THE EFFECTIVENESS OF COOPERATIVE LEARNING MODEL TYPE OF STUDENT TEAMS ACHIEVEMENT DIVISION (STAD) AND NUMBERED HEAD TOGETHER (NHT) TOWARD MATHEMATICS LEARNING OUTCOME

Muhammad Fajar Wilda Chadhiq[a], Edi Prajitno[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul Yogyakarta
[a]fajarrfajar@gmail.com, [b]ediprajitno@yahoo.com

ABSTRACT

Learning that tends dominated by teachers leads students are less active in the following study. Students only passively accept the teaching of teachers so that students have difficulty in understanding the material. It is thought to be one of the factors that led to lower students' mathematics learning outcomes. This research is intended to find out the effectiveness of the cooperative learning model type of student teams achievement division (STAD) and numbered head together (NHT) toward mathematics learning outcome of the VIII grade students of SMP Negeri 2 sewon Kabupaten bantul in the odd semester of academic year of 2016/2017. This study uses a posttest-only control design. There is three class in the population of this study, samples were taken from two classes with random sampling techniques to the class. Data collection was conducted with the test model. The instrument used questions related to the subject of algebra. Before analyzing data, there is a prerequisite test that consists of a normality test and a homogeneity test to do. The data analysis using t-test two parties and one party t-test. The results of a study on the significant level of 5% and dk = 53 indicating that there is a significant difference between the results of learning mathematics using cooperative learning model STAD with the use of models NHT type of cooperative learning. This is indicated by the value $t_{table} = 2,00758$ and $t_{count} = 2,127332$ which mean $t_{count} > t_{table}$, and STAD cooperative learning model is more effective than the cooperative learning model NHT type, against the mathematic learning student's results. This is indicated by the value $t_{table} = 1,675255$ and $t_{count} = 2,127332$ which mean $t_{count} > t_{table}$.

Keywords: Effectiveness, STAD, NHT, Learning Outcomes.

INTRODUCTION

A developed nation is certainly an ideal to be achieved by every country. The progress of a nation is determined by the level of educational success. Quality education will produce quality Human Resources (HR) as well. In the learning process, there are several components that can affect the learning process, one of which is the teacher component. According to Rusman (2012: 58) teachers are a very dominant determining factor in education in general because teachers play a role in the learning process, where the learning process is the core of the overall education process.

A teacher has a very important role in learning activities including the teacher as a learning resource, facilitator, class manager, supervisor, and a motivator for students. In each lesson, the teacher hopes that the students will get the results of learning in accordance with the planned learning goals. But not all students can obtain maximum learning outcomes, even there are still many students who have difficulty learning, especially in mathematics

As for the factors of the low mathematics learning outcomes of junior high school 2 sewon students in Bantul regency, it is allegedly because teachers have not precisely chosen the learning model. To improve learning outcomes and improve the learning process, then in each learning activity teachers should choose a learning model that can attract students' attention. So that in student learning activities more active, creative and students more easily understand the material presented. One learning model that can be applied is the cooperative learning model

The problems in this study are: 1) Is there a difference between student mathematics learning outcomes using the STAD type cooperative learning model and student mathematics learning outcomes using the NHT type cooperative learning model in class VIII odd semester students of SMP Negeri 2

Sewon, Bantul Regency in 2016 / 2017 ?. 2) Which is more effective between the STAD type cooperative learning model and the NHT type cooperative learning model to the mathematics learning outcomes of students of class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year ?.

The purpose of this study are 1) To find out whether or not there is a difference between mathematics learning outcomes using the STAD type cooperative learning model and NHT type in class VIII odd semester students of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year. 2) To find out which is more effective between the use of the STAD type cooperative learning model and the NHT type cooperative learning model to the learning outcomes of mathematics in class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.

THEORY

Mathematics is one branch of human science that is very useful in human life in the face of a problem. The wide scope of mathematical material and its important role in human science have led to the emergence of various opinions about the notion of mathematics.

According to James and James in Suherman, Erman, et al. (2003: 16) mathematics is the science of logic regarding form, structure, quantity, and concepts related to one another with a large amount divided into three fields, namely algebra, analysis, and geometry. According to Suprijono, Agus (2013: 5), learning outcomes are patterns of actions, values, understandings, attitudes, appreciation, and skills.

Student Teams Achievement Division (STAD) (Student Team Achievement Division) is one of the simplest learning models and is the best model for beginners for teachers who are new to using cooperative learning. According to Isjoni (2012: 74), Student Teams Achievement Division (STAD) is one type of cooperative that emphasizes the existence of activities and interactions between students to motivate each other and help each other in mastering subject matter in order to achieve maximum achievement. According to Slavin, Robert E. (2005: 143), STAD consists of five main components namely: class presentations, teams, quizzes, individual progress scores, and team recognition. The following are the STAD steps that researchers do: 1) The teacher delivers learning material to students according to the basic competencies that will be achieved. 2) The teacher forms a team of four or five students who represent all parts of the class in terms of academic performance, gender, race, and ethnicity. 3) After one or two periods the teacher gives a presentation and around one or two periods of team practice, students will get an individual quiz. 4) The teacher gives an individual progress score, the idea behind the individual progress score is to give each student performance goals that will be achieved if they work harder and give better performance than before. 5) Teachers give awards to groups that get high scores.

Numbered Head Together (NHT) or numbering of shared thinking is a type of cooperative learning that is designed to influence student interaction patterns. According to Robert Slavin in Huda, Miftahul (2013: 203-204), that "the goal of the NHT is to provide opportunities for students to share ideas and consider the most appropriate answers. In addition to improving student cooperation, NHT can also be applied to all subjects and grade levels ". The following are the stages of the NHT type of cooperative learning model that researchers do: 1) Students are divided into groups. 2) Each student in the group is numbered 3) The teacher assigns a task/question to each group to do it. 4) Each group starts a discussion to find the answer that is considered most appropriate and makes sure all group members know the answer. 5) The teacher calls one of the numbers randomly Study. 6) Students with the numbers called present their answers from the results of their group discussions.

METHODS

This type of research is experimental research. The design in this study uses True Experimental Design design with the type of Posttest-Only Control Design (Sugiyono, 2012: 112). In this study using two classes, namely experimental class I and experimental class II. In the experimental class, I conducted

learning using the STAD cooperative learning model and in experimental class, II learning was carried out using the NHT type cooperative learning model.

The population in this study were all eighth-grade students of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year consisting of 8 classes, totaling 224 students. While the sample in this study was class VIII D as the experimental class I which received treatment with the STAD type cooperative learning model and class VIII C as the experimental class II which received treatment with the NHT type cooperative learning model, the sampling technique used was the Random Sampling Technique. The data analysis technique used is the test technique with the instrument in the form of objective questions in the form of multiple choice. The instrument testing uses validity test, reliability test, and different power test. The analysis prerequisite test is the Chi-square formula normality test and the homogeneity test uses Bartlett. Research hypothesis testing uses the first hypothesis test and the second hypothesis. The first hypothesis test using a two-party t-test was conducted to find out whether or not there were differences in learning outcomes using the STAD and NHT cooperative learning models. Whereas the second hypothesis test using a one-party t-test was conducted to find out which was more effective between the STAD and NHT cooperative learning models.

RESULTS

1. Initial Ability

From the normality test at a significant level of 5% and degrees of freedom = 3, it is obtained $\chi^2_{count} = 1{,}41503$ and $\chi^2_{table} = 7{,}8147$ so $\chi^2_{count} < \chi^2_{table}$ which means that the experimental class I have initial ability data that is normally distributed. At a significant level of 5% and a degree of freedom = 1, it is obtained $\chi^2_{count} = 0{,}15884$ and $\chi^2_{table} = 3{,}8415$ so $\chi^2_{count} < \chi^2_{table}$ which means that the experimental class II has the initial ability data that is normally distributed. which means that the experimental class II has the initial ability data that is normally distributed.

From the homogeneity test at a significant level of 5% and the degree of freedom = 1, it was obtained $\chi^2_{count} = 0{,}08315$ and $\chi^2_{table} = 3{,}8415$ so $\chi^2_{count} < \chi^2_{table}$ which means that both classes have the same variance (homogeneous).

Based on the results of the analysis of hypothesis testing conducted with a significant level of 5% and 53 degrees of freedom, the value obtained $-t_{table} = -2{,}00758 < t_{count} = 0{,}238923 < t_{table} = 2{,}00758$, then H0 is accepted and H1 is rejected, which means there is no difference between the initial math abilities of students in class VIII D and class VIII C odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.

2. Mathematics Learning Outcomes

From the normality test at a significant level of 5% and degrees of freedom = 2, it is obtained $\chi^2_{count} = 0{,}378419$ and $\chi^2_{table} = 5{,}9915$ so $\chi^2_{count} < \chi^2_{table}$ which means that the experimental class I have initial ability data that is normally distributed. At a significant level of 5% and a degree of freedom = 3, it is obtained $\chi^2_{count} = 1{,}6801$ and $\chi^2_{table} = 7{,}8147$ so $\chi^2_{count} < \chi^2_{table}$ which means the experimental class II has initial ability data that is normally distributed.

From the homogeneous test at 5% significance level and the degree of freedom = 1, it was obtained $\chi^2_{count} = 0{,}440333$ and $\chi^2_{table} = 3{,}8415$ so $\chi^2_{count} < \chi^2_{table}$ which means that the learning outcomes of both classes have the same variance (homogeneous).

3. **Hypothesis Testing Learning Outcomes.**
    a. **First Hypothesis Test**
        At a significant level of 5% and degrees of freedom = 53, it is obtained $t_{table} = 2{,}00758$ and $t_{count} = 2{,}127332$ which means $t_{count} > t_{table}$ then H_0 is rejected and H_1 is accepted. So, it can be concluded that there is a difference between mathematics learning outcomes that use STAD type cooperative learning models and those using NHT type cooperative learning models in class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.
    b. **Second Hypothesis Test**
        The analysis results are obtained $t_{table} = 1{,}67525$ and $t_{count} = 2{,}127332$ which means $t_{stat} > t_{table}$ then H_0 is rejected and H_1 is accepted. So, it can be concluded that the STAD type cooperative learning model is more effective than the NHT type cooperative learning model for the learning outcomes of students of class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.

CONCLUSION

Based on the analysis of the experimental data and its discussion, this activity concludes the following:

1. There is a difference between the results of learning mathematics using STAD type cooperative learning models and those using NHT type cooperative learning models in class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.
2. Learning using the STAD type cooperative learning model is more effective than the NHT type cooperative learning model of mathematics learning outcomes for students of class VIII odd semester of SMP Negeri 2 Sewon, Bantul Regency in the 2016/2017 school year.

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