used in testing the data analysis is 0.05 (5%). Based on the results of the study, it can be stated that flash-based interactive multimedia learning influences student outcomes (T. T. Lee & Osman, 2012).

Based on the research conducted, the researcher saw several advantages of learning using flash-based interactive multimedia namely, students were more interested in participating in existing learning and students could carry out learning activities independently. In addition, there are also weaknesses, namely, students and schools must have the computer equipment to be able to access this interactive multimedia learning. Interactive multimedia is a reciprocal activity between multimedia and user, where user action depends on multimedia action and vice versa (Domagk et al., 2010).

Regarding learning in elementary schools, Shilpa & Sunita (2016) found that multimedia was able to provide interactive education in elementary schools and were able to improve the quality of materials or learning content in elementary schools. The use of interactive multimedia can be one solution to overcome learning problems (Hakim & Windayana, 2016). In addition, learning using interactive multimedia has a positive impact on students in achieving the expected competencies (Khan & Masood, 2015).

CONCLUSION

Based on the data analysis and discussion, the conclusion that can be drawn is that there is an influence of flash-based interactive multimedia learning on integrative thematic learning of fifth-grade elementary school students. This can be proven by the average thematic learning outcomes of students using flash-based interactive multimedia learning in the experimental class, which is 85.70, which is higher than the average thematic learning outcomes of students who are not flash-based interactive multimedia, which is 71.10. So it can be concluded that the average value of the control class < experimental class is $71.10 < 85.70$ so that the experimental class has an influence or H_0 is rejected with the value of $t_{count} > t_{table}$ which is $-5.801 > 1.70113$.

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