THE EFFECTIVENESS OF COOPERATIVE LEARNING MODEL TYPE OF TEAM ASSISTED INDIVIDUALIZATION ON STUDENTS' MATHEMATICS LEARNING OUTCOMES IN GRADE VIII

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ABSTRACT

Teacher-centered learning and lack of learning media make the students pay less attention to explaining what the teacher gives, affecting the students learning results. The use of the cooperative learning model of Team Assisted Individualization (TAI) is expected to improve students learning results. The purpose of this study is to determine whether or not there are differences in mathematics learning outcomes between students using TAI type of cooperative learning model with direct learning model and to find out whether the TAI type of cooperative learning model is more effective than the direct learning model to the results of class VIII even semester of Muhammadiyah Junior High School (SMP Muhammadiyah) 1 Minggir Sleman District Academic Year of 2016/2017. This study's population was 237 students of class VIII at SMP Muhammadiyah 1 Minggir Academic Year of 2016/2017, consisting of seven classes. Samples were taken two classes using a random sampling technique that is by drawing. Derived VIII G as the experiment class and VIII F as the control class. Method of data collection using the student's initial ability documentation and test methods. The instrument of this research is the test of mathematics learning results in the form of multiple choice. Analysis of data used is test prerequisite analysis consisting of a normality test and homogeneity test. The hypothesis test used is a paired t-test and a one-sample t-test. The results in the significant level of 5% and db = 66 show that : (1) there are differences in students' mathematics learning outcomes using TAI and mathematics learning outcomes of students who use the direct learning. The value of t_{count} = 3.3587 evidenced this and t_{table} = 1,9949 so that $t_{count} > t_{table}$ means that rejecting H_0 and accept H_1. (2) Mathematic learning of students who used cooperative learning model type of TAI was more effective than students who used direct learning on mathematics learning outcomes. The value of t_{count} = 3.3587 evidenced this and t_{table} = 1,6672 so that $t_{count} > t_{table}$ means that rejecting H_0 and accept H_1.

Keywords: effectiveness, Team Assisted Individualization, learning outcomes

INTRODUCTION

Education has a vital role in shaping students' character to form high quality and dedicated human resources, so that in shaping the character requires a supporter that is the quality of education. The efforts made by the government in improving the quality of education include developing educational facilities and infrastructure, increasing teacher professionalism by holding teacher certification, and improving the curriculum. The government made this effort because national education has essential functions and objectives as contained in the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System. The function of holding a national education is so that students can develop the potential that exists in themselves and make students character. So we need a way to perfect the implementation of national education adapted to the current development of science and technology. In providing stimulation to students, so students want to learn, a teacher must create conditions and situations that allow students to receive stimuli well by paying attention to the learning model.

Based on the results of an interview conducted on 6 January 2017 in one of the eighth-grade mathematics teachers of SMP Muhammadiyah 1 Minggir, Sleman, Ibu Sri Nuryati, it was obtained that the school used the Education Unit Level Curriculum where the teacher as the center of learning activities in the classroom was still maintained. Minimum Completeness Criteria (MCC) class VIII is 68. In learning mathematics, students are divided into groups. However, group activities are still

dominated by teachers, so students are passive and less involved in learning. This learning is still maintained because it does not take time and is the most practical to do.

Also, based on information from some eighth-grade students of SMP Muhammadiyah 1 Minggir, Sleman Regency, on 7 January 2017, it was found that there were still many students who did not like mathematics because it was difficult and tedious. If this learning pattern is not changed, then students will have difficulty solving problems or problems given by the teacher. Consequently, the learning value obtained by students will below. This can be seen from the odd semester final exam scores of Grade VIII students of SMP Muhammadiyah 1 Minggir, Sleman Regency in the 2016/2017 school year, where the average scores of students learning mathematics are still low when viewed from the Minimum Completeness Criteria (MCC)set at SMP Muhammadiyah 1 Out of class VIII is 68. If it is presented that has not reached the MCC is 99.57%, while those who have reached the MCC is 0.42%.

One of the factors influencing poor student mathematics learning outcomes is the teacher's inaccuracy in choosing a learning model. The learning model used by the teacher should be a learning model that can attract students' attention so that the learning process can provide better results than before. One learning model that can attract students' attention is the cooperative learning model. The right learning model's selection can make students interested in learning mathematics and provide better learning outcomes than previous learning outcomes. Students share knowledge and abilities in learning mathematics in groups with different levels of ability.

From the description above, the researcher is interested in choosing to use the TAI type of cooperative learning model in this study because, in the TAI type cooperative learning model, students work to help one another in small heterogeneous groups where students do not notice racial differences and differences in academic ability. Students can argue with each other, discuss each other, and help each other to hone the knowledge they are mastering at the time and close the gap in each other's understanding.

Based on the background of the problem, the problem formulation for this research is: 1) Are there differences in mathematics learning outcomes between students whose learning uses the TAI type cooperative learning model with direct learning models to the mathematics learning outcomes of Grade VIII students of SMP Muhammadiyah 1 March 2016/2017?, 2) Is the type of cooperative learning model TAI more effective than direct learning of mathematics learning outcomes for students of class VIII Even Semester SMP Muhammadiyah 1 March 2016/2017 school year?

The objectives of this research are: 1) To determine whether there are differences in mathematics learning outcomes using the TAI type cooperative learning model with direct learning models on mathematics learning outcomes for students of class VIII of SMP Muhammadiyah 1 March 2016/2017 Academic Year. 2) To determine whether the TAI type of cooperative learning model is more effective than the direct learning model of mathematics learning outcomes for students of class VIII of SMP Muhammadiyah 1 March 2016/2017 school year.

METHODS

This research design uses a posttest only control research design. Sugiyono (2015: 112) explained that there were two groups chosen randomly (R). the first group was given treatment (X), and the other group was not. The treated group is called the experimental group, and the group that is not treated is called the control group. If there is a significant difference between the experimental group and the control group, then the treatment given has a significant effect. This research was conducted at Muhammadiyah 1 Minggir Middle School in Sleman Regency. The research subject was eighth-grade students of the even semester of SMP Muhammadiyah 1 Minggir 2016/2017 school year. This research population was VIII grade students in the even semester of SMP Muhammadiyah 1 Minggir consisting of 7 classes, namely VIII A, VIII B, VIII C, VIII D, VIII E, VIII F, and VIII G, totaling 237 students. In this study, sampling was carried out by random sampling technique to class VIII SMP Muhammadiyah

1 Minggir, the sample obtained by lottery class. The draw results obtained class VIII G as an experimental class, class VIII F as a control class, and class VIII E as a test class.

In this study, there are two variables, namely the independent variable and the dependent variable. The independent variable in this study is the TAI type of cooperative learning model. The direct learning model, the dependent variable in this study, is the mathematics learning outcomes of Grade VIII students of SMP Muhammadiyah 1 Minggir, Sleman Regency, in the 2016/2017 school year. The technique used in collecting data in this study was a test technique and initial ability data documentation (End of semester retrial score for odd semester 2016/2017 academic year). The instrument used in this study was a matter of multiple-choice test results. Before, the questions were tested to the experimental class and the control class. The test instruments were first tested in the pilot class. The form of questions is multiple choice with 25 items.

A trial test is conducted to determine whether the items qualify questions that are feasible to use, namely valid and reliable items. The instrument test uses a validity test that is the product-moment correlation formula; the results obtained are as many as 21 useful items. Furthermore, from the 21 items tested, different power tests were carried out to determine the criteria for different power items that could be used. Based on the calculation of the different power test results obtained, the number of items with the right criteria is four items. The criteria are enough as many as 14 items, and bad criteria are three questions. Problem with ugly criteria not used. Only questions with excellent and sufficient criteria can be used so that the number of items remaining is as much as 18 items. After testing the validity and different power tests, the reliability test was carried out on 18 items using the KR-20 formula. Based on the reliability test obtained $r_{count} = 0.95504$ and $r_{table} = 0.482$ with a significance level of 5%. This matter means $r_{count} > t_{table}$. So it can be seen that the research instrument is reliable to use. After the data is collected, an analysis prerequisite test is carried out with the normality test using the Chi-Square formula and homogeneity test using the Bartlett test. In this research, the hypothesis test used is a one-party t-test and two-party t-test.

RESULTS AND DISCUSSION

Researchers took the Odd End Semester Exams' value before researching to determine that the study population came from homogeneous classes. Furthermore, the value of the sample class's initial ability will be tested for normality, homogeneity test, and hypothesis testing of two parties to determine the average similarity using the t-test. Based on tests of normality and homogeneity, it is known that the samples are normally distributed and homogeneous. Hypothesis testing of two parties with a significant 5% level and dk = 66 was obtained $t_{count} = -1{,}28018$ and $t_{table} = 1{,}9949$. Because $t_{count} < t_{table}$, H_0 is accepted, and H_1 is rejected. This means no significant difference between the experimental class's initial abilities and the control class.

The results of the initial ability values analysis showed that the sample's initial ability before being given the treatment was the same so that different treatments could be given. Namely, the experimental class was treated using the Team Assisted Individualization (TAI) type of cooperative learning model. The control class was given treatment using the direct learning model. Then both classes were given a test of learning outcomes. Based on the value of student learning outcomes after being given treatment, the average value obtained by the experimental class was 86.767, and the average value of the control class was 78.104. Then the hypothesis test on mathematics learning outcomes is performed to determine whether there are differences between the experimental and control classes and determine whether the TAI learning model is more effective than the direct learning model.

The first step of testing the hypothesis is to conduct prerequisite tests, including normality tests and homogeneity tests. Furthermore, the hypothesis testing of two parties and one party is conducted. Based on the normality test of the experimental class's learning outcomes and the control class, the results obtained $\chi^2{}_{count} < \chi^2{}_{table}$. This shows that the data of the mathematics learning outcomes of the experimental class and the control class are normally distributed. Whereas the homogeneity test results

show that $\chi^2_{count} < \chi^2_{table}$ at 5% significance level and degree of freedom 1. This means that the sample has a homogeneous variance.

After the prerequisite tests are fulfilled, next is to do a hypothesis test using a two-party t-test and a one-party t-test. Based on the two-party t-test, it is known that the value of $t_{count} = 3{,}3587$, and $t_{table} = 1{,}9949$ at the 5% significance level and df = 66, which means $t_{count} > t_{table}$, so H_0 is rejected, and H_1 is accepted. This shows differences in mathematics learning outcomes between students whose learning uses the TAI type cooperative learning model and students whose learning uses direct learning. Based on one party's t-test, it is known that the value of $t_{count} = 3{,}3587$, and $t_{table} = 1{,}6672$ at the significance level of 5% and dk = 66, which means $t_{count} > t_{table}$, so H_0 is rejected, and H_1 is accepted. This shows that learning mathematics using the TAI type of cooperative learning model is more effective than the direct learning model.

Several factors that cause the TAI learning model to be more effective are in classes that use the TAI learning model, students are formed groups consisting of 4-5 heterogeneous group members, and the teacher provides individual assistance to students in need with the help of other students who have good academic skills in the group the. Also, in the TAI learning model, students are given a quiz initially, and at the end of the learning done individually. This makes students have a sense of responsibility towards themselves before joining the group even after joining the group.

CONCLUSION

1. There is a difference in mathematics learning outcomes between students whose learning uses the TAI type of cooperative learning model with the direct learning model of class VIII students of SMP Muhammadiyah 1 Minggir Sleman Regency 2016/2017 Academic Year. This is evidenced by the two-party hypothesis test results with a significance level of 5% and freedom = 66. The results obtained $t_{count} = 3{,}3587$ and $t_{table} = 1{,}9949$. Because $t_{count} > t_{table}$, H_0 is rejected, and H_1 is accepted.
2. The TAI type cooperative learning model is more effective than the direct learning model of the VIII grade students' mathematics learning outcomes of the even semester of SMP Muhammadiyah 1 Minggir 2016/2017 school year. This is evidenced by one-party hypothesis testing results with a significance level of 5% and degrees of freedom = 66. The results obtained $t_{count} = 3{,}3587$ and $t_{table} = 1{,}6672$. Because $t_{count} > t_{table}$, so H_0 is rejected, and H_1 is accepted.

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