

The Effectiveness Of The Flipped Classroom Type Blended Learning Model In Basic Graphic Design Subjects at Vocational High School

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ABSTRACT

This study aims to determine the differences in student learning outcomes in the application of blended learning the flipped classroom model to the direct learning model and also to determine the more effective learning model between blended learning type flipped classroom with direct learning model. This study uses a quantitative approach with a quasi-experimental design and uses a pretest-posttest control. The population of this research is all students of class X majoring in Multimedia. The sample used is 54 students. The sampling technique in this research is using the total sampling method. Data obtained from the results of pre-test and post-test based on indicators of student learning outcomes. The results obtained from this study are as follows. First, there are differences in learning outcomes in Basic Graphic Design subjects in the experimental class by applying the blended learning type flipped classroom and the control class applying the direct learning model. It is proven by the average learning outcomes of the experimental class of 77.3 and the control class of 73.14. The second is that the blended learning model of the flipped classroom type is more effective than the direct learning model. The results of the effectiveness behavior in the experimental class with the application of the flipped classroom blended learning model are in the medium category, while the control class with the direct learning model is in the low category.

Keywords: Blended learning; Flipped classroom

1. INTRODUCTION

Learning is a process of changing a person's personality that can be seen in terms of quality and quantity of behavior such as increasing knowledge, understanding, attitudes, thinking power, and other abilities. The learning process has an important role to improve the quality of education, it takes innovation in the learning process so that optimal learning is created. In the world of education, technological developments are very helpful in the learning process. Technology can be utilized when learning is teacher-centered or it can be used to help implement a student-centered approach. In addition, technology can inspire students to be innovative and creative. Creativity and innovation can make students successful in their lives [1]

Currently, the times have changed and the digital world offers convenience in learning science, one of which is applications that support learning media, this is a challenge for teachers to be able to maximize learning by utilizing online learning as well as providing materials that are easy to understand for students [2]. This becomes interesting for researchers to provide innovations in the provision of learning materials and also learning models that are suitable for the application. In the Basic Graphic Design subject, students learn how to create images to provide information or interact visually, which if combined with online learning, students can learn more about the materials they want to learn [2].

Teaching and learning activities carried out in vocational high schools on the subject of Basic Graphic Design are carried out entirely face-to-face in the classroom using a direct learning model of the lecture method. Rizka Faidatun Ni'mah[3] stated that A hands-on learning model is a model that is prepared to help the student's learning process related to factual information and the stages that must be carried out. After the interview with the teacher concerned, teaching and learning activities took place quite effectively even though there were obstacles, namely, there were students who still had difficulty understanding the subject

matter. According to Noor [4], the shortcomings of this direct learning model are that it is difficult to overcome students' abilities, initial knowledge, and understanding. This direct learning model emphasizes one-way communication or uses a teacher-centered approach and uses the lecture method, so this learning is not suitable for students' poor listening ability which makes students difficulty in the learning process.

Judging from the obstacles that occur in vocational high schools today, there is a learning model that can be applied to teaching and learning activities which will be described below. The first is the discovery learning model. According to Marisyah and Sukma [5], the discovery learning model is a model that emphasizes that students are active in learning and looking for their learning concepts so that students are better able to solve existing problems according to the given learning framework. Some of the advantages of the discovery learning model according to Yulietri, Mulyoto, and S [6], are that students are more active in learning activities because students are required independently to find the final result so that students will understand what they are learning, using this discovery method students will be able to develop their knowledge and can practice for independent learning. The disadvantage of this learning model according to Yulietri [6], is that students who are still confused and lack seriousness will experience obstacles in the learning process, and also take a long time in the learning process.

The second is the flipped classroom-type blended learning model. According to Purwoko (in Estika and Ekohariadi,[7]), blended learning is a combination of face-to-face learning with online or computer-based learning. While the flipped classroom is an activity that is usually done in the classroom and activities outside the classroom. The flipped classroom has several advantages, namely, students can take part in learning according to the speed of their understanding because the material can be repeated if needed, the distribution of learning video materials in advance and homework is done in class and students can ask for material that is not understood (Kurniawati, Santanapurba, and Kusumawati [8]). After the interview with the teacher, the basic graphic design subject matter is quite a lot, and also the class hours are relatively small, so the teacher has difficulty delivering materials according to the learning design, by applying this learning model the teacher can give the material as he wants to them to learn first and the teacher can adjust the amount of subject matter to the learning design. The disadvantages of this model according to Kurniawati [8], include making learning videos requires a lot of time, and the lack of student interaction with teachers can affect student enthusiasm for learning, so students need adaptation in the transition from traditional learning.

Among the learning models above, the flipped classroom type blended learning model has characteristics to solve existing problems, this is in line with research conducted by Yulietri [6], conducted research at Sragen Regency State High School totaling 64 students, there is an influence between flipped classroom learning models and discovery learning on student learning outcomes. Using the flipped classroom model, the average score is 71.56. While the discovery learning model was 58.67. It can be concluded that flipped classroom learning models are better than discovery learning. In line with Nouri's [9], in his research, there were 240 students including men and 76 women, there were 23 students who had received flipped classroom type blended learning before, from the research conducted, 75% of students, or around 180 students expressed a positive attitude towards the flipped classroom learning model. Students are enthusiastic about the use of video during learning, as well as the flexibility and mobility applied to flipped classroom learning models. The students find it easier and more motivated in learning, in addition, students feel more responsible for their learning. Based on the research, researchers are interested in conducting research that will be carried out in vocational high schools. This research will apply a flipped classroom-type blended learning model.

2. RESEARCH METHOD

According to Arikunto [10], experimental research is a study that studies cause-and-effect relationships where at least one variable is manipulated. Therefore, experimental research is closely related to testing a hypothesis to find relationships and differences in changes to the group subjected to treatment. According to Abdullah [11], quantitative research is an effort made by researchers to find science where the data results are in the form of numbers. This study used a non-equivalent control group design model.

In this study, the non-equivalent control group design model was used. First of all, a pre-test both the experimental class and the control class to determine the condition of the two classes before being given treatment. Then the next treatment will be given for experiment class. After the treatment, the experimental class and the control class will be given a test again, namely the post-test to find out the condition of each class after the treatment is given. Here's a design diagram.

Table 1. Research Design

Class	Pre-Test	Treatment	Post-Test
Experiment	O1	X	O2
Control	O3		O4

In research practice, a researcher rarely conducts research on the entire population set. Researchers usually select parts of the population elements. The selected population elements are called samples. The sampling technique used in this study is total sampling. Total sampling is a technique in taking samples where the sample and population have the same amount [12]. The use of total sampling because the population is less than 100 so that the entire population is used as the research sample. In this study, the sample consisted of 2 classes, namely from class X students majoring with a total of 54 students. One class became the control group, namely class X Multimedia 2 then one class became the experimental group, namely class X Multimedia 1

In this study, the learning outcomes tests used were pre-test and post-test. Pre-test is a test that is carried out before the treatment to the research sample as well as an indicator of the equivalence of the initial abilities of the experimental class or control class. While the post-test is a test that is held after giving treatment to the research sample in the form of using a blended type flipped classroom in the experimental class and direct learning model in the control class. Post-test is useful for getting scores from the experimental class and the control class as a measure of differences in learning outcomes after being given treatment.

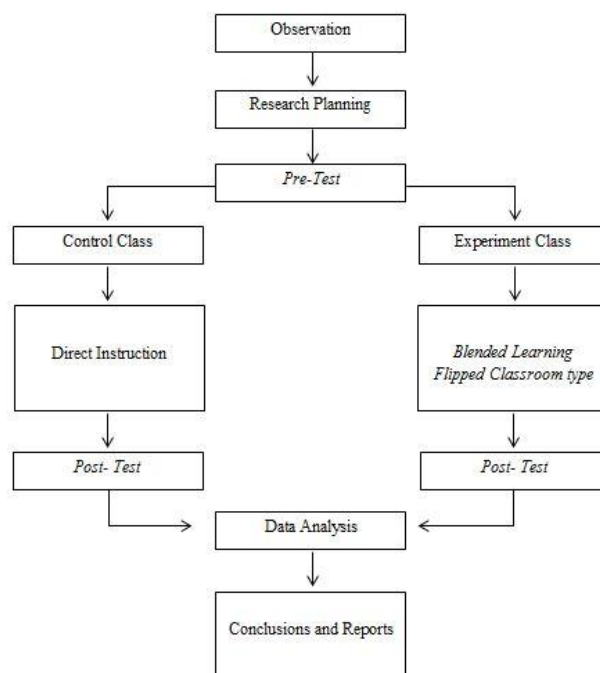


Figure 1. Research Procedure

3. RESULT AND ANALYSIS

Before the implementation of the research, Testing of pre-test and post-test was conducted on 15 students of class XI Multimedia 1 class. The instrument tested was in the form of 50 multiple-choice questions for each pre-test and post-test. Based on the number of students testing the instrument, it is known that the value of $r_{table} = 0.514$. Based on the results of the tests that have been carried out, it can be concluded that the questions used for research are questions that have a valid category from the validity test, totaling 20 pre-test questions and 20 post-test. In the reliability test, the reliability value (Cronbach Alpha) was 0.920 in the pre-test and 0.937 in the post-test. which both fall into the very good category

3.1. RESULT

The data on the results of the initial abilities of students contains the scores obtained by students from the pre-test in the form of 20 items in the form of multiple choice questions which were carried out before giving treatment with the flipped classroom model to the experimental class and direct learning model to the control class. The value obtained from the pre-test becomes an indicator of the student's initial ability. An overview of the data from the initial ability value of the learners can be seen in table 2.

Table 2. Pre-Test Result Data

Description	Experiment Class	Control Class
Average	70,92	71,85
Lowest Score	55	60
Highest Score	90	85
Standard Deviation	7,58	7,83
Varians	59,68	63,74
Number of Students	27	27

The results of the final ability of students contain the scores obtained by students from the post-test form of multiple choice questions on as many as 20 items which are carried out after giving treatment with the flipped classroom in the experimental class and the Direct Learning Model in the control class. The value obtained from the post-test becomes an indicator of the final ability of students. An overview of the data from the initial ability value of the learners can be seen in table 3.

Table 3. Post-Test Result Data

Description	Experiment Class	Control Class
Average	80,74	75,14
Lowest Score	70	60
Highest Score	95	90
Standard Deviation	6,04	7,52
Varians	37,89	58,83
Number of Students	27	27

The prerequisite test includes the normality test, homogeneity test, and balance test. Normality and homogeneity tests were used to test whether the results of the initial ability (pretest) and final ability (post-test) were normal and homogeneous. While the balance test is used to test whether the initial ability (pre-test) in the two groups is the same so that it will be used as research, results can be seen in table 4.

Table 4. Normality Test Results

Instrument	Class	Sig. Kolmogorov	Conclusion
Pre-Test	Experiment Class	0,129	Normal
	Control Class	0,057	Normal
Post-Test	Experiment Class	0,200	Normal
	Control Class	0,075	Normal

The normality test serves to find out whether the distribution of the data from the pre-test and post-test is normally distributed or not and to determine whether the next test uses parametric or non-parametric statistics. The normality test in this study used the Kolmogorov-Smirnov test at a significance level of 0, 05 assisted by SPSS version 26 application. The data are normally distributed if the significance value (sig) > 0.05 and the data is not normally distributed if the significance value (sig) < 0.05.

The homogeneity test is useful for finding out whether the data set from the pre-test and post-test comes from a homogeneous or non-homogeneous (heterogeneous) population. The homogeneity test used in this study is Levene's test at a significance level of 5% ($\alpha = 0.05$). The results of the homogeneity test of the pre-test and post-test can be observed in table 5.

Table 5. Homogeneity Test Results

Instrument	Sig. <i>Levene's</i>	$\alpha = 5\%$	Conclusion
<i>Pre-Test</i>	0,105	0,05	Homogeneous
<i>Post-Test</i>	0,122	0,05	Homogeneous

From the calculation results shown in table 5, it can be identified that the sig value in the pre-test experiment class and control class is 0.105 and post-test experimental class and control class is 0.122. Both values have a significance value greater than 0.05 so that the data can be categorized as homogeneous.

The balance test was carried out with the aim of finding out whether the two classes (experimental and control) had comparable abilities. In this research, the test used is the independent-sample t-test with a significance level of 0.05. The following are the results of the balance test of student learning outcomes in terms of the pre-test that can be observed in table 6

Table 6. Balance Test Results

Instrument	Sig. (<i>2-tailed</i>)	Conclusion
<i>Pre-Test</i>	0,667	Balanced Class

From the data in table 6 it is shown that the pre-test has a significance value of 0.667 where the value is greater than 0.05. With these results it can be determined that the two classes have a balanced ability.

Table 7. First Hypothesis Test Results

Instrument	Sig. (<i>2-tailed</i>)	Conclusion
<i>Post-Test</i>	0,021	H _a accepted

Based on the results of the t-test presented in table 7, where the value of sig (2-tailed) is 0.021, which means that this value is less than the 0.05 significance level. With these results, it can be concluded that the null hypothesis (H₀) is rejected and H_a is accepted, which means that there is a difference in student learning outcomes between the use of blended learning the flipped classroom model, and the direct learning model on Basic Graphic Design subjects.

Table 8. Second Hypothesis Test Results

Class	<i>Pre-Test</i> Average	<i>Post-Test</i> Average	<i>Standart</i> <i>Gain</i>	Description
Experiment	70,92	80,74	0,3343	Medium
Control	71,85	73,14	0,08	Low

Based on table 8, it is known that the standard gain in the experimental class is 0.343, which means that the effectiveness of using the flipped classroom is classified as moderate. While the standard gain in the control class is 0.08, which means that the effectiveness of using Direct Learning Model is classified as low. Thus the standard gain in the experimental class is greater than the standard gain in the control class (0.343 > 0.08), which means H₀ rejected and H_a is accepted. Therefore, it can be concluded that the use of the blended the flipped classroom is more effective than the direct learning model in Basic Graphic Design subjects.

3.2. ANALYSIS

Based on the results of the pre-test scores carried out before the two classes were treated, it was found that the average score of the experimental class was 70.92 and the control class was 71.85. This proves that the average pre-test scores in the two classes are still below the minimum criteria. There are 12 experimental class people who have scores above the minimum criteria while the remaining 15 people have not met the minimum criteria. Then in the control class, there were 11 people who had scores above the minimum criteria and the remaining 16 people who had not met the minimum criteria. After being given treatment in the experimental class with a flipped classroom type blended learning model and in the control class using a direct learning model, it was found that the average post-test score in the experimental class was 80.74 and in the control class was 73.14. In the experimental class, there were 24 people who scored above the minimum

criteria and only 3 other students were still below the minimum criteria. Then in the control class, there are 13 people who have met the minimum criteria and the remaining 14 people still have not met the minimum criteria. From the results of obtaining the average value of the pre-test and post-test that have been described, it can be found an increase in the average value in the experimental class by 11.2% while in the control class, there is an increase in the average value of 1.80%. Thus there are differences in learning outcomes of the two classes where the experimental class experienced an increase in the average value which was higher than the control class. The results of this study are in accordance with the research that has been done by Nouri [9] regarding the effect of flipped classroom learning on learning outcomes. It has been found that flipped classrooms affect student learning outcomes. This influence is generated by flipped classroom which provides more time for students to study learning materials and the availability of learning videos can make it easier for students because they can be played over and over again if they forget the material they are learning.

Based on the results of the pre-test carried out before the two classes were given treatment, it was found that the average value of the experimental class was 70.92 and the control class was 71.85. This proves that the average pre-test in the two classes still does not meet the Minimum Completeness Criteria which is 75. After being given treatment in the experimental class with a blended type flipped classroom and in the control, class using a direct learning model it was found that the average post-test in the experimental class was 80.74 and in the control class was 73.14. From the results of obtaining the average value of the pre-test and post-test that have been described, it can be found an increase in the average value in the experimental class by 11.2% while in the control class, there is an increase in the average value of 1.80%. Thus there are differences in learning outcomes of the two classes where the experimental class experienced an increase in the average value which was higher than the control class.

learning model blended the flipped classroom in this study can make it easier for students to participate in learning because learning materials can be learned by students through Google Classroom a few days before teaching and learning activities begin. Students can take advantage of this time to understand in advance the material in the form of videos given by the teacher. Then, if students have difficulty, they can directly ask the teacher at a meeting at a later date so that students are in a condition where they already understand the material when given the task. When learning activities start, time is maximized for doing assignments or practical exercises guided by the teacher so that students do not procrastinate when doing assignments or practical exercises. learning model blended the flipped classroom has a higher level of effectiveness compared to the direct learning model because in flipped classroom students are given time to study the material first so that they are ready when doing assignments during learning.

4. CONCLUSION

There are differences in student learning outcomes in the blended learning of the flipped classroom with the direct learning model. The difference is known from the results of the t-test calculation on the post-test, the result of which is $0.021 < 0.05$, which means H_0 rejected and H_a accepted. Then, it can be seen that there are significant differences in learning outcomes between the use of blended learning the flipped classroom model and the direct learning model for Basic Graphic Design subjects.

blended learning model of N the flipped classroom has a higher effectiveness than the direct learning model in terms of student learning outcomes in the Basic Graphic Design subject. This is evidenced by the results of the -Gain where the experimental class uses the blended learning type flipped classroom obtained standard gain of 0.343 which belongs to the medium category. While in the control class that uses the direct learning model, the standard gain 0.015 which is classified in the low category. Thus, it can be concluded that the use of the blended the flipped classroom is more effective than the use of the direct learning model..

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