Model Implementation *Numbered Head Together* On The Material Of Straight-Line Equations Through One Point Class Viii

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Abstract

This research is a descriptive research using a qualitative research approach. The subjects of this research were 26 students of class VIII A SMP Al Ihsan Yapis Kotaraja. The selection of research subjects used the purposive sampling techniques. The research instruments used were teacher observation sheets, student observation sheets, and individual tests. The purpose of this research is to describe the application of the Numbered Head Together (NHT) learning model to the straight line equation material through one point in class VIII A SMP Al Ihsan Yapis Kotaraja. Based on the results of the analysis and discussion of the learning process by applying the Numbered Head Together (NHT) learning model, it went well. This is evidenced by the results of the teachers observations obtained the category of very good, the activeness of students obtained the high category, and the results of individual tests can help students to understand the material of straight line equations through one point.

Keywords: Cooperative Learning Model, Numbered Head Together (NHT), Straight Line Equation Through One Point

INTRODUCTION

Mathematics comes from the Latin word "mathematike," meaning to study or learn. The word itself is derived from the ancient Greek word "mathema," meaning knowledge (Simangunsong, 2021). Mathematics is a subject taught with the hope of fostering students' interest in creativity, critical thinking, and logical thinking, as well as fostering collaboration (Kristina Pane, 2022). However, according to Lestari,*et al*. (2024) Students consider mathematics difficult to understand, uninteresting, and discouraged from learning. Therefore, teachers need to choose appropriate learning models to support learning.

A learning model is a conceptual framework that describes systematic steps in organizing learning experiences to achieve specific learning objectives and serves as a guideline for learning designers and teachers in planning teaching and learning activities (Darmawan & Wahyudin, 2018). Meanwhile, according to Isrok'atun & Rosmala (2018) a learning model is a design pattern that describes the interaction of students with teachers that refers to learning steps from beginning to end by using various teaching and learning activities to achieve the desired objectives. Thus, a learning model is a pattern that describes the learning steps between students and teachers to achieve learning objectives by using various learning activities. Currently, teachers can implement various learning models that continue to develop according to the situation in the classroom so that learning can take place effectively, one of which is the cooperative learning model.

The cooperative learning model is a group learning model in which students with heterogeneous abilities work together to solve problems by dividing tasks within the group (Isrok'atun & Rosmala, 2018: 126). According to Bastian & Reswita (2022: 66), the cooperative learning model emphasizes cooperation in using knowledge and skills to find solutions to problems in order to achieve learning objectives. There are several types of cooperative learning models that can be implemented by teachers in learning activities, one of which is the cooperative learning model type Numbered Head Together (NHT).

According to Tangdiallaet al.(2025) cooperative learning model type Numbered Head Together (NHT) or numbered headers is a learning model that motivates students to actively participate in group discussions and provides opportunities for each student to participate in learning activities. According to

Latifah (2023), the model Numbered Head Together (NHT) was introduced by Spencer Kagan, which invites a large group of students to review the material presented in a lesson and check their knowledge of the lesson. The NHT model can encourage students to share their thoughts, consider appropriate answer choices, and encourage collaboration.

Based on an interview with an eighth-grade mathematics teacher at Al Ihsan Yapis Junior High School in Kotaraja, several students were still passive and had difficulty understanding mathematical concepts, one of which was simplifying division. The lecture method, often used by teachers, tended to be one-way, resulting in students being less active, especially during daytime lessons, which caused them to become sleepy and less focused. To address this, the researcher chose cooperative learning model type Numbered Head Together (NHT) which can actively involve students.

In selecting research materials, the researcher discussed with teachers the material for the even semester of the 2024/2025 academic year, including relations and functions, linear equations, and statistics. The topic of linear equations through one point was chosen because, according to Utami,et al(2022), students have difficulty using formulas due to a lack of mastery of algebraic material, integer arithmetic operations, coordinate planes, and the concept of arithmetic operations in linear equations, resulting in errors when working on problems. The Learning model Numbered Heads Together (NHT) is suitable for this material, because it focuses on discussion and participation activities, thereby strengthening conceptual understanding and improving students' social skills.

Research conducted byEkawati (2021) stated that the use of the NHT cooperative learning model showed an increase in learning outcomes and activity of class VII G students at SMP Negeri 1 Pangkah in the topic of linear equations. This is supported by data from research that showed that classical absorption capacity reached82,35%is above the established class completion level75%, which previously only reached35,29%from the completion criteria. Meanwhile, research conducted by Asna et al. (2022) in class VIII of SMP Negeri 2 Ampek Angkek, after implementing all stages in the NHT type cooperative learning model, the learning outcomes of students whose initial value criteria were0% increase to 40,74%with very good criteria. And student activity during learning has improved, and learning is more effective due to improvements from previous learning.

Based on the previous description, researchers are interested in implementing learning models Numbered Head Together (NHT) on the material of straight-line equations through one point with the hope of helping students' abilities so that this research is entitled "Application of Learning Models Numbered Head Together (NHT) on the material of straight-line equations through one point in class VIII A of Al Ihsan Yapis Kotaraja Middle School". The purpose of this study is to describe application of learning models Numbered Head Together (NHT) on the material.

METHOD

The research used is descriptive research with a qualitative research approach. According to Sugiyono (2024: 24) this type of research presents data using words or images so it does not focus on numbers. This research was conducted at Al Ihsan Yapis Kotaraja Middle School located at Jl. Perkutut Cigombong Kotaraja Dalam No. 106, Vim, Abepura District, Jayapura City, Papua. This research was conducted in the even semester of the 2024/2025 academic year. Observation of the research location was on Wednesday, January 15, 2025, the trial was on Monday, April 14, 2025, and data collection was on Tuesday, April 22, 2025.

In selecting research subjects, techniques are used purposive sampling. This is a sample selection technique used by considering various specific requirements. The sample selection consisted of students who were attending class and had not yet studied the topic of linear equations through a point. Therefore, the subjects of this study were 26 students of class VIII A of SMP Al Ihsan Yapis Kotaraja in the 2024/2025 academic year.

The instruments used were the researcher as the primary instrument, observation sheets (teacher and student), and individual tests. Data

collection techniques used documentation, teacher observation sheets, student observation sheets, and individual tests. The teacher observation sheets contained aspects of learning implementation as observed by the observer. According to Shofa & Azizah (2022), the calculation of the percentage of learning implementation is as follows:

$$\%\text{Implementation}=\frac{\sum \text{the score obtained}}{\sum \text{maximum score}} \times 100\%$$

The categories obtained according to the final score include:

Very good : 81% −100%
Good : 61% −80%
Enough : 41% −60%
Not enough : 21% −40%
Very less : 0% − 20%

Then the student observation sheet is divided into 2, namely:

1. Attitude assessment for each student during learning activities. Scoring calculations include:

   $$\text{Final Score}=\frac{\text{total shoes}}{\text{maximum score}} \times 4$$

   Information: $skor\ maksimal$ = 12
   According to Permendikbud No. 81A of 2013, students receive the following scores:
   Very Good (A) : when obtaining a score of $3{,}33 < skor \leq 4{,}00$
   Good (B) : when obtaining a score of $2.33 < skor \leq 3{,}33$
   Enough (C) : when obtaining a score of $1.33 < skor \leq 2{,}33$
   Less (D) : when obtaining a score ≤ 1.33
2. The active participation of all students during learning activities. According to Mardiana & Suharyanto (2024), the calculation of the percentage of learning implementation is as follows:

   $$\text{Achievements}=\frac{\text{number of scores obtained}}{\text{maximum score}} \times 100\ \%$$

   The categories obtained correspond to the final score as follows:
   High : 75%−100%
   Currently : 50% −74,99%
   Low : 25% −49,99%
   Very Low : 0% − 24,99%

The individual test, a descriptive test on the equation of a straight line through a point, is given at the end of the learning process. The assessment uses the Learning Objective Achievement Criteria (KKTP) implemented by the school. The criteria include:

Table 1. KKTP Value Scale or Interval

Scale or Value Interval	0% − 40%	Not Yet Achieved (remedial in all sections)
	41 − 65%	Less than achieving mastery (remedial in the required sections)
	66 − 85%	Achieving Completion (no need for remedial)
	86 − 100%	Has Achieved Completion (needs enrichment)

The calculation of individual test scores is as follows:

$$Final\ score = \frac{the\ score\ obtained}{maximum\ score} \times 100$$

Note: maximum score = 15
To calculate the scale or interval, the value can be calculated using $final\ score\ \times\ 100\%$.

The data analysis stage in this study involved describing and analyzing the pre-research and research processes using the NHT model. The data analysis technique was descriptive based on the results of observer observations of teachers (learning implementation) and students, as well as individual test results.

RESULTS AND DISCUSSION

From the results of the trial, the researcher found several obstacles, including students' slowness in joining their groups during

group assignments, difficulties with integer arithmetic operations, and difficulties with multiplication in algebra. Afterward, the researcher consulted with the supervising lecturer to find solutions to these obstacles. The solution for group formation is to divide students into groups first, then present them through slide *PowerPoint* so they see each other's names and begin to form groups. A solution for students who have difficulty with integer arithmetic and multiplication operations in algebra is that researchers ask teachers to use their class time to explain or provide examples of problems from the material to students.

As for the documentation when the researcher implemented the cooperative learning model type Numbered *Head Together* (NHT) as follows:

Figure 1. Step 1 of NHT, namely Numbering

Figure 2. Step 2 of NHT, namely Asking Questions

Figure 3. Step 3 of NHT, namely Thinking Together

Figure 4. Step 4 is Answering

Then on the teacher's observation sheet pThe calculation of the percentage of learning implementation results is as follows:

$$\%\text{Implementation}=\frac{\sum \textit{the score obtained}}{\sum \textit{maximum score}}\times 100\%$$

$$\%\text{Implementation}=\frac{150}{180}\times 100\% = 83{,}3\%$$

Based on the calculation of the percentage of results of the implementation of the cooperative learning model *Numbered Head Together* (NHT) obtained score83,3%included in the very good category.

Furthermore, the attitude assessment for each student is presented in the form of a pie chart as follows.

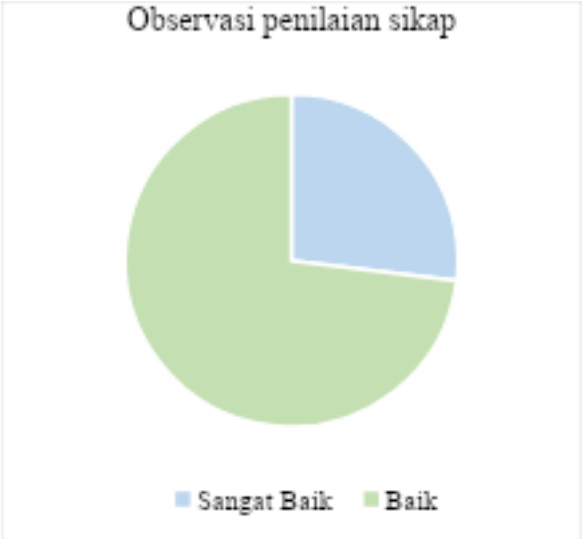

Figure 5. Pie chart of attitude assessment observations

Based on the diagram, it shows that of the 26 students who achieved very good attitudes, the number73%and good as much as27%.

Furthermore, the results of observations of the activeness of all students during learning activities, the percentages are as follows:

$$\text{Achievements}=\frac{number\ of\ scores\ obtained}{maximum\ score}\times 100\ \%$$

$$\text{Achievements}=\frac{66}{70}\times 100\% = 94{,}2\%$$

Based on the calculation of the percentage of activity of all students, a score is obtained.94,2%in the high category.

Then, the results of the individual test scores of 26 students in class VIII A using the Learning Objective Achievement Criteria (KKTP) showed that the scale or value interval consisted of 4 parts, namely$0-40\%$included in the categoryNot Yet Achieved (remedial in all sections) as many as 2 people, $41-65\%$included in the categoryLess than achieving completion (remedial in the required sections) as many as 4 people,$66-85\%$ included in the category Achieving Completion (no need for remedial) for 3 people, and$86-100\%$included in the category17 people have achieved completion (need enrichment).

Based on this description, the entire series of learning processes by applying the cooperative learning model type *Numbered Head Together* (NHT) has been implemented well. This is evidenced by the results of the learning implementation, which are included in the very good category, student activeness during the learning process is included in the high category, and individual test results can help students understand the material on the equation of a straight line through one point. During the learning process, by applying the cooperative learning model type *Numbered Head Together* (NHT), there were several obstacles that researchers encountered, namely having to re-teach the prerequisite material from the material being taught and researchers had to observe carefully and thoroughly when students raised their hands first during the round *Game* to answer the question.

Apart from the constraints, researchers found several advantages by implementing the cooperative learning model type *Numbered Head Together* (NHT) including:

1. By applying the cooperative learning model type *Numbered Head Together* (NHT), student attitudes can be categorized as good.
2. By applying the cooperative learning model type *Numbered Head Together* (NHT) by teachers, students are actively involved during learning, discussions in groups, and enthusiasm in learning.

CONCLUSION

Implementation of the cooperative learning model type *Numbered Head Together* (NHT) can help students understand the material on linear equations through one point. This is proven by the results of observations on the implementation of the cooperative learning model type *Numbered Head Together* (NHT) obtained83,3%included in the very good category, the attitude assessment for each student was included in the good category, and observations of activity for all students were obtained94,2%included in the high category. In the individual test results of 26 students, 2 students were included in the scale or value interval.$0-40\%$with criteriaNot Yet Achieved (remedial in all sections), 4 students are included in the value scale or interval $41-65\%$with criteriaLess than achieving mastery (remedial work in the required sections), 3 students are included in the value scale or interval$66\%-85\%$with the criteria of Achieving Completion (no need for remedial), and 17 students are included in the value scale or interval$86\%-100\%$with the criteria of Having Achieved Completion (needs enrichment).

SUGGESTION

Based on the results of the conclusions in this study, including:

1. Teachers are expected to be able to apply the cooperative learning model type *Numbered Head Together* (NHT) in mathematics learning so that students are actively involved during learning.
2. Teachers are expected to apply cooperative learning models *Numbered Head Together* (NHT) by paying attention to appropriate learning materials so that students can easily understand the material presented.

3. For future researchers, it is hoped that they will strengthen the knowledge of students regarding the prerequisite material for the material to be studied and pay close attention during the final round.*game* so that students are sporty in these activities.

ACKNOWLEDGEMENT

1. Sri Lestari, M.Pd., as the Principal of Al Ihsan Yapis Kotaraja Middle School who has accepted and given the opportunity to the researcher to carry out thesis research at the school he leads.
2. Maria Ulfa, S.Pd. and Mita Arum Pratiwi, S.Pd., as mathematics teachers who have been willing to take the time to provide all information to researchers so that the research can run smoothly.
3. All students of SMP Al Ihsan Yapis Kotaraja for their cooperation and togetherness, especially classes VIII A and VIII D who were willing to be the classes used in this research.

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