

CHAPTER I

INTRODUCTION

1.1 Background

A very important activity for the life of every living being is learning in order to easily interact with the environment and change behavior. Learning is a process of interaction with all the circumstances that surround the individual. Humans will grow and develop as mature individuals with education. Human efforts to develop individual abilities and personality both outside and within themselves are pursued through education.

The world of education is a place for the learning process experienced by students in order to gain knowledge, improve abilities, and improve attitudes through teaching by the teacher. This is in accordance with the meaning of Law no. 20 of 2003 that education is a planned form of awareness to create a learning atmosphere and teaching and learning process so that students actively develop their own abilities so that they have religious spiritual expertise, intelligence, personality, noble character and self-control needed by themselves, society, nation, and country. Education is an awareness to be able to improve the development of both personality and skills that we get from inside or outside of school this will last a lifetime which is created from the family, school and community environment (Manalu, et al., 2021).

Education has an important role in preparing human resources now and in the future. The process of learning and teaching is an important factor in the world of education. In order for the implementation of learning to take place in accordance with the expected goals, serious attention is needed by both teachers, parents and the government. When carrying out the learning process, learning activities are needed.

In principle, learning is doing, in which case students will carry out activities to change behavior. One of the central institutions of learning activities is the school. School is one of the central institutions for learning activities with activities that are quite complex and varied (Agustin, 2017).

The progress of the school as one of the central institutions for learning activities is largely determined by the quality of human resources. Education plays

the most important role in nation building because successful development in education will greatly affect development in other fields. If it fails to develop human resources, a nation will not succeed in developing its country. Therefore, the development and development of human resources is one of the important conditions in development (Damanik, et al., 2020). With developments in the field of education, it certainly affects the progress of science and technology. This can be seen by the increasingly rapid development of science and technology today which has resulted in many new findings in the field of science and technology.

Educational activities in Indonesia can run well and achieve goals very much depend on the way teachers carry out learning activities. Teachers always apply various teaching models so that students do not experience boredom and learn optimally. Conventional learning means that a child's mind is like a blank slate that is still clean and ready to wait for the teacher's scribbles. In another sense, a child's brain is like a bottle filled with the knowledge and wisdom of the teacher (Kahar, et al., 2020).

The old learning paradigm, the teacher imparts knowledge to students passively, the teacher lacks mastery of the proper teaching and learning process, student only knows how to convey what he knows into the memories of students who are ready to receive it. Some teachers think this paradigm is the only way. They teach with the lecture method students are expected to sit, be silent, listen, take notes, and memorize and compete with their students.

The learning model that is often used in schools that accompanies conventional learning is competitive learning. In competitive learning, sometimes it can lead to divisions between students. This is because in competition learning there is a placement of students starting from the most intelligent to the least intelligent. Teachers provide motivation to students by giving rewards to students who get the highest ranking. This learning can cause jealousy for students who are in low rankings.

So it is necessary to update the paradigm in assessing student learning processes and interactions between students and teachers. In addition, the flow of the learning process does not have to originate between the teacher and students. Students can also study with other students. The learning system should provide

opportunities for students to work together with other students in structured assignments. This learning system is also called cooperative or group learning, where students carry out learning activities in small groups, so they can help each other, work together, discuss in studying a subject matter or in doing group assignments given by the teacher. Cooperative learning can help develop cooperative skills and better relationships between students in their academic learning. Students are required to be active in learning and the teacher is a facilitator, so that students can build their knowledge actively. Students can improve the quality of learning because there are wider opportunities to seek their own knowledge by asking questions and discussing (Pakpahan, 2022).

The science learning process prioritizes the provision of direct experience in order to develop competencies in order to understand and explore the natural surroundings scientifically. Physics is a branch in science subjects. Physics is a component of science that has the nature of processes, products, and values. Physics lessons require a focus on understanding, namely understanding concepts that focus more on the process of realizing knowledge through experimentation, measurement and presentation mathematically. This statement shows that physics lessons are not just rote lessons but rather require understanding and application of concepts.

In the school physics curriculum, the objectives of giving physics include mastering concepts, principles, having the skills to develop knowledge and self-confidence as a preparation for continuing education at a higher level and being able to develop science and technology. To fulfill these objectives, it is hoped that education can determine good teaching methods and appropriate teaching methods.

The classic problem in physics education in Indonesia is the low value of students' physics learning outcomes and the lack of motivation and desire for physics learning in schools. Because this problem is a serious problem and needs to get the full attention of all parties, both the government, schools, and the students themselves. The low value of student learning outcomes is caused by many factors, one of which is caused by the inaccuracy of the learning method used by the teacher, so that students feel bored and bored when learning takes place. It can also be caused by the method of presentation or delivery of material that does not attract students' attention, so that students are indifferent when the material is delivered by

the teacher. In addition, it is also caused by teachers who are less competent in managing teaching and learning strategies that can arouse student learning interest or also because learning methods are still traditional in nature where students are only slightly involved in the learning process and class activity because they are dominated by the teacher.

To achieve this goal, the teacher is expected to be able to determine a good way of teaching with the appropriate method because each method has advantages and disadvantages. It will be even better if the use of teaching methods can be varied according to the needs of the material and students. Because if you only use certain methods, it will not give students the opportunity to build creativity and thinking power and create a feeling of boredom in students. Of the many problems in physics education listed above, the teaching approach is an aspect of the problem that requires serious handling. The constructivism learning model uses an approach called cooperative learning. Paul Suparno considers knowledge to be a construction (formation) of people who know something themselves, especially emphasizing the active role of students because knowledge or understanding is formed by students actively and not just passively received by students from the teacher (Febiola & Siregar, 2022).

Cooperative learning developed by Slavin is a teaching method that places students into small groups so that students help each other in learning a subject. Cooperative learning emphasizes the presence of peers who interact among fellow students as a group in solving or discussing a problem. Cooperative learning has many methods, including Student Teams Achievement Divison (STAD), Teams Games Tournamen (TGT), Teams Accelerated Intruction (TAI), Cooperative Integrated Reading and Compisition (CIRC), Jigsaw, Learning Together, Numbered head together (NHT), and Group Investigation (GI).

Based on the initial observation of physics learning conducted at SMAN 1 Secanggang, during the process of teaching and learning activities 80% of students stated that the teacher explained more using the lecture method, so that students were less actively involved in learning. From interviews conducted with teachers, it was found that students would prefer group learning to individual learning. In other words, students' needs to understand physics learning are cooperative learning

models. The following phenomena were also found: 1) There are still students who daydream and busy themselves with their stationery without listening to the teacher while students do not understand the material presented. 2) There are still a few students who respond to the teacher's questions when learning takes place regarding the material presented. 3) Still found students who do not want to express opinions during the teaching and learning process takes place. 4) There are still students who do not do the assignments given properly.

Based on the description presented above, the researcher tries to use the right learning model by applying the numbered head together (NHT) cooperative learning model. This technique gives students the opportunity to share ideas with each other and consider appropriate answers. In line with that, this technique also encourages students to increase the spirit of cooperation among them.

The NHT model requires students to be able to answer questions when the number is called randomly by the teacher, where this can be a motivation for students because the points earned are not only for personal gain but for the group. This certainly can be a solution so that we can manage learning in a class with a large number of students properly (Permana, 2016).

Therefore, through the explanation above, the NHT type cooperative learning model is expected to improve student learning outcomes in the learning process, so that students no longer feel bored and can take part in active learning and create a more effective learning atmosphere. So this research was formulated with the title **“The Effect Of Cooperative Learning Model Numbered Head Together (NHT) Type On Student Higher Order Thinking (HOT) Learning Outcomes In Optical Devices Topic At SMA N 1 Secanggang”**.

1.2 Problem Identification

Based on the description in the background of the problem, it can be seen the identification of the problem, as follows:

1. There are still many teacher-centered learning processes, preferably student-centered learning.
2. The learning model that is still used in physics learning at SMA Negeri 1 Secanggang is generally the lecture learning model, so that the teaching and

learning process is still monotonous and students tend to be passive.

3. These learning activities can be achieved with a variety of learning models.
4. The learning process with the Numbered Head Together (NHT) cooperative model is a student-centered learning model so it is necessary to do research on its effect on improving students' High Order Thinking (HOT) learning outcomes.
5. Lack of student activity and enthusiasm in the learning process.
6. Students experience difficulties when expressing opinions or answering questions.

1.3 Scope

The scope of the problems discussed in this study is the Effect of the Numbered Head Together (NHT) Cooperative Learning Model on Students' Higher Order Thinking (HOT) Learning Outcomes and Optical Instrument Material.

1.4 Problem Limitation

This research is limited to the following matters:

1. The object of research is students of class XI MIPA SMA Negeri 1 Secanggang
2. The learning model used is Number Head Together (NHT) which is carried out with the steps of Numbering, Questioning, Thinking Together (Head Together), and Giving Answers. The researcher chose NHT because the condition of the students and classes at SMA Negeri 1 Secanggang really supports the learning process with the NHT model.
3. Learning materials are limited only to optical instruments.

1.5 Problem Formulation

Based on the identification of the problem and the limitation of the problem above, the formulation of the problem in this research is "Is there an influence of the Numbered Head Together (NHT) Cooperative Learning Model on Student Higher Order Thinking (HOT) Learning Outcomes in Optical Devices Topic at SMA N 1 Secanggang?".

1.6 Research Objectives

In accordance with the formulation of the problem above, the goal to be achieved in this study is to determine the effect of the numbered head together (NHT) cooperative learning model on students' higher order thinking (HOT) learning outcomes in optical devices topic at SMA N 1 Secanggang.

1.7 Benefits of Research

The research results are expected to provide benefits to all parties involved. The benefits can be reviewed theoretically and practically as follows:

1. Theoretical Benefit

The theoretical benefit of this research is that it can provide information that student Higher Order Thinking (HOT) learning outcomes can be improved through the use of the Number Head Together learning model for students at SMA Negeri 1 Secanggang.

2. Practical Benefits

a. For Researcher

To answer scientific insights and have experience when dealing with students who have low physics learning outcomes.

b. For Student

Can increase the effectiveness and activeness of students in the learning process.

c. For Teacher

Can be an input for teachers in improving students' higher order thinking (HOT) learning outcomes in the learning process using the number head together learning model.

d. For School

Can be an input for schools in improving students' higher order thinking (HOT) learning outcomes through the number head together learning model.