CHAPTER I
PRELIMINARY

1.1. Background of Study

A good education must be able to require students to develop their potential, this also requires students to expland their thinking in answering the questions given to make these students have thinking skills. Keane et al (2016) stated that students are required to be able to solve problem, collaborate, and be able to establish good communication. These efforts are made to train students skills so that they have superior and creative (Sri, 2020).

The skills needed in 21st education in facing life challenges are problem-solving or systematic skills, creative thinking, and critical thinking skills (Shaheen, 2016). Critical thinking is an ability that is needed by individuals to be able to face various problems in learning if they can apply critical thinking skill and can generate new ideas (Faud, 2017; Rahman, 2019).

The era of 21st century which is growing rapidly requires changes in society that must have wider abilities, so this requires students to be skilled in thinking, collaborating, having high creativity, and being able to communicate (Van Laer, 2014). Preparing human resources who can complete with technology, so that the decision is made that purpose of education is to improve students critical thinking skills, make students able to think rationally and as thinkers who can know how to solve problems to generate ideas or innovations (Agnafia, 2019; Moser, 2017).

Critical thinking skills are skills that must be taught to students from an early age in learning so that students can develop simple thinking skills to think critically and logically in solving problems (Zubaidah, 2016; Bustani, 2017). The ability to analyze, find problems, and provide logical conclusions is an indicators of critical thinking that students must have to be able to develop critical thinking skills so that students can be skilled especially in critical thinking (Rachmatika, 2017, Van 2014).

Critical thinking skills include the ability to identify a problem, use logic to conclude. Based on the information obtained from the development of thinking and evaluation skills. Future challenges require students to develop critical thinking skills so that students can overcome problems when answering the questions given. The importance of applying critical thinking skills is that students can identify a problem and find important points in the problem (Annizar, 2018; Bustami, 2017).

Facione (2011) states that critical thinking skills include the ability to analyze, and conclude. Based on facts and are logical, the ability to provide creative and innovative ideas to be develop. So that it can train individual critical thinking skills in solving problems. The skills that individuals must have in critical thinking are being able to solve questions, plan innovative strategies and evaluate the conclusions that have been made (Kartimi, 2012). If students are able to think critically, innovatively, evaluate so that they can solve a problem (Cojocariu 2014;Nasihudin, 2021).

Based on research conducted the critical thinking skills of students in Indonesia is still in the low category with an average value of 34,2, there are still many students who don't have the criteria for critical thinking indicators. Based on the score at 2018 PISA survey, it also shows that the critical thinking ability of Indonesian students is ranked 379 or ranked 7th from bottom (Schleicher, 2019).

Based on these ratings, it can be shown that the critical thinking ability of Indonesian students is still low, this happens because most education in Indonesian still applies aspects of memorizing material to students and still applies learning that only make students as listeners and does not require students to think critically. Requires a change in the way students think and requires students to be trained in critical thinking so as to improve the education system in Indonesia (Annizar, 2018).

The role of science, especialy biology is very important to make students creative in thinking, but there are still many students who have not applied critical thinking skills in learning biology material (Azima, 2018). Based on the results of previous studies as described above, it can be concluded that students have not

been able to develop critical thinking skills in learning, especially in learning science (biology) (Sanjaya, 2006; Wulan, 2017).

Based on a pre-survey conducted on one of the biology teachers at Senior High School 5 Medan class XI MIPA, Mam Fatmawati S.Pd stated that students critical thinking skills had never been measured before, so an analysis was needed to measure the critical thinking skills of students at Senior High School 5 Medan, especially on human respiratory material. Where the learning method applied is using conventional learning methods, group discussions, and question and answer methods.

While the learning model used at the time of learning is conventional learning. Most teachers have implemented group discussion learning methods to help develop students critical thinking skills. As in the superior class, it has been seen that students begin to develop critical thinking skills, where students have begin to be active in giving opinions and solving problems, students still tend to memorize material so they still depend on the teachers as a source of information.

The discovery learning model requires students to be active in learning process. Students learn throught active engagement with concepts and principles, and teachers encourage students to gain experience by doing activities that allow students to discover concepts and principles for themselves. The fact shows that students participation in learning increases when the discovery learning models is used. The discovery learning model always involves students actively making students accustomed to observing, identifying, analyzing, reasoning, classifying, and making conclusions. Learning activities like this can improve student's critical thinking skills. (Euis, 2019).

Human respiratory system material is the material was related to everyday life, so it requires students to relate the material to the human respiratory system with problems that occur in the surrounding environment, such as how the human respiratory process works, what organs work on the human respiratory system. The causes of respiratory disorders in human that often occur in the surrounding environment, throught the material of the human respiratory system students are required to be able to think critically in working on questions that require students to think critically.

Based on the problems above, it is necessary to analyze the critical thinking skills of students at Senior High School 5 Medan class XI MIPA on the material of human respiratory system. This research was conducted on a thesis with the title. "**Analysis of Students Critical Thinking Skills of the Respiratory System Material in Senior High School 5 Medan Class XI MIPA Academic Year 2021/2022".**

1.2. Problem Indentification

Based on the background of the problems described above, several problems can be identified as following:

1) Students critical thinking skills are still passive in learning process on the material of the human respiratory system with discovery learning.
2) Indicators of critical thinking skills are still not applied in learning material of the human respiratory system.

1.3. Scope of Study

The analysis of critical thinking skills for students of Senior High School 5 Medan Class XI MIPA on the material human respiratory system needs to be analysed the problem limits regarding the extent to which students critical thinking skills in Senior High School 5 Medan Class XI are material for the human respiratory system, while the limitations of the problem are:

Analyzing the critical thinking skills of Senior High School 5 Medan class XI students of the human respiratory system by applying critical thinking skills indicators, namely analysing, solving problems, and providing conclusions that require students to think critically with using discovery learning model in learning process with discovey learning models.

1.4. Scope of Problem

Based on the background and limitations of the problem above, the problems in this study can be formulated, following:

1) How are the critical thinking skills of Senior High School 5 Medan in class XI MIPA A.Y 2021/2022 on the material of the human respiratory system in students learning outcomes with discovery learning models?
2) How are students critical thinking skills by applying critical thinking indicators in class XI Senior High School 5 Medan A.Y 2021/2022 on the human respiratory system material in students learning outcomes?

1.5. Research Purpose

This research aims to:

1) To measure the critical thinking skills of Senior High School 5 Medan class XI A.Y 2021/2022 on the material of the human respiratory system in students learning outcomes with discovery learning model.
2) To analyze students critical thinking skills by applying critical thinking indicators in class XI Senior High School 5 Medan A.Y 2021/2022 on the human respiratory system material.

1.6. Research Benefits

The benefits of research conducted by the author are:

1) **For Researchers**

   Researchers can improve the understanding and mastery of researchers about the analysis of critical thinking skills of Senior High School 5 Medan class XI on the material human respiratory system in the even semester of A.Y 2021/2022.

2) **For Teachers**

   By analyzing the critical thinking skills of Senior High School 5 Medan Class XI on the respiratory system material, it can be used as input for teachers and schools to determine the critical thinking skills of students.

3) **For Students**

For students, it can be used a reference to develop critical thinking skills for students of Senior High School 5 Medan class XI on the material of the human respiratory system A.Y 2021/2022.

4) **For School**

Throught this research, it is expected to provide information to schools regarding the critical thinking skills of Senior High School 5 Medan Class XI on the human respiratory system material and can be used as a reference to improve students critical thinking skills with discovery learning models.

1.7. Operational Definition

1) Skills are possessed by individuals through the training process, be able to develop their potential. Skills consist of aspects of normal skills, and social skills. Skilled individuals are able to do things well, quickly, and precisely.
2) Critical thinking is a reflective, creative, and logical thinking process. Individuals who think critically are required to have an open attitude to have ideas so that they are able to develop critical thinking skills.
3) Students critical thinking skills are skills to analyze, and think logically, so that they can be used as skills that require students to develop their knowledge.
4) The respiratory system material in humans is abstract material that requires students to apply critical thinking skills to solve problems on the human respiratory system material and its relation to everyday life.
5) The discovery learning model involves students actively in learning, so students are required to be able to get used to observing, analyzing and making conclusions. This is what can improve student's critical thinking skills.