EFFECTIVENESS OF ROLE PLAYING LEARNING STRATEGY ON MATHEMATICS LEARNING OUTCOMES OF CLASS VII STUDENTS OF SMPN 1 SEMPOR, KEBUMEN DISTRICT

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ABSTRACT

The lack of attention given to the materials the students by the teacher in the learning outcome processed studied mathematics students. One of the learning strategies that focus student against teacher is Role Playing learning strategies. The purpose of this research is to know the effectiveness of learning strategies among students who are using Role Playing learning strategies with students who use direct learning outcomes learning mathematics in grade VII semester odd SMP Negeri 1 Kebumen Regency Sempor school year 2016/2017. This research population is grade VII SMP Negeri 1 Kebumen Regency Sempor school year 2016/2017, with a total of 256 students. Penelitaian is a sample class VII A and VII B as a class experiment and control that is selected by random sampling against class. Method of collecting data using the method of documentation and tests. Research instrument in the form of a test of the ability of the beginning and test results of learning math. Data analysis is a test of the hypothesis. Hypothesis test results of two parties with the significance level 5% and 62 degrees of freedom shows that: (1) there is a difference in the results of learning math learning strategies that use Role-Playing with Direct learning. This is shown on $t_{count} = t_{table}$ and $1.86763 = 3.0869$ so $t_{count} > t_{table}$ and (2) Learning Mathematics using Role Playing strategy is more effective than Direct learning. This is shown by the value $t_{count} = 3.0869$ and $t_{table} = 1.6702$, $t_{count} > t_{table}$ value.

Keywords: effectiveness, role-playing, the result of learning math.

INTRODUCTION

Mathematics is one branch of science that has an important role in human life. According to Ibrahim and Suparni (2008: 35) "Mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines and advancing the power of human thought." The importance of the role of mathematics requires the mastery of mathematics from an early age. Therefore, mathematics is a subject that is given at every level of education, from elementary to high school and several study programs in tertiary institutions. Mathematics is a basic science that has an important role in the process of human life. But in reality, mathematics is one of the lessons that is considered difficult for students to understand. According to the results of interviews with a number of students at SMP Negeri 1 Sempor Kebumen, most students had difficulty learning mathematics.

This is shown from the low-grade VII mathematics learning outcomes of SMP Negeri 1 Sempor, Kebumen Regency. Table of the average value of UTS mathematics learning grade VII SMP Negeri 1 Sempor Kebumen Regency Even Semester Academic Year 2016/2017.

Table 1. UTS Mathematics Grade VII Grade 2016/2017 Academic Year of SMP Negeri 1 Sempor, Kebumen district.

Pure Value	Mathematics	
	Class VII A	Class VII B
Many students	32	32
KKM	75	75
Average	61,875	60,3125
Completed KKM	31,25%	31,25%
Not Complete KKM	68,75%	68,75%

From Table 1 the data obtained for grade VII UTS mathematics grades with an average is still low because there are still those who have not reached the minimum completeness criteria (KKM), which is 75. From the results of the researchers' interviews with mathematics teachers at SMP Negeri 1 Sempor Kebumen Regency on Monday, August 1, 2016, in learning mathematics there are still many students who have difficulty learning mathematics. Some students pay less attention to the lessons explained by the teacher, students are less responsive to the opinions of their friends, in group discussions, students still rely on other friends. According to the mathematics teacher at Sempor 1 Public Middle School in Kebumen district, this is the reason for the low learning outcomes of mathematics because they are not given the opportunity to develop their own potential. So that when learning takes place, students are only passive, lacking initiative, students do not understand the material delivered by the teacher. Besides that students' attention to learning is also very lacking. During the discussion, only a few students were active, while some other students were still busy and did not respond.

Based on observations on Monday, August 1, 2016, it appears that student activity has not yet been seen, there are still many students who have not asked questions when the teacher gives an opportunity to ask questions. If students are given examples of questions by the teacher, students are quiet when they don't understand. When the teacher gives a question that is varied or different from what was previously demonstrated students feel confused and unable to work, this causes low student learning outcomes.

In addition to delivering material to students, it must be clear, the selection and use of appropriate learning methods is important in learning mathematics so that the use of appropriate methods is expected to have an effect on student learning outcomes in mathematics. For this reason, the role of the teacher in the selection and use of learning models must be considered. The teacher should present lessons in an interesting and student way so that students have an interest in, and interest in, the mathematics learning process. One strategy that can be used is the Role Playing learning strategy.

Role-Playing learning strategy is a learning model in the form of role-play. According to Hamdani (2010: 87) role Playing is a way of mastering learning materials through developing the imagination and appreciation of students. The development of imagination and appreciation is done by students acting as living or dead figures. In this strategy, students are invited to be active in learning, learning materials and problems will be solved by playing the roles played directly by some students in front of the class. Students who do not take part in the task of observing and responding to the course of play. The use of Role-Playing learning strategies can make conditions in the classroom more interesting because in this learning model students will play a role in front of the class, trying to be people or other objects. So that with active students in the classroom is expected to not monotonous class conditions and students are interested, interested and pay attention to the ongoing learning process. With the interest and attention of students in participating in learning mathematics using the Role Playing learning strategy, it is hoped that it will affect student learning outcomes in mathematics at SMP Negeri 1 Sempor, Kebumen Regency for the better.

Based on the background of the problem and the boundary of the problem, the formulation of the problem raised is:

1. Is there a difference in mathematics learning outcomes between students whose learning uses Role-Playing learning strategies, and students whose learning uses direct learning models in class VII students of Sempor Middle School 1 Kebumen Regency in the 2016/2017 school year.

2. Is mathematics learning using Role Playing learning strategies more effective than learning mathematics by using a direct learning model of mathematics learning outcomes in grade VII students of SMP Negeri 1 Sempor Kebumen in the 2016/2017 school year?

While based on the formulation of the problem, the objectives of this study are:

1. Knowing whether there are differences in mathematics learning outcomes between eighth-grade students of SMP Negeri 1 Sempor, Kebumen Regency in the 2016/2017 school year whose students use Role-Playing learning strategies, and VII graders of SMP Negeri 1 Sempor, Kebumen Regency 2016/2017 school year whose students use direct learning capital.

2. Knowing whether learning using Role Playing learning strategies is more effective than learning using direct learning models for mathematics learning outcomes of Grade VII students of SMP Negeri 1 Sempor, Kebumen in the 2016/2017 school year.

METHODS

This type of research is experimental research. The research design used in this study is Posttest Only Control Design. This research was conducted at SMP Negeri 1 Sempor Kebumen district with research subjects being grade VII students in the odd semester of the 2016/2017 academic year with class VII A as an experimental class and class VII B as a control class. In this study, the population was grade VII students of SMP Negeri 1 Sempor Kebumen in the 2016/2017 school year consisting of 8 classes. From 8 samples, the researcher draws to get 2 samples that are used for research. The draw results obtained class VII A as an experimental class that is a class that uses the learning strategy Role Playing, VII B as a control class that is a class that uses Direct Learning. The technique used to collect data in this study is a test technique and initial ability data documentation (UTS scores in Odd Semester 2016/2017 Academic Year). Data collection techniques function as revealing the symptoms or variables being investigated.

Test for normality using the formula:

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

χ^2 : Chi-Square Price
O_i : The frequency of observations in the i - th interval
E_i : The frequency of expectations in the i - th interval group
k : J number of interval classes

The formula used in the homogeneity test is the Barlet Test, namely:

$$\chi^2 = (\ln 10)\left\{ B - \sum_{i=1}^{k}(n_i - 1)\log S_i{}^2 \right\}$$

With

$$S^2 = \frac{\sum_{i=1}^{k}(n_i - 1)S_i{}^2}{\sum_{i=1}^{k}(n_i - 1)}$$

Dan $B = (logS^2)\sum_{i=1}^{k}(n_i - 1)$
(Sudjana,2002 : 263)

Information :

S_i^2 : i-sample variance
S^2 : variance combined
n_i : many i-th samples
B : the number of degrees of freedom of the sample is multiplied by the logarithm of the combined variance of all samples.

Testing Criteria:

If $\chi^2_{count} < \chi^2_{table}$, then the variance of the sample is homogeneous.

The t-test formula is:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

with $S^2 = \sqrt{\frac{(n_1 - 1)S_1{}^2 + (n_2 - 1)S_2{}^2}{n_1 + n_2 - 2}}$

(sudjana, 2002: 243)

Information :

t: price t

$\bar{X}_1$: the average value of students who use the learning strategy Role-Playing (experimental class)

$\bar{X}_2$: the average value of students using Direct Learning (control class).

S_1^2 : Variance of students in the Role Playing learning group

S_2^2 : Variance of students in the Direct learning group

n_1 : number of students using Role Playing learning strategies (experimental class)

n_2 : the number of students using Direct Learning (control class).

S: Standard deviation combined

      Criteria for testing for the two-party t-test if $t_{count} > t_{table}$, then H$_0$ is rejected. And for one party's t-test if $t_{count} > t_{table}$, then H$_0$ is rejected and H$_1$ is accepted.

RESULTS AND DISCUSSION

      Before being given treatment to the experimental class and the control class, a homogeneity test of the initial ability value was held. This was done to find out that the population of Sempor N 1 Middle School students had the same or homogeneous variance. Based on homogeneity tests conducted on all class VII obtained $\chi^2{}_{count} = 10.0954$ and $\chi^2{}_{table} = 14.0671$. Because $\chi^2{}_{count} < \chi^2{}_{table}$ it can be concluded that the population is homogeneous.

      After knowing that the student population is homogeneous, the instrument testing is then tested in the pilot class. Analysis of data from this research instrument shows that out of 25 questions, 4 were invalid. So that the number of questions used for student mathematics learning achievement tests totaled 21 questions. Of the 21 items used have a very high level of reliability. The questions that have been valid are reliable and have a good difference in power are then given to the experimental class that is class learning using Role Playing learning strategies and control class that is class learning using Direct Learning. The results of the mathematics learning achievement test can be seen in the following table 2.

Table 2. Summary Description of the value of learning outcomes.

Class	max value	min value	$\bar{X}$	S	S^2
VII A	95.2	61.9	80.6594	7.9158	62.6599
VIIB	90.5	47.6	73.3719	10.7556	115.6827

      Table 2 shows the minimum value, maximum value, and the average value of the experimental class and the control class. It can be seen that the average value of the experimental class is higher than the average value of the control class. Then a two-party hypothesis test is performed to determine whether there are differences in mathematics learning outcomes between the experimental class and the control class. The results of the two-party hypothesis test can be seen in the following table 3.

Table 3. Results of a Two-Party Hypothesis Test.

$\chi^2{}_{count}$	df	α	$\chi^2{}_{table}$	Conclusion
3.0869	62	5%	1.86763	H0 is rejected and H1 is accepted

      Based on the results of the analysis carried out with a significant level of 5% and a degree of freedom 62, the value obtained $t_{count} = 3.0869$ and $t_{table} = 1.86763$ so that $t_{count} > t_{table}$ then H$_0$ is rejected and H$_1$ is accepted, which means that there are differences in mathematics learning outcomes of students whose learning uses Role-Playing learning strategies with learning outcomes in mathematics using Direct learning that is applied in class VII of SMP Negeri 1 Sempor, Kebumen district in the 2016/2017 School Year.

      From the two-party hypothesis test, it is known that there are differences in mathematics learning outcomes between the experimental class and the control class. Then a one-party hypothesis test is

performed to find out whether learning using Role Playing learning strategies is more effective than direct learning. The results of one-party hypotheses can be seen in the following table.

Table 4. Hypothesis testing of one party mathematics learning outcomes.

χ^2_{count}	dk	α	χ^2_{table}	Conclusion
3.0869	62	5%	1.6702	H0 is rejected and H1 is accepted

Based on the results of the analysis, which was carried out with a significant level of 5% and a degree of freedom 62 was obtained $t_{count} = 3.0869$ and $t_{table} = 1.6702$ so that $t_{count} > t_{table}$ then H_0 is rejected and H_1 is accepted. This shows that mathematics learning using Role Playing learning strategy is more effective compared to Direct Learning in VII grade students of the odd semester of SMP Negeri 1 Sempor, Kebumen in the 2016/2017 school year.

CONCLUSION

Based on the results of research and discussion as described above, the following research conclusions can be drawn:

1. There is a difference in mathematics learning outcomes of students whose learning uses Role Playing Strategy with students whose learning uses Direct Learning in class VII odd semester students of SMP Negeri 1 Sempor Kebumen, 2016/2017 Academic Year. This is indicated by the results of the two-party hypothesis test with a significant level of 5% and degrees of freedom = 62, the value of t_{count}= 3.0869 and $t_{table} = 1.8676$, so that $t_{count} > t_{table}$ Then the rejects H_0 and H_1 are accepted.

2. Mathematics learning using Role Playing Strategy is more effective compared to Direct Learning in class VII odd semester students of SMP Negeri 1 Sempor Kebumen, 2016/2017 Academic Year. This is indicated by the results of the one-party hypothesis test wherewith a significant level of 5% and degrees of freedom 62, the value of t_{count}= 3.0869 and t_{table}= 1.6702, so the value of $t_{count} > t_{table}$ then H_0 is rejected and H_1 is accepted.

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