

The Use of LMS Schoology in Cooperative Learning to Improve Learning Activeness of Vocational High School Students

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Abstract—Indications of student learning activities when doing learning activities from home occur one-way learning communication which makes student-teacher interaction less responsive, so cooperative learning is needed so that students are more responsive assisted by interactive media to facilitate students in learning. The teacher makes a new strategy using a learning approach, namely the Learning Management System (LMS) Schoology in cooperative learning that is able to have an impact on student learning activities. The application of Miro Schoology LMS for the experimental class and the Indonesian Smart School Application (SPI) for the control class. The purpose of the study was to determine the differences in student learning activities in the use of LMS Schoology in cooperative learning. The research design used a quasi-experimental and the research location was at SMKN 5 Bandung with sampling using purposive sampling technique, namely Class XI DPIB 3 as the experimental class and Class XI DPIB 5 as the control class. The research instrument in data collection was in the form of a questionnaire to measure each indicator of student activity. Data analysis used Descriptive Analysis and Non-Parametric tests to determine the difference in the average value or percentage of learning activities between the two classes. The results of the research data using LMS Schoology in cooperative learning showed significant differences in the results of learning activities between the two research classes. The average value of the experimental class activity was 39.43, bigger than the control class 23.36, indicating that there was a significant difference in student activity. The percentage value of student learning activity indicators consists of paying attention, listening, writing, asking, arguing, and behaving. The average percentage of activeness in the experimental class was 87% (Very Active) which was greater than the control class of 72% (Active).

Keywords—LMS schoology, cooperative learning, learning activity

I. INTRODUCTION

The covid-19 pandemic has changed the way people live. All community activities that involve physical contact, must be

limited and apply the applicable health protocols. Access to public space such as formal and non-formal education has been limited, the impact of the policy on learning activities in schools experiencing a transition from outside the network (Offline) to having to do it online (Online). The Learning from Home Program is here to help students learn independently from their homes. Regarding this, the government responded by adjusting distance learning policies during the Covid-19 period at all levels of education, including Vocational High Schools (SMK).

Vocational High Schools in Bandung City are still implementing comprehensive distance learning scenarios including SMKN 5 Bandung. Distance learning activities at SMKN 5 Bandung are carried out concerning the adaptive curriculum, namely the approach to the condition of each student. Then the interaction of learning from home is quite limited, so online learning in schools has problems, such as students having difficulty learning independently because they are easily distracted, one-way learning communication, students do not participate actively, student learning outcomes are not optimal, and teacher limitations in managing and utilizing learning applications.

According to Amidah [1], the teacher must innovate to find appropriate learning strategies based on needs so that learning can be more meaningful, both for teachers and students. Therefore, teachers must continue to carry out teaching and learning activities even with a virtual face-to-face system. Based on Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, it is stated that teachers are required to continue to develop by the times, the development of science and technology, as well as the needs of the community.

The application of learning strategies makes the interaction between students and teachers in a learning environment [2], meaning that learning strategies are the teacher's way of choosing which learning activities to use during the learning

process. In essence, educators must be able to create and understand strategies in teaching and learning. In line with Majid [3], the strategy of teaching and learning activities can be carried out by teachers by applying appropriate learning methods, so that efforts to carry out a certain learning method, teachers can apply techniques that are considered relevant to students, and the use of learning techniques every teacher has possible tactics/ways different from other teachers.

When doing the learning, dialogue between students is not only done with the teacher but with peers as well, because students will be more flexible and easier to learn. Therefore, it is necessary to manage learning classes with more active student participation.

According to Isjoni [4], it is said that cooperative learning (group learning) is designed to involve students actively participating with friends in small groups. So that a more cooperative learning model is currently needed so that students are more responsive and have a good cooperative attitude in supporting learning outcomes.

Strategies in implementing cooperative learning need interactive media that make it easy and facilitate students to discuss remotely (online), and teachers will more easily monitor the progress of student discussions on the media platform.

The e-learning media that can be used is the Learning Management System (LMS) with the Schoology platform approach. According to Aminoto and Pathoni [5], the function of LMS Schoology can adapt to the needs of students in group discussions or exchanging ideas. Another benefit of using the LMS Schoology application in supporting learning according to Haniah et al. [6], is that it can be connected, extend class time, be flexible in managing classes, and available on various devices.

The field review that attracted the attention of researchers was class XI DPIB SMKN 5 Bandung on the subject of Software Applications (APL) in the implementation of distance learning (online learning), there were indications of problems, such as students being less responsive, learning only one way and teacher limitations in managing and utilizing learning applications. The teacher applies group learning assisted by LMS Schoology, as an effort to make it easier for students to discuss and help each other in their group if some do not understand the material presented by the teacher.

II. METHODS

This study uses a quantitative quasi-experimental research approach which aims to reveal the effects involving the experimental group and the control group. The quasi-experimental research method or Quasi Experiment Design is a form of developing a true-experimental method that is difficult to implement [3] and has a variety of approaches, one of the forms used by the researcher is the Post-test Only Control Group Design. Questionnaire data were used as testing material for measuring learning activity, between the experimental class

and the control class. The following is an overview of Sugiyono [7] research design (Table 1):

TABLE I. RESEARCH SCHEME

Class	Instruction	
Experiment	X	Y
Control	-	Y

The experimental class was the group that was given treatment and the control class was the group that was not treated. The two research classes are assumed to be the same and only different learning media are applied. Learning in the experimental class applies cooperative learning based on LMS Schoology Miro, while the control class uses cooperative learning based on LMS Schoology SPI. The population in this study is State Vocational High School 5 Bandung, Class XI Department of Building Information Modeling Design (DPIB), Even Semester for the 2020/2021 academic year. For the research sample that will be used, the researcher uses the purposive sampling method. According to Sugiyono [8], purposive sampling is a sampling technique by determining certain criteria. Sampling criteria, such as:

- Active DPIB Class XI students who are contracting Software Application subjects,
- Class XI DPIB students with the highest average ability to operate software applications from subject teacher assessments,
- Class XI DPIB students who are willing to take part in the research and are willing to be respondents.

The samples taken were students of Class XI DPIB 3 (experimental class) and Class XI DPIB 5 (control class). This study uses a questionnaire instrument to find and process data related to student activity during the online learning process. This activity questionnaire uses a statement in the form of a qualitative description. Using a Likert scale model, which is used consists of four levels and is included in ordinal data (Table 2).

TABLE II. STUDENT ACTIVITY INDICATOR

Variable	Dimension	Indicator	Item	Number of Items
Student Learning Activities	Student Activity	Visual Activities	2	22
		Listening Activities	3	
		Writing Activities	2	
		Oral Activities	2	
		Motor Activities	4	
		Mental Activities & Emotional Activities	9	

A. Descriptive Analysis

Descriptive analysis to determine the standard provisions of student activity data in learning uses the following formula:

$$P = \frac{f}{N} \times 100\%$$

Description:

- P* Yield percentage
- f* The total score obtained by students
- N* Maximum score

According to Arikunto and Supardi [9], there are guidelines for student activity criteria during learning, as shown in the following table 3:

TABLE III. STUDENT ACTIVITY CRITERIA

Percentage	Criteria
81% - 100%	Very Active
71% - 80%	Active
61% - 70%	Moderate/Enough
51% - 60%	Less Active
0% - 50%	Very Less Active

Viewed from the table above, it can be concluded that there are five criteria in student activity, such as very high, high, medium, low, and very low.

B. Hypothesis Testing Analysis

In testing the hypothesis, the T statistical test used the Independent Sample T-test approach, which is a statistical analysis that aims to compare two unpaired samples. The application device used to calculate the hypothesis test is IBM SPSS 23 with the condition that the independent sample t-test is tested if the database is normal, but if the data is not normal, then use an alternative non-parametric test, namely the Mann Whitney Test [10]. Measurement of the Mann Whitney test is based on the average ranking and the resulting probability value.

*H*₀ = There is no difference in a student learning activity in cooperative learning based on LMS Schoology in class XI-DPIB students at SMK Negeri 5 Bandung.

*H*_A = There is a difference in a student learning activity in cooperative learning based on LMS Schoology in class XI-DPIB students at SMK Negeri 5 Bandung.

In terms of probability value, *H*₀ is accepted if the significance ≥ 0.05 . Meanwhile, *H*₀ has been rejected if the significance value is ≤ 0.05 .

III. RESULTS AND DISCUSSION

A. Results

The following is the percentage score of the recapitulation result table of student activity questionnaires in both research classes (Table 4):

TABLE IV. PERCENTAGE OF ACTIVE LEARNING INDICATORS

Indicator	Control Class	Experiment Class
<i>Visual Activities</i>	76%	86%
<i>Listening Activities</i>	73%	86%
<i>Writing Activities</i>	77%	85%
<i>Oral Activities</i>	67%	80%
<i>Motor Activities</i>	69%	81%
<i>Mental Activities & Emotional Activities</i>	74%	85%
Accumulation	72%	84%

Based on the recapitulation table above, shows the average percentage of the indicators of the learning activity questionnaire between the experimental class and the control class showing different results. The activeness of the experimental class students according to the accumulated average percentage has a value of 84% (very active) while the activeness of the control class students has an average accumulated percentage of 72% (active). Aspects Representation of student activity in the difference percentage of questionnaire results, as follows:

- Indicators of visual activities, in the form of students' attention to the teacher's explanation and paying attention to the opinions of friends.
- Listening activities indicators, such as students understanding what the teacher says, start working when the task is given and listening to the opinions of discussion partners.
- Indicators of writing activities, such as recording material for new references and summarizing the material.
- Oral activities indicators, such as asking if you don't understand and can answer teacher or friend questions.
- Indicators of motor activities, such as giving personal opinions during discussions, expressing opinions during discussions, explaining work results, and refining friends' opinions.
- Indicators of mental and emotional activities, such as inviting active groups of opinion, responding to answers, influential learning situations, helping friends, asking group friends for help, feeling challenged to solve problems, daring to be a speaker during presentations, and submitting assignments on time.

The results of the average percentage of activity indicators are contained in a form diagram to illustrate the differences in student activity graphically, as follows (Figure 1):

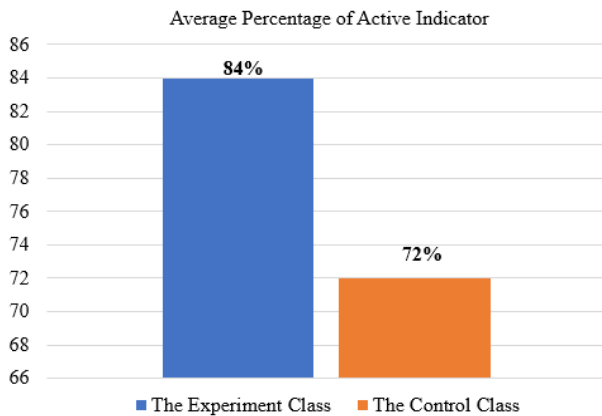


Fig. 1. Average percentage of active indicators.

Seen from the diagram above, the difference is visible in each indicator of student activity in the two research classes, the experimental class tends to be more active when using LMS Schoology Miro-based cooperative learning than the control class using LMS Schoology SPI-based cooperative learning. However, both research classes are included in the criteria for fairly high activity when conducting cooperative learning based on LMS Schoology.

Hypothesis testing uses a non-parametric test in the form of the Mann Whitney Test as an alternative to hypothesis testing for independent sample t-test data that are not normally distributed, this test is to determine the outline of the difference in student activity between the two classes in group learning based on LMS Schoology. The measurement of the Mann-Whitney test is based on the average ranking and the resulting probability value.

TABLE V. NON-PARAMETRIC TEST RESULTS

	Student activity
Mann-Whitney U	219.500
Wilcoxon W	747.500
Z	-3.533
Asymp. Sig. (2-tailed)	.000

Table 5 shows the result of the probability value obtained by Asymp. Sig. (2-tailed) of $0.000 \leq 0.05$, which means that H_0 is rejected, then the hypothesis decision, there is a significant difference to student learning activity in implementing LMS Schoology-based group learning strategies.

B. Discussion

Comprehensively, the results of the average percentage for each indicator of the experimental class and control class are included in the very active and active categories related to

differences in student activity in group learning using LMS Schoology Miro and SPI.

Indications of activity indicate that the experimental group (Miro) tends to be better or more active than the control group (SPI). The difference in the tendency of the two classes occurs because of the use of LMS Schoology in each class. According to Siahaan [11] the benefits and functions of the schoology platform can affect learning because it is related to the ease of using applications, curiosity in using applications, interest in using applications and application services provided. But on the other hand, in line with the opinion (Aminoto & Pathoni, 2014) that an effective LMS schoology platform can provide convenience for teachers in opening up broad communication opportunities to students, the goal is for students to be easier to interact and take part in discussions and work in the team.

The Schoology platform directs students to implement the use of technology in the learning process. When viewed from the description of the features available for the LMS Schoology Miro application and SPI, the advantage of the interesting features of the Miro Application is that it can be used as material for group discussions in real-time and user friendly.

Meanwhile, the SPI feature is quite limited to class making, class attendance, schedule creation, and task input, so it does not accommodate online discussion activities. The experimental group is superior in terms of activity because it uses the Miro application which is more collaborative and interactive, while the control class that uses SPI tends to be abstract or the group learning process does not appear.

IV. CONCLUSION AND SUGGESTION

Based on the results of the study, there are differences in student learning activities in implementing cooperative learning based on LMS Schoology in class XI-DPIB students of Vocational High School 5 Bandung. By category, the average percentage of the two classes is included in the Active category. Decision making is supported by the analysis of student activity questionnaire data, the difference in the average percentage of student activity for the experimental class is 84% in the very active category and the control class is 72% in the active category.

The indicator of the percentage of activity consisting of students paying attention, listening, writing, asking, arguing, and behaving shows that the experimental group class (Miro) tends to be better or more active than the control group class (SPI). This happens because of the use of LMS Schoology in each class, the experimental group is superior in terms of activity because it uses the Miro application which is more collaborative and interactive because it has excellent features such as being able to enter images, text, notes, patterns, comments, create frames. Presentations and other features that can support the group learning process can be accessed through the website or smartphone application.

While the control class that uses SPI tends to be abstract or the group learning process is not visible because it is limited to

the Chatting Features of Questions and Answers, Attendance and Student Work, the question and answer feature is less supportive in group learning, because they have to refresh every time they type text, cannot upload images. Because of that, it is less than optimal in accommodating online discussion activities.

From the results of the study, it was reviewed that the use of LMS Schoology Miro was better in supporting the online group learning process than LMS Schoology SPI. The use of LMS Schoology if it is well integrated into the right learning model and as needed, will be able to support learning, especially online group discussions based on the Schoology platform which is an aspect of driving student activity and learning outcomes. Teachers have a role to be able to use which methods and learning media are appropriate and relevant to the conditions of each student. The use of appropriate applications and learning methods will make it easier for teachers to manage a more interactive and collaborative class, with the results of this study allowing teachers to examine distance learning methods that teachers can apply to adjust students' conditions in online classes.

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