IMPROVING STUDENTS' LEARNING OUTCOMES REGARDING COMPARING AND SORTING TWO NUMBERS IN MATHEMATICS SUBJECTS USING COOPERATIVE LEARNING MODEL THE NUMBERED HEADS TOGETHER (NHT) TYPE

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Abstrak.

This research has several objectives, the first is to find out whether the application of the Numbered Heads Together (NHT) cooperative learning model can improve students' math learning outcomes about comparing and ordering two numbers in 1st grade of elementary school. The second objective is to determine the process of improving student learning outcomes in mathematics subjects about comparing and ordering two numbers after using the Numbered Heads Together (NHT) learning model in 1st grade of elementary school. The third objective is to measure the magnitude of the increase in student learning outcomes in the mathematics subject of comparing and ordering two numbers after using the Numbered Heads Together (NHT) type cooperative learning model in 1st grade of elementary school. The results showed that before applying the Cooperative Numbered Heads Together (NHT) learning model, students' learning outcomes only reached an average score of 66.15, then there was an increase after using the Cooperative Numbered Heads Together (NHT) learning model to 74.61 in cycle 1 and 81.79 in cycle 2. It can be concluded that the use of the cooperative learning model of the Numbered Heads Together (NHT) type can be a fun learning variation for students so that it is proven to improve student learning outcomes.

Kata Kunci: Cooperative Learning Model; Numbered Heads Together; NHT; Students'Learning Outcome; Mathematics Subject; Comparing and Ordering Two Numbers

MENINGKATKAN HASIL BELAJAR SISWA TENTANG MEMBANDINGKAN DAN MENGURUTKAN BILANGAN DUA ANGKA PADA MATA PELAJARAN MATEMATIKA DENGAN MENGGUNAKAN MODEL PEMBELAJARAN KOOPERATIF TIPE NUMBERED HEADS TOGETHER (NHT)

Abstract. Penelitian ini memiliki beberapa tujuan, yaitu yang pertama untuk mengetahui apakah penerapan model pembelajaran kooperatif Numbered Heads Together (NHT) dapat meningkatkan hasil belajar matematika siswa tentang membandingkan dan mengurutkan dua bilangan di kelas I SD. Tujuan kedua yaitu untuk mengetahui proses peningkatan hasil belajar siswa pada mata pelajaran matematika tentang membandingkan dan mengurutkan dua bilangan setelah menggunakan model pembelajaran Numbered Heads Together (NHT) pada kelas I SD. Tujuan ketiga yaitu untuk mengukur besarnya peningkatan hasil belajar siswa pada mata pelajaran matematika membandingkan dan mengurutkan dua bilangan setelah menggunakan model pembelajaran kooperatif tipe Numbered Heads Together (NHT) pada kelas I SD. Hasil penelitian menunjukkan Sebelum diterapkan model pembelajaran Cooperative Numbered Heads Together (NHT), hasil belajar siswa hanya mencapai skor rata-rata sebesar 66,15, kemudian terjadi peningkatan setelah menggunakan model pembelajaran Cooperative Numbered Heads Together (NHT) menjadi 74,61 pada siklus 1 dan 81,79. dalam siklus 2. Dapat disimpulkan bahwa penggunaan model pembelajaran kooperatif tipe Numbered Heads Together (NHT) dapat menjadi variasi pembelajaran yang menyenangkan bagi siswa sehingga terbukti dapat meningkatkan hasil belajar siswa.

Keywords: Model Pembelajaran Kooperatif; Numbered Heads Together; NHT; Hasil Belajar Siswa; Pelajaran Matematika; Membandingkan dan Mengurutkan Dua Bilangan

I. INTRODUCTION

Mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines and advances human thinking power. Developments in the field of information and communication technology today are based on developments in mathematics (Gafoor and Kurukkan, 2015; Stacey and Wiliam, 2012; Taleb *et al*, 2015). To master and create technology in the future, strong mathematics is needed from an early age.

Mathematics subjects need to be given to all students through the learning process starting from elementary school, to equip students with the ability to think logically, critically and creatively and have the ability to work together. This is necessary so that students can have the ability to obtain, manage and utilize information to survive in conditions that are always changing and uncertain.

Based on the results of observations in class I of the Kawung Luwuk State Elementary School, Semester II of the 2020-2021 academic year, there are problems faced, namely that students always find it difficult to learn mathematics in

the material of comparing and ordering two numbers, so that the class average score does not reach the standards for the Completion Criteria. Minimum (KKM) that has been set. It is known that of the 39 class I students, only 15 students or 38.46% have achieved the minimum completion criteria (KKM) score, and 24 students or 61.54% have not reached the KKM, with an average score of 66.15 . Meanwhile, the KKM score for mathematics subjects determined by the Kawung Luwuk State Elementary School is 75.

The low learning outcomes of students in class I of the Kawung Luwuk State Elementary School, North Bogor District, Bogor City in mathematics subjects are caused by several causal factors. One of them is that students still consider mathematics subjects to be difficult subjects, students are less interested in mathematics subjects so that students do not want to pay attention to the teacher who explains the material and instead tend to chat and carry out activities that disrupt the learning process. Another cause is that teachers in teaching and learning activities still use the lecture method which results in a one-way flow of communication. Mathematics is one of the difficult lesson from students point of view (Acharya, 2017; Novriani and Surya, 2017; Bartelet *et al*, 2014)

One effort to improve this situation is to vary the learning models used. One learning model that can make learning mathematics easier is the Numbered Heads Together (NHT) cooperative learning model. With the NHT model, students are given the opportunity to experience or do it themselves, follow a process, observe an object, analyze, prove and draw their own conclusions about an object and the circumstances of a learning process (Jufrida *et al*., 2021; Tetelepta *et al*., 2023; Sari and Suparman, 2018).

II. RESEARCH METHOD

The method used in this research activity is the Classroom Action Research method developed by Kemmis and MC. Taggart, according to him "Action planning uses a spiral system of action implementation, observation and reflection, re-planning is the basis for a problem-solving approach".

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This research was carried out at the Kawung Luwuk State Elementary School, class I, Semester II, 2020-2021 academic year. When the teacher teaches about comparing and ordering two numbers, the average score is 66.15 while the specified KKM is 75. Only 15 students get a score above the KKM or 38.46%, while there are 24 students who get a score below the KKM. people or 61.54%.

This research was carried out in the second semester of the 2020-2021 academic year. The subjects of this research were 39 class I students at SD Negeri Kawung Luwuk, Bogor City, consisting of 20 boys and 19 girls.

To obtain the data required by researchers, the following data collection instruments were used Competency Test Test and Observation Sheet

Competency tests are used to obtain data regarding student learning outcomes which are carried out after learning takes place, namely by using the Number Heads Together (NHT) learning model about comparing and ordering two numbers. This competency test is carried out twice, namely at the second meeting of each cycle. The form of competency test is a written test. The written test questions were created by researchers and then the questions were validated by a team of experts.

Observation sheets are prepared to obtain a direct picture of students' activities in carrying out teaching and learning activities. Action observations are carried out by other teachers who act as observers. Observer sheets are prepared to observe researchers and students in carrying out classroom actions, class conditions and student activity in the learning process.

This research was carried out using the classroom action research method. This research seeks to examine and reflect on a learning approach with the aim of improving teaching processes and products in the classroom. This goal cannot be separated from the interaction between teachers and students, students and students, class conditions and materials so that in this research what is examined is the process.

The research design carried out consisted of two cycles with each cycle consisting of two meetings. The research design that will be carried out is so that the research is directed and can achieve the expected goals, so the research carried out is Classroom Action Research which starts from planning, implementation, observation and reflection as stated by Kemmis and Taggart.

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The data processing steps in this research are as follows:
1. Process the collected data such as:
   a. Student activity data during the learning process is an observation sheet.
   b. Data in the form of scores obtained from the results of competency tests (written tests).
   c. Observation observation sheet data
2. Selecting data
3. This step is carried out to find out whether the collected data can be processed or not
4. Calculating Percentages
5. Percentages are used to see the percentage of each alternative answer to each question so that the data obtained can be analyzed.
6. Collect research results after the data has been analyzed.

To determine the effectiveness of a method in learning activities, data analysis needs to be carried out. In this classroom action research, qualitative descriptive analysis is used, namely a research method that describes reality or facts according to the data obtained with the aim of knowing the learning outcomes achieved by students, as well as knowing students' responses to learning activities and student activities. during the learning process.

III. RESULTS AND DISCUSSION

From the results of learning using the Numbered Heads Together (NHT) learning model and the answers to the evaluation questions provided, the researcher then used these answers to find out whether learning mathematics using the Numbered Heads Together (NHT) learning model could improve the learning outcomes of classroom students. I Kawung Luwuk State Elementary School, North Bogor District, Bogor City. The following is data obtained from the results of the pre-cycle, cycle I and cycle II.

Based on the results of research during two cycles which aims to improve student learning outcomes regarding the material of comparing and ordering two numbers. It can be seen that the implementation of cycles I and II has shown an improvement in the mathematics learning process. With the Numbered Heads Together (NHT) learning model which begins with the teacher's explanation of the material on comparing and ordering two numbers. Then the researcher gave examples of questions on the blackboard and asked the students to work on them in front of the class. Then the researcher guides the students to form groups. After the groups were formed, the researcher gave a head number to each student in the group and gave assignments according to each student's number. The researcher then guides the students to discuss, after finishing the discussion, the students present the results of the discussion and then respond to other groups.

During the learning process, researchers manage the class interactively, guide students, and motivate students to actively participate in learning activities. At the end of the lesson, the researcher and the students concluded the lesson that had been implemented. Then the researcher evaluates the students by giving questions that are relevant to the concept. Based on this, it can be concluded that there has been an increase in student activity in mathematics. This can be seen from the increase in the average value of learning outcomes from pre-cycle, cycle I and cycle II which are presented in figure 1 below:
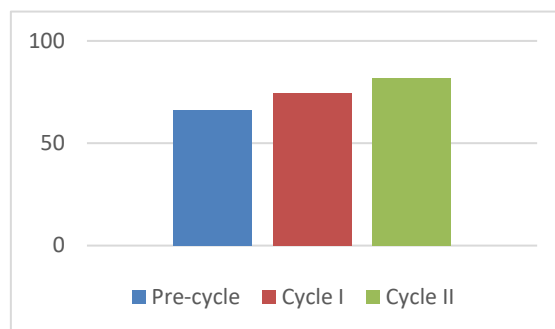

Figure 1. Increase in Average Student Scores Each Cycle

The increase in the average student score is also supported by an increase in the lowest and highest scores of students each cycle as depicted in figure 2 below:
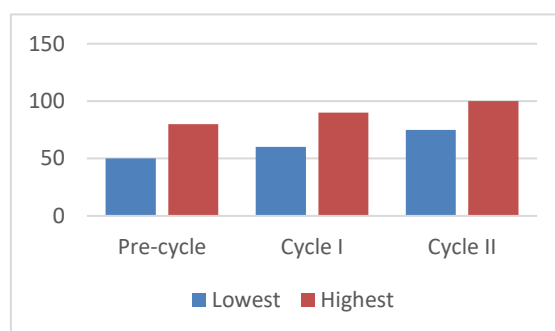

Figure 2. Increase in Lowest and Highest Values Each Cycle

From figure 2 above, it can be seen that the lowest value in the pre-cycle was 50, then increased to 60 in cycle I and increased again to 75 in cycle II. Furthermore, the highest value in the pre-cycle was 80, then increased to 90 in cycle I and increased again to 100 in cycle II. This proves that the Numbered Heads Together (NHT) learning model is able to improve student learning outcomes. Apart from increasing the average score of students, the application of the Numbered Heads Together (NHT) learning model can also increase the percentage of students' learning completion as shown in figure 3 below:
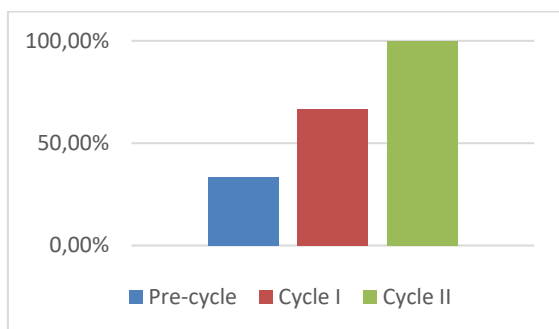
Figure 3. Increase in the Percentage of Student Learning Completeness Each Cycle

From figure 3 above, it can be seen that in the pre-cycle only 38.46% or 15 students had scores above the set KKM, then in cycle I this increased to 66.67% or 26 students whose scores were above the KKM, then in cycle II it became 100% or 39 students whose scores were above the KKM

Data on student activity shows that in cycle I 79.92% always listened to the teacher's explanation. After the teacher improved the reflection results in cycle I, in cycle II it was found that 89.74% always listened to the teacher's explanation. For students who were active in groups in cycle I there were 74.36% and in cycle II there were 86.32%. Meanwhile, there were 76.07% of students who actively asked questions in cycle I and 88.03% in cycle II. Then there were 82.91% who carried out teacher duties in cycle I and 100% in cycle II. The large number of students who are active during learning shows that the researcher, when applying the material comparing and ordering two numbers using the Numbered Heads Together (NHT) learning model, has succeeded in involving students in learning.

Teacher activity data shows that in cycle I in general it was good, but there were several components of assessment from observers that were still lacking, namely less than optimal in motivating students, less than optimal in managing time and less understanding of the material to be studied so that the material presented was not optimal. The deficiencies in cycle I were then corrected in cycle II and teacher activities in cycle II were generally very good.

Learning using the Numbered Heads Together (NHT) learning model can improve student learning outcomes because learning using the Numbered Heads Together (NHT) learning model makes students more active, creative and enjoyable in learning. The activity that makes students interesting in learning could improve their learning achievement, one of them is Number Head Together learning models (Hasan *et al*., 2019; Catarino *et al*., 2019; Siew *et al*., 2017)Apart from that, learning using the Numbered Heads Together (NHT) learning model becomes more effective. Students understand more about the material provided and the information received by students will be remembered longer. NHT cooperative learning will impact student skills and the development of scientific attitudes (Bektiarso et al., 2014; Hidayah, 2018; Rahmawati, *et al*., 2014). Beside that Some of the problems encountered in applying this sort of NHT cooperative learning model are the problem of time, which is regarded insufficient to finish the learning process (Hidayah,

2018; Nursyamsi, *et al*., 2016; Prastiti, 2016; Rasyid *et al*., 2015; Susanti *et al*., 2016).

IV. CONCLUSION

Based on the discussion of the results of the research that has been carried out, it is concluded that the application of the Numbered Heads Together (NHT) learning model can improve learning outcomes in mathematics subjects in the material of comparing and ordering two numbers in class I of the Kawung Luwuk State Elementary School, North Bogor District,

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