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The Influence of E-Portfolio Towards Students' Activeness and Learning Achievement on Mathematics Learning in SMP Negeri 8 Makassar

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ABSTRACT
This study aims to determine the influence of e-portfolio towards students' activeness and learning achievement on mathematics learning in SMP Negeri 8 Makassar. This study was a kind of quasi-experimental research involving two groups that were given different treatments, namely the experimental group with an e-portfolio and the control group with a paper-based portfolio. The Population of this study was grade eight students of SMP Negeri 8 Makassar, which consisted of 11 classes, and 2 classes were selected based on a purposive random sampling technique as the study sample, namely classes are VIII-2 and VIII-6. Data collection techniques were carried out using observation sheets of the implementation of learning, learning achievement tests (post-test), and student activity observation sheets. The data were analyzed using descriptive and inferential statistics. The descriptive analysis suggests that (1) the learning activity of the experimental group students who are taught using e-portfolios are in the very active category. While the control group taught using paper-based portfolios are in the active category, and (2) the learning achievement of the experimental group students who were taught using e-portfolio was better than the control group taught using paper-based portfolios. Meanwhile, based on the inferential analysis, it can be suggested that (1) The Learning with using e-portfolio effects onstudents' activeness of students in mathematics learning; (2) The Learning with using e-portfolio affects students' learning achievement in mathematics learning; and (3) there are differences students' activeness and learning achievement of e-portfolio groups and paper-based portfolio groups.

Keywords: *E-Portfolio, Students' activeness, Learning achievement, Mathematics Learning.*

1. INTRODUCTION

Facing the rapid development of the globalization era in the 21st Century, teachers and educational institutions are demanded to prepare their students to have competencies or skills. Problem-solving skills, effective communication skills, decision-making skills, collaborating skills, information literacy, information, and communication technology (ICT) literacy are parts of the 21 Century competencies [1]. The use of innovative and challenging Information and communication technology demands learning mathematics to achieve success in learning. The success of learning is influenced by one aspect, namely the existence of learning media. The primary function of learning media is as a means to achieve learning objectives. The more effective the learning media used, the more influential the learning process will be. So, choosing suitable media will significantly affect the success of the learning process [2]. One of the learning media that students can use is an internet-based e-portfolio. An E-portfolio is structured to be able to support the learning process.

An e-portfolio is defined as electronically collected work and student reflections, which show their growth and development during the learning process [3]. The e-portfolio also allows students to download their work and other students' work as learning references. In addition, teachers and students can also share learning

materials to increase students' knowledge and insight. Thus, e-portfolios can be used by students to support their success in learning.

E-portfolios not only act as learning media but can also increase student learning activities. E-portfolio-based assessment requires students to be active participants in the learning process. This thing is related to research by [4] which suggests that by using e-portfolios, student learning activities are higher than student learning activities using paper-based portfolios.

We can see student learning activities from the involvement of students in various teaching and learning processes, such as when students listen to lectures, discuss, make assignment reports, and so on. In addition to active learning, e-portfolios also play a role in improving students' mathematics learning achievement. This is related to research by [5], which states that e-portfolio media can describe and enhance student achievement trends. Learning achievement is an evaluation or test carried out by students after completing learning activities to understand the achievement of the learning material being studied [6]. Learning achievement as a result and learning performance during participation in learning activities [7].

Researchers want to initiate innovation in learning mathematics in schools by using information technology. As for the learning material, use Schoology as an assignment medium for students, which will be presented in the form of an electronic portfolio (e-portfolio). The teaching and learning process continues according to the learning implementation plan made by the teacher. Another difference between Schoology in this study and other e-learning lies in the number of teacher-student meetings. In Schoology, face-to-face meetings remain in the classroom regularly, while in e-learning generally, there are only a few face-to-face meetings. This study is intended to find out how the influence of e-portfolio on students' activeness and learning achievement in mathematics. The purpose of this study is to determine whether an e-portfolio affects student activity and achievement in learning mathematics.

2. METHOD

This research is a type of quantitative research with an experimental design. The experimental study is designed to determine the effect of one or more variables on other variables by giving treatment. The method used in this research is quasi-experimental. The research involves two classes at SMP Negeri 8 Makassar, one class as the experimental class and one class as the control class. The sampling technique used is purposive random sampling.

The sample in this study consisted of 72 students. There are two types of variables in this study, namely the independent variable and the dependent variable. The independent variable in this research is learning by using an e-portfolio. While the dependent variable is student activity and achievement.

The research design in this study is shown in Table 1.

Table 1. Research design

Class	**dependent variable**	***Posttest***
Experiment	P_E	Y_{21}
Control	P_K	Y_{22}

Information:

Experiment: The group was given treatment in the form of learning using e-portfolios

Control: The group was assigned treatment in the form of learning using a paper-based portfolio

P_E: Treatment in the experimental class

P_K: Treatment in the control class

$Y_{21:}$ Posttest in the experimental class

$Y_{22:}$ Posttest in the control class

Data collection techniques were carried out by giving tests and filling out observation sheets. The instruments developed are learning achievement tests and observation sheets on implementing learning and student activity observation sheets.

The data analysis used in this research is descriptive statistical analysis and inferential statistical analysis. Descriptive statistical analysis was used to describe each research variable. Inferential statistical analysis was used to test the research hypotheses. However, previously the prerequisite tests were conducted, namely the morality test and homogeneity test. The normality test used is the Kolmogorov-Smirnov test. The homogeneity test used is the homogeneity test of variance and the homogeneity test of the variance/covariance matrix.

The hypotheses in this study are (1) The activeness of students who are taught using e-portfolios is better than students who are taught using paper-based portfolios; (2) The achievement of students who are taught using e-portfolios is better than students who are taught using paper-based portfolios; and (3) There are differences between students who are taught using e-portfolios and students who are taught using paper-based portfolios.

3. RESULT AND DISCUSSION

The research was carried out with five meetings, one meeting giving posttest, and four meetings providing learning using e-portfolios and using paper-based portfolios. Posttest is the final test after the teaching is carried out. In addition, during the learning process, the learning implementation observation sheet and student activity observation sheets were filled out.

3.1. The Descriptive Statistics Analysis Results

Several findings which are based on the descriptive statistics are as follows:

3.1.1. Learning Implementation

Table 2. The average learning implementation

Learning Implementation	Percentage	Categories
Using e-portfolio	100%	Very high
Using paper-based portfolio	100%	Very High

Table 2 quantitatively shows that the average score of all meetings on implementation using e-portfolios or paper-based portfolios is 100% with the "very high" category.

3.1.2. Student Activities

Table 3. The average Student Activities

Student Activities	Percentage	Categories
Using e-portfolio	83%	Very A
Using paper-based portfolio	75%	Aktif

Based on Table 3, student activity using e-portfolio is in the very active category at 83%. Meanwhile, students' activities in the class using paper-based portfolios are in the active category at 83%.

3.1.3. Students' learning achievement

Table 4. Recapitulation of Posttest Scores of Learning Achievement

	E-portfolio	**paper-based portfolio**
Sample size	36	36
Average	65,69	55,83
Standard Deviation	16,952	20, 231
Variance	287,361	409, 286
Score range	60	70
Lowest Score	30	25
Highest Score	90	95

Based on Table 4, the average value of the experimental group is 65.69 from the ideal score of 100 with a standard deviation of 16.952. The variance of the experimental group's learning achievement data is 287.361, where the score range is 60 from the minimum score data showing a value of 30 and the maximum score of 90. Based on the post-test control group's student achievement data, the average data is 55.83 from the ideal score of 100 with a standard deviation of 20.231. The control group's learning achievement data variance is 402,286, where the score range is 70 from the minimum score data showing the value of 25 and the maximum score.

Table 5. Distribution and Percentage of Posttest Value of the Experiment Group

Score	**Categories**	**Frequencies**	**Percentage**
≤54	Very low	9	25%
55-69	Low	8	22%
70-79	Medium	7	19%
80-89	High	11	31%
90-100	Very high	1	3%
Total		36	100%

Based on table 5 shows that 9 out of 36 students or 25% in the experimental class are in the very low category, 8 of 36 students or 22% in the experiment class are in a low category, 7 of 36 students or 19% in the experimental class are in the medium category. 11 of 36 students or 31% in the experiment class are in the high category, and 1 of 36 students or 3% in the experimental class are in the very high category.

Table 6. Distribution and Percentage of Posttest Value of the Control Group

Score	**Categories**	**Frequencies**	**Percentage**
≤ 54	Very Low	18	50%
55 – 69	Low	8	22%
70 – 79	Medium	3	8%
80 – 89	High	3	8%
90 – 100	Very high	4	11%
Total		36	100%

Based on table 6, it can be seen that 18 of 36 students or 50% in the control class are in the very low category, 8 of 36 students or 22% in the control class are in a low category, 3 of 36 students or 8% in the control class are in the medium category. 3 of 36 students or 8% in the control class are in the high category, and 4 of 36 students or 11% in the control class are in the very high category.

3.2. The Inferential Statistics Analysis Results

In the inferential analysis, based on the normality test for the activeness data of the experimental group students, p-value > is 0.070 > 0.05. The control group student activity data p-value > , that is 0.079 > 0.05. This shows that the student activity data in the experimental group and the control group came from a normally distributed population.

The homogeneity test of variance using Levene's Test for student activity data shows that the p-value > is 0.789 > 0.05. The student achievement data obtained p-value >

that is 0.7197 > 0.05. Then it can be continued on the homogeneity of the matrix/covariance test and obtained p-value >, i.e., 0.721 > 0.05. This shows that the variance/covariance matrix of the dependent variable is the same or homogeneous.

- The First Hypothesis Testing

The first hypothesis testing for student activity data shows that t = 3.331 with degrees of freedom = 70 and p-value = 0.001. Because $p < \alpha$, then H_o is rejected, or H_1 is accepted. This indicates that there is an effect of e-portfolio on student learning activities in learning mathematics.

- The Second Hypothesis Testing

Testing the second hypothesis for student achievement data shows that T = 2.242 with degrees of freedom = 70 and p-value = 0.028. Because $p < \alpha$, then Ho is rejected, or H1 is accepted. This indicates that there is an effect of e-portfolio on student achievement in learning mathematics.

- The Third Hypothesis Testing

Testing the third hypothesis for differences in student activity and achievement in the experimental and control groups shows that the p-value < α is 0.004 < 0.05. This shows the difference between activeness and student achievement in the experimental group and the control group.

4. CONCLUSION

Based on the findings, some conclusions can be drawn, i.e., e-portfolio affects student activity and achievement in learning mathematics, and there are differences in classes that use e-portfolios and classes that use paper-based portfolios.

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