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**IMPLEMENTATION OF COOPERATIVE LEARNING MODEL OF NUMBERED HEADS
 TOGETHER (NHT) TYPE ON THE SUBJECT OF STATISTICS
 AT VOCATIONAL HIGHT SCHOOL**

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Abstract. This study Purpose to describe the steps of cooperative learning model of numbered heads together (NHT) Type that can enhance students' understanding on the subject of statistics. Subject of study are all students of XI class Health vocational high school of Al-Yasini. This type of research is a action research that refers to the O'Leary model. The data collected is derived from the work of the student worksheet, final of cycle test, observation result of teacher and student activities. The results of observation indicate that the activity of teacher and student have fulfilled good category, (2) percentage of students completion in solving problems in student worksheet more than 75%.

Keywords: Cooperative Model; Numbered Heads Together (NHT); Statistics

A. INTRODUCTION

Mathematics is one of the subjects in school that Holds an important role. The role of mathematics is used to take college entrance test. Basic Mathematics is one of the materials that is tested in the Joint Selection of State Universities (SBMPTN), both sains and technology groups and social humanities. Mathematics is a science that has special characteristics, one of which is understanding (Yosefa & E., 2013). Therefore, in learning mathematics is needed a way to be able to develop students' understanding.

The ability of students' understanding is seen through their ruling on mathematical material. The mastery of the material is also shown from the result of daily test value of statistical material which still has not reached KKM that is 80. Based on the value of daily test of XI class Health vocational high school of Al-Yasini, it is known that most students have not succeeded in learning mathematics. Based on interviews with mathematics teachers related to students' difficulties in learning, obtained information that at the time of learning students are less active to ask the teacher for fear of wrong or lack of confidence if there is material that is not understood. In addition, the lack of understanding of students' materials and difficulties in solving problems of mean, median, and mode for group data. Thus, it is known that the unsuccessfulness of students in learning mathematics is caused by difficulties in understanding the material in teaching by teachers.

In addition through interviews to trace the causes of students' the unsuccessfulness in learning, researchers also observed learning directly. Based on the observations in the classroom, the teacher still dominates the learning by explaining the material, giving examples of problems, and exercises that are done individually or in groups. The concept of the material is explained by the teacher without giving the students the opportunity to discover or construct their own knowledge. Furthermore, the teacher gives an example of the problem along with how to solve it and exercises. In solving the problem, students tend not to guess how to solve the problem if without a given example first. As a result, when given other difficult questions,

students have difficulty in solving them. Therefore, it can be said that students' understanding in solving math problems is still low.

Previous learning applied to be teacher-centered. According to Marpaung (Tahmir, 2008). one of the characteristics of teacher-centered learning is that teachers transfer knowledge to students. For that, it is necessary to improve learning which is still centered on the teacher to be student oriented. According to Kilpatrick (Kilpatrick, 2011), for students to succeed in learning mathematics, learning must be meaningful and interesting. In addition, Belmont (Nickerson, 2010) that learning becomes very effective if students build their own knowledge. The problems that often happens in an efforts to improve the success of the learning process, that is how the teacher provides learning so that the learning process can be effective and can achieve results as a destination. To implementation the learning process, teachers must choose a learning model that can resolve student learning difficulties in material statistics. Therefore, the cooperative learning model that is considered appropriate in this research is cooperative learning model of Numbered Heads Together (NHT) type.

One of others the characterize of the cooperative learning model of Numbered Heads Together (NHT) type is that teachers only appoint one of the students representing the group, so that each individual in a group will have the same responsibility (Wijaya, 2015). Furthermore, Wijaya explained that the cooperative learning model of Numbered Heads Together (NHT) type can provide an opportunity for students to cooperate with others in the group. With the cooperative learning model of Numbered Heads Together (NHT) type. every student will be serious in the discussion and also a intelligent student will teach the less intelligent students (Alie, 2013).

Some study results have shown that cooperative learning model of Numbered Heads Together (NHT) type has a positive impact in mathematics learning. The study with Numbered Heads Together (NHT) model has been done by Panjaitan (Panjaitan, 2008) which researching about the use of cooperative learning model of Numbered Heads Together (NHT) type on the subject of Relation Set. Furthermore, Balfanz (Balfanz, 2006) researching about the effect of the relationship of Numbered Head Together (NHT) and Questioning techniques to students' understanding. Based on the description, this study purpose to describe the steps of cooperative learning model of Numbered Heads Together (NHT) type that can improve students' understanding on the subject of statistics.

B. MATERIAL AND METHODS

The study was implemented at Health vocational high school of Al-Yasini, in the second semester of academic year 2016-2017. The subjects of the study were nursing XI class students of 28 people, consisting of 10 men and 18 women. This type of study is a action research. This study procedure refers to action research of O'Leary Model (O'Leary, 2004) which consisting of four steps: (1) planning, (2) action, (3) observation, and (4) reflection. At the planning step, the researcher develops learning tools and research instruments. Furthermore, learning tools and research instruments are validated by two validators. If the set of instruments and research instruments are said to be valid, then it can be used to retrieve the data at a later step.

The success criteria of action in this study is the result of the analysis of teacher and student observation data at least on good criteria. In addition, the increased understanding of students seen on the mastery of subject matter, it is (1) A total of 75% of students get a minimum of 75 in solving the problem at the final of the test cycle, (2) the percentage of completeness students in solving problems in the student worksheet more than 75%. If the study success criteria are unfulfilled, the researcher will improve the strategy used and apply in the next cycle. Conversely, if the study success criteria have been fulfilled, then the implementation of the next cycle is stopped and the study is said to be successful.

C. RESULT AND DISCUSSION

1. Result

Implementation of study begins with the planning step, where researchers prepare learning tools and research instruments. Learning tools include lesson plan and student worksheet. While the research instrument used consisted of validation sheet, observation sheet of teacher and student activity, interview guide, and final test cycle sheet. After learning device and research instrument are prepared, the next step is validated by two validators. From the validation results indicate that learning tools and research instruments are valid, so it can be used for the learning process.

Before the study was implemented, the researcher made preparations related to classroom management. In the preparation, researchers discussed with the mathematics teacher to form a student learning group. The group is determined based on preliminary test results on statistics. Each group consists of four students and includes students heterogeneous academic ability category. The formation of heterogeneous groups can feature the interaction within the group, so it will make students accept other students who are ability and of different sex (Suherman, 2003).

This study was conducted for two cycles, each cycle consisting of two meetings and one final cycle test. The purpose of this test is to know the students' understanding ability after the implementation of cooperative learning model of Numbered Heads Together (NHT). After the implementation of the learning and final of cycle tests, the researchers also do interviews with two students representing each category of academic ability. The purpose of the interview is to accentuate students' responses to the teacher's learning, mastery of the material being taught, and the difficulty of students in completing the test questions.

During the learning activities, held observations on the implementation of activities of teachers and students in learning. The observation result during one-cycle shows that teacher and student activities are in good category. This means that the activity of teachers in implementing learning and student activity has reached the criteria of research success. For the final of cycle test score of the one-cycle obtained as many as 16 of 28 students who took the test score below 75. Then, the results of student work in solving problems in the student worksheet obtained percentage of 73.66%. Based on observation data, quiz and final test in cycle I, this research has not met the criteria of success. Therefore, the study continued on two-cycle.

Before the study continued on two-cycle, researchers and observers analyzed the constraints faced in learning in one-cycle. Next will be done activities to improve the learning action for two-cycle. The result of observation during two-cycle shows that the activity of teacher and student are in good category. A total of 78.27% of students get the value a minimum of 75 in solving the problem in the final of cycle test. While the percentage of complete students in solving problems in the student worksheet more than 75%. Thus, it can be said that based on all data obtained in two-cycle of the student activity observation, the final of cycle test has met the criteria of success, so no need to be implemented next cycle.

2. Discussion

The cooperative learning model of Numbered Heads Together (NHT) type has accentuate characteristics compared to other types of cooperative learning is that teachers only appoint one of the students representing the group, so that each individual in a group will have the same responsibility (Wijaya, 2015). Numbered Heads Together (NHT) type Steps among others are numbering, questioning, heads together, and answering (Ibrahim, 2005).

In the numbering step, the researcher give different numbers to each of the group members consisting of four students and includes the heterogeneous category of student academic ability. Group formation can be done by teachers (Eggen & Kauchack, 2010). Then, the teacher announces the division of the group and asks for each named student name to join the group immediately. However, the students looking confused and are still waiting for directions from the teacher to determine the desired place. In accordance with the results of interviews with teachers of mathematics, that students are not accustomed to study in groups.

So that students have not experienced to form groups independently. Responding to this, researchers take action by arranging the students sitting position before the learning takes place. This will save time for the next learning activity.

After each student gets a different number, the researcher gives problems in student worksheet. In the Questioning step, the researcher performs questions and answers related to previous material to check students' understanding. At the first meeting, some students still look passive. Students are not used to asking questions. However, at the third meeting, students begin to arranging and get used to asking questions about the unknown. In step heads together step, students work together in groups to work on the problems given in the student worksheet. When solving problems at the student worksheet, students can discuss with their group mates. Through discussion, students can also reevaluate their answers. In addition, discussions can help students to learn from mistakes or difficulties encountered (Anthony & Walsh, 2009). In the Answering step, the researcher calls the number at random and asks the student representatives to present the results of the discussion in a classical way. As for the same number are given the opportunity to respond or ask the representative of the group whose presentation. Once the group is completed, it is also given the opportunity for students holding different numbers to present the issues that have been discussed in front of the class. Presentation activities can help students to dare to express their ideas and explain them to other friends, dare to accept criticism and suggestions from others. Students often feel nervous or embarrassed when asked for presentations in the classroom. This is because the students are not accustomed to doing presentation activities in learning. However, at the next meeting, students start adapting and are accustomed to discussing in groups and presentations in front of the class.

After the presentation is completed, the teacher provides reinforcement of the material that has been discussed during the lesson. This is supported by the opinion of Ruseffendi (Ruseffendi, 1988) that in the process of learning, especially in this stage the teacher must still carry out the strengthening of the objectives (1) to increase students' attention (2) to create and nurture students' attention (3) control and modify student behavior less positive and encourage productive student behavior. Furthermore, the researcher gives the material information selanjutnya and close the meeting with greetings.

D. CONCLUSION

Based on the results of data analysis, it can be concluded that learning using cooperative learning model of Numbered Heads Together (NHT) type can improve students' understanding is (a) numbering step, the researcher give different number to each group consisting of four students and cover ability category heterogeneous student academic derived from the students' scores on the initial test, (b) the questioning step, the researcher performs questions about the previous material to check students' understanding, (c) the heads together step, the students work together in the group to work on the problems given in the student worksheet. Through the discussion, students can also reevaluate their answers, then (d) the answering step, the researcher calls the number at random and asks the student representatives to present the outcome of the discussion in a classical way. As for the same number are given the opportunity to respond or ask the representative of the group whose presentation.

Learning model of cooperative of Numbered Heads Together (NHT) type makes it facilitate students in understanding the material being. This is known from the interview, students say that learning with NHT type cooperative model more interesting and make them challenged in learning. So, the model cooperative learning model of Numbered Heads Together (NHT) can be an alternative learning in the classroom. In order for the learning process can be run in accordance with the plan and goals to be achieved, then in applying cooperative learning model of Numbered Heads Together (NHT) need to management the time and class settings.

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