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INCREASING MATHEMATICS LEARNING OUTCOMES THROUGH TYPE COOPERATIVE LEARNING MODEL NUMBERED HEADS TOGETHERON CLASS STUDENTS VIII B SMPMAKASSAR GROVE CATHOLIC

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ABSTRACT

This study aims to determine the increase in learning outcomes of mathematicsin class VIII B students of Belibis Catholic Middle School Makassar through the cooperative model *Numbered Head Together* type on the subject of flat sided space builds. TypeThis research is Classroom Action Research (CAR). Subject of this researchare students of class VIII B Belibis Catholic Middle School Makassar 2022/2023 which consists ofof 21 students. There are several data collection techniques used, namely learning achievement tests , teacher activity observation sheets, and activity observation sheetsstudent. The data analysis technique used is the quantitative data analysis technique And qualitative. Findings from research This show that with use model learning cooperative type *Numbered heads together* can increase results learning mathematics in students. Matter This can seen in cycle I obtained an average value of 59.76 with a standard deviation of 15.297 with pass rate of 14.28% and in cycle II increased to 85.71% with average 81.05 with a standard deviation of 6.078 based on the assessment category used, scores of students' mathematics learning outcomes in cycle I were categorized In total there were 3 people students and on cycles II to 18 people student. From the research results obtained, it can be concluded that whether by applying model learning cooperative type *Numbered heads together* can increase results Study mathematics on student class VIII$_B$ JUNIOR HIGH SCHOOL Catholic Grouse Makassar.

Keywords: Results Study, Model Learning, Model cooperative Type *Numbered heads together*

1. Introduction

Education is a necessary process to achieve balance and perfection in the development of individuals and society. The emphasis of education compared to teaching lies on the formation of awareness and personality of individuals or communities in addition to the transfer of knowledge and expertise. With this kind of process, a nation or country can pass on religious values, culture, thoughts and expertise to the next generation, so that they are really ready to face a brighter future for the life of the nation and state (Hastuti et al., 2019)

As stated in Law no. 20 of 2003 concerning the National education system states that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and

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good skills. needed by himself, society, nation and state. (Karunia et al., 2019) .

Education is currently a fundamental problem for every country, because through human education both intellectually and morally can be formed. Education is not just transferring knowledge from an educator to students but educating a student to know something information about something assessed from a scientific and moral point of view, and prepares students to be ready to carry out life in a social environment. Education is an important thing so that it becomes a major step by the government that must be carried out in preparing its citizens to be able to compete and maintain their lives in global competition, one way to achieve goals while measuring the success of an education is based on the learning process and learning outcomes obtained by students. through education at school. (Sari & Sumiarni, 2020)

Mathematics is a universal science that underlies the development of modern technology, has an important role in various disciplines in developing human thinking power. The rapid development in the field of information and communication technology today is based on developments in mathematics in the fields of number theory, algebra, analysis, probability theory, geometry and discrete mathematics. To master and create technology in the future requires strong mastery of mathematics from an early age. Once the importance of the role of mathematics as described above, it should try to be a subject that is fun and liked by students (Kistian, 2018)

Mathematics is one of the subjects that helps in solving a problem. Mathematics can help prepare students to be able to deal with changing circumstances that develop through Action Exercises on thinking on the basis of critical, rational and careful thinking, and can use mathematical mindsets, both in studying science and in everyday life. Then, in facing the era of globalization, the government must prepare quality human resources and have high competitive abilities, be able to work together, dare to be reliable in competing (Hidayatilah, 2013)

According to Kusrini, in (Anshori & Wulandari, 2020) states that mathematics is a servant of science because its development and discoveries depend on mathematics. Thus, mastery of mathematics is needed from an early age. Because mathematics is a very important field of study in everyday life. Almost all of our life activities are related to mathematics. But what an irony when you look at the actual situation. Female students consider mathematics to be a difficult subject. This arises because the teacher is not precise in implementing a learning model.

Based on the results of an interview with the mathematics teacher at Belibis Catholic Middle School Makassar on March 6 2023, information was obtained that students' learning outcomes in mathematics were still relatively low. This can be seen from the average daily test score for class VIII $_{\text{B students}}$ is 68 while the actual KKM is 75. According to the math teacher, this happens because there are still many students who are shy to ask questions, students are also still doing other activities. which are not expected in the teaching and learning process, students are less active in learning, students lack understanding of mathematical concepts and prefer to do exercises that must be in accordance with the examples given, lack of positive responses from students for example teaching and learning activities which are dominated by teachers, only students who have abilities above the average seen being active in class, and causing some students to be less active in class.

For In addressing this problem, a more creative learning model is used so that in the learning process natural teachers must pay attention to using more creative learning models that are able to make students active in the learning process. One way that is applied is to implement a cooperative learning model. The effort that can be done is to choose a learning model that can provide the widest opportunity for students to develop according to the wishes and abilities

of students. One learning model that can be applied to increase student activity and learning outcomes is the *Numbered Head Together* (NHT) cooperative learning model.

Numbered head Together (NHT) is a type of cooperative learning, a learning model that aims to improve students' academic mastery and increase interaction between students Santiana in (Susanto, 2021)

According to Muhammad Hebrews (Kamdani & Purnami, 2015) the stages are first the teacher groups students into several groups with each group consisting of 3-5 students, provided that each group has heterogeneous or diverse abilities. Second, the teacher distributes numbers to each student according to the number of all students. Third, the teacher asks questions. Fourth, the teacher takes random lottery numbers and asks the numbers drawn to answer the question and the other groups to understand and correct their answers.

Numbered Head Together (NHT) cooperative learning model is a type of cooperative learning designed to influence student interaction patterns and as an alternative to traditional classroom structures. The *Numbered Head Together (NHT)* cooperative learning model was first developed by Kagen, to involve more students in studying sufficient material in a lesson and checking their understanding of the content of the lesson (Hotmaida et al., 2021)

2. Research Methods

The type of research used is Classroom Action Research. In this study, the PTK model that will be used is Empirical PTK, namely researchers who directly teach at the school where they do their research. This research was conducted at Belibis Makassar Catholic Middle School which is located at Jl. Belibis no. 44, Lette, Kec. Mariso, Makassar City, South Sulawesi 90124, in the even semester of the 2022/2023 academic year.The subjects of this research were 11 students in class VIII $_B$ of Belibis Catholic Middle School, Makassar, even semester of the 2022/2023 academic year, 11 men and 10 women, so the total number of students was 21 people. The object of this research is improving the learning model through the *Numbered Head Together type cooperative model* to improve student learning outcomes. This research was conducted over two cycles at Belibis Makassar Catholic Middle School, cycle I was conducted over 4 meetings, namely meetings 1 to 3 for presentation of material and the 4th meeting for the final evaluation of cycle I. The supporting instruments in this research were tests of learning outcomes and teacher activities. and students.

3. Results

This research was conducted during the second cycle, namely cycle 1 with a time allocation of 2×40 minutes which includes the stages of planning, implementing, observing and reflecting.

a). Planning

Before the teacher gives teaching material, the teacher first prepares a learning implementation plan (RPP) about the material being taught and which will be used as a reference in implementing learning in cycle I using the NHT Cooperative type model, then the teacher makes an instrument grid for the final test of each cycle and make questions and answer keys that will be given to students, as well as make observation sheets to observe student activities in class when the action is in progress. The first cycle was carried out in 3 meetings with the giving of matari and 1 meeting to give the test.

b). Implementation

the Numbered Head Together (NHT) learning model such as the teacher conveys the learning objectives and delivers teaching material, then the teacher divides the students into groups and ensure that each group has a package book or manual. The teacher distributes LKPD which contains questions that will be worked on in groups. The teacher gives students the opportunity to think

together or discuss the correct answer and ensures that each group member knows the answer to the question given. The teacher asks students to conclude the material that has been studied and together with students

c). Observation

After implementation, the next stage is observation of students' mathematics learning results, student activities and teacher activities.

Table 1. Statistics on students' mathematics learning scores in the first cycle test

Statistics	Statistical Value
Subject	21
Ideal Score	100
Average Score	59.76
Highest score	80
Lowest Score	31
Range	49
Median	68.00
Mode	70
Standard deviation	15,297
Variance	233,990

Table 2. Distribution of frequency and completeness of learning outcomes in cycle I

Score	Category	Frequency	Percentage (%)
0 – 74	Not Completed	18	85.71%
75 – 80	complete	3	14.28%
Amount		21	100

d). Reflection

At the reflection stage, the weaknesses found in cycle I, the weaknesses found in cycle I, were lack of understanding of the material provided and solving questions, lack of attention of students to the teacher's explanation of the learning material, lack of activity and self-confidence, which made them feel uncomfortable asking or responding to questions from the teacher, and students are not used to learning using the NHT type cooperative model. The average score for student learning outcomes in cycle I was 59.76 with a percentage of completeness of learning outcomes of 14.28%, so it had not yet reached the classical indicator of 85% above the KKM, namely ≥ 75.

After reflecting on the results of the implementation of cycle I, a picture of the actions that will be carried out in cycle II will be obtained as improvements to cycle I.

a. Planning

Cycle II was held in 4 meetings, the three meetings were to present material and one meeting was to test student learning outcomes. Basically repeating the steps from cycle one. However, cycle II was carried out to correct the deficiencies in cycle I so as to achieve more optimal learning outcomes. The thing to note is

1) Menconstruction of students' initial knowledge
2) Explaining, applying and motivating, giving attention, enthusiasm and activeness to students to increase.

b). Implementation

the Numbered Head Together (NHT) learning model such as the teacher conveys the learning objectives and delivers teaching material, then the teacher divides the students into groups and ensure that each group has a package book or manual. The teacher distributes LKPD which contains questions that will be worked on in groups. The teacher gives students the opportunity to think together or discuss the correct answer and ensures that each group member knows the answer to the question given. The teacher asks students to conclude the material that has been studied and together with students

c). Observation

Data on mathematics learning outcomes in cycle II were obtained through giving cycle II tests after conducting three meetings (giving material). As for the descriptive analysis of the results of mathematics learning outcomes for class VIII $_{B \text{ students}}$ at Belibis Catholic Middle School Makassar. In cycle II after applying the *Numbered Head Together* (NHT) learning model we can see in Table 3

Table 3. Statistical scores of students' mathematics learning outcomes in the first cycle test

Statistics	Statistical Value
Subject	21
Ideal Score	100
Average Score	81.05
Highest score	92
Lowest Score	70
Range	22
Median	82.00
Mode	82
Standard deviation	6,078
Variance	36,948

the Numbered Head Together (NHT) learning model during the learning process in cycle II can be seen in Table 4.

Table 4. Frequency distribution and completeness of learning outcomes in cycle I I

Score	Category	Frequency	Percentage (%)
0 – 74	Not Completed	3	14.28%
75 – 80	complete	18	85.71%
Amount		21	100

d). Reflection

At the reflection stage, the problems found in cycle I were corrected in cycle II. This can be done in cycle II and from the test results in action evaluation, namely with an average score of 81.05, it can be concluded that the average score has also increased from 59.76 in cycle I and 81.05 in cycle II. This means that the classical completeness is fulfilled, namely 85%.

4. Discussion

Cycle I

Based on a descriptive analysis of mathematics learning outcomes for class VIII $_{B}$ students at Belibis Makassar Catholic Middle School, it was found that the average score for students' mathematics learning outcomes in cycle I was 59.76 and in the assessment category at Belibis Makassar Catholic Middle School, the mathematics learning results were in the medium category, but The average score has not yet reached the KKM determined by the school. Of the 21 students who took the test in cycle I, 85.71% were in the incomplete category and 14.28% were in the completed category. This means that the classical completeness criteria are not met, namely 85%.

Cycle II

Based on a descriptive analysis of mathematics learning outcomes for class VIII $_{B}$ students at Belibis Makassar Catholic Middle School, it was found that the average score for students' mathematics learning outcomes in cycle II was 81.05 and in the assessment category for Belibis Makassar Catholic Middle School, these learning outcomes were in the high category. Completeness of mathematics learning outcomes on the subject of Building Flat Side Spaces through the NHT type Cooperative model reached a classical 85% of the KKM that had been determined at Belibis Makassar Catholic Middle School. So the mathematics learning outcomes of class VIII **B students at** Belibis Makassar Catholic Middle School after implementing the NHT type cooperative model have increased. Of the 21 students who took the test in cycle II, 14.28% were in the incomplete category and the other 85.71% were in the completed category.

5. Conclusion

Based on the results of the research and discussion, it can be concluded as follows: the results of learning mathematics in class VIII **B students** of Belibis Catholic Middle School Makassar through the NHT type Cooperative model experienced an increase from cycle I to cycle II. This can be proven by the increase in the average value obtained in cycle 1, namely 59.76 and in cycle II it increased to 81.05. With a standard deviation recorded in cycle I of 15.297 and increasing in cycle II to 6.078

Apart from that, the percentage of completeness of student learning outcomes from cycle I to cycle II also increased, namely in cycle I 14.28% or 3 students who completed and in cycle II it increased to 85.71% or 18 students who completed, and achieve the classical completeness criteria, namely 85%.

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