CHAPTER I
INTRODUCTION

1.1 Background of Problem

One of the subjects that must be taught at school is natural science. The learning process of science should be fun one for students because, in science learning, students learn various processes of investigation about the concept of natural events that occur around them. However, a lot of students don't enjoy this lesson because the learning process is saturated and they assume that too much memorization of things that are not important (Sugiharti & Aey, 2022).

In the millennial era of the 21st century, science knowledge is developing at a rapid pace, which requires more concepts to be learned by learners. The selection of important concepts that learners learn should be done with reciprocity. These fundamental insights are chosen because of their importance to learners' lives. They provide learners with specific experiences, especially in learning, so they can gain sufficient science knowledge. To be able to compete in this modern era of globalization, learners must have science literacy skills. A person is considered capable of solving problems if they understand the problem and can use their knowledge in new situations encountered. These thinking skills are called higher-order thinking skills, or HOTS, and include creative thinking, problem-solving, critical thinking, argumentation, and decision-making (Utama & Rahman, 2020).

HOT literacy refers to the ability to engage in higher-order thinking skills, which include problem-solving, critical thinking, creative thinking, reasoning, and decision-making. HOT literacy involves applying concepts and knowledge to real-life situations as well as the ability to analyze, reflect, and provide reasons or arguments. HOT literacy is an important aspect of education in Indonesia, as the government has designed a learning and assessment system that is oriented towards higher-order thinking skills (HOTS). It is believed that by developing HOT literacy, learners can improve their learning outcomes and develop their thinking power (Siregar et al., 2020). Overall, HOT literacy is an essential skill that enables learners to think critically, solve problems, and apply their knowledge in various contexts. HOT literacy is an essential component of modern education that aims to prepare learners for the challenges of the 21st century.

This is in line with the curriculum now used in Indonesia, known as the independent curriculum. Their curriculum incorporates mapping of competence standards, independent learning, and minimum competency assessment to allow more free space for educators to build

learning and assessment designs based on students' traits and needs (Andari, 2022). In practice, the implementation of the independent learning curriculum policy has not been fully implemented effectively and efficiently. In the independent curriculum, students can develop independent, creative and innovative potential. However, there are still many teachers who do not understand the concept of an independent learning curriculum, so the implementation of an independent learning curriculum in different education units is still not optimal (Rambung et al., 2023).

The solar system is one of the materials studied in the natural sciences. Solar System material covers topics such as the structure and composition of celestial bodies, the Earth's orbit and rotation, the Sun as the central star, the eight planets and their characteristics, the moon, asteroids, comets, and the gravitational forces that govern the motion of celestial bodies (Yenita et al., 2022). The entire scope of the material and the Solar System requires learners' HOT literacy skills to understand and develop the cognitive aspects of learners. Educators must have the ability to conduct HOTS evaluations, which measure higher-order cognitive thinking skills through unusual contextual problems in a variety of problem forms (Listiani & Rachmawati, 2022). The problems include C4, C5, and C6 skills analysis, evaluation, and synthesis are higher order thinking skills from Bloom's Taxonomy.

In science literacy as the focus of the test conducted by PISA (Program for International Student Assessment) on 15-year-olds, Indonesia ranked 69th out of 74 countries in PISA 2018, with a score of 371 compared to an average of 487 points in OECD countries (OECD, 2023). Based on the results of the PISA test that measures the level of science literacy of students in Indonesia is still low. Factors that cause low student science literacy are internal and external factors. Where internal factors are from within the students themselves and are simply said to be the interest and motivation of students. On the other hand, external factors influence such as parental attention and learning methods provided by educators.

Based on the results of interviews conducted by researchers with one of the science teachers at SMP Negeri 2 Kabanjahe, the learning model carried out is still conventional, where the teacher uses lecture and question and answer methods and uses makeshift learning media, so that it is more monotonous and less varied when delivering subject matter. As a result, students become less active and only accept what is given by the teacher so that they cannot improve their science literacy HOT skills. Based on the learning results of 32 students in science lessons, the average score is 66 with a score of 75 and below, there are 24 students and scores above 75, there are 8 students. Based on these learning results, students' HOT literacy skills are still categorized as low. Teachers must find better learning methods to improve

student learning outcomes in the learning process. One method that can be used to achieve this goal is to use the Discovery learning method.

One of the alternative learning models that can be applied by teachers to meet the demands of 21st century competencies in science learning is by applying learning models that are able to help students find their own knowledge such as by applying the discovery learning model. The discovery learning model stresses that learning must be able to motivate learners to learn what they already know. (Sudirama et al., 2021). The discovery learning model is a learning model that directs students to undergo research, experiments, or scientific activities so as to obtain conclusions from the scientific activities that have been carried out. This learning model aims to develop a way of learning for students to be active in obtaining their own and analyzing their own subject topics that are being studied, especially science subjects (Yunus & Yusaerah, 2023).

Based on the background that has been explained, the researcher is interested in conducting research with the title "The Effect of Discovery Learning Model on Hot Literacy in Solar System Material of VII Grade Students in Junior High School"

1.2 Problem Identification

Based on the background of the problems that have been described, the problem identification in this study is as follows:

1. The science literacy skills of students in Indonesia are still low, based on tests conducted by PISA (Programe for International Student Assessment).
2. The implementation of the independent learning curriculum policy has not been fully implemented effectively and efficiently.
3. Teachers still apply conventional learning methods so that students are less active during the learning process.
4. Students' HOT literacy skills are still low because HOT literacy skills have not been applied in the delivery of material.
5. Learners do not have a high level of understanding of solar system material.

1.3 Scope of the Problem

Based on the problem identification that has been described, the scope of the problem in this study is as follows:

1. This research focuses on the effect of the discovery learning model.
2. This research focuses on Solar System material at the junior high school level.

3. The skills studied in this research are literacy skills at the HOTS level.
4. The subjects of this study were junior high school students in grade VII at SMP Negeri 2 Kabanjahe 2023/2024.

1.4 Problem Limitation

Based on the scope of the problem that has been described, the problem limits in this study are as follows:

1. The learning model used is the discovery learning model.
2. The material used in this study is solar system material.
3. Skills testing in this study is the HOTS literacy skills of students.
4. The targets of this research are seventh-grade students of SMP Negeri 2 Kabanjahe.

1.5 Problem Formulation

Based on the background of the problem and the limitations of the problems that have been described, the problem formulations in this study are:

1. Does the use of the discovery learning model improve students' HOT literacy skills more than the conventional model on solar system material in class VII SMP Negeri 2 Kabanjahe?
2. Which aspects of HOT literacy are most developed with the discovery learning model?

1.6 Research Objectives

Based on the formulation of the problems that have been described, the objectives of this study are as follows:

1. To determine the difference in improving HOT literacy skills using discovery learning models with conventional learning models on solar system material in class VII SMP Negeri 2 Kabanjahe.
2. To determine which aspects of HOT literacy are most developed with the discovery learning model.

1.7 Research Benefits

The benefits of this research theoretically related to the effect of the discovery learning model in improving students' HOT literacy skills are as a source of scientific information. The practical benefits of this research are as follows:

1. For students, it can increase learning motivation through discovery learning models and improve HOT literacy skills in science lessons on solar system material.

2. For teachers, improve teachers' pedagogical and professional skills in teaching with good methods.
3. For schools, improve the quality of schools from the results of improving the quality of student learning and improving the quality of teacher teaching.