



Numbered Head Together Model Assisted by Concrete Media on Students' Critical Thinking Ability in Mathematics Learning

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ABSTRAK

Pembelajaran matematika merupakan salah satu mata pelajaran yang dianggap sulit oleh siswa. Hal ini disebabkan siswa kurang memahami konsep yang diberikan. Siswa memiliki kemampuan berpikir kritis yang rendah, karena dalam pembelajaran guru tidak menggunakan model pembelajaran dan media pembelajaran yang sesuai dengan karakteristik siswa. Guru hanya menggunakan model pembelajaran konvensional. Berdasarkan hal tersebut diperlukan suatu model pembelajaran yang dapat meningkatkan kemampuan berpikir kritis. Penelitian ini bertujuan untuk menganalisis pengaruh signifikan model kooperatif tipe NHT berbantuan media konkret terhadap kemampuan berpikir kritis siswa pada pembelajaran matematika kelas V sekolah dasar. Penelitian ini merupakan penelitian quasi eksperimen dengan desain non-equivalent control group design. Populasi penelitian ini adalah seluruh kelas V yang berjumlah 217 siswa. Sampel penelitian ditentukan dengan menggunakan teknik cluster random sampling yang diperoleh kelas V sebanyak 38 siswa sebagai kelas eksperimen dan kelas V sebanyak 30 siswa sebagai kelas kontrol. Metode pengumpulan data dalam penelitian ini adalah metode tes, dengan jenis tes yang digunakan adalah tes uraian. Data yang diperoleh dari hasil post-test dianalisis menggunakan teknik statistik deskriptif dan analisis statistik inferensial menggunakan *polled variance t-test*. Berdasarkan analisis data diperoleh hasil bahwa model kooperatif tipe NHT berbantuan media konkret berpengaruh signifikan terhadap kemampuan berpikir kritis siswa pada pembelajaran matematika kelas V SD.

ABSTRACT

Learning mathematics is one of the subjects that students consider difficult. This is because students do not understand the concepts given. Students have low critical thinking skills, because in learning teachers do not use appropriate learning models and learning media that suit student characteristics. Teachers only use conventional learning models. Based on this, a learning model is needed that can improve critical thinking skills. This research aims to analyze the significant influence of the NHT type cooperative model assisted by concrete media on students' critical thinking abilities in fifth grade elementary school mathematics learning. This research is a quasi-experimental research with a non-equivalent control group design. The population of this study was all class V totaling 217 students. The research sample was determined using a cluster random sampling technique which obtained class V of as many as 38 students as experimental class and class V as many as 30 students as the control class. The data collection method in this research is the test method, with the type of test used being the description test. Data obtained from the post-test results were analyzed using descriptive statistical techniques and inferential statistical analysis using the *polled variance t-test*. Based on data analysis, the results showed that the NHT type cooperative model assisted by concrete media had a significant effect on students' critical thinking abilities in fifth grade elementary school mathematics learning.

1. INTRODUCTION

The 2013 Curriculum and the independent curriculum focus on student learning activities, so it is necessary to use teaching models, strategies, methods and techniques in accordance with the learning model to involve active student participation in the learning process. Mathematics learning is one of the subjects that can involve active student participation (Nadhiroh & Anshori, 2023; Tishana et al., 2023).

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Mathematics is a core subject in Elementary School (SD). Mathematics learning in elementary school is a basic concept that is used as a foundation for learning at the next level. Learning mathematics is a sufficient requirement to continue education to the next level because by learning mathematics, it can encourage students to have critical, creative and active thinking skills (Istiqomah & Siswono, 2020; Meliyanti et al., 2018). Mathematics is one of the disciplines that can improve students' thinking and argumentation skills, can contribute to solving problems in everyday life and in the world of work, and can provide support in developing science and technology. In fact, learning Mathematics is still considered a difficult subject by students (Sarwoedi et al., 2018; Wahyuni et al., 2024).

The mathematics learning process certainly still has weaknesses, several problems in the learning process which have an impact on students' critical thinking skills (Afifah & Kusuma, 2021; Hendryawan et al., 2017). Based on simple interviews and observations with homeroom teachers of grade V at SD Gugus VIII, Abiansemal District, it was stated that the curriculum implemented in grade V of SD Gugus VIII is the Independent Curriculum. There is a problem, namely that the daily scores of students, especially in the cognitive aspect of mathematics learning, are still not optimal. Based on the average results of the final semester exam in Mathematics for grade V, there were 123 students who had not achieved the PAP, obtaining a percentage of 57% with a category of less, this percentage is the average result of the population of SD N in Gugus VIII Abiansemal. This shows that students have not met the minimum requirements for mastery.

One of the causes of less than optimal grades is that students' critical thinking skills when given problems are still lacking (Parwati et al., 2020; Raidil et al., 2023). The problem is that students often make mistakes when learning mathematics related to learning to count and mistakes in solving story problems. Difficulties that are often experienced by students are difficulties when working on story problems because they are unable to understand the meaning of the problem and confusion when determining the arithmetic operation to be used because students do not yet understand the mathematical concept when working on the story problem (Mahmuda et al., 2021; Utari et al., 2019). So one of the life skills that needs to be developed through the education process is the ability to think. During Mathematics learning, students often complain that Mathematics is difficult because it uses a lot of formulas. This can happen because students do not yet understand the concept of the material in Mathematics learning and the space for interaction between students and teachers is still limited (Afifah & Kusuma, 2021; Maswar, 2019). So students easily say that mathematics is difficult and causes their critical thinking skills to be low.

The methods used are not yet varied or are not multi-directional so they are still centered on the teacher or one-way communication, therefore students can only listen to the teacher's explanation and learning is not centered on students (Maswar, 2019; Sarwoedi et al., 2018). If this continues, it will affect the quality of education to be low. In addition, during the learning process, students only listen to the explanation of the subject matter from the teacher or the lecture method, do practice questions, then give assignments. This situation makes learning only centered on the teacher (teacher center), back interaction between students and teachers also rarely occurs. Thus, students quickly feel bored and tired of learning (Sucilestari & Arizona, 2019).

The use of media as a learning support is also rarely implemented, students only refer to the textbooks provided (Salsabila, unique Hanfa, Irwan Ghazali, 2020; Setiono & Rami, 2017). This affects the lack of critical thinking attitudes of students towards a problem in learning due to the lack of references or guidelines as a reference in solving or working on problems given by the teacher. In addition to these problems, there are also students who are less enthusiastic about the material given by the teacher so that during the learning process it causes less effective conditions.

Critical mathematical thinking skills are a thinking process with the aim of making rational decisions systematically in identifying problems, evaluating and constructing ideas/concepts and being able to solve all problems faced appropriately. Therefore, critical thinking skills are very important to be trained by students. As students, it is necessary to have critical thinking skills so that they can be used in making decisions in everyday life, because someone who has critical thinking skills will be able to observe, identify, analyze, and evaluate various existing information, as well as search for and find/choose logical, useful, and appropriate solutions (Actress Yulianti Mulyani, 2022; Jaya, 2019). Realizing such problems, it is necessary to apply an appropriate learning model as a form of effort to improve the cognitive domain, especially students' critical thinking skills in Mathematics learning (Cahyaningsih, 2018). The learning model that is expected to be able to create a conducive, active, creative, effective and enjoyable learning situation is by implementing the NHT type of cooperative learning model or joint thinking numbering.

Based on the problems found, namely students' critical thinking skills are not optimal, where students tend to memorize formulas and materials rather than understanding concepts (Al-Amin & Murtiyasa, 2021; Marliani, 2015). Therefore, the NHT type cooperative model is very suitable for students' needs, because in the NHT type cooperative model in mathematics learning there is active interaction and

combined skills in class in groups of 3-5 students to foster students' critical thinking. Each group member is responsible for their group's tasks in completing their lesson material. The NHT learning model is one of the cooperative learning models that can train students' communication skills. By using this model, students can understand more quickly about the material being studied that day. Thus, students can understand what learning is.

The selection of learning models and media is also based on the results of previous research. Previous research stated that there are similarities in the learning models used, namely the NHT type cooperative model can improve students' mathematical reasoning skills. There are similarities in research, namely in the learning model used, namely the NHT type Cooperative learning model in Mathematics lessons. The results of the study showed that: (1) there is a significant influence of the NHT type cooperative learning model on critical thinking skills, (2) there is a significant influence of the NHT type cooperative learning model on mathematics learning outcomes, (3) there is a significant influence of the NHT type cooperative learning model simultaneously on critical thinking skills and mathematics learning outcomes. Thus, it can be concluded that the NHT type cooperative learning model has a positive effect on critical thinking skills and mathematics learning outcomes. There are also similarities in research, namely using the NHT type cooperative model on critical thinking skills in Mathematics learning. In this study, the Head Together (NHT) learning model has an influence on the critical thinking skills of grade IV students in mathematics content at SD Negeri Siasem 03 (Dadri, C. et al., 2019; Mundanti, SA et al., 2023).

The innovation of this study is to examine the effectiveness of the Numbered Heads Together (NHT) cooperative learning model supported by concrete media on improving students' critical thinking skills in mathematics learning in grade V of elementary school. This innovation lies in the integration of the NHT method with the use of concrete media, which has not been widely explored in the context of elementary education in Indonesia. (Hasanah, 2021; Yusniati, 2022). The results of this study are expected to provide real contributions in the development of more effective and enjoyable learning strategies, as well as encourage increased active participation of students in the learning process. This is relevant to the implementation of the Merdeka Curriculum which emphasizes student-centered learning and the development of critical thinking skills.

From these studies, it is concluded that the NHT Type Cooperative Learning Model can provide influence and is effective in improving students' critical thinking skills in learning Mathematics. In Mathematics subjects, students are expected to be able to develop their critical thinking skills in understanding mathematical concepts because it is an important foundation for thinking in solving mathematical problems and everyday problems. The ability to understand mathematical concepts is the first ability that is expected to be achieved in the objectives of Mathematics learning. This research can be seen from the significant influence of the average post-test results which are higher than the pre-test. The purpose of this study was to determine the influence of the Numbered Head Together (NHT) type cooperative model assisted by concrete media on students' critical thinking skills in mathematics learning in grade V of Elementary School.

2. METHOD

This type of research is quantitative research, namely experimental research with a quasi-experimental design (Quasi-Experimental Design). In this study, the form of quasi-experimental design used is non-equivalent control group design. The design in this study involved two class groups, namely the experimental class group and the control class group (Thyer, 2012). The experimental class group and the control class group received the same learning treatment in terms of learning objectives, learning materials, and learning time. The difference is in the experimental group that received treatment using the NHT Type Cooperative model assisted by concrete media, while the control group did not use the NHT Type Cooperative model. The experimental group and the control group will be given a Pre-test, to determine the initial condition of the research subjects. The post-test will be given if the research / provision of special treatment to the experimental group has been summarized. The Post-Test is given to both classes to see the differences in the results of the treatment that has been carried out, especially in students' critical thinking skills.

The implementation of this research consists of three stages, namely the preparation stage, the implementation stage, and the final stage of the experiment. The research population used in this study were grade V students of SD N Gugus VIII Abiansemal which implemented the independent curriculum consisting of 8 classes in 8 schools. From the population of grade V students of SD Gugus VIII Abiansemal, the next step is to determine the research sample. The sampling technique for determining the experimental class and control class in this study is using a sampling technique. In this study, the sampling technique used was Cluster Random Sampling. Based on the results of the lottery, the sample results in this study were

grade V of SD No. 1 Sibanggede as many as 38 students as the experimental class and grade V of SD No. 4 Sibanggede as many as 30 students as the control class

In this study, the data required is data on the critical thinking skills of fifth grade students of SD N Gugus VIII Abiansemal in Mathematics learning. The data collection method used is a test method, namely measuring the critical thinking skills of Mathematics learning. The test that will be used to measure the mastery of critical thinking skills in Mathematics learning is a descriptive test consisting of 5 questions. The descriptive test form gives freedom to each test taker to express their reasoning power, so that the answers given by each test taker will show the ability to think in a complex way. The test assessment technique uses a 4-0 scale.

In making a test instrument, first an instrument grid is made. The instrument grid is a guideline or guideline on formulating questions contained in the instrument grid. The instrument grid in this study is a descriptive test grid that is compiled and developed based on the FPB and KPK material of the Mathematics subject matter for grade V semester 2 which is then described in the grid of the results of students' critical thinking skills in Mathematics learning. The instrument grid in this study is shown in [Table 1](#).

Table 1.The Grid of Critical Thinking Ability Assessment Instrument for Students in Mathematics Learning

Achievements Learning	Question Indicator (Learning objectives)	Indicator Ability Students' Critical Thinking
Students can solve and conclude problems related to FPB and KPK of two numbers related to everyday life.	1. Given a problem, students are able to analyze the correct solution for solving the least common multiple (LCM) and greatest common factor (GCF).	Analyze(analyze the problem from a statement)
	2. Presented with daily life story problems, students are able to solve story problems regarding the greatest common factor (GCF) and least common multiple (LCM) of three numbers.	Recognizing and solving problems (analyze and solve problems)
	3. Presented with daily life story problems, students are able to design correct solutions to story problems regarding the greatest common factor (GCF) and the least common multiple (LCM).	Designing a solution (inductive or deductive reasoning)

After the instruments are collected, the next stage is the instrument is tested. The results that have been obtained are tested for content validity and item validity. A test can be said to be good if the test meets the requirements, namely having validity and reliability. In research, all data that has been obtained needs to be analyzed. The techniques used to analyze data in this study are descriptive and inferential statistical analysis techniques.

Descriptive statistical analysis is used to determine the high and low quality of students' critical thinking skills, which are taught using the NHT Type Cooperative Learning Model assisted by concrete media with students who are not taught using the NHT Type Cooperative Learning Model assisted by concrete media. Calculating the high and low quality of students' critical thinking skills, through the average value (mean), mode, median, and standard deviation. While inferential statistical analysis is used to test the hypothesis proposed by the researcher, namely by using the t-test. Before conducting the t-test, the prerequisite analysis test must first be known. The prerequisite analysis test can be carried out by testing the normality of data distribution and the homogeneity of variance test.

3. RESULT AND DISCUSSION

Result

The data analyzed in this study are data on critical thinking skills in Mathematics learning for grade V students of SD N Gugus VIII Abiansemal in the 2023/2024 academic year on FPB and KPK materials. Data on critical thinking skills in Mathematics learning were obtained from the post-test data of both groups.

The data on critical thinking ability of the experimental group's Mathematics learning obtained through a pre-test of 38 students, showed that the highest score was 20 and the lowest score was 5. Based on the analysis of the descriptive results, the frequency distribution of the pre-test scores of the experimental group's critical thinking ability of Mathematics learning is presented. Furthermore, to see the

tendency of the scores obtained by students, the pre-test data on critical thinking ability of Mathematics learning is presented in a curve as seen in [Figure 1](#).

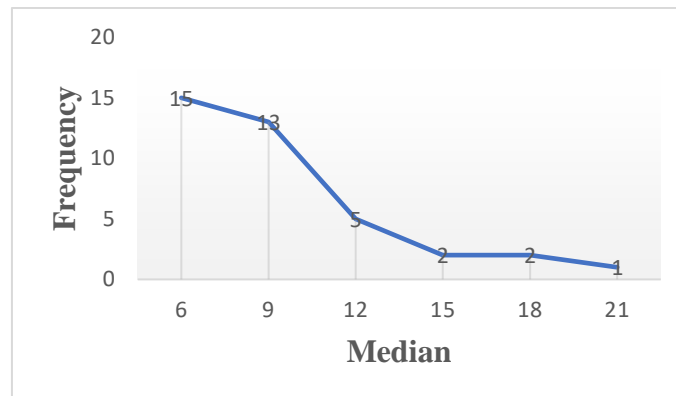


Figure 1. The Pre-Test Score Curve of Critical Thinking Ability of Experimental Group Students

Based on [Figure 1](#), it can be seen that the mode is smaller than the median and the median is smaller than the mean ($Mo < Me < M$), thus forming a positive squint curve. This means that most of the scores tend to be low. Furthermore, the average pre-test score of critical thinking skills in Mathematics learning of students in the experimental group is converted into a rating scale category to determine the high and low quality of critical thinking skills in Mathematics learning of students. Based on the calculations carried out by following these criteria, the results of the average score of the learning outcomes of students in the experimental group are obtained, with $M\% = 46.55$ classified as "Low" criteria.

The data on critical thinking ability of Mathematics learning in the control group obtained through a pre-test of 30 students, showed that the highest score was 20 and the lowest score was 5. Based on the analysis of descriptive results, the frequency distribution of pre-test scores of critical thinking ability of Mathematics learning in the control group is presented. Furthermore, to see the tendency of scores obtained by students, the pre-test data on critical thinking ability of Mathematics learning is presented in a curve as seen in [Figure 2](#).

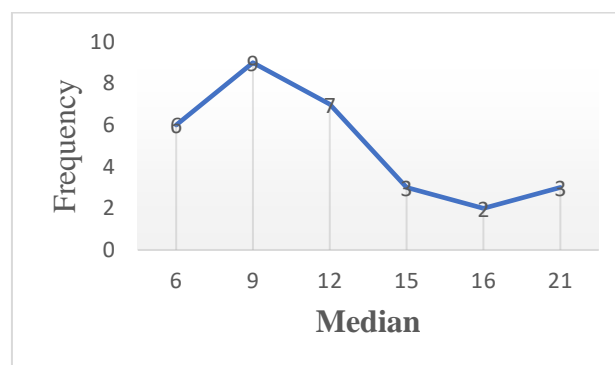


Figure 2. The Pre-Test Score Curve of Critical Thinking Ability of Control Group Students

Based on [Figure 2](#), it can be seen that the mode is smaller than the median and the median is smaller than the mean ($Mo < Me < M$), thus forming a positive squint curve. This means that most of the scores tend to be low. Furthermore, the average pre-test score of critical thinking skills in Mathematics learning of students in the control group is converted into a rating scale category to determine the high and low quality of critical thinking skills in Mathematics learning of students. Based on the calculations carried out by following these criteria, the results of the average score of the learning outcomes of students in the control group are obtained, with $M\% = 56.8$ classified as "Low" criteria.

The data on critical thinking ability of the experimental group's Mathematics learning obtained through a post-test on 38 students, showed that the highest score was 20 and the lowest score was 11. Based on the analysis of the descriptive results, the frequency distribution of the post-test scores of the experimental group's critical thinking ability of Mathematics learning is presented. Furthermore, to see the tendency of the scores obtained by students, the post-test data on critical thinking ability of Mathematics learning is presented in a curve as seen in [Figure 3](#).

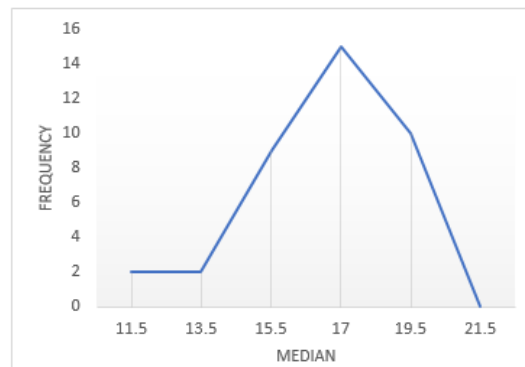


Figure 3. The Post-Test Score Curve of Critical Thinking Ability of Experimental Group Students

Based on Figure 3, it can be seen that the mode is greater than the median and the median is greater than the mean ($Mo > Me > M$), thus forming a negative squint curve. This means that most of the scores tend to be high. Furthermore, the average post-test score of the critical thinking ability of students in Mathematics learning in the experimental group is converted into a rating scale category to determine the high and low quality of students' critical thinking ability in Mathematics learning. Based on the calculations carried out by following these criteria, the results of the average score of the learning outcomes of students in the experimental group are obtained, with $M\% = 85.1$ classified as "High".

The data on critical thinking ability of Mathematics learning in the control group obtained through a post-test of 30 students, showed that the highest score was 19 and the lowest score was 9. Based on the analysis of descriptive results, the frequency distribution of the post-test scores of the critical thinking ability of Mathematics learning in the control group is presented. Furthermore, to see the tendency of the scores obtained by students, the post-test data on critical thinking ability of Mathematics learning is presented in a curve as seen in Figure 4.

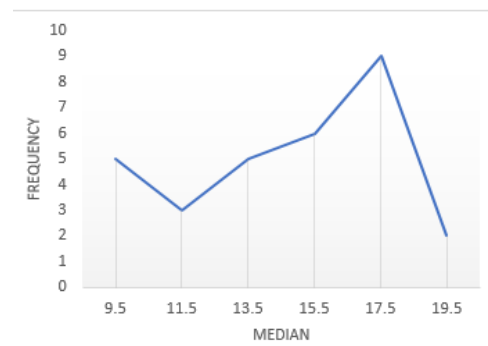


Figure 4. The Post-Test Score Curve of Critical Thinking Ability of Control Group Students

Based on Figure 4, it can be seen that the mode is greater than the median and the median is greater than the mean ($Mo > Me > M$), thus forming a negative squint curve. This means that most of the scores tend to be high. Furthermore, the average post-test score of critical thinking skills in Mathematics learning of students in the control group is converted into a rating scale category to determine the high and low quality of critical thinking skills in Mathematics learning of students. Based on the calculations carried out by following these criteria, the results of the average score of the learning outcomes of students in the experimental group are obtained, with $M\% = 73.15$ classified as "Moderate".

Next, a data analysis prerequisite test is carried out before carrying out the hypothesis test. There are several data analysis prerequisites that must be met, including: 1) normality test of data distribution shown in Table 2. The homogeneity test of variance shown Table 3. And the results of the analysis that has been carried out can be seen in Table 4.

Table 2. The Results of the Normality Test for Post-Test Data Distribution for the Experimental and Control Groups

No	Research Group	Lots Student	Maximum Value $\sqrt{Ft - Fs}$	Table Values KS	Conclusion
1.	Experimental Group	38	0.1132	0.219	Normal

No	Research Group	Lots Student	Maximum Value $F_t - F_s$	Table Values KS	Conclusion
2.	(Elementary School No. 1 Sibangede) Control Group (Elementary School No. 4 Sibangede)	30	0.0983	0.219	Normal

Table 3. The Post-Test Recapitulation of Homogeneity Test of Variance of Experimental and Control Groups

Research Group	F_{count}	F_{table}	Conclusion
Experimental Group and Control Group	2.167	3.99	Homogeneous

Table 4. The Summary of t-Test Calculation Results

Group	Many subjects (n)	Average score (\bar{X})	Variance (s^2)	Degrees of freedom (df)	count	t_{table} (ts 5%)
Experiment	38	17.02	4.49	66	3.84	1.99656
Control	30	14.63	9.73			

Based on Table 4, shows the recapitulation, the results of the t-test obtained $t_{count} = 3.84$ and for a significance level of 5% with $dk = (38 + 30 - 2) = 66$ obtained $t_{table} = 1.99656$ then it can be stated that H_0 is rejected and H_1 is accepted. So it can be concluded that there is a significant influence of the NHT Type Cooperative model assisted by Concrete Media on the critical thinking skills of Mathematics learning of class V students of SD N Gugus VIII Abiansemal in the 2023/2024 Academic Year.

Discussion

Mathematics is one of the sciences studied in learning activities. Mathematics is not just one of the subjects in school, but can be useful for developing students' critical thinking skills to be more critical and creative so that they can solve problems in life (Agnafia, 2019; Yulianti et al., 2022). One of the successes of Mathematics learning that can be seen from the increase in critical thinking skills and the increase in students' critical thinking skills will get good grades. With the increase in students' critical thinking skills well, it can also be said that the learning objectives have been achieved. Educators play an important role in designing and implementing learning activities to improve students' critical thinking skills (Afifah & Kusuma, 2021; Siswanto & Ratiningsih, 2020). Therefore, everything that can improve students' critical thinking skills to support learning success must be done as optimally as possible.

Mathematics learning is carried out in two directions, namely students ask questions to educators, educators become facilitators, and students learn from each other. So that learning will be more active and effective. Mathematics learning for grade V of SD N Gugus VIII Abiansemal tends to be less varied. In the process, Mathematics learning should be packaged in an interesting way so that the learning patterns given to students are not monotonous, so that it can create motivation and activeness of students in learning mathematics. Therefore, an appropriate strategy, method, and learning model are needed in Mathematics subjects.

Based on the background of the problem, the process of learning Mathematics, especially in terms of students' critical thinking skills, still tends to be low. This can be seen from students who still have difficulty in understanding story problems that are changed into mathematical form. Students find it difficult to solve a problem individually, so they understand better if they discuss it with their friends (Maswar, 2019; Monica et al., 2019). In addition, educators still often use lecture models and tend to be monotonous in the teaching and learning process and the use of media as a learning support so that students can easily understand learning is rarely used. So that it makes students easily bored and become less focused on the learning delivered by educators.

The existence of such a situation requires that it be addressed through a learning model that can improve students' critical thinking skills regarding mathematical problems (Mimpin, 2022; Nourhasanah & Aslam, 2022). The implementation of learning certainly uses a learning model in delivering knowledge. One of the learning models that can be used is the NHT Type Cooperative learning model. The NHT Type Cooperative learning model is a learning model that applies a small grouping/team system whose members are four to six people who have different academic abilities, gender, race or ethnicity (heterogeneous) (Astuti, 2019; Yusniati, 2022). NHT is a form of learning variation from group discussions, each student in the group has a number and the student knows that the student who will be called randomly to represent their group, but is not informed in advance who will be the representative of the group. So the activity

involves all students in the class. In this method, educators use a four-step structure, namely: numbering, asking questions, discussing with groups, and presenting the results of discussions that are selected randomly (Sudewiputri & Dharma, 2021; Yenni, 2016). The characteristics of the NHT type cooperative learning model are (1) heterogeneous groups, (2) each group member has a different head number and (3) thinking together (Heads Together).

The NHT type of cooperative learning model assisted by concrete media is a learning model that provides students with the opportunity to exchange ideas, consider the most appropriate answer, and can encourage students to increase their spirit of cooperation in groups. In this learning model, students will get numbering, numbering is the main thing in Numbered Head Together (Arpiah, 2020; Yusniati, 2022). The teacher will divide the students into 3-5 people in each group and give the students a number, so that each student in the group has a different number, according to the number of students in the group (Hasanah, 2021; Kusnadi & Kusumawati, 2020). To support students' understanding of mathematics learning materials, supporting media will be used, namely concrete media. This concrete media will later help students in solving a problem given by the educator so that students' critical thinking skills will increase.

The results of this study are in line with research stating that there is a significant increase in students' mathematical reasoning abilities after the implementation of the NHT type cooperative model. This is evidenced by the increasing activeness of students in participating in learning activities in class and cooperation between groups that is increasing until they obtain better reasoning abilities than before. The critical thinking abilities of groups taught with the NHT Type Cooperative model with conventional learning models are far different (Arpiah, 2020; Yusniati, 2022). The results of this study have similarities with the findings of several previous studies. The results of previous studies showed that there was a significant influence of the NHT type cooperative learning model on critical thinking skills. In line with this, previous studies also had similarities in research, namely using the NHT type cooperative model on critical thinking skills in Mathematics learning (Arpiah, 2020; Mimpin, 2022). In the study, the Head Together (NHT) learning model has an influence on the critical thinking skills of fourth grade students in mathematics content at Siasem 03 Elementary School. Based on the description, it is supported by relevant research that to optimize the Mathematics learning process in Elementary Schools, it is suspected that the NHT type Cooperative model assisted by concrete media has an influence on students' critical thinking skills in Mathematics learning for fifth grade elementary school.

The results obtained from this study are expected to be used as study material and additional information for the development of research related to the use of the NHT Type Cooperative model in Mathematics subject learning activities, especially in Elementary Schools. This study has several implications, limitations, and advantages that are important to note. The implications of this study include improving the quality of mathematics learning in elementary schools by implementing the NHT Type Cooperative learning model assisted by concrete media, which has been proven to be able to improve students' critical thinking skills. For teachers, the results of this study can be a guideline for adopting more interactive and effective learning strategies, as well as encouraging students to be more active and creative in solving problems. For school principals, these findings can be used as a basis for coaching and improving the quality of teaching in schools. This study also has several limitations, including limitations in the scope of the sample which only includes grade V students of SD N Gugus VIII Abiansemal, so that generalization of the results of this study needs to be done carefully. In addition, this study is also limited to the use of certain concrete media that may not be directly adapted in all learning contexts.

4. CONCLUSION

This study can be concluded that the implementation of the Numbered Heads Together (NHT) Cooperative Learning Model supported by concrete media significantly improves students' critical thinking skills in mathematics learning. Data collected from the pre-test and post-test showed a clear increase in the experimental group compared to the control group. The average post-test score of the experimental group was high, while the control group showed a moderate increase. The t-test confirmed that there was a significant difference between the two groups, confirming the effectiveness of the NHT Cooperative Model assisted by concrete media. The implications of this study include the importance of adopting interactive and innovative learning strategies by teachers to encourage student engagement and creativity, as well as recommendations for principals to support improving the quality of teaching through teacher coaching. The limitations of this study are related to the scope of the sample and the adaptability of the concrete media used, but the results provide useful practical and theoretical contributions to the development of learning methods in elementary education.

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