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The Influence of the Scramble Learning Model on the Mathematics Learning Outcomes of Class VIII SMPN 2 Bungku Timur Morowali District

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ABSTRACT

This study aimed to determine the effect of using scramble learning models and direct learning models on student learning outcomes in mathematics in class VIII SMPN 2 Bungku Timur, Morowali Regency. This research is a Quasi Experiment with a pretest-posttest control group design. The population in this study was 35 students consisting of 18 students in class VIII A (experimental class) and 17 students in class VIII B (control class). Determination of the sample was done by using a purposive sampling technique. The results showed that the significance value of equal variances in learning outcomes was 0.015, which was smaller than 0.05, then H_0 is rejected, and H_1 is accepted, which means that learning outcomes of students taught using scramble learning were significantly better than learning outcomes with direct instruction. In other words, there were differences in learning outcomes between the use of scramble learning models and direct learning models for class VIII students of SMPN 2 Bungku Timur, Morowali Regency.

Keywords: *Scramble learning model, Mathematics learning outcomes.*

1. INTRODUCTION

Education has an essential role in producing quality human resources. Education is expected to create human resources critically, independently, and comprehensively because education is the primary capital for quality human beings. This is in accordance with the objectives of national education as stated in law number 20 of 2003 chapter 2, article 3, concerning the national education system that national education aims to develop life and shape the character and civilization of the nation, develop the potential of students to become human beings of faith and piety to God Almighty, noble, healthy, knowledgeable, capable, creative, independent and responsible [1]. To achieve these goals, the government is trying as much as possible to fix various things to improve the quality of education. Various innovations and educational programs have also been implemented, including improving educational qualifications, improving the quality of teachers and education personnel through various researches, seminars, teaching materials, and other reference books, and improving the curriculum from year to year.

Mathematics is one of the subjects that students must master in both formal and non-formal education. According to Permendiknas No. 22 of 2006 concerning Standard Content for Mathematics Subjects, one of the objectives of learning mathematics is to understand mathematical concepts, explain the relationship between concepts, and apply concepts or algorithms flexibly, accurately, and precisely problem-solving [2]. One of the successes of learning can be seen from the learning outcomes. However, learning outcomes are still a problem in learning mathematics. Learning outcomes are abilities possessed by students after receiving learning experiences [3]. According to Nasution [4], learning outcomes result from an interaction of teaching and learning actions and are usually

indicated by test scores given by teachers, both written and non-tested tests. Based on this understanding, it can be concluded that mathematics learning outcomes are abilities possessed by students as a form of interaction with learning activities indicated by test scores.

According to the Minister of National Education, the purpose of learning mathematics is that students understand the concept correctly. However, education in Indonesia is currently still low compared to other countries, especially in mathematics. The Trends in International Mathematics and Science (TIMSS) survey in 2015 placed Indonesia in 44 of 49 countries. It indicates that Indonesian students' rank is still very low in understanding complex information, theory, analysis, and problem solving, using tools, procedures, problem solutions, and conducting investigations (2). Meanwhile, in the 2015 Program For International Student Assessment (PISA) survey on mathematical ability, Indonesia was ranked in 39 out of 40 countries in 2003, 38 out of 41 countries in 2006, and 61 out of 65 countries in 2009, in 56 out of 65 countries. In 2018 Indonesia was ranked 72 out of 78 countries [5]. The results of the TIMSS and PISA surveys show that the ability of students to read mathematical problem solving, theory, and problem-solving skills in Indonesia is still low. To overcome these problems, teachers' ability is very reliable in implementing learning strategies and providing quality material. The teacher is the party who deals directly with students. So that in providing an evaluation, they are expected to be more accurate, objective, and optimize learning. Thus, it can be revealed that the teacher determines the success of student learning. The teacher's ability to carry out the teaching and learning process greatly influences student understanding.

Based on the results of interviews conducted with mathematics teachers at SMPN 2 Bungku Timur, it was found that the motivation and learning outcomes of mathematics were still categorized as not meeting the standards (poor). This can be seen from the average score of the semester exam results for class VIII students who only got an average score of 65.9, while the minimum completeness criteria (MCC) set was 85. Some efforts that can be made to overcome this problem are by improving the curriculum, improving facilities and infrastructure of learning, and using new learning methods or models that are adapted to the material to be taught.

Ways that a teacher can do to overcome these problems are to apply and combine various models, methods, or approaches that are interesting and can trigger an increase in student learning outcomes. One of the learning models that can be applied is the scramble learning model. Learning with the scramble model is in groups by honing students' creativity to find logical answers from scrambled words. Students are asked to assemble them into logical answers from a statement or problem. 5 stages, namely: 1) Making question cards according to teaching materials, 2) Making question cards with random numbers, 3) Presenting the material, 4) Distribution of question cards in groups and answer cards, 5) Students in groups work on questions and look for correct answers [6].

The research conducted by Siti Karnilawati [7] on the effect of the scramble learning model on students' mathematical learning outcomes in the number pattern material for Class VIII showed that the impact of using scramble learning models on students' mathematics learning outcomes was very high, positive student responses to the scramble learning model on pattern material. Numbers with an average score of 76.52 and the use of the scramble learning model on the number pattern material was carried out with very good criteria, namely reaching a percentage of 86.00%[7].

Research conducted by Ahmad Rustam [8] about improving mathematics learning outcomes through a scramble cooperative model with a contextual teaching and learning approach shows that by applying the Scramble invitation type Cooperative Learning model with a Contextual Teaching and Learning (CTL) approach, it can improve student learning outcomes in the eye of the eye. Mathematics lessons, especially in the basic competence of calculating the surface. Area and volume of cubes and blocks of class VIIIB SMP Negeri 1 Latambaga, this is indicated by the measurement value after cycle I and II increased compared to the initial value so that it has met the predetermined performance indicators with more than 80% of students getting a minimum score of 75. In line with this, this study refers to the research conducted by Desie Narmia Sari [9] on scramble learning models to improve science (physics) learning outcomes for students of SMP Negeri 16 Purworejo. The scramble learning model influences the increase in student learning outcomes.

Based on several previous studies, it became the basis for research on the effect of the scramble learning model on students' mathematics learning outcomes. In addition, a study states that the scramble model has no impact on student learning activities. This research was conducted in learning mathematics for class X students of SMA N 1 Klego, Boyolali Regency. Therefore, this research was entitled "The Influence of Scramble Learning Model on Mathematics Learning Outcomes of

Class VIII Students of SMPN 2 Bungku Timur, Morowali Regency".

The purpose of this study is to determine the effect of mathematics learning outcomes between groups of students who were taught with the Scramble learning model and groups of students who were taught using conventional models in class VIII SMPN 2 Bungku Timur, Morowali Regency. This research will provide knowledge and experience about scramble learning models in mathematics subjects to achieve optimal learning quality.

2. METHODOLOGY

This study is experimental research with a pretest-posttest control group design. Experimental research can be interpreted as a research method used to find the effect of certain treatments on other variables under controlled conditions [10]. This type of research is quasi-experimental research (quasi-experimental). An experimental study is called a quasi-experiment if the researcher can't manipulate or control all relevant variables [11].

This research was conducted at SMPN 2 Bungku Timur, Morowali Regency. The population in this study were all grade VIII students of SMPN 2 Bungku Timur, Morowali Regency, totaling 35 students divided into 3 classes. The sampling technique was carried out using a purposive sampling technique and obtained class VIII A as the experimental class with 18 students and class VIII B as the control class with 17 students. The experimental class was treated with a scramble model, while the control class was given one-way learning. The independent variable in this study is the scramble learning model. The dependent variable is the student's mathematical learning outcomes. The data collected in this study came from the implementation sheet of learning carried out by peers to obtain data on the implementation of learning by using the scramble learning model and written tests to get data on students' mathematical learning outcomes that were carried out after the learning process, as well as providing response questionnaires to obtain data. About student responses after the learning process. Before the questionnaire instrument and posttest learning outcomes were tested, the instrument was tested first, then the validity test, reliability test, level of difficulty, and discrimination were carried out first.

The questionnaire instrument test consisted of an expert judgment validation test, item validation test, and reliability test. The posttest instrument for learning outcomes was tested for validity with expert judgment. The hypothesis proposed in this study is as follows. H0 is no significant difference in mathematics learning outcomes between students who follow the Scramble model learning and the group of students who follow the conventional model learning. And H1 is a significant difference in mathematics learning outcomes between students who follow the Scramble model learning and the group of students who follow the conventional model learning.

Data analysis consists of two types, namely, descriptive analysis and inferential analysis. The descriptive analysis serves to describe or provide an overview of the object under study through sample or population data as it is, without intending to make conclusions that apply to the public [10]. Data obtained from questionnaires and learning outcomes in the control class and experimental class were carried out descriptive testing; the test was used to determine the analysis results of the data description of the minimum, maximum, average, and standard deviation of the two classes. While inferential analysis is used to analyze sample data, the results will be generalized (inferred) to the population where the sample is taken. Then test the hypothesis by using the normality test using the Liliefors statistical test. After the data is normally distributed, the next step is to test the homogeneity of the two data using Fisher's exact test. The fulfillment of the homogeneity test, then using the independent sample t-test type equal variances assumed to conclude. All these tests were carried out at a significance level of 5% with the SPSS 20.00 software calculation tool.

3. RESULTS AND DISCUSSION

3.1. Results

The data presented in this study is the data on the value of students' mathematical learning outcomes given to the experimental and control classes. The recapitulation of students' mathematical learning outcomes can be seen in Table 1 below:

Table 1. Recapitulation of Statistical Values of Students' Mathematics Learning Outcomes in Experiment Class and Control Class

Statistics	**Experiment Class**	**Control Class**
N	18	17
Mean	80,08	71,88
Median	80	75
Modus	80	75
Standard Deviation	7,91	10,82
Variance	62,63	117,11

The data in Table 1 shows that the statistical value of students' mathematical learning outcomes obtained from 18 experimental class students and 17 control class students based on posttest results. The statistical value in the experimental class is the average value of 80.08, the median value of 80, the

mode value of 80 with a standard deviation of 7.91. While the statistical value in the control class is the average value of 71.88, the median value of 75, the mode value of 75 with a standard deviation of 10.82. The category of learning outcomes for the experimental class and the control class can be seen in Table 2 below:

Table 2. Category of learning outcomes for the experimental class and the control class

No	Mark	Category	Experiment Class		Control Class	
			Frek	Persen	Frek	Persen
1.	$x \leq 35$	Very low	0	0	0	0
2.	Low	Rendah	0	0	1	5,88%
3.	$54 < x \leq 64$	Currently	0	0	1	5,88%
4.	$64 < x \leq 84$	Tall	11	61,11%	13	76,47%
5.	$84 < x \leq 100$	Very Tall	7	38,9%	2	11,77%
Amount			18	100%	17	100%

Based on Table 2, it can be seen that students included in the low and medium categories in the control class are 1 student or 5.88% of 17 students; in the experimental class, there are none. The high category in the experimental class was 11 students or 61.11% of 18 students; in the control class, there were 13 students or 76.47% of 17 students. Very high category in the experimental class as many as 7 students or 38.9% of 18 students, in the control class as many as 2 students or 11.77% of 17 students.

However, previously the posttest statistical values for the experimental class and the control class were tested for normality and homogeneity of data variance. The normality test was carried out using the Liliefors statistical test. The recapitulation of the results of the Liliefors posttest data normality test for the experimental class and control class can be seen in Table 3 below:

Table 3. Recapitulation of Data Normality Test Results

	Experiment Class			Control Class		
	Statistic	df	Sig.	Statistic	df	Sig.
Kolmogorov-Smirnov[a]	.128	18	.200*	.202	17	.872
a. Lilliefors Significance Correction						

In Table 3 above, it can be seen that the significance value of the experimental class is 0.2 and the control class is 0.872, which is greater than 0.05, meaning that the posttest learning outcomes of students in the experimental class and control class are normally distributed.

The fulfillment of the normality test of the learning outcomes data uses the independent sample t-test as the mean difference test. The results of the independent sample t-test can be seen in Table 4 below:

Table 4. Recapitulation of Homogeneity Test Results for Experimental Class and Control Class

Independent Samples Test						
	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	Sig.	t	df	Sig. (2-tailed)	Std. Error Difference
Equal variances assumed	.473	.496	2.562	33	.015	3.190
Equal variances not assumed			2.539	29.213	.017	3.219

The independent sample t-test in Table 4 shows that the significance value of the homogeneity test of learning outcomes is 0.496 (greater than 0.05). This means that the sample groups in both classes come from populations with the same variance (homogeneous). Therefore, the independent sample t-test used the Equal variances assumed type. These results indicate that the significance value of learning outcomes is 0.015 (smaller than 0.05). It is rejected and accepted, which means that the learning outcomes given the scramble learning treatment were significantly better than those with

direct learning. In other words, there are differences in the use of the scramble learning model with the direct learning model on learning outcomes in class VIII of SMPN 2 Bungku Timur, Morowali Regency.

3.2. Discussion

Based on the research results obtained, there are significant differences in mathematics learning outcomes between the group of students taught using the scramble learning model and those conducted using the conventional learning model. In line with this, it can be seen that the scramble learning model can give a better effect than the conventional learning model. The reason that can be used as the basis for determining that the scramble learning model is better in improving learning outcomes compared to the conventional learning model is that the scramble learning model can provide opportunities for students to learn from each other while playing, develop students' interest and motivation to learn so that learning becomes more meaningful. Each group member is responsible for everything done in the group, which can foster a sense of solidarity in the group so that the learning process becomes active and fun. The scramble learning model combined with question cards in mathematics is expected to make students interested, active in following the learning process and increase student learning outcomes. This is in accordance with the opinion of [12], which states that the advantages of the scramble learning model are: (1) each group member is responsible for everything that is done in the group, (2) the scramble learning model allows students to learn from each other while playing, (3) generate excitement and practice particular skills, (4) the material provided through one of the game methods is usually impressive and difficult to forget, (5) can encourage students to compete to advance. In line with this, the scramble learning model assisted by question cards consists of several steps, which include: (1) the preparation stage (preliminary activity), (2) delivery of group learning (core activity), (3) conveying learning material (core activity), (4) prepare question cards (core activity), (5) prepare question cards, and answer cards (core activity), (6) students discuss with their respective groups (core activity), (7) students present the results of the discussion (core activity).), (8) conclude the material and cover (closing activity)[12]. The learning steps using the question card scramble learning model prioritize the roles and activities of students in learning. The teacher only acts as a facilitator, such as providing learning resources that can help students understand learning materials other than textbooks, media, and worksheets; the teacher also acts as a mediator or director to assist students in reviewing their knowledge as a reference for understanding the material discussed in class. In learning, the teacher uses lectures as necessary if there are students who do not understand. Still, the teacher only helps direct students' cognition, so they are arranged correctly until they know the material they are learning. Learning with the scramble learning model assisted by question cards is very interesting and fun because students are invited to be directly involved in learning through group discussions and actual observations in the school environment and the environment around students.

Unlike the case with learning activities using conventional learning models, the teacher acts as the executor of the learning process during the learning process. Conventional learning is teacher-centered learning, and the delivery of material in traditional learning is mainly done through lectures, questions and answers, and assignments that take place continuously. In this model, the teacher is the only source of information in the learning process in the classroom. It can be tedious, weaken students' enthusiasm for learning, and not prioritize students' activities to seek or explore their own knowledge. This resulted in the learning outcomes of students who were taught using the conventional model being lower than those conducted using the model. This review is based on the acquisition of the average score of mathematics learning outcomes between groups of students who learn to use the Scramble learning model and groups of students who learn to use conventional learning models. The average score of students' group mathematics learning outcomes taught using the Scramble learning model is 80.08. While the average score of the control group students' mathematics learning outcomes taught using the conventional learning model was 71.88.

This is in line with some previous research results, which revealed that the Scramble learning model was effectively used in learning. Some of the advantages of the Scramble learning model are supported by the results of research conducted by Widi Astriani (2019), which states that the Scramble learning model can improve Science III learning outcomes in SD Cluster II, KubuAddan Subdistrict for the 2017/2018 Academic Year[13].

Based on the overall explanation above, it can be interpreted that the results of this study indicate that there are significant differences in the ability of student learning outcomes between the group of students who were taught with the Scramble learning model and the group of students who were conducted using the conventional learning model in mathematics subjects for class VIII SMPN 2

Bungku Timur. Morowali Regency. Thus, the Scramble learning model has a positive effect on student learning outcomes.

4. CONCLUSION

There needs to be improvements and innovations in learning to deal with them appropriately so that student learning outcomes in mathematics are better. One way that can be done is to use appropriate learning models and media because students will more readily accept lessons by using educational media. Students can use as many senses as they have. The learning model in question is the Scramble learning model.

The Scramble model is a learning model in the form of a random word, sentence, or paragraph games that are carried out in groups and has the aim of being able to help students find answers and solve problems that exist in Indonesian language learning so that students become active, creative, think critically in solving problems and able to work together in groups [12].

The Scramble learning model will be more effective if suitable learning media support it. One of the appropriate learning media to use is the question card media. Question card media is a means to learn to be actively involved in learning activities, think critically, and innovatively find ways or prove theories in learning [14]. Using this question card media in the learning process is to help students analyze learning materials and attract students' attention.

The purpose of this study was to determine the differences in mathematics learning outcomes between groups of students who were taught with the Scramble learning model and groups of students who were conducted using the conventional model in class VIII of SMPN 2 Bungku Timur, Morowali Regency.

The research design used was a pretest-posttest control group design. Through the purposive sampling technique, class VIII A of SMPN 2 Bungku Timur was determined as the experimental class and class VIII B of SMPN 2 Bungku Timur as the control class. This study shows significant differences in learning outcomes between students who follow the scramble model and those who follow conventional learning.

Based on the results of research and discussion, there are significant differences in mathematics learning outcomes between groups of students who are taught the scramble learning model and the conventional learning model in class VIII of SMPN 2 Bungku Timur, Morowali Regency. These results were obtained from the independent sample t-test hypothesis using the type of Equal variances assumed. This test requirement assumes that the data must be normally distributed and there is a similarity of variance (homogeneous). Then the results obtained that the significance value of equal variances learning outcomes of 0.015 is smaller than 0.05, then is rejected and is accepted, which means that learning outcomes treated with scramble learning are significantly better than learning outcomes with direct learning. In other words, there is a significant difference between the use of the scramble learning model and the direct learning model on learning outcomes in class VIII SMPN 2 Bungku Timur, Morowali Regency.

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