

CHAPTER I

INTRODUCTION

1.1 Background

The 21st education emphasizes in-depth skills. One skill that is included in 21st-century skills is learning skills, which consist of the 4Cs, namely creativity, critical thinking, collaboration, and communication (Trilling & Fadel, 2009). Entering the twenty-first century, life's challenges become increasingly difficult and require more sophisticated methods to solve them. Solutions that are not only effective but also efficient are needed to overcome this problem. Critical thinking ability is an important skill that is needed in this context (Rahmawati et al., 2023). Critical thinking is an important foundation for those who wish to develop deeper thinking skills. This is the ability to analyze situations or problems (Hidayati & Sinaga, 2019). Critical thinking skills are very important in this rapidly developing and changing world. It increases one's understanding and wisdom about various situations. Therefore, the ability to think critically is one of the important things to be able to adapt in this era (Ramdani et al., 2021). Students need to have critical thinking skills because they are required in order to face the challenges of the 21st century, and critical thinking skills are required to analyze a problem to the stage of finding a solution to overcome the problem (Irhasyuarna et al., 2022).

According to (Ennis, 2011) before making a decision, rationality and introspection should be emphasized while considering what to do and believe. Other versions define critical thinking as a student's capacity to identify and articulate (Sari et al., 2021). Critical thinking skills are very useful in education because of the whole process involved in it (Yani et al., 2023). Six elements of critical thinking skills are identified by (Ennis, 2011) basic clarification (understanding and formulating a problem or argument), bases of decision (the basis for decision making), inference (concluding), advanced clarification (more complex analysis to clarify a problem or argument), supposition and integration (making a hypothesis), and auxiliary ability (supporting skills). Solving difficulties is a must for students in the learning process. When students already understand the

concept and understand in depth how to resolve decisions, it will be easier for students to find effective solutions to challenges when they can improve their understanding of a subject. Therefore, critical thinking skills and a higher level of thinking need to be taught to the students. (Mauizah et al., 2024)

In science learning, students are expected not only to understand the material but also to be able to analyze problems and make the right decisions in often complex situations. This process relies heavily on critical thinking skills. Students must have strong abilities in understanding, interpreting, and evaluating scientific information in science learning because these skills are very important for developing accurate and applicable knowledge. Based on the results of the PISA (2018) Of the 70 participating countries, Indonesian students ranked 68th, indicating that there is a correlation between learning outcomes and low scientific and critical thinking skills. This shows that Indonesian students need more effort to improve their critical and scientific thinking skills, especially in increasingly complex science education. According to Saputra et al., (2019) revealed that students' critical thinking abilities are still low, as can be seen from the problem symptoms that dominate observations during the science learning process in class. Apart from that, Basri., (2019) and Hadisaputra et al., (2020) Students' critical thinking skills are closely related to science learning. If students have low critical thinking then the students also have weaknesses in their science learning. This is the case because teachers have not been able to create learning media that uses a learning approach to encourage students to participate more actively in their learning (Ramdani et al., 2021).

Many factors contribute to this low critical thinking ability. One of them is the tendency of students to memorize material and formulas rather than understand basic concepts (Arif et al., 2019). According to Muahor & Yulianto, (2023) explained that the lack of student response and the tendency to memorize rather than understand concepts caused students' critical thinking skills to be poorly trained. Many students think that science learning is always related to numbers, mathematical formulas, and also memorizing too much. So, students find it difficult to connect various science concepts to everyday life. This is one of the factors

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COMIC AS MEDIA ON LEARNING HUMAN RESPIRATORY SYSTEM TO IMPROVE STUDENTS' CRITICAL THINKING

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inhibiting students from thinking critically (Indawati et al., 2021). Apart from that, other research has revealed that other factors influence critical thinking in students, including physical condition, self-motivation, anxiety, and intellectual development. (Adisty et al., 2021)

According to Widodo, (2021) Science consists of three important components, knowledge, process, and attitude. And all three are interconnected. According to research conducted by Tanti et al (2020) found that students' science process skills influence their ability to think critically about science, critical thinking is very influential in science lessons. This is proven by previous research which explains the relationship between science lessons and critical thinking, then strategies for implementing critical thinking in the classroom make students actively ask questions during the learning process.(Tanti et al., 2020). Furthermore, according to research conducted by Syamsinar et al., (2023) states that critical thinking skills have a positive relationship with learning outcomes. This can be seen in student learning outcomes.

It will not be easy to meet international standards for teacher responsibility as we approach the 21st century. Teachers are expected to have sufficient capability and knowledge. They are expected to be able to teach various subjects (Glaze, 2018)(Rochmawati et al., 2020) With the current development of education, the use of teaching methods that only involve lectures and explanations makes students feel bored and have difficulty understanding the material presented by the teachers (Luppy et al., 2020) One step to developing teaching methods is to utilize information technology (Islam Sarker et al., 2019) Therefore, innovations are needed in teaching methods, namely by integrating learning media as a tool in the classroom learning system (Pratama et al., 2020). Therefore, teaching materials such as student textbooks must be made as optimal as possible, containing special steps to make students active during learning activities. The design of teaching materials by teachers and science learning models has an important role in improving students' critical thinking skills. Selecting appropriate teaching materials is useful for encouraging students to be more active in the learning process and

improving their learning outcomes. So that students can experience the learning process directly. This is one alternative that must be considered.

According to (Damayanti & Kuswanto, 2020) comics can improve students' critical thinking, this is because the storyline in the comics and the narrative are interesting. The same thing was also found in research conducted by (Fikriyah et al., 2023) namely, comics were able to improve student's critical thinking in elementary school students. This is because the storyline and images in comics keep readers entertained. Furthermore, Anisa et al., (2023) also proves that comics can improve students' critical thinking in learning human digestion of material. Based on these three studies, it can be concluded that learning using comics can improve students' critical thinking.

It improves students' critical thinking, and learning using comics can also improve student learning outcomes (Indriyani et al., 2024). This is important because according to (Amaliyah et al., 2022) students experience difficulties when studying the human respiratory system, this is due to the difficulty of understanding the teacher's explanation, a large amount of Latin language, and the material contained in learning support books, the human respiratory system material is abstract, is difficult to imagine because it cannot be seen with the naked eyes. difficulties in learning the human respiratory system is understanding concepts were also found, such as misconceptions caused by a lack of student participation in learning (Dewi & Purnomo, 2021) the way teachers explain the material and inappropriate learning methods also influence the misconceptions experienced by students (Tridiyanti & Yuliani, 2017). Furthermore (Myanda et al., 2020) added that the difficulty for students to understand the human respiratory system material is that the material is abstract so students do not know what they are learning.

According to (Khotimah & Hidayat, 2022) argues that comics can increase student engagement and learning outcomes. This is because comics are an effective media for conveying information or delivering material, especially abstract material, and also effective in improving scientific competence. (Caldwell, 2012). The use of comics as a learning media is not new at the moment, there has been a lot of research discussing the effectiveness of comics in helping students to improve

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their learning scores. The research in question, among others, according to (Syarah et al., 2019) states that electronic comics can build students' knowledge, especially in learning about marine conservation, other research such as that conducted by (Alfi Riski Ramadanti & Kurniana Bektiningsih, 2023) also proves that learning using comics can improve student learning outcomes.

According to Suwandinata & Suranata, (2023) comics are very effective in being used as a learning media because comics contain a variety of interesting colors, pictures, and words, and the delivery of the material is presented in the form of daily conversation. Apart from that, it is also said that comic media is one of the media that can be used to improve students' critical thinking skills. This is in line with (Berger et al., 2023) which states that comics are able to convey messages to readers through pictures and writing that have a storyline. So, that readers have a real picture of the content of the story they want to convey. The use of comics as a media in learning was previously researched by (Setiyani, 2019) The results show that comics in learning are the right media to use because they are able to increase students' understanding and foster their interest in learning. This research was conducted on grade XI students in Cirebon. Apart from conducting research. Furthermore, it was also carried out by (Dewa Ayu Puspawati & Ni Wayan Ekayanti, 2023) who researched the influence of learning comics on problem-solving abilities and creative thinking in senior high school students in Denpasar, Bali, and the results were that comics affected improving these skills, apart from that, comics were also able to create students more active in learning and make learning less boring. Apart from that, according to (Rahmi et al., 2021) Comics are able to improve students' critical thinking skills and help them understand biological material because they present information in a more interesting way because they contain visual elements. Thus, comics can help students understand and grasp biological concepts better. This research was conducted on class XI students in Bandung who used comics about the structure of tissues that make up organs with a coordination system.

Different from previous research, this research discusses comics that are able to improve students' critical thinking skills, especially regarding the human respiratory

system material. The participants in this research are also different, the participants in this research are eighth-grade students at one of the schools in Bogor Regency who have not yet learned about the human respiratory system. Based on the problems previously described, this research aims to explain and analyze students' critical thinking using comics as a media for learning the human respiratory system.

1.2 Research Problem

Based on the background already stated, this study's research problem is “How does the improvement of critical thinking skills in the human respiratory system by using comics as a media?”

1.3 Research Questions

Based on the research problem, this paper constructs questions that will be explored, which are:

1. How is the improvement of Student Critical Thinking before and after implementing comics as media on the human respiratory system?

1.4 Research Objectives

Based on the problem formulation that will be answered in the research objective in this section, the research objective in question is

1. Explain and analyze how to use comics in learning the human respiratory system to improve students' critical thinking skills.
2. Analyzing and comparing student scores in pre-test and post-test critical thinking students before and after learning using comics as a learning media.
3. Evaluate the effectiveness of comics as a learning media from the student's perspective,

1.5 Operational Definition

To prevent misunderstandings and to make it easier for readers to understand, the variables involved in this research will be explained in more detail, the variables in question are

1.5.1 Comic Learning Media

Comic learning media is a learning media using comics that contain images and text related to learning about the human respiratory system, especially how

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cigarettes affect the body and the impacts caused by smoking. Comics as a learning media will be measured using a questionnaire about students' views of comics.

1.5.2 Student's Critical Thinking

One of the 4C learning skills known as students' critical thinking is essential for problem-solving, decision-making, and a thorough understanding of the environment and is a great preparation for students in the future. It is also an important educational skill because it encourages students' growth into independent and competent learners. Pre-test and post-test are used in this research to measure students' level of critical thinking, in the test there will be 20 questions consisting of two aspects, 10 questions will use basic aspect clarification and the other 10 questions will use aspect inference. To optimize the use of comics in improving critical thinking, small group discussion activities were carried out using comics and other sources of information, such as websites and explanations from previous teachers. The results of this discussion are five questions and answers which will later be seen whether the questions they make are following the ennis aspect or not.

1.5.3 The Implementation of Learning Human Respiratory System

In this research, comics are used which discuss several respiratory organs, the impact of smoking, and the mechanism of the ingredients in cigarettes that can affect the body, to optimize the use of comics to increase students' critical thinking, so as a basis for initial knowledge students will learn about the basics of the human respiratory system. first. However, the dangerous effects of smoking will be explained using comics

1.6 Limitation of Problem

To make this research more focused, the problem is limited as follows:

1.6.1 Media

Comics are the media used in this research. The experts' evaluation focused on three main things: the material must be appropriate to the desired learning outcomes; the material must be in accordance with the learning objectives that have been set; and the material must be broad or cover what is being taught. The discussion in the comic specifically focuses on the effects of smoking on the respiratory system and the disorders it causes. Consequently, this research

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concentrates on ways in which comics can be used to convey information about the impact of smoking on the respiratory system in eighth-grade junior high school students.

1.6.2 Material

In this study only information related to the respiratory system. The curriculum uses the merdeka curriculum. This research examines and explains the organs related to the respiratory system, how the respiratory system works, diseases of the respiratory system (especially smoking), and the dangers of smoking.

1.6.3 Student Critical Thinking

In this research, it only focuses on examining the critical thinking of 8th grade junior high school students. To examine critical thinking, critical thinking aspects are used. In this research, the focus is on the critical thinking (Ennis, 2011) aspect, according to (Ennis, 2011) the critical thinking aspect is divided into six aspects include, basic clarification, the bases for a decision, inference, advanced clarification, supposition and integration, and auxiliary abilities, but in this research it only focuses on two aspects of critical thinking techniques, namely basic clarification, and inference in the context of learning about the respiratory system, specifically focusing on the part related to diseases caused by smoking.

1.7 Research Benefit

This research is useful in determining the effectiveness of using comics as media in learning the human respiratory system to improve student health literacy. Here are some of the benefits:

1.7.1 The Benefits for Student

Comics contain images and text that are able to visualize respiratory system material, especially diseases that arise due to smoking. The images and text listed can be linked with information from other sources such as textbooks that students use at school. This connecting process will improve children's ability to analyze and understand something more deeply. Apart from that, the comic also contains information about diseases caused by smoking, with this, students can choose a healthier life by avoiding smoking.

1.7.2 The benefits for the Teacher

Teachers can utilize the data from the results of this research as a basis for using comic media in classroom learning to improve students' critical thinking. Teachers can also explain material more easily because in comics some explanations and illustrations are easy for students to understand.

1.7.3 The benefits for another researcher

Researchers can utilize data from the results of this research such as results and limitations to conduct further research related to the topic in this research

1.8 Research Organization Structure

This research discusses how comics can improve critical thinking in students, and then looks at the results of improving learning using comics based on pre-test and post-test scores. To find out these two things, scientific steps are needed which consist of 5 chapters, each chapter discussing different scientific steps. this research is arranged based on the arrangement below:

Chapter 1: Introduction

This section explains the background to this research, namely the lack of student critical thinking in Indonesia and students' difficulties in studying the human respiratory system, both of which can be resolved by learning using comics. Based on this background, it produces a problem formulation, namely How is the implementation of comic Media in Learning the Human Respiratory System to Improve Students' Critical Thinking? And how did the improvement of Student Critical Thinking before and after implementing comics as media on the human respiratory system?

Chapter II: Literature Review

This section explains data from previous research which helps to solve problems. The previous research data in question is about the use of comics as a learning media, student critical thinking, and also about the human respiratory system. This chapter also explains how comics work to improve students' critical thinking and the impact of comics on students' critical thinking

Chapter III: Research Methodology

This chapter discusses the characteristics of 39 grade 8 students at one of the schools in Bogor. This research also explains the three instruments used to

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determine student critical thinking and their influence. Instruments that measure student critical thinking are analyzed using several steps such as instrument validity and statistical tests using the Wilcoxon test. Other instruments such as observations between friends and student responses of comics will be measured using a Likert scale.

Chapter IV: Results and Discussion

This chapter explains all the results of the use of the three instruments used, not only, this chapter also explains the answers to the previous research questions which will later discuss the increase in student critical thinking, analyzing aspects in the instruments such as the highest and lowest scores, their use. effective for comics to increase student critical thinking, supporting journals will also be explained in this research to strengthen the findings.

Chapter V: Conclusion, Implication, and Recommendation

This chapter discusses the results of data analysis carried out in the previous chapter which discusses these findings related to the application of comics in the learning process to improve students' critical thinking. Additionally, this chapter provides recommendations to teachers and other researchers for future research and their implications.