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Improving Students' Learning Achievement Through Cooperative Learning and Padlet Application in Class XI MIPA 3

Nita Rulianah[1], Agung Prabowo[2*], Sukono[3]

[1]*Public Senior High School (SMAN) 1 Mirit, Kabupaten Kebumen, Jawa Tengah, Indonesia*
[2]*Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Jenderal Soedirman, Purwokerto, Indonesia*
[3]*Department of Mathematics, Faculty of Mathematics and Natural Sciences, Universitas Padjadjara, Jatinangor, Indonesia*

**Corresponding author email: agung.prabowo@unsoed.ac.id*

Abstract

Chemistry learning is still less active which can be seen t students tend to be passive and less enthusiastic in learning. Students participate in learning activities with less enthusiasm and tend to wait for explanations from the teacher. One of the solutions used to overcome this is the cooperative learning model and the use of padlet application media. The purpose of this study was to find out the application of cooperative learning and padlet application media in class XI Mathematics and Natural Science (MIPA) 3. The research sample was students in class XI MIPA 3 Senior High Scholl (SMA) N 1 Mirit, Kebumen consisting of 36 students. The research was conducted in 3 meetings. This type of research is quantitative research using descriptive analysis. Screening data through pretest and posttest value data. The results showed that learning using cooperative learning and padlet applications increased 30.94% of student achievement in class XI MIPA 3 SMA N 1 Mirit.

Keywords: cooperative learning, padlet, learning outcomes.

1. Introduction

Chemistry learning in general is still less active. This can be seen from only a small proportion of students who are active in learning, both when studying the material and when practicing completing practice questions. Most students participate in learning activities with less enthusiasm and tend to wait for explanations from the teacher. This of course has an impact on learning outcomes that are less than optimal, that is, many students have not reached the KKM, with a minimum score of 70.

One of the less active learning materials is acid-base titration. In addition to the need for good logical skills, students must play an active role in learning so that they are able to understand and implement acid-base titrations. To activate students, this can be done with learning that involves students in each process using contemporary media that are interesting and as needed.

Learning that can activate students is cooperative learning. Cooperative learning is a learning model that involves students to be active in thinking processes and learning activities. In this learning model, students work in groups to achieve mastery of the material. In cooperative learning students learn together in small groups of students who are equal but heterogeneous in terms of abilities, gender, ethnicity/race and help each other (Brandon & All, 2010; Huang et al., 2010). According to Johnson, et al., (1996) cooperative learning is a group of teaching strategies that involve students working collaboratively to achieve common goals.

In cooperative learning, students work together in understanding concepts. In the group there is a role of giving assistance and those who receive assistance, so that each member of the group understands the concepts being studied. In addition, learning activities carried out in groups will increase the motivation and activeness of each member of the group and create student-centered learning (student center).

Students are less active in learning because of limitations in the learning media used by the teacher in class. Many students are less enthusiastic in participating in learning so that the results of the assessment are not optimal because students do not fully understand the learning material. In the world of education, the media is defined as tools and materials that carry information or learning materials that aim to make it easier to achieve learning goals (Dörnyei, 2003; Brindley, et al., 2009). The media used in this study is the Padlet application.

Padlet is an online learning platform that can be called a synchronous online learning platform because educators and students are present together at the same time. In simple terms, padlets can be called online whiteboards that allow educators and students to convey and share ideas and thoughts in the form of text, photos and videos. This padlet is very easy to use as there is no need to download any specific application and the features are easy to learn. In addition, the padlet can be operated via smartphones, tablets, laptops and computers. Users can choose a free version of the padlet or a paid version of around 40,000 rupiah/month (Mehta, et al., 2021).

This study used the Padlet Application media on cellphones or cellphones with data collection techniques using student learning activity sheet instruments and giving post tests in the form of multiple choice questions and brief descriptions of student learning outcomes as a support for determining research results.

Musfirah, et al., (2011) stated that the application of the cooperative learning model with the TSTS structural approach improved the physics learning outcomes of class X-3 SMA N 1 Boja. According to Indrawati, et al., (2021), that cooperative learning using modules in class X SMA is effective. This can be seen from the average percentage of students who meet the KKM, student activity, and the teacher's ability to manage learning in the experimental class is better than in the control class. According to Lestari & Kurniawan, (2018), using Padlet media is more effective than using WhatsApp Group media. Therefore, student achievement can be increased by using Padlet learning media. Zahro, et al., (2022) states that the use of the Padlet application media can improve student learning outcomes in class.

Based on the description above, to determine whether there is an increase in learning outcomes of acid-base titration, a cooperative learning model is applied with the Padlet application media. Through the cooperative learning model, students collaborate in carrying out learning activities while understanding concepts. Meanwhile, the use of a complete and interesting padlet application will make it easier for students to understand the concept of material.

2. Research Methodology

This research was conducted in class XI MIPA 3 of SMA N 1 Mirit, Mirit District, Kebumen Regency. The number of respondents was 36 people. The research was conducted in 3 meetings, namely Tuesday, April 19, 2022, a pre-test was held and learning acid-base reactions using the lecture method. On Wednesday, April 20, 2022, the learning of acid-base titration was continued with the cooperative learning model and the Padlet application. Continued on Tuesday, April 26, 2022 learning the acid-base titration curve with cooperative learning models and Padlet and post-test applications.

Quantitative data was obtained through pretest and posttest scores. The data is then processed using SPSS (Statistical Package for the Social Sciences), which is a computer program used for statistical data analysis.

At the first meeting, learning uses the lecture method, sources of information for students are obtained through textbooks and lectures from the teacher. At the second meeting, learning uses cooperative learning models and the Padlet application. The learning process that takes place students enthusiastically and actively collaborate in groups during the learning process.

3. Results and Discussion

Based on the results of observations during the learning process students carry out various learning activities. First, the students were divided into nine groups with differences in ability and gender. Each group works on Student Worksheets (LKPD) which contain material in the form of modules and videos, practice questions and impression messages as shown in Figure 1. The results of extracting information and exercises are typed and uploaded on the padlet as shown in Figure 2.

Figure 1: Students work on the LKPD on the padlet

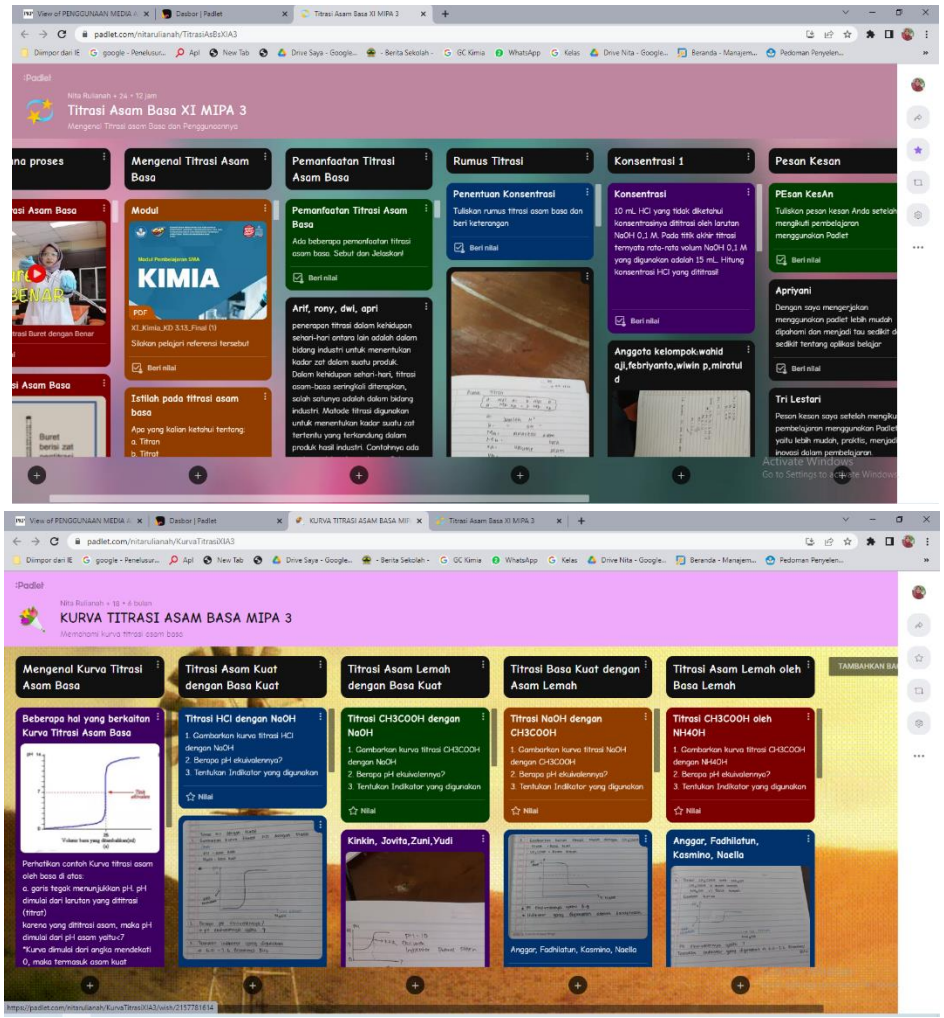

Figure 2: Padlet application

The next process is that each group presents the results of the discussion in front of the class, other groups provide feedback, as shown in Figure 3. In this presentation activity the teacher accompanies and provides conclusions as a result of the presentation and discussion.

Figure 3: The group presents the results of the discussion.

3.1. Quantitative Analysis

Data analysis was carried out quantitatively, including the pretest and posttest results normality test and the difference test between the pretest and posttest averages. Testing the normality of pre-test and post-test values was carried out using the Kolmogorov-Smirnov test. The test was carried out with the help of SPSS software, and the results are provided in Table 1.

Table 1: Pretest and Posttest Normality Test Results with SPSS

Statistics			
		Pretest	Postest
N	Valid	36	36
	Missing	0	0
Mean		51.7361	67.7500
Skewness		0.075	-0.336
Std. Error of Skewness		0.393	0.393
Kurtosis		-0.881	-1.368
Std. Error of Kurtosis		0.768	0.768

Testing the normality of pre-test and post-test scores was carried out using the Skewness and Kurtosis Tests. Based on the Skewness and Kurtosis Test criteria, the data is normally distributed if the Skewness and Kurtosis ratio values are between -1.96 and +1.96. As for the calculation of the Skewness and Kurtosis ratio values with the formula for the value of skewness or kurtosis divided by their respective standard errors. The pre-test and post-test values will be normally distributed if the values of the two ratios are between two certain values, depending on the level of significance used. For example, if a significance level of 0.05 is used, the data will be normally distributed if the skewness and kurtosis ratios are between -1.6 and +1.96.

Based on the calculations, the Skewness ratio is 0.191 for the pretest and the Kurtosis ratio is -1.147. Meanwhile, for the post-test, the Skewness ratio was -0.085 and the Kurtosis ratio was -1.781. At a significance level of 0.05, both Skewness and Kurtosis ratios are between -1.96 and +1.96, so the pre-test and post-test scores are normally distributed.

Furthermore, because both pre-test and post-test values are normally distributed, the hypothesis test for the difference in the average pre-test and post-test values (different test) is carried out using the t-test (Paired sample t-Test). Based on the results of the pretest and posttest which were then processed with SPSS, the results provided in Table 2 are obtained:

Table 2: Processing results of the Paired Samples Test

Paired Samples Test									
		Paired Differences							
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1	pretest - postest	-1.60139E1	15.14666	2.52444	-21.13878	-10.88900	-6.344	35	0.000

In the results of the different test using the Paired sample t-Test as provided in Table 2, it is known that the value of Sig. (2-tailed) of 0.000. This shows that the two values are significantly different. To find out whether the difference in values is positive or negative can be seen in the average value shown in the descriptive table in Table 3.

Table 3: Results of Pretest and Posttest Data Processing with SPSS

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pretest	51.7361	36	18.69702	3.11617
	postest	67.7500	36	18.20577	3.03429

The calculation of descriptive statistics shows an increase in the pre-test score from 51.74 to 67.75 in the post-test score. The increase in value that occurred was 30.94%. This increase in value shows that there is a difference between before and after the learning methods and applications are carried out. Based on the percentage increase in value, the right hypothesis to formulate is that there is no increase in students' understanding between before and after the learning methods and applications are carried out. In more detail, the formulation of the research hypothesis is:

H_0: There is no increase in student learning outcomes between before and after the implementation of learning with cooperative learning methods and the use of the padlet application

H_1: There is an increase in student learning outcomes between before and after the implementation of learning with cooperative learning methods and the use of the padlet application

Statistically, the research hypothesis above can be formulated with

$H_0 : \mu_1 = \mu_2$ with μ_1 *the average pretest value*

$H_1 : \mu_1 < \mu_2$ μ_2 *the average pretest value*

Based on the results of data processing with the t-test, a *p-value* or *asymp is obtained*. *sig(2-tailed)* = 0.000 (Table 2). This figure is smaller than α = 0.05. Based on the criteria that Reject H_0 if the *p-value* <*α*, it is concluded that H_0 is rejected, or H_1 is accepted. That is, there is an increase in student learning outcomes between before and after the application of cooperative learning methods and padlet applications.

Descriptive statistical calculations show an increase in the pre-test score from 51.74 to 67.75 in the post-test score. The increase in value that occurred was 30.94%. The increase in the average post-test score indicates that the application of cooperative learning methods and padlet applications can improve student learning outcomes in acid-base titration material.

Based on the results of the study it can also be concluded that the application of cooperative learning methods and padlet applications can improve student learning outcomes. The results of this study support previous studies such as those conducted by Indrawati, et al., (2021) and Zahro, et al., (2022).

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