

CHAPTER I

INTRODUCTION

1.1. Background of the Problem

Science literacy is the one very important skill that students must have. Students who have science literacy skills will be able to apply the knowledge they have learned to solve problems in everyday life well. Science literacy aims to develop skills and creativity based on scientific knowledge that is relevant to everyday life and making decisions to solve problems (Jufrida et al., 2019). Mastery of scientific and technological literacy in this digital era plays an important role in educational success (Irsan, 2021). Applying scientific literacy skills to understand, communicate, and implement scientific skills in solving problems in everyday life (Latif et al., 2022).

Students' scientific literacy skills can be measured based on PISA (Program for International Student Assessment), by measuring students' performance in three main areas, namely reading, mathematics, and science. Based on the results of the PISA study (2022), Indonesia is ranked 68 out of 81 countries with scores; mathematics (379), science (398), and reading (371). Based on this research, students' ability to read is still classified as low. This reflects that the level of higher-order thinking skills (HOTS) in scientific literacy has not been adequately developed.

Higher-order thinking is a strategy to improve critical thinking skills and clinical reasoning, both of which are higher-order thinking skills (HOTS) (Jarvis & Baloyi, 2020). According to Antonio & Prudente (2023) HOTS science literacy aims to generate valuable insights into the current state of literature on inquiry-based approaches and students' higher-order thinking skills in science learning. In an effort to develop students' higher-order thinking skills, several challenges have been faced by teachers.

Some information was obtained through an interview with one of the Chemistry teachers in MAN 1 Medan, namely the existence of school literacy

activities implemented by the school and the library as an infrastructure for student's literacy activities. However, for chemistry learning itself, literacy is still rarely carried out. The absence of student literacy activities has an impact on students looking passive, students' mastery of the material is limited from the teacher's explanation and they are less able to train critical thinking skills. One of the chemistry materials that causes students to be lazy to read is chemical equilibrium material, because this material is dominated by calculations. This raises new problems for teachers because students are less able to analyse and identify the concept of chemical equilibrium with everyday life.

Various efforts that have been implemented by teachers in schools to improve students' HOTS Science Literacy skills are still ineffective. Some of the methods that have been given include giving students time to discuss to improve their science literacy skills, dividing students into small groups and providing printed LKPD. The results of Azwar's (2023) research also show that the R2L method has succeeded in improving students' literacy skills in several countries, one of which is Indonesia. This is also proven that the application of the R2L method has a positive influence on student learning outcomes and increases students' interest in critical thinking because it requires students to apply high-level skills. However, in Azwar's (2023) research, it is still less than optimal because it still uses the R2L display which seems monotonous and does not attract students' interest in analysing a problem in learning. This is evidenced by the less attractive appearance of the R2Lbased worksheet in Azwar's (2023) research and is less able to stimulate students' HOTS Literacy skills.

Therefore, because of these problems, researchers propose a new way to improve students' HOTS literacy skills through the use E-LKPD Based on the Reading to Learn (R2L). This method is expected to be more effective than printed LKPD because it can stimulate students' HOTS literacy skills. The use of E-LKPD Based on the Reading to Learn (R2L) method is also emphasized because the progress of the world of education in the modern era 5.0 has given rise to various challenges that require a greater mastery of technology in its application in the

scope of education in the 21st century (Budiyono & Haerullah, 2024). The development and progress of technology creates new learning spaces that are needed to facilitate learning activities (Sari & Atmojo, 2021). Based on the opinion of Haviz et al. (2018) 21st century skills must be mastered by students including 4C, namely (Critical Thinking, Creativity, Communication Skills, and Collaboration), which means that it is adjusted to current educational needs, one of which requires students to be able to hone their scientific literacy skills.

In order to maximize students' high-level scientific literacy skills, it can be collaborated with applications in the form of E-LKPD so that the form of learning and student analysis is not boring and attracts students' interest and motivation to be more careful in drawing conclusions with this R2L technique in LKPD (Siregar, 2023). The results of Ritonga et al.'s (2021) research show that R2L is able to improve student learning outcomes and also the application of R2L and HOTS Literacy with projects and problem-based learning allows teachers and students to build their own knowledge and improve students' writing skills. This is collaborated with its application which is arranged in the form of E-LKPD.

Based on the description, the researcher proposes a method to improve students' scientific literacy which will be carried out in a study entitled "Development of E-LKPD Based on the Reading to Learn (R2L) Method to Improve Students' HOTS Science Literacy Skills on Chemical Equilibrium Material".

1.2. Problem Identification

Identification of problems in this research according to the background that has been described is as follows.

1. Low scientific literacy skills of students
2. Low levels of high-level thinking of students
3. Low culture of reading and analysing a problem in students
4. Students are still passive in learning
5. Printed LKPD used in schools are not interesting and too monotonous

1.3.Scope

To be more specific in this study, the researcher only identified problems and limitations in the use of interactive E-LKPD Based on the Reading to Learn (R2L) Method on chemical equilibrium material.

1.4.Problem Formulation

1. What are the need analysis results of interactive E-LKPD based on the Reading to Learn (R2L) method to improve Students' HOTS Science Literacy skills on Chemical Equilibrium?
2. What is the feasibility level of interactive E-LKPD based on the Reading to Learn (R2L) method towards Students' HOTS Science Literacy skills on Chemical Equilibrium?
3. How does the influence of interactive E-LKPD based on the Reading to Learn (R2L) method towards Students' HOTS-Literacy Science skills on Chemical Equilibrium?
4. How effective is the interactive E-LKPD based on the Reading to Learn (R2L) method to improve Students' HOTS Science Literacy skills on Chemical Equilibrium?

1.5. Problem Limitations

The researcher limits the problems in this study as follows:

1. The material that will be discussed in the learning process is Chemical Equilibrium
2. E-LKPD functions to train students' HOTS scientific literacy skills
3. The method used is Reading to Learn (R2L)

1.6. Research Objectives

1. To determine the need analysis results of interactive E-LKPD based on the Reading to Learn (R2L) method to improve Students' HOTS Science Literacy skills on Chemical Equilibrium.

2. To determine the feasibility level of interactive E-LKPD based on the Reading to Learn (R2L) method towards Students' HOTS Science Literacy skills on Chemical Equilibrium.
3. To determine the influence of interactive E-LKPD based on the Reading to Learn (R2L) method towards Students' HOTS-Literacy Science skills on Chemical Equilibrium.
4. To determine the effectiveness of interactive E-LKPD based on the Reading to Learn (R2L) method to improving Students' HOTS Science Literacy skills on Chemical Equilibrium.

1.7. Benefits OF Research

This research is expected to be useful for several parties.

1.7.1. Theoretical

The interactive E-LKPD for class XI SMA developed in this study can be used to facilitate chemistry teachers in carrying out learning activities specifically on chemical equilibrium material.

1.7.2. Practical

1. For Researcher

This research can improve the knowledge, competence and skills of researchers in designing learning activity media that can be applied later as a teacher.

2. For Teachers

This research can be a reference for teachers in choosing learning methods to improve students' HOTS-Science Literacy abilities.

3. For Students

This research is useful in improving students' HOTS-Science Literacy abilities through the R2L method via interactive E-LKPD.

4. For Next Researchers

This research is a study material or literature for further research.