

CHAPTER I

INTRODUCTION

1.1 Background of Study

We are currently living in the fourth industrial revolution era of the 21st century, a time where science and technology progress is accelerating quickly. Everyone should be able to adjust to and keep up with these developments in this condition. Making human resources more qualified and competitive is a problem for the educational sector given these science and advances in technology (Zuhra & Arifiyanti, 2021).

High quality human resources must be prepared to compete in a global world. School should be able to have a role in improving students that can survive in this era. 21st century skills are very important to be developed. National Education Association (NEA) recommend the importance of developing the "Four Cs. The Four Cs are the critical thinking and problem solving, communication, collaboration, and creativity and innovation (Sole & Anggraeni, 2018). The 4Cs soft skills, also known as High Order Thinking Skills (HOTS), play a crucial role in our day-to-day lives. These skills have the potential to be seamlessly integrated into formal educational settings, specifically through fostering critical thinking, creative thinking, analytical thinking, and metacognitive thinking (Purnami, Sarwanto, et al., 2021).

Critical thinking is an intellectual process that involves the discovery, analysis, and evaluation of information derived from observation and experience. Its purpose is to utilize this information to make informed judgments when taking action (Wayudi & Santoso, 2020). Critical thinking is also defined as an ability that significantly impacts an individual's future. This is because possessing critical thinking skills enables a person to become an effective decision-maker (Sari et al., 2019). Indicators for measuring critical thinking abilities, according to Facione, include interpretation, analysis, evaluation, inference, explanation, and self-regulation (Facione, 2011).

The level of students' critical thinking skills in Indonesia is low. PISA (Program for International Student Assessment) study findings revealed that

Indonesian students' critical thinking skills are still weak. In 2009, Indonesia was ranked 60th out of 65 participating countries; in 2012, it was 64th, and in 2015, it was placed 69th out of 75 participating countries. (Pisa, 2015).

Numerous studies have found that Indonesian students critical thinking skills fall into the "low" category. Among them: According to research findings, students' critical thinking abilities remain in the poor category (Sari et al., 2019). In another study, it was discovered that high school students in Talang Ubi district's class X science have low critical thinking skills when it comes to studying virus content (Agustine et al., 2020). The research analysis revealed that SMAN 1 Tuban and SMAN 4 students' critical thinking skills were under the "poor" category (Rakhmawati et al., 2015).

On the other side, it is well known that students at SMAN 4 Padang have a high level of critical thinking on environmental degradation, with an average proportion of 71.99% (Syahrul et al., 2021). These two-result are contradictory. There are several factors that influenced students critical thinking skill level. The selection of an inappropriate learning model, the lack of students' skills in identifying problems, and students often find it difficult to develop strategies when faced with different difficulty levels are some factors that influence it (Zuhra & Arifiyanti, 2021).

The teacher's role is very influential in the teaching and learning process (Zuhra & Arifiyanti, 2021). Based on the interviews that conducted with one of the biology teachers in SMA PAB 8 Saentis, it known that the students critical thinking skills in SMA PAB 8 Saentis are still low. This can be concluded from how students respond when the teacher is teaching. Students are passive in learning, they didn't answer the teacher's questions, and didn't active in discussions. The students didn't care about the material presented by the teacher, students prefer to be silent, talk to their friends while the teacher was teaching.

Based on observation, it is found that some biology teacher still used conventional learning model in the learning process. They do teacher-learning center in the learning process, this condition causes students to be not active in learning, so students are not able to improve their critical thinking skills.

The results of the observation also describe the condition of the school environment, an activity that shows students' lack of care the environment. There are so many students throw their own rubbish to the school yard, in the classroom, in the desk, gutter, and the other places. This condition describes that the students less of care on environment, and their critical thinking skill are still low.

The core themes of 21st century learning are grouped into: global awareness, financial literacy, ecological awareness, health awareness and community awareness (Bialik & Fadel, 2015). Some of skills above can be implemented on the learning process in biology lesson, aspecially in ecology or environment topic.

In ecology learning, students learn about the interactions among the living things and with the surrounding environment, as a basic science for understanding interactions in the environment (Mayarni & Nopiyanti, 2021). By understanding concept of ecology, it is hoped the students can create a sustainable living environment without causing environmental problems, think critically and analyze information or data from various sources about ecosystems, and solve the problem that occur in the environment. Thus, in ecology learning, students can train and develop their eco critical thinking skills, so they can solve and connect the concepts they have learned to their life.

One of the materials related to this topic is the environmental material that studied in grade ten in the second semester. Forms of integration in the curriculum listed in the Basic Competency (KD) 3.11 and 4.11. The 3.11 basic competence is to analyze the data of environmental changes, causes, and impact on the lives. The 4.11 basic competence is to formulate the idea of the problem-solving environmental changes that occur in the environment.

Critical thinking skills in the environment are very important for students in preparing for 21st century learning that cares about the preservation of nature. Critical thinking skills on the environment (Eco Critical Thinking Skills) are cognitive skills that consist of identify, interpretation, inference, explain, analyse, and evaluate materials regarding the environment (Purnami, Sarwanto, et al., 2021).

In the learning process, SMA PAB 8 Saentis do not apply learning activities that support the student's critical thinking skill. Some of the reasons are the facilities of the school does not support it, even though nature is the best facility for studying environment material.

Based on these problems, it is necessary to make improvements in the learning process. Preparing the right learning model is one of the solutions in facing this problem, so that students have concern for the environment and eco critical thinking skills.

Science Technology Eco-cultural Society (STEcS) model is a learning model developed by combine and modify STS (Science Technology Society) learning model and Problem Based Learning (PBL) model by integrating culture (culture) in one learning model. This learning model consist of five syntaxes orientation, organization and investigation, application, conceptualization, and evaluation.

STEcS model is an effective model to enhance eco critical thinking skills at elementary school teacher education program (Purnami, Sarwanto, et al., 2021). In their research, it suggested to apply the STEcS model to the elementary, middle school, and high schools.

Based on the problems above, it is necessary to conduct a research to improve student's eco critical thinking skills with the better learning model, and it is hoped students have a high awareness to the environment. So, the title of this research is "The Influence of STEcS (Science Technology Ecocultural Society) Learning Model on the Students' Eco Critical Thinking Skills at the Tenth Grade of SMA PAB 8 Saentis on Environment Materials in Academic Year 2021/2022".

1.2 Problem Identification

Based on the background above, it can be identified the following problems:

1. Critical thinking skills of students in Indonesia is in the low category.
2. The student's critical thinking skills in SMA PAB 8 Saentis are still in the low category.

3. Some of biology teachers in SMA PAB 8 Saentis still used conventional learning model or teacher-learning center in the learning process.
4. The learning process in SMA PAB 8 Saentis do not apply learning activities that support the students eco critical thinking skill.

1.3 Scope of Study

The research has the following limits in order to obtain an acceptable discussion:

1. The learning model that will be implemented is STEcS learning model.
2. The research will be conducted to analyze the influence of STEcS model on student's eco critical thinking skill in SMA PAB 8 Saentis.

1.4 Research Questions

The research question of this study is: how are the influence of STEcS (Science Technology Ecocultural Society) learning model on the students' eco critical thinking skills at the tenth grade of SMA PAB 8 Saentis on environment materials in academic year 2021/2022.

1.5 Scope of Problem

Based on the background and problem identification above, there is a need for problem limitation in this study so that the assessment of the problem in this research can be more focused. So, the scope of this study are as follows:

1. The Basic Competency (KD) 3.11 and 4.11's environmental theme is the subject matter that will be discussed. Analyzing data on environmental changes, their causes, and how they affect people's lives is the 3.11 fundamental competency. Formulating the concept of resolving environmental changes that take place in the environment falls under fundamental competency 4.11.
2. The variable that will be used is eco critical thinking skills, with the indicators: interpretation, analysis, evaluation, inference, explanation, and self-regulation.

1.6 Study Objectives

The objective of this study is to analyze the influence of STEcS (Science Technology Ecocultural Society) learning model on the students' eco critical thinking skills at the tenth grade of SMA PAB 8 Saentis on environment materials in academic year 2021/2022.

1.7 Research Benefits

This reaserch have some benefits, as follows:

1. Theoritically

This research can contribute to the study of biology and education, in relation to the influence of the learning model in improving students' eco critical thinking skill.

2. Practically

- a. For students, students can be motivated in improving eco critical thinking skill.
- b. For teacher, this research is able to provide additional understanding of the characteristics and supporting alternatives in improving student's eco critical thinking skill.
- c. For researcher, researcher can apply the knowledge gained in university and to add to the experience, insight, and knowledge.
- d. For next researchers, this research can provide additional references so that it becomes a reference material to find new things that are relevant to this research study.