

THE EFFORT TO INCREASE MATHEMATICS LEARNING ACTIVITY BY USING LEARNING COOPERATIVE MODEL OF NUMBERED HEAD TOGETHER (NHT) TYPE OF STUDENTS CLASS VIII

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ABSTRACT

The students' lack of learning activity can be marked by lacking their enthusiasm, interaction, cooperation, and participation in the maths learning process. This research had the aim to increase the students learning activity using a cooperative learning model of NHT type. The research is a Classroom Action Research (CAR). The research subject is the VIII D of SMP Negeri 11 Yogyakarta on the even semester Academic Year 2016/2017. The object of the research is maths learning activity by using a cooperative learning model of NHT type. The technique used to collect the data is the observation method, interview method, test method, and triangulation. The research instruments were observation and interview papers. The research did twice cycles. The cycle was stopped after the indicator's result was reached out to > 60% or good criteria. The result of the research shown that maths learning by using a cooperative learning model of NHT type can increase the maths learning activity of the VIII D. Based on the result of the student's activity observation, where each learning process got an increasing percentage. The first achievement is 44.91 %. It means enough, and the other achievement became 67.83%. It means good. Based on the result of the interview, it is shown that there was a positive response to the students.

Keywords: Learning activity, Cooperative Learning Model, NHT

INTRODUCTION

Education is a right for every citizen, especially children at school age, and is an obligation for the government and parents to provide adequate educational facilities. Efforts to develop human potential can be pursued through education. Education as a business is carried out in a planned, directed, integrated, and can provide opportunities for students to develop all their potential. Mathematics is one of the subjects taught at every level of education in Indonesia, namely, basic education and secondary education, even to college. Mathematics is a science that is used to solve various kinds of problems encountered in daily life. Mathematics subject is considered to have an important role in shaping students to be quality because mathematics is a means of thinking to study something reasonable and orderly.

On Saturday, November 12, 2016, researchers conducted observations to see the activities carried out by students in the class. From the observations, it appears that during the learning process the teacher explains the material with a direct learning model, students learn more listening to the teacher's explanation in front of the class, observing the material learned, taking notes recorded by the teacher and carrying out assignments if the teacher gives exercises to students. Students have few opportunities to be actively involved in the learning process. When the teacher asks students to work on the problem, only some students dare to go forward to work on the board while some of the other students are not independent in answering the questions seen while they wait for answers from the teacher or students. When the teacher gives questions, students tend not to be able to answer. Students rarely ask questions even though the teacher has provoked questions that if not yet clear.

A learning process is needed in a way that involves the role of students actively in teaching and learning activities to improve mathematics learning activities and mathematics learning outcomes. One

learning model that actively involves students in the cooperative learning model. According to Slavin (Sholeh, Moh, 2014: 76), cooperative learning is a learning model where learners work in teams or small groups to help one another in learning material. There are several types of cooperative learning models, including Numbered Head Together (NHT). Learning by using NHT is learning that begins with numbering because the teacher divides the class into small groups. Then each group member is numbered according to the number of group members (Suprijono in Priansa, Donni Juni, 2015: 260). According to Shoimin, Aris (2014: 108) that Numbered Head Together is a group learning model in which each group member is responsible for the group's work, so there is no separation between one student and another student in one group to give and receive between one with others. Priansa, Donni Juni (2015: 261) concludes the steps of the NHT type of cooperative learning model as follows: (1) numbering; (2) asking questions; (3) thinking together; and (4) answer.

A study related to this research is a study conducted by Dian Safitri (2015), showing that there is an increase in the motivation and achievement of mathematical learning in cube and beam materials through cooperative learning models NHT type. Based on the research results Yul Eviriani (2015) showed that activities and learning outcomes were improved after being given implementation with NHT learning models. This can be seen from the percentage of students' activity on cycle I of a 59% increase in cycle II by 93%. While the results of learning for the cycle, I of 65.6% increase in cycle II to 82.7%.

In the process of learning elements, learning activity helps students understand an explanation from the teacher. According to Kunandar (2008:277), Student activity is the involvement of students in the form of attitudes, thoughts, attention, and activities in the learning activities to support the success of the learning process and benefit from the activities. According to the Directorate of High School Development (2010:58), Students ' activities in learning simply can be seen from the students ' efforts, namely (1) learners enthusiastically in the following lessons; (2) Student interactions with teachers; (3) Interaction between learners; (4) Group cooperation; (5) Student activities in the group; (6) Learners ' participation in the discussion of the results.

This research aims to increase the learning activities of mathematics by using a cooperative learning model type Numbered Head Together (NHT) in students of grade VIII D SMP Negeri 11 Yogyakarta, even semester 2016/2017 school year on The subject builds a flat side space of cubes and beams.

METHODS

The type of research used is Classroom action research (CAR). The design of the research used is as follows:

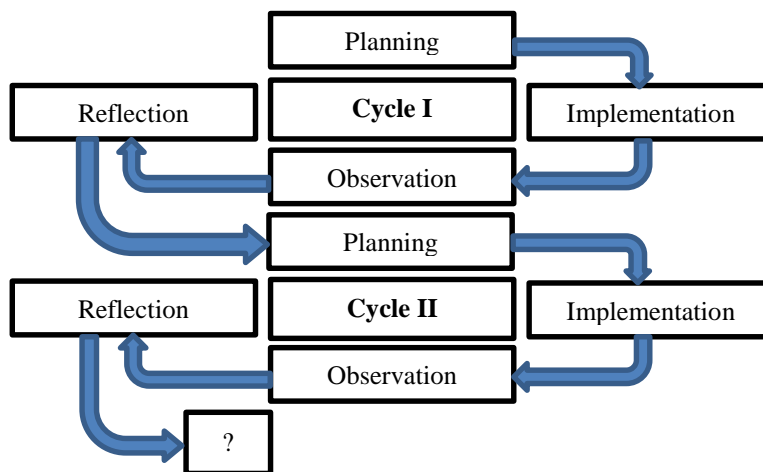


Figure 1. Design Action Research Class

(Arikunto, Suharsimi, dkk: 2012)

This class action study was conducted in class VIII D SMP Negeri 11 Yogyakarta in the even semester of the 2016/2017 school year by adjusting the lesson hours in the class. The subject in this study is students of grade VIII D SMP Negeri 11 Yogyakarta, even semester 2016/2017 school year. The number of grade VIII students amounted to 34 people comprising 18 male students and 16 female students. The object examined in this study is the implementation of the NHT-type cooperative learning model on mathematics learning as an effort to increase learning activity in students of grade VIII D SMP Negeri 11 Yogyakarta In fact semester 2016/ 2017. The procedure of class action research is implemented in two cycles. There are 4 data collection techniques: Observation methods, interview methods, test methods, and triangulation. The instruments used for data retrieval in this research are observation sheets, interview guidelines, and test questions. This observation sheet consists of several items used to evaluate all the actions that occur in the learning to suit the purpose of research. The interview guidelines are structured to know things less clearly observed at the time of observation and to know the student's response to the mathematical learning process. The question of the test contains the questions in the form of descriptions that students are working on individually and given at each end of the cycle. The data analysis techniques used are analysis of the observation data and analysis of the results of interviews. The indicator of the success of this research is that students ' learning activities in mathematics learning are increasing, and the percentage of student learning activity reaches the criteria of the minimum value of either ($P > 60\%$).

RESULTS AND DISCUSSION

In this study, researchers acted like a grade VIII mathematics teacher and assisted by four UAD students who acted as observers. Researchers carry out this research by the steps that exist on the Lesson Plan. The following is the ITS activities description:

1. Cycle I

- a. **Planning:** In the planning phase, researchers initiated the research by determining the class VIII D even semester material that would be the research object with the teacher of the mathematics subjects concerned. The activities undertaken in this planning phase include drafting activities that will be implemented: (1) the preparation of learning tools that include the Learning Plan and Student Worksheets. Lesson Plan is compiled by researchers and consulted to teacher mathematics class VIII D. Lesson Plan is composed of one Lesson Plan for two meetings. Student Worksheets were compiled by researchers and then consulted with mathematics teachers. (2) The preparation of research instruments, which include observation sheets, student interview guidelines, group division, and Test I. Prepared observation sheets, are observation sheets of students ' learning activities used to observe learning activities Students. An observation sheet of student learning activity is about the indicator of student learning activities observed during the learning process. The interview guidelines are arranged to facilitate the response to the implementation of the learning being implemented. Questions asked to students as many as nine questions. This group division is based on the results of the semester exam, even semester for mathematical subjects. In this cycle, seven groups were formed where six groups consisted of 5 members, and 1 group consisted of 4 members. I have a test about the description consisting of 4 questions.
- b. **Action Implementation:** At this stage, researchers carry out actions by the Lesson Plan that have been compiled by researchers and have been approved by the mathematics teacher class VIII D. Learning Mathematics is conducted by implementing the cooperative learning model of NHT type. The learning activities are divided into initial activities, core activities, and closing activities. The stages in cooperative learning of NHT type are located in core activities. In core activities, researchers provide material explanations. Furthermore, researchers announce the division of previously created groups based on the even semester Midterm. Researchers divide students into seven groups. Researchers asked students to sit according to a designated group—the seating arrangement for discussion forms like the letter

U. Furthermore, researchers share the numbers 1, 2, 3, 4, 5 to each group. Furthermore, researchers provide the student worksheet that has been prepared for each group. Researchers ask each member of the group to share ideas that they have at the time of discussion so that at any time, the researcher calls one of the numbers in his/her group members to give the member the answer Know the answer. When students discuss, researchers come to each group to help and guide students who are experiencing difficulties. After finishing the task, the researcher summoned one of the numbers randomly to move forward to report the results of his work and asked the other group to follow along and pay attention to the exposure of his friend. Researchers provide another group's opportunity to respond. After all, the problems are presented, and the wrong answers have been refined, then the researcher allows recording and asking if there is the less obvious material.

- c. **Observation:** Observations are conducted based on the observation guidelines of the learning activities that have been compiled by previous researchers. In the observation phase, the researchers assisted four people's observers to observe student learning activities in mathematics learning by using the NHT type Cooperative learning model. Six aspects are observed that students are enthusiastic in following the lesson, interaction students with teachers, the interaction between students, group cooperation, student learning activities in the group, and student participation in concluding the results of the discussion.
- d. **Reflection:** Based on the implementation of action and observation of the first and second cycle I, in following the learning process, students can receive learning using a cooperative learning model of NHT type. Implementation is not optimal, so it needs to be held reflection on the observation result that has been done as input material to determine action in cycle II.

2. Cycle II

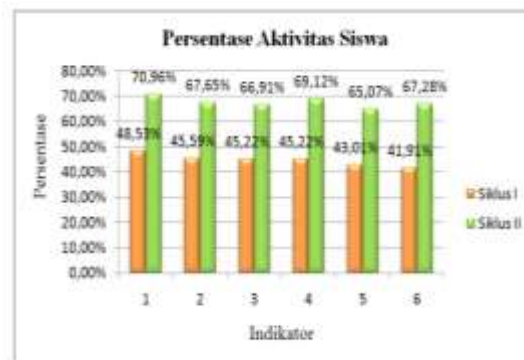
- a. **Planning:** At this stage, I re-planned the learning action as in cycle I to correct and correct deficiencies in the I cycle.
- b. **Action Implementation:** At this stage, the implementation of the action is not much different from the implementation of the action in cycle I. It has only been a few revisions based on the reflection on cycle I to further improve student learning activities in mathematics.
- c. **Observation:** This stage is almost identical to the observation in cycle I, but it is more focused on observing the students' learning activities during the learning process.
- d. **Reflection:** At this stage is done data processing and discussion between researchers and teachers of mathematics subjects. This reflection will be used to find out how much student learning activity increases in mathematics.

If there is no increase in student learning activities, then the research activity continues in the next cycle. However, if there is an increase in a student learning activity of $> 60\%$ (good category), then the research activity is terminated. The results of a class action study consisting of two cycles of the cycle I and cycle II on learning Mathematics using a cooperative learning model of NHT type demonstrate increasing student learning activities in learning Math. This is evident from the observation and the results of the student interviews indicating an increase. Increased percentage of student learning activities in mathematics learning by using cooperative learning model NHT type from cycle I to cycle II can be seen in table 1 and figure 2 below:

Table 1. Analysis of observation results Student Learning activities in mathematics learning

No	Indicator	Percentage		Information
		Cycle I	Cycle II	
1	Enthusiastic learners in the following learning	48,53%	70,96%	Increased
2	Student interactions with teachers	45,59%	67,65%	Increased
3	Interactions among learners	45,22%	66,91%	Increased
4	Group cooperation	45,22%	69,12%	Increased
5	Student activities in the group	43,03%	65,07%	Increased
6	Learners participation in concluding discussion results	41,91%	67,28%	Increased
	Mean	44,91%	67,83%	
	Criteria	Enough	Good	

Based on table 1, all indicators are experiencing an increase from cycle I to cycle II. In the cycle, The student study activity in mathematics learning is 44.91% insufficient criteria. In cycle II The learning activities of students in mathematics learning increased to 67.83% in the right criteria. So that it can be concluded an increase and has managed to achieve good criteria. For more details are presented in the following graph:

**Figure 2.** Graph of the increasing percentage of student learning activity cycle I and cycle II

The increase in student learning activities is due to teachers' use of learning models during the learning process. In Figure 2 can be seen that the percentage for the cycle I average below 50.00% all. In the initial condition before being given the cycle I action most students are still ashamed and afraid to ask the teacher, not only to the teacher there are still students who are reluctant to ask a friend in one of his groups when experiencing difficulties, and when to Conclude the results of students' discussions still do not dare to deliver answers in front of the class. In cycle, I is seen in indicator number 6, which is the participation of learners in the conclusion of the results is the lowest percentage among all indicators is 41.91%. After being given the act of motivation given to students to boldly convey his opinion, appoint students to conclude the material and appoint another student to perfect the conclusions expressed by his friend, And give praise for students who want to participate in concluding the results of the discussion, there is an increase of 67.28% in cycle II.

The success of action in cycle I is seen in the observation results of student learning activities. The average percentage of students' study activities still meet enough criteria of 44.91%. Researchers decided to continue the action on cycle II because it has not achieved either criterion. In cycle II is expected to increase and be able to meet good criteria. Once given the action cycle II turns out the increase and change of criteria is 67.83% entry in good criteria, even all the indicators of learning activities students show good criteria.

A. M, Sardiman (2011:95) argues, in principle, learning is doing. There is no study if there is no activity. That is why researchers devise a plan to use learning models to increase students' learning activities in mathematics learning. The learning models that researchers use are the model of cooperative learning NHT type. The hallmark of this NHT model is numbering. The student is called by the teacher randomly according to the number in the head, so students must be prepared to go forward to convey his opinion. The implementation of the NHT model has increased in every cycle.

Based on research conducted by Dian Safitri (2015), it turns out that the model of NHT cooperative learning can not only increase motivation and learning achievement proved that based on research has been proven model NHT-type cooperative learning can also increase student learning activities. Research conducted by Yul Eviriani (2015) that model of cooperative learning NHT type can increase the learning activity of students in the surgical materials calculate the form of algebraic. Not only in the form of algebraic operation material, but the NHT Cooperative learning model can also increase learning activity in students with a flat side space building material.

Based on the researcher's interviews with students, students' responses are very good at learning mathematics using the NHT type Cooperative learning model. From the interviews obtained the following results:

1. Students feel that math learning is more enjoyable after using the NHT-type cooperative learning model.
2. Students find it easy to understand the material in learning mathematics because students discuss groups and exchange the minds of group members.
3. Students have tried to ask if they have difficulties in problem-solving.

Overall, it can be concluded that mathematics learning by using the NHT type Cooperative learning model can be used as an effort to improve student learning activities in mathematics learning in class VIII SMP Negeri 11 Yogyakarta in the even semester 2016/2017. Thus the hypothesized action proved.

CONCLUSION

The results of class action research through cooperative learning model type Numbered Head Together (NHT) in grade VIII students SMP Negeri 11 Yogyakarta even semester 2016/2017 school year can be concluded, namely learning model NHT can increase the learning activities of mathematics in students. This is demonstrated by the increase of student learning activity from 44.91% in cycle I with sufficient criteria and increased to 67.83% in cycle II with good criteria.

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