CHAPTER I

INTRODUCTION

1.1. Background of Problem

In learning process at school, a variety of learning materials are given to students who must be controlled in accordance with the expected goals. One of the subject matter presented at the senior high school level is Biology. Biology as part of the science is knowledge that deals with how to find out about the systematic nature. Stone *in* Kusuma (2011) states that science is a body of knowledge, ways to get (Discovery-inquiry) and use that knowledge. Natural science is not only a mastery of knowledge in the form of facts, concepts or principles, but also a process of discovery and application in daily life.

Students' difficulties in learning Biology have been studied by various researchers across the world (Cimer, 2011). Experiencing difficulties in so many topics in Biology negatively affects students' motivation and achievement (Özcan, 2003). There are many reasons why students have difficulties in learning biological concepts (Cimer, 2004). Firstly, the nature of science itself is the reason for the difficulties in learning science, while according to Lazarowitz *et al* (1992), the biological level of organization and the abstract level of the concepts make learning Biology difficult. Biological science includes many abstract concepts, events, topics and facts that students have to learn. This makes it hard for students to learn them (Anderson *et al*., 1990). Secondly, the teaching methods also influence the difficulties in learning science. The teacher seeks to transfer thoughts and meanings to the passive student leaving little room for student-initiated questions, independent thought or interaction between students. This teacher-centered method of teaching also assumes that all students have the same level of background knowledge in the subject matter and are able to absorb the material at the same pace (Lord, 1999). Thirdly is about student motivation. Nelson (2000) posits that there is a relationship between motivation, cognitive engagement and conceptual change.

Therefore, the teaching approach should be effective, therefore, utilize a wide variety of teaching methods to enhance learners' motivation and actively involve them in the learning process. The place of teacher in society is a much beaten topic and because of its being controversial in nature, is both lively and interesting. No doubt that teacher is of paramount importance in any national system of education (Ram, 2008).

In the process of teaching and learning, learning often takes place only in one direction, teacher is not engaging students in learning and teachers' lack of ability to choose the model and learning strategies, so that students are passive. In other words, students are not given the opportunity to develop and independently through his thinking process. This situation can make students bored, less interested and then learning objectives are not achieved maximally.

Some solutions that expected can solve this problem, i.e, PBL (Problem Based Learning), that the process is working in collaborative groups, students define and analyze the problem, identify and find needed information (by posing and answering their own and peers' questions), share the results of their investigations, and formulate and evaluate possible solutions, and Discovery learning, which is an important component in constructivist approach that has had a long history in the world education.

According to the overall information above, researcher is interested to explore the problem of learning Biology at SMA N 1 Berastagi. This school is experiencing low student's achievement (<KKM). The KKM is 78, and learning outcome for grade XI students in this school was still low, 62 in average score. From the observation, it may be concluded that the school tends to experience difficulties in learning Biology. The problem of teacher-centered and low students' motivation may responsible from the low student's achievement in Biology.

Researcher is also interested to use discovery learning approach in solving the problem of SMA N 1 Berastagi in learning Biology. The idea of discovery learning emerged from desire to give pleasure to students in finding something by themselves (Ibrahim, *et al.,* 2000). Discovery learning can be divided into two,

namely *Free Discovery* or often called open ended discovery and *Guided Discovery* learning (Khulsum, 2005).

On the other hand, the teacher provides illustrative materials for students to study on their own. According to Ugwuanyi (1998), a learner is active in discovery leaning, and provides for individual differences as well as makes the process of learning to be self-sequenced, goal directed, with the goal perceived and the pace self-determined. So it means that discovery learning is expected can solve the problem of difficulties in learning Biology, mainly changing the role of teacher as the only resource science and also increasing the students' motivation that will increase the students' cognitive learning outcome.

Most of the learning processes in classroom is able to enhance behavioral change either at the cognitive, affective or psychomotor level. One component of a student's ability in those level is science process skills (Rustaman, 2005). Suryosubroto (2002) cites the opinion of Sund (1980) that discovery is the process by which students assimilate something mental concepts or scientific method. The scientific method or science process skills include the skills to observe, hypothesize, using tools and materials properly and correctly, by always considering safety, asking questions, classifying and interpreting data, and communicate their findings orally or in writing, probing, and sifting the relevant factual information to test ideas or to solve everyday problems (Sianturi *et al.*, 2009). So, the researcher also measure the students' science process skill in learning Biology with both of approach in discovery learning.

Ghidion (2011) in his study on students in SMA Masehi Berastagi concluded that the overall Guided Discovery approach can significantly improve the understanding of the concepts and science process skills. In addition, this approach also very appropriate to be used to arouse students' learning and help students to solve another problem in daily life with the concept that they can get their own.

1.2. Problem Identification

Based on the background above, problems identified in this proposal as follow:

1. There is a tendency that the ongoing learning activities centered on the Biology teacher (teacher-centered).
2. The student's ability to perform the scientific method or science process skills when learning Biology is lacking.
3. Participation and involvement of the student in the biological learning process is still very limited cause students tend to be less involved in the learning so that the students' cognitive learning outcome are low.

1.3. The Scope of Study

1. Learning Biology which can improve the students' cognitive learning outcome by using free discovery and guided discovery approach.
2. Subject matter is limited to the respiratory system topic in class XI IA SMA N 1 Berastagi Academic Year 2012/2013.
3. Science process skills that are expected to emerge in this study is consist of observation, measuring / counting, looking for relationships between space and time, formulate hypotheses, interpret data, draw a conclusion, the application, and communications.

1.4. Research Questions

In accordance with the issues that have been stated, then the problem can be formulated:

1. Is there any differences of students' cognitive learning outcome between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013?
2. Is there any differences of students' observation-application skill between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013?

3. Is there any differences of students' communication skill between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013?

1.5. Research Objectives

1. To study the differences of students' cognitive learning outcome between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013.
2. To study the differences of students' observation-application skill between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013.
3. To study the differences of students' communication skill between free discovery and guided discovery approach on Human Respiratory System in Class XI IA SMA N 1 Berastagi Academic Year 2012/2013.

1.6. Research Significances

The significances that expected from the results of this research are:

1. For teachers, they can enhance the innovative and suitable learning method which will be used in teaching and learning process in the classroom.
2. For students, this research will give knowledge and experience about scientific discovery which can be developed for another problems in daily life.
3. For researcher, as an idea donation for the next researcher and it can be useful in developing science.