

CHAPTER I

INTRODUCTION

1.1. Background of The Problem

Education has a very important role in human life. Through education, individuals can develop themselves optimally. Based on Law No. 20 of 2003, education is defined as an effort made consciously and planned to create a learning atmosphere that allows students to actively develop their potential, including spiritual strength, self-control, personality, intelligence, noble morals, and skills needed for themselves, society, nation, and state (Pemerintah Republik Indonesia, 2003).

Education is considered mandatory for every child in Indonesia, which will ultimately involve a lot of knowledge that must be mastered in the education process (Hasbullah, 2020). In the modern era, education has succeeded in forming a generation that has high creativity and critical thinking skills, as well as an attitude that does not give up easily when facing situations. These mindsets and attitudes allow students to be independent and not dependent on help from others (Indy et al., 2019).

In facing the challenges of education in the 21st century, the Indonesian Ministry of Education and Culture requires the implementation of integrated science concepts in junior high schools (Asrizal et al., 2018). This integrated science lesson aims to help students think holistically, understand nature more deeply, and improve the application of science in practice. In addition, it also aims to develop students' abilities and skills (Wahid et al., 2024).

Science is a branch of science that focuses on efforts to find explanations for natural phenomena that occur around us (Saharudin & Wahab, 2019). Science learning has two main characteristics, namely as a product of knowledge and as a process for producing knowledge. In this learning, students are directed to seek, process, and find knowledge (Tala & Vesterinen, 2015).

To support efforts to improve the quality of education in Indonesia, it is important to pay attention to international evaluation standards such as PISA (Programme for International Student Assessment) organized by the OECD (Organization for Economic Co-operation and Development) (Hartono et al., 2021). Indonesia's ranking in PISA, which measures students' skills and abilities, is still relatively low. Based on the results of the science ability assessment conducted by the PISA team in 2018, Indonesia was ranked 71 out of 79 participating countries. The implementation of PISA in Indonesia at that time involved 12,098 students from 399 educational units, with a sample representing 85% of the 15-year-old population (around 3,768,508 students) (Organization for Economic Co-operation and Development, 2019).

PISA questions test students' problem-solving and critical thinking skills. A student can be considered to have critical thinking skills if he/she is able to apply his/her knowledge to new situations that he/she has never faced before (Alir & Fauziyah, 2024). To face the challenges in the 21st century, the government has designed a learning system that integrates 4C skills (critical thinking, communication, collaboration, creativity). One of the 4C skills is critical thinking (Agnafia, 2019).

According to Ennis (2019), critical thinking can be defined as an individual's ability to analyze, assess, and draw conclusions from information or arguments objectively and rationally. Critical thinking skills are very important because individuals who have this ability can think logically, solve problems well, and make rational decisions about what actions to take or what beliefs to hold (Ariadila et al., 2023).

Critical thinking is a process that combines personal experience, training, and skills, and is accompanied by reasons in decision making to determine the truth of information (Briliandika, 2021). Zakiah & Lestari (2019) explain that critical thinking skills are productive reflective thoughts that involve results and evidence. And critical thinking is the right way of thinking in seeking relevant knowledge based on existing evidence (Magdalena et al, 2020).

The results of interviews with science teachers at SMP Negeri 35 Medan, although teachers have used cooperative learning models in general as suggested by the Merdeka Curriculum, teachers feel the need to further explore more interesting and effective types of cooperative models to improve students' critical thinking skills. And although learning models such as PjBL or PBL have been applied according to the characteristics of the material, teachers revealed that students still face difficulties in critical thinking, which can be seen from the low interest in reading and limited reading sources.

The results of initial observations conducted at SMP Negeri 35 Medan showed that students' critical thinking skills were still low. This can be seen from the varying initial test scores, with most students getting low and medium scores. Of the 32 respondents, around 68.75% of students scored below 40, reflecting their limited critical thinking skills. These students seemed to have difficulty analyzing, evaluating, and drawing appropriate conclusions from the material being studied. The factors that influence the low critical thinking skills are due to the implementation of learning models that have not honed students' activeness in the learning process.

To improve critical thinking skills, teachers can apply appropriate learning models. This is in line with Nurdyanto's research (2017) which states that critical thinking skills have not been fully honed by teachers because the learning models used are not appropriate, so students are less sensitive in responding to problems or phenomena in their surroundings.

One model that can encourage student activity and improve critical thinking skills is the Numbered Head Together (NHT) model (Briliandika et al., 2021). According to Shoimin (2021), Numbered Head Together (NHT) is a group learning model where each group member is responsible for their group's tasks. In this model, there is no separation between students, so they can give and receive information among fellow group members. Numbered Head Together (NHT) is a type of cooperative learning that focuses on being designed to influence student interaction patterns (Machfud, 2018). The study conducted by

Putra (2020) showed that the implementation of the cooperative learning model *Numbered Heads Together* (NHT) had a significant impact on students' learning outcomes. This was evident from the increase in the average scores, from 39,80 before the implementation (pretest) to 70,20 afterward (posttest).

Critical thinking skills can not only be realized through the application of appropriate learning models but must also be supported by the presentation of relevant materials (Hamdani et al, 2019). Based on the achievements of biology learning in the Independent Curriculum in phase E, students are expected to be able to formulate solutions to various problems related to local, national, and global issues, including those related to environmental change (Ministry of Education and Culture, 2022).

The major challenge faced by the global community today is the prevention and control of environmental pollution. The sources of environmental pollution are very diverse, ranging from industrial waste, agricultural activities, use of fossil fuels, and others. The negative impacts of environmental pollution can include ecosystem damage, human health disorders, and threats to environmental sustainability (Malihah, 2022).

In the context of education, understanding environmental issues and preventive measures is very important for the younger generation (Ismail, 2021). However, learning about preventing environmental pollution often faces a number of challenges, such as lack of student interest, difficulty in understanding complex concepts, and lack of active student involvement in the learning process (Harianti, 2017).

In learning about environmental pollution contained in the sub-chapter of human influence on ecosystems and biodiversity conservation, the Numbered Head Together (NHT) learning model can be used to help students understand the material better. Through this method, students are invited to work together, discuss, and actively participate in finding solutions or understanding the influence of human activities on environmental balance (Lidia et al., 2018).

Learning with this model involves students to review the material that has been taught and evaluate their understanding of the lesson content. This model has a procedure that has been designed to provide more time for students to think, answer, and help each other between group members. In addition, the application of this model can improve students' understanding of the lesson material and strengthen cooperation between them through joint thinking activities. In connection with this, this study raises the title "The Effect of The Cooperative Learning Model Type Numbered Heads Together (NHT) to Improve Critical Thinking Skill on Ecology and Biodiversity Material Grade VII at SMP Negeri 35 Medan."

1.2. Identification of problems

Based on the description of the problem background above, the following problem identification was obtained:

1. Lack of active response from students in the science learning process at SMP Negeri 35 Medan
2. Lack of critical thinking skills of students at SMP Negeri 35 Medan
3. The learning model used is not yet appropriate to support the critical thinking skills of students at SMP Negeri 35 Medan.

1.3. Scope

The scope of this study is to apply the Numbered Head Together (NHT) cooperative learning model to improve students' critical thinking skills towards concepts in the material on Ecology and Biodiversity Material and their ability to apply this knowledge

1.4. Problem limitation

In order for the research to be more focused and not to extend beyond the intended discussion, the scope of this research has been limited, namely:

1. The study observed whether or not there was an influence of the use of the Number Head Together (NHT) method on the critical thinking skills of class VII students at SMP Negeri 35 Medan.

2. The learning objectives measured are the activeness and cooperation of students in learning.
3. The material taught is about Ecology and Biodiversity in Indonesia, the sub-material on human influence on ecosystems and biodiversity conservation.

1.5. Formulation of the problem

Based on the identification of the problem, the problem in this research can be formulated as follows:

1. How does the Numbered Head Together (NHT) type cooperative learning model influence students' critical thinking skills on the material Ecology and Biodiversity in class VII of SMP Negeri 35 Medan in the 2024/2025 academic year?
2. Which aspect of critical thinking has the most significant influence on the implementation of the Numbered Heads Together (NHT) learning model?

1.6. Research purposes

Based on the problem formulation above, the objectives of this research are:

1. To determine the influence of the Numbered Head Together (NHT) type cooperative learning model on students' critical thinking skills in the Ecology and Biodiversity material in class VII of SMP Negeri 35 Medan in the 2024/2025 academic year.
2. To identify which aspect of critical thinking has the most significant influence on the implementation of the Numbered Heads Together (NHT) learning model.

1.7. Benefits of research

This research is expected to provide direct and indirect benefits to the world of education. The benefits of this research are as follows:

1. For schools, providing reflection materials to schools in an effort to improve learning objectives.
2. For teachers, providing motivation for educators to develop interesting learning methods and support the learning process.

3. For students, providing new knowledge to students regarding Ecology and Biodiversity.
4. For students, providing real experience in seeing the influence of the Numbered Head Together (NHT) cooperative method in improving critical thinking skills on the material on Ecology and Biodiversity.

