

THE INFLUENCE OF THE NHT TYPE COOPERATIVE LEARNING MODEL ON MATHEMATICS LEARNING OUTCOMES OF CLASS III CLASS MIS JIHAN ULFANI

ABSTRACT

The purpose of this study is to see how the NHT type of cooperative learning model affects the mathematics learning results of class III pupils at MIS Jihan Ulfani. The population of this study consisted of 332 students from class III MIS Jihan Ulfani. Random sampling was used to choose the research sample of 74 people. This study employs a single factor independent groups design. The test approach was used to obtain data on critical thinking skills and mathematics learning outcomes. MANOVA is used to analyze data. The results showed that: (1) there was a significant effect of the NHT type of cooperative learning model on critical thinking skills, (2) there was a significant effect of the NHT type cooperative learning model on mathematics learning outcomes, (3) there was a significant effect of the type of cooperative learning model NHT simultaneously on critical thinking skills and mathematics learning outcomes. Thus, it can be concluded that the cooperative learning model of the NHT type has a positive effect on critical thinking skills and mathematics learning outcomes for class III students of MIS Jihan Ulfani

Keywords: NHT type Cooperative Learning Model, Critical Thinking Ability, Mathematics Learning Outcomes

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A. INTRODUCTION

Education is the most valuable asset for this nation. Education in elementary schools is the most basic thing that is used as a guide for further education. The educational process is expected to run optimally and with quality. Education is not a process of imposing the will of a teacher on students, but an effort to create conducive conditions for students, namely conditions that make it easy for students to develop themselves optimally. The implementation of education in question is related to the educational process that occurs throughout a child's life which is marked by continuous changes from one situation to the next in a mechanism between existing educational aspects. The container of this education is the school as a place for organizing learning process activities.

Learning is the heart of the educational process in an educational institution. Learning is a change in knowledge, skills and attitudes as criteria for learning. Mathematics is one of the subjects taught at all levels of education which has a very important role in mastering science and technology. Learning mathematics in elementary schools is a basic concept that is used as the basis for learning at the next level.

One of the life skills that needs to be developed through the educational process is thinking skills. A person's ability to be successful in life is determined, among other things, by his ability to think critically, especially in solving a problem. Students will have the ability to identify central issues or main issues, compare similarities and differences, make and formulate questions appropriately, find causes of problem occurrences, be able to assess impacts or consequences, be able to predict further consequences from the impact of events, be able to explain problems and make simple conclusions, be able to design a simple solution, and be able to reflect on the values or attitudes of the event. So that students will be skilled in solving problems both personal problems and social problems because in essence students live in a society full of seeds of potential problems (Imron, 2016).

Critical thinking ability is a process that is carried out by students skillfully and actively in an organized manner that allows students to evaluate evidence on observation and communication, information and argumentation (Egok, 2016). Critical thinking is a reflective thinking process that requires careful decision-making through a series of procedures to analyze, test and evaluate evidence and is carried out consciously

(Ritiauw, 2016). Critical thinking is a person's mental activity in collecting, categorizing, analyzing and evaluating information or evidence in order to make a conclusion to solve a problem. (Amir, 2015).

Florea (2014) states that critical thinking is a way of approaching and solving problems based on persuasive, logical and rational arguments, which involve verifying, evaluating and choosing the right answer to a given task and reasoned rejection of other alternative solutions.

Critical thinking is a conscious process that is used to interpret or consider information and experience that accompanies a behavior. Ennis (in Lasmawan, 2010:345) adds that the characteristics of people who think critically are 1) Look for clear answers to each question. 2) Looking for excuses. 3) Try to know the information well. 4) Using a credible source and mentioning it. 5) Pay attention to the situation and condition as a whole. 6) trying to stay relevant to the main idea. 7) Given the original and fundamental interests. 8) Look for alternatives. 9) Be open minded and open minded. 10) Seek as much explanation as possible whenever possible.

The existence of the teacher in the learning process is very influential on student learning outcomes. However, until now, teaching mathematics in elementary school

teachers still regard students as objects in the learning process. This causes students to only receive information from the teacher and student activities become passive. This situation makes students' critical thinking skills less. This is in accordance with the opinion (Nasrun, 2016) which states that in the process of learning, the process is interaction between teachers and students who interact. Not only teachers affect students, but students can also affect teachers. The interaction in the learning process does not only occur among students, but among students in human resources (that is, those who can provide information), and between students and learning media. This means that during the learning process in the classroom the interaction that occurs must be balanced between the teacher and students and vice versa. Because if there is only one direction, the learning conditions will be passive. Students are expected to be able to dig up information without having to listen to the teacher's explanation. Apart from teachers, they also get learning resources from books or their direct experience.

The teaching and learning process generally does not encourage the achievement of critical thinking skills. According to Ahmatika (2016) there are two factors that cause critical thinking not to develop during

education. First, the curriculum is generally designed with broad target material so that the teacher is more focused on completing the material. That is, mastery of the material is prioritized over students' understanding of mathematical concepts. Second, that the learning activities in class that have been carried out by the teacher so far are nothing but the delivery of information (lecture method) by activating the teacher more, while students passively listen and copy, where occasionally the teacher asks questions and students answer. Then the teacher gives an example of training students' critical power.

In all learning process activities in the classroom, the teacher should always provide learning innovations by using various learning models but still in accordance with the learning objectives at that time. Especially when learning mathematics, because in general students complain that mathematics is difficult. This is a challenge for teachers how to design learning so that it can be fun and eliminate students' thoughts that learning mathematics is difficult. This resulted in students' mathematics learning outcomes were not optimal. The word mathematics comes from the Latin, *manthhanein* or *mathema* which means learning or things to learn, while in Dutch, mathematics is called *wiskunde* or

exact science which is all related to reasoning (Depdiknas in Susanto, 2013: 184).

Learning mathematics is a teaching and learning process built by teachers to develop students' creative thinking which can improve the ability to construct new knowledge as an effort to improve good mastery of mathematical material (Susanto, 2015: 186) There are two factors that influence student learning outcomes, namely students themselves and their environment. Factors from the students themselves include the ability to think, motivation, interest and readiness physically and spiritually. Learning factors from the environment include teachers, infrastructure, learning resources and family.

According to Andri (2017), factors that influence mathematics learning outcomes are school facilities, family, psychological factors, student abilities, student interaction, electronic media and student discipline. In line with this opinion, learning outcomes as an indicator of achieving learning objectives in the classroom cannot be separated from the factors that influence the learning outcomes themselves. Sugihartono et al (in Wardhani 2015), mentions the factors that influence learning outcomes, as follows: a) Internal factors are factors that exist within individuals who are learning. Internal factors include: physical factors and psychological factors, b) External

factors are factors that exist outside the individual. External factors include: family factors, school factors, and community factors.

Based on observations of the learning process carried out in class III MIS Jihan Ulfani, especially learning mathematics and students' critical thinking skills in class III, the reality in the field of learning mathematics is still far from expectations, this is because teachers have not been able to apply various models, especially teachers. still apply learning patterns by giving material through lectures, practice questions, then giving assignments. This situation still creates learning interactions that are still less effective so that they are less meaningful. This can be seen from the score of the Odd Semester End Deuteronomy, the average student score is less than the KKM that has been set. Out of a total of all students, around 56% of students have learning outcomes in mathematics below the KKM. In addition, evidence of students' critical thinking abilities is still low according to research conducted by Nugraha (2017) students' critical thinking skills have not been facilitated and have never been measured, this is evident when the teacher shows them with LKPD and test questions used to evaluate learning outcomes oriented low order thinking, namely at the level of remembering (C1) and understanding (C2).

To overcome this problem, the role of the teacher is very influential for the achievement of student learning outcomes. The selection of learning models that are adapted to the material, the use of learning media, the teacher's strategy in designing the classroom atmosphere has an important role. In terms of using learning models, teachers can apply learning in groups with the hope that in group discussions there will be interaction between students which will influence student motivation in learning so as to achieve optimal learning goals.

The NHT type cooperative learning model is a group learning model designed by giving each child a head number in each group. The Numbered Head Together (NHT) learning method has procedures that are explicitly defined to give students more time to think, answer and answer each other, involving students more in studying the material covered in the lesson. (Zativalen, 2016).

NHT is a type of cooperative learning that emphasizes a special structure designed to influence student interaction patterns and aims to improve academic mastery. Each student in the group is deliberately given a number to facilitate group work, compiling material, presenting and getting responses from other groups (Aristyadharma, 2014). The steps of the NHT type cooperative learning model

according to Ula (2013) are as follows. (1) Numbering Phase: The teacher divides students into groups of 3-5 people and each student in the group has a different number, (2) Asking Questions Phase: The teacher asks questions to students. Questions can vary and can be specific, (3) Thinking Phase Together: Students unite their opinions on the answers to questions and make sure each member in their team knows the team's answers, and (4) Question Answering Phase: The teacher calls a certain number randomly. The student whose number was called raises his hand and tries to answer the question for the whole class.

The use of the NHT type cooperative learning model in the learning process is able to make material. what is conveyed is easier for students to understand, students are able to explore their own knowledge students also feel happy and enthusiastic so they can solve the problems given. Interaction in the study group can train students in accepting group members who have less ability to understand lessons. Students in their groups are responsible for providing explanations to their friends who do not understand the material being studied. In group learning it will also lead to an attitude of cooperation between group members, because students feel that the success of the group is determined by each group member in completing the task. The NHT type of

cooperative learning model is suitable to be applied in elementary schools with the advantages of 1) creating a positive dependency attitude on group members in completing tasks for which they are responsible, 2) having personal responsibility regarding subject matter in group members so that students are motivated to help his friends, and 3) improve the skills of working together in solving problems. (Isjoni, 2013). Based on this background, a study was conducted with the title “The Influence of the NHT Type Cooperative Learning Model on Mathematics Learning Outcomes of Class III Class MIS Jihan Ulfani”.

The purpose of this study was to determine the effect of the NHT type of cooperative learning model on critical thinking skills and mathematics learning outcomes for third grade students of MIS Jihan Ulfani.

B. METHOD

This type of research is quasi-experimental research. In this research design requires an experimental group and a control group. The experimental group was given treatment in the form of a cooperative learning model of the NHT type and the control group was given scientific learning treatment. This

research was conducted to describe the effect of the NHT type cooperative learning model on critical thinking skills and mathematics learning outcomes, thus the research data analysis design used was a single factor independent group design, data analysis used MANOVA analysis. The variables in this study, namely the NHT type cooperative learning model, critical thinking skills, and mathematics learning outcomes.

The population in this study were all grade III students at MIS Jihan Ulfani for the 2022/2023 academic year, which consisted of 10 classes in 7 schools. The total population in this study was 332 students. The drawing of the sample was carried out by using random sampling technique to select the experimental group and the control group. By using this technique each class has the same chance or opportunity to be the subject of research. The selection of the research sample was not done by individual randomization but by class randomization. In order to get an equivalent class from an academic point of view, it is necessary to score the results of the general mathematics test in the first semester. For class equality, the entire population is analyzed by t-test. After knowing the equal groups, a draw was then carried out to determine the sample. The drawing method is done by writing the names of pairs of equal groups on each piece

of paper, then the paper is rolled up. Then put in a bottle with a hole in the top. Take out two rolls of paper. The paper rolls that came out were then used as research samples. The experimental class is class III SD No. 2 Sading, totaling 35 people and the control class is class III SD No. 3 Sading, totaling 39 people.

There are two data collection methods in this study. For critical thinking skills using a test method with a description test instrument and for mathematics learning outcomes using a test method with multiple choice test instruments. Before the research instrument in the form of a test of critical thinking ability and mathematics learning outcomes is used, validity, reliability, level of difficulty, discriminating power and deception effectiveness are first tested.

Testing the research hypothesis was carried out using manova. All hypothesis testing was carried out using the SPSS Statistics 16.0 program with a significance level of 5%. In this study, hypothesis testing was carried out as follows (1) there was an influence of the NHT type of cooperative learning model on the critical thinking skills of third grade students of MIS Jihan Ulfani, (2) there was an influence of the NHT type of cooperative learning model on the mathematics learning outcomes of class III



students of MIS Jihan Ulfani , and (3) there is an influence of the cooperative learning model simultaneously on critical thinking skills and mathematics learning outcomes for third grade students of MIS Jihan Ulfani.

C. RESULTS AND DISCUSSION

From the calculation of the data description that has been carried out from the four data groups, the recapitulation of the calculation results is presented in Table 01 below.

Table 01. Table of Recapitulation of Mathematics Learning Outcomes of Students who are Taught with the NHT Type Cooperative Learning Model and Students who are Taught with Scientific Learning

Statistics Data	A1Y1	A2Y1	A1Y2	A2Y2
N	39	35	39	35
Mean ()	78,14	68,85	79,57	75,64
Median	80	70	80	75
Standard Deviation (SD)	11,38	9,70	7,99	10,21
Varians ()	129,54	94,03	63,78	104,18
Minimum Score()	55	55	65	60
Maksimum Score ()	95	85	100	95
Reach/ range	40	30	35	35

Testing the first hypothesis which reads that there is an influence of the NHT type cooperative learning model on the critical thinking skills of class III MIS students Jihan

Ulfani, using one way anava. A summary of the one-way analysis of variance can be seen in Table 02 below.

Table 02. Summary of the First Hypothesis Test

Source of Variance	JK	db	RK	F	Sig.
Inter group	1594,259	1	1594,259	14,389	<0,01
Inner Group	7977,363	72	110,797		
Total	9571,622	73			

From the results of the analysis above, a significance value of 0.011 <0.05 was obtained. This means that there is an influence of the NHT cooperative learning model on the critical thinking skills of class III MIS students Jihan Ulfani. Students who are taught with the NHT cooperative learning model can improve students' critical thinking skills. The application of the NHT type of cooperative learning model can help students to improve and improve cognitive skills and processes, knowledge obtained through models that can strengthen understanding, causing students to direct their own learning activities by involving their minds, encouraging students to think and work on their own initiative. This advantage has been seen in every learning step of the NHT type cooperative learning model, namely the teacher asking questions or giving problems to each group to solve together. Students discuss the problem and ensure that all group members can solve the problems that

have been given. Then the teacher calls one of the student numbers randomly and the student whose number is called answers or presents the results of the discussion in front of the class. The use of the NHT type of cooperative learning model is expected to be able to improve students' critical thinking skills because using an innovative and fun model makes students feel more comfortable participating in teaching and learning activities.

Based on the implementation of the NHT type cooperative learning model in mathematics learning, it provides an opportunity for students to be able to solve a problem and improve their thinking skills so that learning becomes more meaningful. In contrast to scientific learning which is applied to the control group. The role of students in the learning process is only to listen to the teacher's explanation, the one-way communication in question is only the teacher who provides the knowledge they have, and students only listen without giving a response. This causes students' understanding of the material conveyed to be lacking, so that later it will have an impact on student learning outcomes. In line with the opinion of Permana (2016) which states that the NHT type cooperative learning model influences

students' critical thinking skills in social studies subjects.

That way the NHT type cooperative learning model is very suitable to be applied to elementary school children in increasing student learning motivation.

Testing the second hypothesis which reads that there is an influence of the NHT type cooperative learning model on the mathematics learning outcomes of class III MIS Jihan Ulfani, using one way anava. A summary of the one-way analysis of variance can be seen in Table 03. below.

Table 03. Summary of the Second Hypothesis Test

Source of Variance	JK	db	RK	F	Sig.
Inter group	409,952	1	409,952	4,543	0,036
Inner Group	6497,143	72	90,238		
Total	6907,095	73			

From the results of the analysis above, a significance value of $0.036 < 0.05$ was obtained. This means that there is an influence of the NHT type of cooperative learning model on the mathematics learning outcomes of class III MIS students Jihan Ulfani. Based on the implementation of the NHT type cooperative learning model in mathematics learning, it provides an opportunity for students to be able to solve a problem and improve their thinking skills so that learning becomes more

meaningful and achieves maximum learning outcomes.

The application of the NHT type of cooperative learning model can help students to improve and improve cognitive skills and processes, knowledge obtained through the model can strengthen understanding, memory and create a feeling of pleasure in students because of the growing sense of investigating and succeeding, causing students to direct their own learning activities by involving reason and self-motivation, encouraging students to think and work on their own initiative. This advantage has been seen in every learning step of the NHT type cooperative learning model, namely the teacher asks questions or gives problems to each group to solve together. Students discuss the problem and ensure that all group members can solve the problems that have been given. Then the teacher calls one of the student numbers randomly and the student whose number is called answers or presents the results of the discussion in front of the class.

Based on the implementation of the NHT type cooperative learning model in mathematics learning, it provides an opportunity for students to be able to solve a problem and improve their thinking skills so that learning becomes more meaningful. In contrast to scientific learning which is applied

to the control group. The role of students in the learning process is only to listen to the teacher's explanation, the one-way communication in question is only the teacher who provides the knowledge they have, and students only listen without giving a response. This causes students' understanding of the material conveyed to be lacking, so that later it will have an impact on student learning outcomes.

This is supported by previous research, namely Supartini (2015) entitled The Effect of the NHT-type Cooperative Learning Model Assisted by Simple Teaching Aids on motivation and Mathematics Learning Outcomes. The results of his research stated that the NHT type of Cooperative Learning Model had an effect on Mathematics Learning Outcomes.

Thus the application of the NHT type cooperative learning model for elementary school children can improve mathematics learning outcomes. Testing the third hypothesis which states that there is an influence of the cooperative learning model simultaneously on critical thinking skills and mathematics learning outcomes for third grade students of MIS Jihan Ulfani, using manova. A summary of the manova analysis can be seen in Table 04. below.

Table 04. Summary of the third hypothesis

test			
Effect		F	Sig.
Kelas	Pillai's Trace	8,769	0,01
	Wilks' Lambda	8,769	0,01
	Hotelling's Trace	8,769	0,01
	Roy's Largest Root	8,769	0,01

From the results of the analysis above, a significance value of $0.01 < 0.05$ was obtained. This means that there is an influence of the NHT type cooperative learning model simultaneously on critical thinking skills and mathematics learning outcomes for class III MIS students Jihan Ulfani. The NHT type cooperative learning model is a learning model that emphasizes learning activities for students (student center).

The learning process is packaged in student groupings by being given different numbers in one group. Giving this number serves to give responsibility to each individual student to understand a lesson. So, if one of the numbers is called or called by the teacher, the student must be able to present the results of the group discussion. The steps in implementing learning with this model support students to play an active role in developing their understanding. Through this it can be seen that during the learning process in class, the teacher no longer dominates the learning process.

This is supported by Permana's research (2016) entitled Application of the Numbered Heads Together (NHT) Cooperative Learning Method to Improve Student Learning Outcomes and Critical Thinking in Social Studies Subjects. The results of the study found that there was an increase in students' learning outcomes and critical thinking with the application of the Numbered Heads Togethers cooperative learning method. Thus using the NHT type cooperative learning model can provide meaningful learning for students.

D. CONCLUSSION

Based on the results of the analysis and discussion, it can be concluded that there is an influence of the NHT cooperative learning model on critical thinking skills and mathematics learning outcomes for class III MIS students Jihan Ulfani.

Suggestions are used to improve learning and improve the deficiencies that exist in this study. The suggestions that can be submitted based on the research that has been done are as follows: (1) for students, students are expected to become more active in participating in learning and be able to build their own knowledge so that the learning process in class can take place effectively and

efficiently, (2) for teachers, Class teachers in elementary schools, especially in class III SD MIS Jihan Ulfani should be able to use the results of this research as input and consideration for implementing the NHT type cooperative learning model in class III learning to optimize critical thinking skills and students' mathematics learning outcomes., (3) for schools, schools should provide maximum facilities to support learning so that students are more motivated to learn and utilize these facilities to optimize student learning outcomes, so that the quality of schools is increasing.

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