CHAPTER I
INTRODUCTION

1.1. The Background of Study

Tobacco consumption is increasing in Asia as transnational tobacco companies continue their aggressive expansions into the region, particularly targeting their marketing and production activities in the emerging markets of ASEAN’s developing countries.

WHO (2011) reported that more than 6 million people die because of smoking behaviour. Indonesia has been ranked 2nd for highest number of smoker. It shows the lack of public awareness about the dangers of smoking. This behavior has already widespread in society, including elementary school teenagers. Smoking behavior in teenager associated with their knowledge, attitude about smoke and health education.

Studies have found that nearly all first use of tobacco takes place before high school graduation. The Global Youth Tobacco survey of 2006, found that among students aged 13-15, 24 per cent of all boys and 4 per cent of girls smoked. Among those who had ever tried smoking, around 1 in 3 boys and 1 in 4 girls had tried smoking for the first time before age 10 (WHO, 2009). While the age is still young.

Based on the observation and interview that was done on SMA Negeri 3 Medan showed that students at SMA Negeri 3 Medan had became smoker since before they were took a senior high school. The students data was obtained from counseling teacher stated that about 0.6% students of class X, 2.6 % students of
class XI, and 4% students of class XII on Academic Year 2013/2014 had ever
smoke around the school environment.

Such condition showed that there was no changes of students attitude
toward smoking behaviour. Actually, respiratory system topic had been taught to
students since junior high school. Thus, they should realize what the impact of
smoking. It will damage their respiratory system.

Respiratory system topic is closely related to human body. It discuss about
major organs of respiratoy system and function of each, the mechanism which is
responsible for the exchange of gases during internal and external respiration, the
mechanical process of expiration and inspiration, etc. Meaningful learning
expected to encourage students to learn well so that they can master the concepts
of the respiratory system topics in order to take the measures to maintain
respiratory system topics, and to get long term-memory of it. Biology learning
does not only provide sufficient theories, but also need to provide examples of
solving of real projects. Today, people who can think, solve problems, and make
decisions based on evidence and reasoning are needed.

Generally, conventional learning were used by teacher in classroom. This
statement supported by several previous studies. First observation did by
Susilowati (2013), showed that teacher-centered was mainly used by teacher of
SMP N 4 Ungaran. It caused the low student’s low activities in doing discussion,
and affect the student’ learning outcome. Dewi et al (2012) found on their first
observation on SMA N 2 Seragen that teacher-centered caused low student’s
activities. Another survey did by Santi (2011) on college students who took plant
physiology subject, only 35% of students took part on discussion and less than
50% scored 70. It can be concluded that their understanding of plant physiology is still far from achieving all understanding aspects.

Based on the observation and interview made by researcher on teacher and Biology learning of grade XI at SMA N 3 Medan, it was revealed that tend to use conventional (lecturing) method. Even the teacher does involved her students in doing discussion session but they also has lack activity especially in expressing opinion, asking questions, and giving suggestions. There are only about 3-5 of the total 47 students who responded to questions.

Such learning model do not apply the scientific activities which engage student’s concept mastery, and scientific attitude. Fakhruddin et al., (2010) stated that low student’s scientific attitude of SMAN 1 Bangkinang caused by learning model used by teacher. Teacher centered does not develop student’s scientific attitude. Students only acts a passive learner, which listen the whole information from teacher (teacher-centered), and rote the concept.

Rote learning and reception learning makes the low ability of students in mastering the matter and connecting the pre-existing concepts. So, They just remember the facts with less ability to connect the concepts that have been studied. Students who have scientific attitude will show their activities in solving Biology problems enthuasiastically, asking, and questioning the findings, etc.

The task/exercise given by teacher doesn’t engage student’s creative thinking skill. Student’s creativity shown from their ability to generate ideas, solutions, questions, etc. Dewi et al., (2012) stated that teacher centered only focused on understanding and remembering the respiratory system topics. So their psychomotor and affective skill have yet to develop. Such learning activities is
easier for teachers to implement but do not always succeed in Biology. It is characterized by the low average Biology scores of students, particularly in mastering the respiratory system topics, in last three years as show in Table 1 (source of Teachers of Biology).

Table 1.1 The score of students examination of respiratory system topics at SMA Negeri 3 Medan

<table>
<thead>
<tr>
<th>No</th>
<th>Academic Year</th>
<th>Minimum Passing Grade</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2010/2011</td>
<td>75</td>
<td>73.8</td>
</tr>
<tr>
<td>2</td>
<td>2011/2012</td>
<td>75</td>
<td>71.7</td>
</tr>
<tr>
<td>3</td>
<td>2012/2013</td>
<td>75</td>
<td>70.0</td>
</tr>
<tr>
<td>4</td>
<td>2013/2014</td>
<td>75</td>
<td>67.0</td>
</tr>
</tbody>
</table>

It is important to improve students achievement in respiratory system topics. The low achievement is caused by many factors. Others factors can be how the learning applied in classroom. When students is taught in monotone way or using the same model of learning, students will feel boring and they do not concentrate in class. The result is that students does not respond to the subject that they have learned.

According Munandar (Arvyati et al., (2015), the optimal development of creative thinking ability is closely related to the way teachers teach. Creative thinking abilities will grow well if students given the confidence to think creatively and explore all the ability that was in him, and dare to put forward new ideas.

In effort to solve this problems, teachers should try to make learning of Science to be an enjoyable experience, the one that students will remember for a life time as Science is an on-going process and it will continue even when they have stepped out of school (Narmadha, and Chamundeswari, 2013).

Project Based Learning and Group Investigation are the meaningfull learning model which can be used for increasing student’s concept mastery,
scientific attitude, and creative thingking skill is Project Based Learning (PjBL) and Cooperative Learning Group Investigation (GI). Both Project Based Learning and Group Investigation is a constructivist pedagogy in which students takes an opportunity for doing in–depth investigation and involved in constructing their own knowledge. Student will be trained to be creative and innovative in learning.

Some previous research showed Project-Based Learning and Cooperative Learning Group Investigation gave the positive effect on students concept mastery, scientific attitude, and creative thinking skill, namely: Mihardi et al., (2013) stated that Project-Based Learning actually is effective to increase student creative thinking process as indicated by student increase of positive activity. Lindawati et al., (No Year) stated that that Project-Based Learning can enhance the students creativity of MAN 1 on Physcis. Masitoh, L’s research (2013) stated that almost all of the students had positive responses about the instruction that enable them to improve their problem solving skills and concepts mastery skills. Sastrika, et al. (2013) stated that there was difference between understanding concepts and critical thinking skills as impact of project-based model and conventional model.

Astawa, W. et al., (2015) stated that Project Based Learning could develop the student’s scientific attitude and students’ self concept. Both the student’s scientific attitude and self concept differ significantly between PBL (Project Based Learning) with CL (Conventional Learning). Suartika, et al., (2013) said that there were differences in understanding of concepts and creative thinking skill of students who took group investigation with cycle learning model. Nasruddin, and Utiya’s research (2010) stated that GI (Gourp Investigation) can improve
student activity in learning science, thinking skills and scientific attitude students in learning science.

1.2. The Problem Identification

Based on the elaboration of the background of the study, the problems are identified as followed:

1. Conventional model tend to be used by the teacher in delivering the matter. Teacher dominate the classroom and students act a passive learner.

2. The low achievement of students in respiratory system topics showed their low ability in mastering the respiratory concepts.

3. Conventional learning does not develop student’s scientific attitude. Students only acts a passive learner, and get used to rote and reception learning.

4. Learning process does not develop student’s creative thinking ability. The task/exercise given by teacher doesn’t engage student’s creative thinking skill. It just focused on understanding and remembering the concepts.

1.3. The Problems Limitation

By considering the constraints of time, funds, and the ability of researcher, this study is focused to:

1. Learning model on this research is Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL).

2. This study limited to understand whether the use of learning models can improve students’ concept mastery, scientific attitude, and creative thinking skills.
3. Student’s concept mastery were examined by giving multiple choices test based on Bloom Taxonomy of cognitive avility in respiratory system topics for grade XI MIA.

4. Students’ attitude were measure by the Klopfer classification of students attitude developed by Harlen (1985) which consist of some aspects namely curiosity, respect for evidence, flexibility, critical reflection, and sensitivity to living things or human. This research was focused on the student’s scientific attitude towards respiratory system topics.

5. Creative thinking skills limited on the student’s ability answering the verbal creativity test. The test consist of some aspects for example fluency, flexibility, originality, and elaboration.

6. Research subject was limited to grade XI-MIA academic year 2014/2015.

7. Research topic is about respiratory system topics which were curriculum 2013 for Biology at grade XI-MIA at second semester.

8. The project of this research were paper, poster, and prototype.

1.4. **The Research Question**

Based on the backgrounds, identifications, and problem limitation then the study focuses on the following questions:

1. Is there any effect of learning model {Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)} on student’s concept mastery of respiratory system topics at grade XI-MIA SMA Negeri 3 Medan?

2. Is there any effect of learning model {Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)} on student’s scientific attitude of respiratory system topics at grade XI-MIA SMA Negeri 3 Medan?
3. Is there any effect of learning model \{Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)\} on student’s creative thinking skills of respiratory system topics at grade XI-MIA SMA Negeri 3 Medan?

1.5. The Objective of Research

This study was conducted:

1. To find out the effect of learning model \{Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)\} on student’s concept mastery of respiratory system topics at grade XI-MIA SMA Negeri 3 Medan.

2. To find out the effect of learning model \{Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)\} on student’s scientific attitude of respiratory system topic at grade XI-MIA SMA Negeri 3 Medan.

3. To find out the effect of learning model \{Project-Based Learning (PjBL), Group Investigation (GI), and Conventional Learning (CL)\} on student’s creative thinking skills of respiratory system topics at grade XI-MIA SMA Negeri 3 Medan.

1.6. The Research Significance

The result of this study will be useful both theoretically and practically.

1. The theoretical significance

This research was expected to give an information and contribution for teacher or educational institutions to know the effect of Project Based Learning (PjBL), and Group Investigation (GI) on students’ concept mastery, scientific
attitude, and creative thinking skill in Biology topics. It can be a reference for other researcher who wants to continue and develop the next research. This research was expected to encourage teachers to initiate scientific approach in class, especially Project Based Learning, and Group Investigation.

2. The Practical Significance

This research was expected to serve as an input for teachers in delivering the respiratory system topics to students. Teacher can consider the use of Project Based Learning or Group Investigation for increasing students’ concept mastery, scientific attitude, and creative thinking skill. This research also provides information for making an interesting learning process, active and meaningful learning process, and make more scientific students.