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**THE IMPROVEMENT OF STUDENTS LEARNING OUTCOMES
IN HEAT AND ITS TRANSFER WITH THE NUMBERED HEADS TOGETHER (NHT)
COOPERATIVE LEARNING MODEL IN PRIMARY SCHOOL**

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Abstract

The problem in this study was the improvement of student learning outcomes in heat and its transfer with the Numbered Heads Together (NHT) Cooperative Learning Model in V grade students at SDN 18 Sungai Ambawang. The research method used was descriptive research. The study was classroom action research with a collaborative nature with a teacher. The subjects in this study were 14 students of V grade at SDN 18 Sungai Ambawang, Sungai Ambawang District. Data collection techniques in this study were measurement techniques. The instrument used was the observation sheet. The results of this study were as follows: (1) Learning planning with NHT Cooperative Learning Model in improving student learning outcomes on the subject of heat and its transfer in V grade at SDN 18 Sungai Ambawang has been implemented well. It can be seen from the teacher's ability in designing lesson plan (RPP) in the first cycle the average was 66.9, while in the second cycle, it increased to 89.7; (2) The implementation of NHT Cooperative Learning Model in improving student learning outcomes on heat and its transfer material in V grade at SDN 18 Sungai Ambawang has been carried out well, this can be seen from the average teacher activity in the first cycle was 62.5 increases to 92.5 in cycle II (3) There was an increase in student learning outcomes, as evidenced by the increase in the average score of student learning outcomes from cycle I, namely 61.07 to 71.42 in cycle II. It has achieved the minimum completeness criteria (KKM) target of 60 and showed a significant increase.

Keywords: *Learning outcomes, Cooperative Learning Model Numbered Heads Together (NHT)*

Introduction

One of the interesting challenges related to improving education quality is the low quality of education in Indonesia. Especially in rural or mountainous areas that have not been touched by the education system. Education has an important role in the continuity of human life. Education can make people smart, creative, responsible, and productive. In line with the development of society today, education faces many challenges.

It is necessary to develop and renew the relevance of the learning model to improve the quality of education. The learning model is said to be relevant if it is able to lead students to achieve educational goals through learning. In the learning process, informal education, for example, students are taught to be disciplined, active, creative, think critically, and be responsible. It is what is needed to develop human thinking and creativity. Besides, it also requires thinking systematically, logically, and critically which can be developed through science learning.

Based on the results of science learning observations at SDN 18 Sungai Ambawang has not used various active learning models and is still conventional. Usually, in carrying out learning, the teacher used the lecture, question and answer method, and assignments. The teacher explained more, while the students only listened through the handbook. After completing the material's delivery, the teacher immediately gives assignments to students to work on the practice questions on the student worksheets. The teacher never asks students to actively discuss or present their work results in front of their friends. Most of the teachers depend on the lecture method, passive students, a few questions and answers, and work on the questions.

Less precise learning models and lack of interaction between students and teachers can be one of the causes for the low level of students understand the lessons given. It was acknowledged by the teacher that there were still many students who did not master the material, especially on heat and its transfer. Evidenced by the results of student learning on heat and its transfer are below the Minimum Completeness Criteria (KKM), namely, from 14 students, only five students can reach $KKM \geq 60$, while nine students are still under the KKM.

Based on the background, the problem that becomes the focus of this research is "How to improve student learning outcomes on heat and its transfer with the Numbered Heads Together (NHT) Cooperative Learning Model in V grade at SDN 18 Sungai Ambawang?". The researchers need to formulate sub-problems that will be solved into the following questions: (1) How to plan Numbered Heads Together Cooperative Learning Model (NHT) in improving student learning outcomes on Heat and Its Transfer in V grade at SDN 18 Sungai Ambawang?; (2) How are the implementation of the Numbered Heads Together (NHT) Cooperative Learning Model in improving student learning outcomes on Heat and Its Transfer in V grade at SDN 18 Sungai Ambawang ?; (3) How to improve student learning outcomes with the Numbered Heads Together (NHT) Cooperative Learning Model on Heat and Its Transfer in V grade SDN 18 Sungai Ambawang ?.

By doing this research, the researcher has goals, namely general goals and specific goals. In general, this study aims to determine how "Improving Student Learning Outcomes on Heat Material and Its Transfer with the Numbered Heads Together (NHT) Cooperative Learning Model in V grade SDN 18 Sungai Ambawang". Specifically, this research has the following objectives: (1) To determine the planning of learning with the Numbered Heads Together (NHT) Cooperative Learning Model in improving student learning outcomes on the subject of Heat and Its Transfer in V grade SDN 18 Sungai Ambawang; (2) To determine the implementation of the Cooperative Learning Model Type Numbered Heads Together (NHT) in improving student learning outcomes on Heat and Transfer material in V grade SDN 18 Sungai Ambawang; (3) To determine the increase in student learning outcomes with the Cooperative Learning Model Type Numbered Heads Together (NHT) on the material of heat and its transfer in V grade SDN 18 Sungai Ambawang.

Research Method

This research used Classroom Action Research (CAR). Judging from the name, it shows the contents contained therein, namely an activity carried out in the classroom. CAR is a study that improves education by making changes towards improvements in education and learning outcomes (Suharsimi, 2009: 105). CAR has four stages in each cycle, namely planning, implementing actions, observing, and reflecting. CAR aims to determine the level of achievement of activeness and student learning outcomes in the heat material and its transfer by implementing a numbered heads together (NHT) cooperative learning model.

The subjects of this study were teachers and students of V grade at SDN 18 Sungai Ambawang. The total students are 14 students consisting of eight boys and six girls. The research was conducted in V grade at SDN 15 Kuala Mandor B, Kuala Mandor sub-district. The

research was conducted in V grade at SDN 18 Sungai Ambawang from February 5 to February 19, 2018.

This research used a descriptive method, which is a research that explains a certain object that is carried out by finding facts with the correct interpretation of relationships, activities, attitudes, views, and ongoing processes from a real picture, in the field. Descriptive research, according to Arifin (2012: 13), is "research that seeks to describe or explain certain objects."

The instruments were used in this study consisted of: (1) syllabus; (2) Learning Implementation Plan (RPP); (3) Observation Sheet; (4) Formative Tests. The data collection technique used in this research was the measurement technique. According to the logically established rules, the measurement referred to in this study was the scoring of the research test results, both the beginning and the end. Observation is "a deliberate and systematic study of social phenomena or natural phenomena by means of observation and recording" (Kartini Kartono, 1996: 157).

This research conducted in 2 cycles of action. Each cycle held two meetings (face to face). Each cycle was carried out according to the changes to be achieved after each reflection, but the next cycle will be carried out if it does not meet the target. CAR as argued by Suharsimi et al. (2012: 16) above consisted of four series of activities carried out in a repetitive cycle, namely: (1) Planning; (2) Implementation; (3) Observation; (4) Reflection.

Result and Discussion

The first cycle of data exposure was the beginning for the researcher to conduct CAR. Implementation of CAR Cycle I in V grade at SDN 18 Sungai Ambawang with 14 students. The implementation of this first cycle was carried out with a series of activities to give a pre-test and a final test according to a predetermined schedule. Several activities carried out by researchers before carrying out research actions, first at the beginning of the study, conducted pre-action, namely discussing collaboratively with colleagues on the science learning process using the Numbered Heads Together (NHT) cooperative learning model. Before taking action, the researcher conducted a preliminary test to measure the initial knowledge of the fifth-grade students of SDN 18 Sungai Ambawang about heat material and its displacement.

The students' pre-test results in science subjects were still low because the average score was 52.14, which means it did not reach the completeness standard for science subjects, which was 60. Among the 14 students, only five students completed and the percentage is 35.71 %. The condition of the results of this test requires attention by changing teaching methods that make students more active which can improve student learning outcomes, namely the use of the Numbered Heads Together (NHT) Cooperative Learning Model with steps in CAR Cycle I which consists of (1) Planning by preparing Lesson Plan (RPP) of cycle I whose initial activities were focused on motivating students and perceptions. At this stage, the researcher prepared teacher observation sheets and student observation sheets; (2) The implementation of cycle I, the researcher discusses changes in the shape of objects, and students pay attention to each explanation that is conveyed by not taking notes first, then conduct questions and answers with students about heat and its transfer then divide students into groups and assign them to take the cards already prepared. At first, the class atmosphere was a bit rowdy, some students still looked confused and lacked confidence, so the teacher had to improve their motivation. Then the teacher gave a post-test. The post-test results showed in the first cycle of the first and second meetings. There was an increase in the percentage of the average score at the first meeting of 58.57. In contrast, the second meeting became 63.57 showed that students' learning outcomes had increased after participating in Science learning with the Cooperative Learning Model Type Numbered Heads Together (NHT). However, in the second cycle, there are still two students who have not completed it. Therefore, it is necessary to improve the next cycle activities, namely cycle II; (3) Observations are carried out with colleagues. The result of

observations that the researcher has not fully implemented most components of the Learning Implementation Plan. Eight components got 2 with 16, while eight components got a score of 3 with a total of 4, and 1 component got a score of 4 with a total of 4. In the second meeting, seven components got a score of 2 with a total of 14, while seven components get a score of 3 with 21, and three components get a score of 4 with a total of 12. The total average of the first cycle is 66.9%. (4) Reflecting on the existence of these difficulties, steps are needed in the implementation of cycle II by paying attention to the following matters: (a) The teacher seeks to direct student learning activities to be accurate and precise material concepts through direct activities on how to solve problems what have been experienced by students in the use of the Cooperative Learning Model Type Numbered Heads Together (NHT) in accordance with KD, indicators, and goals to be achieved; (b) The teacher improves more directed learning steps, where the use of the Numbered Heads Together (NHT) Cooperative Learning Model was aimed at students' abilities and understanding so that students can overcome any problems they experience in science learning; (c) Each group was given the task of solving questions about heat and its transfer. For the implementation of the next cycle, when students work on the questions, the teacher walks around observing the student's activities in solving the questions; (d) At the time of elaboration, the teacher tried to implement the Numbered Heads Together (NHT) Cooperative Learning Model in a way that after students work on the questions, students are asked to check the questions that have been done.

In cycle II, the following activities are carried out: (1) Lesson planning was carried out based on the results of the reflection in cycle I; (2) Implementation, with student learning outcomes in the second cycle of the first and second meetings experiencing an increase in the average score at the first meeting, was 67.85. The second meeting became 75, meaning that students' learning outcomes after participating in science learning with the Numbered Heads Together (NHT) Cooperative Learning Model in the second cycle of the second meeting increased and exceeded the predetermined KKM. Therefore it is not necessary to make teachers and students carry out improvements in the next cycle of activities; (2) Observation of teaching and learning activities is supervised by peers who act as observers. Based on observational data: (a) At the first meeting, most of the Learning Implementation Plan components were fully implemented by the researcher. There were 12 components that get a score of 3 with 36, and there are five components that get a score of 4 with a total of 20. In the second meeting, two components get a 3 with a total of 6, and 15 components get a score of 4 with 60. The average cycle II was 89.7%. The improvement occurred because the teacher had improved the results in the cycle I then improved the completeness of the scope of the learning formulation, the suitability of the material with the learning objectives, the suitability of student characteristics, the suitability of learning resources/learning media with student characteristics, the suitability of assessment techniques with learning objectives, and clarity of assessment procedures. The implementation of cycle II did not need for improvement in the RPP for the next cycle; (a) The improvement plan that has been carried out, namely the teacher will use several demonstration tools that can attract students' attention, give students the opportunity to ask students to be more active, the teacher improves communication techniques with students, so that it is easy to understand, the teacher provides rewards, which is unusual from previous learning and based on the results of observations about teacher activities in cycle II in the application of the Numbered Heads Together (NHT) Cooperative Learning Model to improve learning outcomes for fifth grade students of SDN 18 Sungai Ambawang have been appropriately implemented, so there is no need to continue in the next cycle; (c) The assessment of activities in science learning activities using the Numbered Heads Together (NHT) cooperative learning model has been successful, because the average student activeness score is 85.15%. This increase occurred because the teacher had corrected the deficiencies in cycle I. The implementation of cycle II, students were orderly occupying the seats arranged by the teacher. All students were

enthusiastic about participating in learning. There was an interaction between students and between students and teachers, enthusiastically paying attention to teacher explanations, trying to answer teacher questions, trying to come to the front of the class, so that the learning conditions take place conducive. After discussing the results of these observations with collaborators, there is no need to continue to the next cycle.

Lesson plan with the Numbered Heads Together (NHT) Cooperative Learning Model in improving student learning outcomes on heat and its transfer in V grade at SDN 18 Sungai Ambawang has been implemented well. CAR results on science subjects on heat and its transfer in V grade at SDN 18 Sungai Ambawang show an increase in learning outcomes and learning completeness. It can be seen from the table below:

Table 1. Average Daily Scores for Pre-Cycle, Cycle I and Cycle II

No	Pre Cycle / Cycle	Total Students	Average Score
1	Pre I	14	52,14
2	Cycle I	14	61,07
3	Cycle II	14	71,42

Source: Results of Classroom Action Research

Based on the table above, we can see that the average daily score on the pre-test was 52.14, while in the post-test cycle I, it increased to 61.07. Then in the second cycle, there was an increase to 71.42. The development of the daily average score in Pre Cycle, Cycle I, and Cycle II is shown in the following figure:

Source: Processed Data February 2018

Fig. 1 Average Score of Daily Tests for Each Cycle

The effect of the Numbered Heads Together (NHT) Cooperative Learning Model on student learning outcomes contributes positively. It can be seen that the average percentage of student activeness who follows in each cycle has increased, in cycle I with average student activeness of 61.71%. In the second cycle of a student, activity increased to reach 85.15%. Based on these

results, students' activeness and understanding in the learning process through the Numbered Heads Together (NHT) Cooperative Learning Model can improve student learning outcomes.

Conclusion and Suggestion

Based on the background, sub-problems, and findings, as well as the discussion in this study regarding the Improvement of Student Learning Outcomes on Heat and Its Transfer with the Numbered Heads Together (NHT) Cooperative Learning Model in V grade at SDN 18 Sungai Ambawang, the following conclusions, can be drawn: (1) Learning planning with the Numbered Heads Together (NHT) Cooperative Learning Model in improving student learning outcomes on heat and its transfer in V grade at SDN 18 Sungai Ambawang has been carried out well, this can be seen from the ability of teachers to design RPP. In the first cycle, the average was 66.9, while in the second cycle is increased to 89.7; (2) The implementation of the Numbered Heads Together (NHT) Cooperative Learning Model in improving student learning outcomes on heat and transfer in V grade at SDN 18 Sungai Ambawang has been carried out well, this can be seen from the average teacher activity in the first cycle was 62.5 increased to 92.5 in cycle II; (3) There is an increase in student learning outcomes, as evidenced by the increase in the average score of student learning outcomes from cycle I, namely 61.07 to 71.42 in cycle II, this result has reached the KKM target, namely 60 and shows a significant increase. The suggestions that can be submitted from this study are as follows: (1) Teachers are expected to innovate continuously in the implementation of learning methods to students, especially in the application of the Numbered Heads Together (NHT) Cooperative Learning Model in learning to run more effectively; (2) The teacher needs to have special attention to students who have abilities below average by providing additional lesson guidance, outside the predetermined schedule of lessons; (3) It is necessary to increase the competence of teachers in the field of science lessons so that the learning process can run smoothly so that it can attract students' interest to participate in active learning and increase student learning motivation towards science lessons.

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