CHAPTER I
INTRODUCTION

1.1. Research Background

Learning achievement of students influences the quality of education. But education's quality of Indonesia is still very far from expectations. Various issues are arising from many sides. Difficulty in understanding the topic and low retention of students as factors which led to the low achievement of high school students.

These poor condition is also found in Biology class learning. Teacher as main information is less involved students actively in the class which had been researched by Assayidiyah (2014). Based on her observation, teachers seldom invited students to be active in asking or arguing their argument in the classroom and when teacher gave questions to the students, only few students can answered the questions. Actually the learning process must encourage students actively as mentioned by Poorman in Jarvis (2002), true learning cannot be occured when students are passive observers. It means the learning process in Biology also must involve students actively in the class.

Most of Biology learning, especially the abstract concept like human body system, was done only by giving text books to explain the materials meanwhile, many students get difficult to conceive the subject matters only based on references. As mentioned by Edgar Dale, 1960, people generally remember just about 30% of what they see. The abstract concepts also make the students' achievement become low. This research was conducted by Adhitama (2014). He observed students couldn't understand the abstract concept because they were lack of metacognitive awareness.

The limitation of media as also the reason why the abstract concept can't be explained well. The limitation of illustration on books and less media utilization are also difficulty factors in teaching and learning process, especially for human body system. This is also a problem which found in SMA Negeri 3 Medan. SMA

Negeri 3 Medan is one of school's model of Kurikulum 2013 in Medan. This school has 75 Minimum Score Standard (MMS) for all students.

There are four teachers of Biology in SMA Negeri 3 Medan. Two of them teach Biology in grade XI. One of the Biology teacher who teach in grade XI in SMA Negeri 3 Medan had mentioned that the average of students' achievement was more than 50% passed the MMS but more than 30% students were failed. The factor is less students' interest in reading text book or other book references. She said students were prefer watching video or seeing picture than reading books. That's why she argued that it's very necessary to find the innovative media that enable to stimulate and engage students' motivation in learning material. This is a problem which must be investigated. This case trigger the researcher to choose this school as research location. She also implemented variation model depended on the topic learning. Usually she designed her classes in discussion. She always started the classes by introduction, guided students to the topic, explained the opening topic, implemented the core model of learning and made conclusion which done by the students. Based on her experiences, she actually got difficult when taught human excretory system, especially urinary system.

Excretory system is the process that rids the body of nitrogenous metabolites and other metabolic waste products (Campbell, 2011). Based on her experiences, students knew the definition of filtration, reabsorption and augmentation, but they were difficult to understand each process. Students would confused when and how the process of filtration, reabsorption and augmentation. In human excretory system, she designed her classes by doing experiment of urine and blood glucose test, picture identification and case study in discussion.

Another conversations with other teachers who ever taught this topic said actually get difficult when they taught the human excretory system, especially how kidney, skin, liver, and lung's work as excretory system. They said these topics are abstract concepts which made a lot of students confused and didn't understand on it. Limited media for this subtopic is also the reason why the teacher get difficult to teach this abstract subtopic. Whereas these abstract concepts are important because further biology concepts cannot be easily

understood if these underpinning concepts are not sufficiently grasped by the student. That's why the human excretory system is chosen as this research topic.

Some questionnaires have been made by the researcher from two classes of Grade XI, academic year 2014/2015, in SMA Negeri 3 Medan. As the result, 50% of students said that Biology is difficult subject matter; 50% agreed that the abstract topic of Biology, like human mechanism processes, led their achievement become low on it, and more than 60% of students agreed that forgetting is the main reason why they can't answer the test of Biology. In other case, more than 60% of students bored, 10% of students agreed that they are not involved actively in learning process and also more than 30% agreed that the utilization of video in learning process is rare. The lower score of tests, forgot the learning material and does not involved actively in learning process are problems that must be solved as soon as possible because these influence the students' achievement.

Actually the abstract concept can be explained by some media like picture, torso, chart, interactive media, video and others. The existence of media is one factor which can engage and motivate students to be actively in the learning process (Rusman, 2012). Animation video is effective than others because involve more than one sense on it, hearing and seeing. Based on Edgar Dale's experiment, people generally remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they say and write, 90% of what they do as they perform a task. So, the animation video will have 50% possibility to remember the topic.

A lot of research had been conducted and showed that animation video using is effective in learning process. There is a fairly extensive literature arguing that animations are more effective than static sequential images for teaching dynamic events (Pollock *et al.,* 2002). Animation video instruction supports the learning method in the classroom is more effective teaching technique than conventional lectures (Felton *et al.*, 2001). Thus to study excretory system, the learning media involvement is necessary. Beyond of this expectation, a video learning also has a potential for bringing a better learning quality. Moreover SMA Negeri 3 Medan has facility to use animation video as media learning,

unfortunately it doesn't used maximally in learning process. That's why the animation video is chosen for this research.The picture is chosen as comparison media because the teacher implemented before in teaching human excretory system. As conversation result, the teacher argued that human excretory system was designed by picture identification. That's the reason researcher uses the picture as comparison media.

In other case, forgetting is a problem which must be solved because can affect the students' achievement. It can be occurred when the students are not involved actively in learning process. To make students actively in learning process as they are, it can be solved by implementation of Role Playing model. Role Playing is one of model which make students say and do something. So, this model is suitable to use for remembering because has 90% possibility to remember based on Dale's experiment. Role Playing also helps students explore human relations-by enacting problems and then discussing the enactment, students together can explore feelings, values and problem-solving strategies (Rai, 2014).

A lot of researches found that role playing model is effective to stimulate students' motivation and can make students active in learning process. Fogg's research (2001), told of a college professor who felt that his history classes were boring and not involving the students. After trying out a role-playing type game one semester, he observed that students were more interested and active in learning the material. Another researchs were done also by Poorman in 2002, Craciun (2010), Lori *et al.* (2002), Bhattachar and Ghosh (2013), have shown the integrating experiential learning activities (using role playing model) in the classroom increases interest and active in the subject matter and understanding of course content. Another research was done by Khaerani (2009) who made research on SMP Muhammadiyah 4 Tangerang. The research aimed to know the influence of role playing to learning achievement of Biology students in plant movement topic. The research used quasi experimental with purposive sampling which divided into two group, experiment and control group. As the result, students achievement which taught by role playing model was higher than conventional method. This research concluded that pleasure condition and

students actively participated, made increasing of students understanding in Biology due to increasing students achievement. That's why the researcher chooses this role playing model to make students more active in this research.

As one of school model of Kurikulum 2013, SMA Negeri 3 Medan must make the student actively in the learning process. Thus, the researcher finally decided to conduct the research location in this school with titled as: ***"The Difference of Students' Achievement and Retention Through Implementing Role Playing Model with Animation Video and Picture on Human Excretory System topic in SMA Negeri 3 Medan."***

1.2. Problem Identification

Based on research background description, the research problem identifications as follows:

1. Human excretory system topic contains abstract concepts and also difficult facts.
2. Less than 30% of students number have low achievement in Biology.
3. Limited learning media utilization about human excretory system although there is facility to support it.
4. Low of students retention.
5. In the classroom, students are often not involved actively.

1.3. Problem Scope

In order to obtain an appropriate discussion, this research has some scopes as follows:

1. Focuses on human excretory system.
2. The researcher implements Role Playing as model of teaching to make students actively in learning process.
3. Analyzing the differences in students' achievement and retention through implementing the role playing model with animation video compared to those with picture as media learning.

4. The students' achievement is average of cognitive, affective and psychomotoric result.
5. The cognitive and retention are examined by Blooms' cognitive instrument test, meanwhile affective and psychomotoric are evaluated by observation sheet during role playing model is going on.
6. For XI Grade Science Students in SMA Negeri 3 Medan academic year 2014/2015.

1.4. Research Questions

From the background and the extent of the problems above, the questions can be formulated:

1. Is there any significant difference on students' achievement through implementing the role playing model with animation video compared to those with picture on the human excretory system topic?
2. Is there any significant difference on students retention through implementing role playing model with animation video compared to those with picture on the human excretory system topic?

1.5. Research Objectives

This research is conducted to achieve some objectives as follows:

1. To analyze the significant difference of students' achievement through implementing role playing model with animation video compared to those with picture on human excretory system topic.
2. To analyze the significant difference of students' retention through implementing role playing model with animation video compared to those with picture on human excretory system topic.

1.6. Research Significant

Considering about the research result and discussion, the research expects this research has some benefits.

1. Teachers (Educator):
   - As an input in teaching, especially for biology teachers in the high school grade XI Science.
   - As an alternative for teachers who teach science in selecting and determining learning strategies.
2. Students:
   - Strategies require students to study concretely the knowledge of the existence of the current study, expected to motivate students actively involved in learning activities that can improve mastery of concepts and their understanding of the biological material, in particular human excretory system.
3. Researchers:
   - As another research reference to develop other further research.

UNIVERSITAS NEGERI MEDAN
UNIMED
THE Character Building UNIVERSITY