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Blended Learning with Flipped Classroom Strategy: The Effect to the Independence and Learning Outcomes

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ABSTRACT

In terms of goal planning, procedures, and evaluation of learning results, learning independence refers to an individual's willingness to study on his own initiative, with or without the assistance of others. The flipped classroom is one learning style that can be utilized to improve student independence. This study aims to determine (1) whether there are differences in independence in the application of the Blended Learning strategy Flipped Classroom with the conventional learning model; (2) Are there differences in student learning outcomes in the application of the Blended Learning strategy Flipped Classroom with the conventional learning model (3) Is there an increase in independence in the application of the Blended Learning strategy Flipped Classroom with the conventional learning model; (4) Is there an increase in student learning outcomes in the application of the Blended Learning strategy Flipped Classroom with the conventional learning model. The pretest-posttest control group design model was applied in this study, which used the quasi-experimental design method. The participants in this study are students from SMK Negeri 1 Gondang's classes X Multimedia 1 and X Multimedia 2. A total of 70 pupils were used in the study. Total sampling was employed as the sampling method. Pretests, posttests, and questionnaires are used to collect data. Balance tests, normality testing, homogeneity tests, and hypothesis tests are among the data analysis procedures employed. The findings revealed that the Blended Learning learning model combined with the flipped classroom method had an impact on student independence and learning outcomes.

Keywords: blended learning; flipped classroom; independence; learning outcomes

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1. INTRODUCTION

In the twenty-first century, information and communication technology developed rapidly. Advances in information and communication technology are accompanied by their impact on various aspects of human life, including education. Education has an important role in developing quality human energy sources and able to compete in the global economy [1]. As a result, with the enactment of the 2013 Curriculum, the Indonesian government set policies in the education system.

However, the current state of Indonesian education is still considered bad. This is based on the results of the Organization for Economic Cooperation and Development's (OECD) Program for International Student Assessment (PISA) 2018 which found that Indonesia ranks in the bottom 6 [2]. As a result, student learning outcomes are still largely poor. Several factors, both external and internal to students, can have an effect on this reality. The application of conventional learning models and learning processes that use traditional methods with a limited number of sessions and practice-oriented learning can be external factors [3]. Internal factors can be caused by the lack of student learning independence which is reflected in the lack of completeness of student assignments, and students' compulsion to the material and practice questions given by the teacher or contained in the package book [4].

Based on the findings of my interview with one of the teachers of digital simulation subjects at SMK Negeri 1 Gondang, students' learning desire is still low, they do not show the ability to learn independently, and students who do not understand the material are sometimes more silent than asking questions. Then, based on daily replay results, the grades are still low, and there are still many students who do not meet the school's Minimum Completion Criteria (KKM), which is 75. Teachers also revealed that the most common teaching

model used by teachers is still a direct learning model centered on teachers rather than students. The dominance of teachers during teaching and learning activities in the classroom proves this.

The coronavirus outbreak or Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is now sweeping Indonesia. Minister of Education and Culture Nadiem Anwar Makarim issued Circular Letter Number 3 of 2020 to the Education Unit and Number 36962 / MPK. A/HK/2020 on The Implementation of Education in the Emergency Period of Coronavirus Disease (COVID-19), after which learning activities are carried out online to prevent the spread of coronavirus (COVID-19) disease [5]. Online learning is learning done through an existing platform rather than face-to-face learning. To solve this problem, students must be independent and actively learn. Learning independence refers to a student's willingness and ability to learn on their own, with or without the help of others, in terms of setting learning goals, learning methods, and evaluating learning outcomes. Students need to be able to study independently, especially if they are studying online [6].

The main idea of flipped classrooms is that everything done in traditional classroom learning is done at home, and all homework done at home is done in the classroom. The teacher in his role as a facilitator packs learning materials in the form of videos for students to watch and learn at home. The benefit of the flipped classroom according to Kathleen Fulton in (Serdar, Ministry, & Education), is that students can follow learning at their own pace because there is an option to repeat the material if needed. Homework is completed in class time and students can ask questions about parts that are not yet understood, students have full access to learning, and classroom study time is used regularly. Teachers who used reverse classes obtained better results than those who used traditional learning methods [7].

Flipped Classroom is a learning approach where educators reduce the amount of hands-on instruction in their teaching practices while increasing student engagement. The following are some of the benefits of this learning model: (1) Students have time to learn the subject matter at home before the teacher delivers it in class, so that they can be more independent; (2) Students can study the subject matter in a comfortable environment; (3) Students receive full attention from teachers when having difficulty understanding assignments or exercises; and (4) Students can learn from a variety of learning content, including videos, books, and websites. Flipped classroom learning styles take advantage of technology by presenting online learning tools that support students. Therefore, students have the opportunity to learn more in-depth content and gain access to the learning tools they want. These exercises help children gain independence and improve their learning outcomes.

The research entitled "The Influence of Blended Learning Models With Flipped Classroom Strategies on Independence and Learning Outcomes in Digital Simulation Subjects in SMK Negeri 1 Gondang" will be carried out based on the description above.

2. RESEARCH METHOD

A quasi-experimental method (Quasi-Experimental Design) was utilized in this study, which comprises of an experimental group and a control group. Only the experimental group is given treatment, while the control group is not. This study employed a pretest-posttest control design, with pretests administered to both groups. The experimental classes are then taught using the Blended Learning with Flipped Classroom strategy, whereas the control group is taught using the traditional (conventional) method. The students were then post tested after being treated in each lesson. The population for this study was students from class X smk Negeri 1 Gondang, which consisted of 70 students from two classes. There were 35 students in Class X Multimedia 1 and another 35 pupils in Class X Multimedia 2. While sampling in this study employed total sampling, which included some control classes and other classes with experiments, total sampling used the full population into a sample. Learning outcome tests (thb) and questionnaires were employed as data gathering approaches in this study.

3. RESULT AND ANALYSIS

The prerequisite test of analysis in this study consists of a balance test, a normality test, and a homogeneity test. The test results showed a sig value of > 0.05, then hypothesis testing can be done. The hypothesis test is done using two-way variance analysis to determine whether or not there is an influence or interaction between variables. The basis for hypothesis test decision making is if the sig. < value of 0.05, which indicates there is an influence.

3.1. RESULT

In the observation, the process can be seen the comparison of the level of independence through the observation sheet that has been done. The results of observation of the level of student independence can be seen in the following table:

Table 1. Comparison of the Average Independence Scores of the Experimental Class and the Control Class

Variable	Meeting I	Meeting II
Number of student (N)	35	35
Target	100	100
Average Total Score of Control Class	72,48	78,65
Average Total Score of Experiment Class	71,2	74,77

The comparison of values in the experimental class and control class can be seen in the following table:

Table 2. Comparison of the Average Pretest Posttest Value of Experiment Class and Control Class

Variable	Experiment Class	Control Class
Number of student (N)	35	35
Average Score Pretest	55,86	56,34
Average Posttest	77,14	64,57
Δ Score	21,28	8,23

Testing the First Hypothesis

H0 : There is no difference in independence in the application of the Blended Learning with the Flipped Classroom and the conventional class X Multimedia learning model at SMK Negeri 1 Gondang in Digital Simulation Subjects.

H1 : There are differences in independence in the application of the Blended Learning with the Flipped Classroom and the conventional learning model for class X Multimedia at SMK Negeri 1 Gondang in Digital Simulation subjects.

The first hypothesis testing is used to determine the differences in student learning outcomes in the two classes. This test was carried out using the t test with an error level of 0.05. The decision to test the first hypothesis is that the hypothesis is accepted if Sig.(2tailed) <0.05 and the hypothesis is rejected if Sig.(2tailed)> 0.05

Table 3. Hypothesis Testing Results 1

Class	N	Sig	α = 5 %	Criteria	Information
Class Eksperimen	35	0,000	0,05	0,000<0,05	H_0 rejected
Class Kontrol	35				H_1 accepted

Based on Table 3, the results of the first hypothesis test with Sig < 0.05 the result is Sig. 0.000 < 0.05 Thus, H0 is rejected and H1 is accepted, so it can be concluded that there is a difference in independence using

the Blended Learning learning model with the Flipped Classroom strategy and conventional learning for students in Digital Simulation subjects.

Testing the Second Hypothesis

H : There is no difference in student learning outcomes in the application of the *Blended Learning model with the Flipped Classroom strategy* and the conventional class X Multimedia learning model at SMK Negeri 1 Gondang in Digital Simulation subjects.

H_1 : There are differences in student learning outcomes in the application of the *Blended Learning learning model with the Flipped Classroom strategy* and the conventional class X Multimedia learning model at SMK Negeri 1 Gondang in Digital Simulation subjects.

The second hypothesis testing was carried out to determine the differences in student learning outcomes in the experimental class and control class using the -t test (independent sample t test).

Table 4. Hypothesis Testing Results 2

Class	N	Sig	α = 5 %	Criteria	Information
Eksperimen Class	35	0,000	0,05	0,000<0,05	H_0 rejected
Control Class	35				H_1 accepted

Based on Table 4 shows the value of sig 0.000 <0.05, then H0 is rejected and H is accepted. So it can be concluded that there are differences in learning outcomes in the application of the Blended Learning learning model with the Flipped Classroom strategy and the conventional learning model for class X Multimedia at SMK Negeri 1 Gondang in Digital Simulation subjects.

Testing the Third Hypothesis

H0 : There is no increase in independence in the application of the Blended Learning with the Flipped Classroom and the conventional learning model for class X Multimedia at SMK Negeri 1 Gondang in Digital Simulation subjects.

H1 : There is an increase in independence in the application of the Blended Learning with the Flipped Classroom and the conventional class X Multimedia learning model at SMK Negeri 1 Gondang in Digital Simulation subjects.

The third hypothesis testing was conducted to find out the improvement in learning outcomes in the experimental class that applied the Blended Learning with the Flipped Classroom. The third hypothesis testing is done by using the gain test. The results of the calculation of the gain test are as follows:

Table 5. Hypothesis Testing Results 3

Variation	Experiment Class	Control Class
Number of Students (N)	35	35
Average Score (g)	20,03	8,71
Minimum Score	-.25	-1.00
Maximum Score	81	46

In accordance with the table of results of hypothesis testing above, it can be seen that the value of Gain (g) in the experimental class is greater than the control class (20.03 > 8.71), which means that there is a good increase in independence in the experimental class. , so that h0 is rejected and h1 is accepted.

Testing the Fourth Hypothesis

H0 : There is no increase in student learning outcomes in the application of the Blended Learning with the Flipped Classroom and conventional learning models for class X Multimedia at SMK Negeri 1 Gondang in Digital Simulation subjects.

H1 : There is an increase in student learning outcomes in the application of the Blended Learning with the Flipped Classroom and the conventional class X Multimedia learning model at SMK Negeri 1 Gondang in Digital Simulation subjects.

The fourth hypothesis testing was conducted to determine the increase in student learning activity in the experimental class before and after the implementation of the Blended Learning with the Flipped Classroom using the gain test. The results of the test are as follows:

Table 6. Hypothesis Testing Results 4

Variation	Experiment Class	Control Class
Number of Students (N)	35	35
Average Score (g)	45,12	15,91
Minimum Score	-.30	-.59
Maximum Score	75	64

Based on the test results show the value of Gain (g) in the experimental class is greater than the control class (45.12 > 15.91) then there is an increase in student learning outcomes that are quite good, so h0 is rejected and h1 acceptable.

3.2. ANALYSIS

3.2.1 First Hypothesis

The first hypothesis concludes that there are differences in learning independence in the experimental class that applies the Blended Learning with the Flipped Classroom and the control class that applies the conventional learning model.

Through questionnaire data, the level of student learning independence carried out before and after applying the learning model in each sample class it can be concluded that there is a significant difference in student learning outcomes in the experimental class and control class of 0.000 (sig. < 0.05) in accordance with hypothesis testing. 2 using t test. In addition, in testing hypothesis 4 using the gain test, there is an increase in student learning independence in the experimental class by 20.03 and in the control class by 8.21. From these tests, it can be seen that there is an increase in higher learning independence in the experimental class by applying the Blended Learning learning model with the Flipped Classroom strategy.

This is in line with research conducted by Dita Kameswari which states that if student learning outcomes are to be improved more optimally, it must increase student learning independence. With independent learning, students can improve the learning process and have an effect on improving student learning outcomes [8].

3.2.2 Second Hypothesis

The second hypothesis concludes that there are differences in student learning outcomes in the experimental class that applies the Blended Learning with the Flipped Classroom and the control class that applies the conventional learning model.

Based on the data of pretest and posttest scores, it can be seen that there are differences in learning outcomes for the experimental class and the control class as evidenced in hypothesis 1 testing using the independent sample t test (t test) with the results of the posttest test score of 0.000 (sig. < 0.05).

Besides that, the application of the Blended Learning with the Flipped Classroom able to improve student learning outcomes in the experimental class as evidenced by testing hypothesis 3 using a gain test on the learning outcomes of the two classes. The test results show an increase in learning outcomes in the experimental class by 45.12 compared to the control class by 15.91, so there is an increase in learning outcomes in the application of the Blended Learning with the Flipped Classroom with good categories (0.30 <g < 0.70). This is relevant to the research conducted by Rahma and Ikashaum which stated that the application of the flipped classroom made a significant contribution to improving student learning outcomes [9].

3.2.3 Third Hypothesis

The third hypothesis concludes that there is an increase in independence in the experimental class that applies the Blended Learning with the Flipped Classroom and the control class that applies the conventional learning model.

Based on Table 1, it shows that there is an increase in the average score of independence in the experimental class from 72.48 to 78.65 while in the control class there is an increase in the independence score from 71.2 to 74.77. Setyosari's opinion in Mudlofir et al that the factors that influence learning outcomes are the nature or characteristics of students which include student independence, giving assignments by teachers and learning methods [10].

3.2.4 Fourth Hypothesis

The fourth hypothesis concludes that there is an increase in student learning outcomes in the experimental class that applies the Blended Learning with the Flipped Classroom and the control class that applies the conventional learning model.

Based on Table 2 shows that there is an increase in the average value of learning outcomes in the experimental class by 21.28, namely from 55.86 to 77.14 while in the control class there is an increase in the average value of learning outcomes by 8.23, namely from 56, 34 to 64.57. According to research by Rahmelina et al , flipped classroom learning can also improve student learning outcomes because of its effectiveness [11].

This is also in line with the research of Pebriati et al which states that there are differences in learning outcomes between students who apply the flipped classroom strategy and students who apply conventional learning strategies. Classes that apply flipped classrooms have higher average scores than conventional learning [12]

4. CONCLUSION

From the results of this study, it can be concluded that there are differences in the independence of learning outcomes in the subject matter of Paragraphs and Word Processors in experimental classes by applying blended learning models with Flipped Classroom strategies and control classes by applying conventional learning models. Blended Learning learning models with Flipped Classroom strategies have a significant influence on improving independence and learning outcomes. The results of the analysis showed an increase in the experimental class by 20%, greater than the control class which experienced an increase in learning independence by 8%. Then the increase in learning outcomes in experimental classes by 45%, greater than the increase in learning outcomes in control classes by 16%.

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