

# The Implementation of Edmodo Using Cooperative Learning Model in Operating System

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**Abstract**—The Objective of this study is to know the improvement of student learning outcomes using the cooperative learning method based on Edmodo. Edmodo was modified to make it easier for teachers to manage virtual classes. Edmodo is developed as a collaborative and connected learning platform between students and teachers in sharing educational content. Cooperative learning method that is integrated into e-learning based on Edmodo. The method of this research is descriptive correlation by using a quantitative approach. The research design using Pre-Experimental Designs with Non-equivalent Control Group. Analysis of research data using Independent sample t-test. However, this study is limited to the following steps such as pre-test, treatment, and post-test. Based on the result of the average value of the students' learning outcomes of the experimental class is superior to the control class, it can be interpreted that the learning activity of the students by using the learning model of cooperative learning based on Edmodo is more increased than the student activity using cooperative learning model without Edmodo. It can be concluded that the implementation of Edmodo on learning by cooperative learning method can improve student learning outcomes.

**Keywords**—*Edmodo; cooperative learning; operating system*

## I. INTRODUCTION

The usage of technology in the learning process encourages the creation of various learning media that teachers can choose to use in their learning. The idea of using machine-learning, creating simulations and animations for processes that are complicated and difficult to describe, is very interesting for learning practitioners. In addition, the progress in the field of information technology gave birth to a new concept in learning based on IT or better known as e-learning. The use of terminology e-learning itself can refer to all training or education activities that use electronic media or information technology [1,2].

Recently, E-learning in Indonesia began to be implemented by several companies and academics. Increasing internet usage by around 100% every year contributes significantly to the progress of using e-learning. The internet technology used has shown progress in several major cities, such as in Pungging State Vocational High School 1 Mojokerto (SMKN 1 Pungging) Indonesia, where internet services are available broadband that allow short data transfer. The existence of fast data transfer facilities makes users e-learning in Indonesia able

to download lessons from the server in a short time so that the comfort of students increases [3].

The education e-learning system is a learning system that helps students to add information on knowledge about concepts learned through systematic learning activities as Edmodo platforms [3,4] as one way to overcome education problems [5]. In the principle of E-learning is learning to use electronic services as a tool that is not limited by space and time. In the principle of E-learning is learning to use electronic services as a tool that is not limited by space and time [6]. In addition, the assignments given through the assignment and quiz features that have a working time limit, so that they can train students' speed and accuracy in carrying out tasks [7]. Based on the Learning Management Program (PPL) at Vocational High School, especially at SMK Negeri 1 Pungging which was carried out by the team of the author, obtained information that Edmodo has three functions in the learning process, namely the replacement function, companion, and complement. Each teacher is free to choose using EDMODO for functions that are tailored to the needs of his class. Replacement function, here the class facilities in Edmodo are used to replace class hours that cannot be done face-to-face directly, for example, used for students who are practicing industry. The companion function, Edmodo is used as a companion media for student learning, through Edmodo students can learn independently about the material that has been delivered by the teacher. The last function is Edmodo as a complement, here the assignments and quiz features in Edmodo are used by the teacher to give assignments and daily tests to students. For students, using Edmodo they can be more independent in learning and the material that has been uploaded by the teacher can be downloaded by students and used as a learning reference source. In addition, the assignments given through the assignment and quiz features that have a working time limit, so that they can train students' speed and accuracy in carrying out tasks [8]

The implementation of classroom learning, Educators tend to explain material a lot and students are not actively involved in learning activities so that learning becomes teacher center. In the study, we used a model of cooperative learning type Student Team Achievement Division (STAD) learning process can be student-center. Because in cooperative learning students learn in groups and help each other learn to solve a problem.

II. METHODOLOGY

The research descriptive is the main purpose to describe systematically the facts and characteristics of the object or subject under study precisely related to current circumstances and events [9]. The population in this study were students in State Vocational High School 1 Pungging, especially in Class X who chose Computer Network Engineering Skills Competencies. The population of class X TKJ amounted to 64 students consisting of 2 classes, namely class X TKJ 2, class X TKJ 3, where each class totals 32 students.

The type of research is Quasi-Experimental Design which is used is the Non-equivalent Control Group Design [10] form which can be seen figure 1.

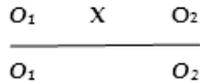


Fig. 1. Non-equivalent control group design. [10]

Description:

- O1 = Pretest for the experimental group and the control group.
- O2 = Posttest for the experimental group and the control group.
- X = Treatment of the use of EDMODO learning devices with cooperative learning models.

In general, the research instrument is divided into two, the first is a learning instrument and the second is an assessment instrument. Teaching materials are used by students as one of the theoretical reference sources for students to solve the problem. Edmodo is used as a medium for learning operating system subjects. Learning tools consisting of Syllabus, Learning Implementation Plans (RPP).

While the assessment instrument consists of the test consists of the initial test (pre-test) questions are given before the model is applied cooperative learning in the subjects of the Operating System. The test used in this study is a written test that contains questions about the Operating System, which are formulated to measure students' ability to understand the material before being taught. The last test (post-test), this problem was given after the model was cooperative learning implemented in the subjects of the Operating System integrated into Edmodo. This test is a final test (post-test). About the post-test and the (pre-test) have the same type

The results of filling in the validation questionnaire will be processed and measured using the intervals on the scale Likert as table 1 [10]:

TABLE I. THE CRITERIA OF VALIDATION OF LEARNING [11]

% Student Response	Information
0-20	Very weak
21-40	Weak
41-60	Enough
61-80	Strong
81-100	Very strong

III. RESULTS AND DISCUSSION

The figure 1 below, shows the display of Edmodo activity in the school.

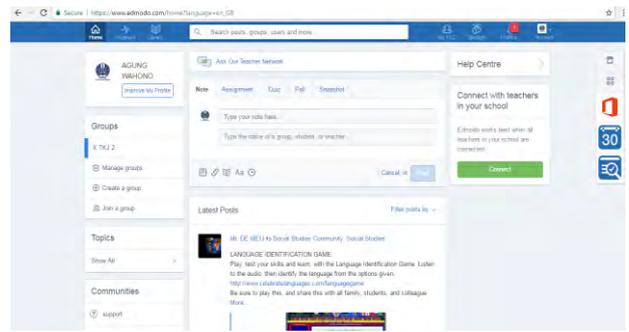


Fig. 2. Edmodo activity.

A. Validation

The results of the validation of learning devices in the Operating System subject matter with basic competencies Understanding the structure of the open source operating system with 3 validators consisting of 2 Informatics Engineering lecturers and 1 teacher:

- From these calculations, the research results of learning media validation are categorized as very valid with an average percentage of 92.7% so that it can be said that this media is worthy of being used as a learning medium.
- Whereas the validation of the Learning Implementation Plan (RPP) is categorized as very strong, namely 100% so that it can be said that the Learning Implementation Plan (RPP) is suitable for use in the learning process.
- The results of material validation are categorized strongly with a percentage of 75% so that it can be said that this material is suitable for use in the learning process.
- The results of the question validation are categorized very strongly with a percentage of 100% so that it can be said that this question is suitable for use in the learning process.
- The results of student response questionnaire validation are categorized very strongly with a percentage of 96% so that it can be said that the student response questionnaire is appropriate to use to find out how students respond to learning.
- The results of student questionnaire responses to Edmodo-based learning media on operating system subjects have an average of 99.5% which is included in a very strong range so that respondents can respond well with the Edmodo-based cooperative learning model on operating system subjects.

B. Descriptive Statistics Test

The hypothesis is usually considered as the principal instrument in research. Its main function is to suggest new experiments and observations. In fact, many experiments are carried out with the deliberate object of testing hypotheses [14]. The following is a description of several tests to find a hypothesis.

1) Descriptive Statistics Test, Pre-test Control Class:

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Pretest X TKJ 3	30	0	65.33	2.14	11.74	45.00	55.00	65.00	75.00

Variable	Maximum
Pretest X TKJ 3	90.00

Fig. 3. Descriptive statistics test, Pre-test control class.

The results of the analysis according to Figure 2 control class pre-test X TKJ 3 consist of 30 students. The average student learning outcomes are 65.33 with the lowest score of 45 and the highest score of 90.

2) Descriptive Statistics Test, Post-test Control Class:

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Posttest X TKJ 3	30	0	78.17	1.85	10.13	55.00	70.00	80.00	86.25

Variable	Maximum
Posttest X TKJ 3	95.00

Fig. 4. Descriptive statistics test, Post-test control class.

The results of the analysis according to Figure 3 of the TKJ 3 post-test X control class consist of 30 students. The average student learning outcomes are 78.17 with the lowest score of 55 and the highest score of 95.

3) Descriptive Statistics Test, Post-test Experiment Class:

Variable	N	N*	Mean	SE Mean	StDev	Minimum	Q1	Median	Q3
Posttest X TKJ 2	30	0	83.33	1.58	8.64	65.00	75.00	85.00	90.00

Variable	Maximum
Posttest X TKJ 2	95.00

Fig. 5. Descriptive statistics test, Post-test experiment class.

The results of the analysis according to Figure 4.11 experimental class post-test X TKJ 2 consist of 30 students. The average student learning outcomes are 83.33 with the lowest score of 65 and the highest score of 95.

4) T-Test of Pre-test:

	N	Mean	StDev	SE Mean
Pretest X TKJ 2	30	73.7	14.9	2.7
Pretest X TKJ 3	30	65.3	11.7	2.1

Difference = mu (Pretest X TKJ 2) - mu (Pretest X TKJ 3)  
 Estimate for difference: 8.33  
 95% CI for difference: (1.39, 15.28)  
 T-Test of difference = 0 (vs not =): T-Value = 2.41 P-Value = 0.020 DF = 54

Fig. 6. T-Test of Post-test.

Figure 5 shows that the average pre-test of the experimental class X TKJ 2 is 73.7 with a standard deviation of 14.9, while the average of the control class X TKJ 3 is 65.3 with a standard deviation of 11.7. The average results of the two classes show that the average experimental class is higher than the control class with a difference of 8.33. Whereas the T-Value result is 2.41 in DF (Degree of Freedom) 54 with a P-Value of 0.020 which means smaller than 0.05, so the hypothesis is answered that the learning value of the experimental class students is better than the control class students.

5) T-Test of Post-test:

	N	Mean	StDev	SE Mean
Posttest X TKJ 2	30	83.33	8.64	1.6
Posttest X TKJ 3	30	78.2	10.1	1.8

Difference = mu (Posttest X TKJ 2) - mu (Posttest X TKJ 3)  
 Estimate for difference: 5.17  
 95% CI for difference: (0.30, 10.04)  
 T-Test of difference = 0 (vs not =): T-Value = 2.13 P-Value = 0.038 DF = 56

Fig. 7. T-Test of Post-test.

Figure 6 shows that the average of the experimental class post-test X TKJ 2 is 83.33 with a standard deviation of 8.64, while the average of the control class X TKJ 3 is 78.2 with a standard deviation of 11.1. The average results of the two classes show that the average experimental class is higher than the control class with a difference of 5.17. While the results of the T-Value of 2.13 in DF (Degree of Freedom) 56 with a P-Value of 0.038 which means smaller than 0.05, so the hypothesis is answered that the learning value of experimental class students is better than the control class students.

IV. CONCLUSION

It is clear, from the results of the student response shows that the interest of students who follow learning using Edmodo on cooperative learning models [4,9,12] shows an average of 99.5% which is included in the range is very feasible so it can be concluded that respondents respond well with the existence of Edmodo-based cooperative learning model on operating system subjects. Based on the parametric independent sample t-test data, it can be seen that the results of the pre-test P-value to count are 0.020 and the post-test P-value calculated is 0.038 which means that it is smaller than 0.05, then it can be interpreted reject H0 and H1 are accepted, the accepted H1 which means there are different learning outcomes [11,13], between the control class and the direct learning model and the experimental class by using cooperative learning model. Based on the average value of the pre-test of the experimental class X TKJ 2 is 73.7 and the control class X TKJ 3 is 65.3 and the average value of the post-test experimental class X TKJ 2 is 83.33 and the control class X TKJ 3 is 78.2. It can be concluded that the class using Edmodo's based cooperative learning model is superior in terms of the acquisition of learning outcomes than the class that uses the cooperative learning model without Edmodo. Based on the results of the average value of student learning outcomes experimental class that is superior compared to the control class, it can be interpreted that student learning activities using Edmodo-based cooperative learning model is more increased compared to

student activities using cooperative learning model without Edmodo.

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