

## CHAPTER I INTRODUCTION

### 1.1. Background of Study

Basically, the concepts in biology are abstract concepts, therefore need a high visualization power. Biology learning requires students to have the critical thinking ability, high visualization power, and ability to represent the whole object. Teachers often have difficulty to teach abstract cellular and molecular process. This is because the learning process is deficient and unattractive so most students do not understand the subject matter (Ika, 2011).

Learning process based on Daryanto (2010) is communication process involving three main components, namely message sender (teacher), message receiver (student) and the message itself (usually the subject matter). Learning process will affected students' memory retention. According to Tri (2011), if the teacher is able to perform good and attractive learning process, then the students will have good memory retention because students can easily understand the topic.

According to Dwi (2011), student memory retention is the ability store abstraction concepts in cognitive structure which is still owned by the student after the lapse of time from the provision material. The low student retention is one of the problems that often faced by teacher because the learning process will run slow so the determined targets failure to achieve. But student memory retention has not become one of the indicators of the learning outcomes quality. This is in contrast with Albert Bandura theory. According to Bandura (1987), memory retention is one of the basic components of study.

Based on the observation results on February 8<sup>th</sup> 2014 and the author's experience from Field Experience Program at SMAN 1 Sidikalang the learning process running monotonous. The teacher delivered the subject matter only verbally. The teacher often read the text on the textbook and the student wrote what the teacher said. When the teacher explained the material, most of the students did not focused to hear the teacher explanation and most students also did

not know when the teacher asked about the last meeting material. Instructed interview with some students, state that the learning process did not interesting because the teacher only explains the material verbally and the students also did not understand the teacher explanation. These problems resulted in the students' average score in biology lesson is still low.

The low learning outcome caused of students easy to forget the learning material that has been taught, so that students is difficult to answer the post test questions. Solving this learning process problem, teaches can use learning media.

Learning Media is the tools used at the learning process as the message deliver between teacher and student so the learning objectives will achieve. The function of media on the learning process is to clarify the presentation of the message that is not too verbal and make the abstract material become more concrete (Daryanto, 2010).

Learning media that can be used by teachers to help the learning process is audio-visual media, mind mapping media, two-dimensional image media. The use of instructional media can facilitate the students understand the learning material and improve the students absorbed information so that improve students' memory retention.

The use of learning media can increase retention memory because human can absorb information about 90% from what they said and done, 70% from what they said, 50% from what they heard and saw, 30% from what they saw, 20% from what they heard and 10% from what they read (Ridhayani, 2010). Levie on Ika (2011) stated that learn with visual or picture stimulus will produce better learning outcomes for remember and recognize again. Students who have good memory retention ability definitely have a good learning outcome.

Each media has their own characteristic. Audio-visual media based on Hadi (2007) is media that combine audio and visual elements that helps students understand complex and dynamic process make abstract concept become concrete. Mind mapping media based on Buzan (1994) present information that connect with central topic, in form of keyword, image, and symbol and picture so the information can quickly and efficiently learned and remember. Mind mapping

media can make students more active and creative because students can create their own mind mapping media so that more information absorbed. Two dimension image media is props that only has length and width located on one flat plane (Daryanto, 2010). Two dimension image media can improve student memory retention ability because students will not be chased by the duration of the animation, and students will understand the expected information.

The research conducted by O'Day (2007) stated that learning outcome for animation media taught group is  $80,6 \pm 0,136\%$ , higher than picture media taught group  $58,1 \pm 0,31\%$ . The retention ability in animation media taught group decrease become  $50,0 \pm 0,308\%$  and in picture media taught group decrease become  $35,8 \pm 0,318\%$ . The research conduct by Yulika (2012) stated that mind mapping can increase students' learning outcome until 36, 18% in the first cycle and 47, 29% in the second cycle. Base on the research by Alhaq (2012), learning outcome taught by audiovisual media is 80,25 higher than picture media; 75,25.

Base on the facts, so to solve problem in Biology learning is by selecting appropriate learning media to improve students' memory retention and will impact to their cognitive learning outcome. Refers to the background, author was interested to conduct research about Comparison of Student's Learning Outcome and Memory Retention Taught By Various Media On Spermatophyte Topic Grade X SMA Negeri 1 Sidikalang 2013/2014 Academic Year.

## **1.2. Problem Identification**

Based on the background, the problems are identified as follows:

1. The students' average Biology score is still low.
2. The teachers have difficulty teaching abstract materials.
3. The learning process is still running monotonous because teachers rarely use learning media.
4. The students' retention to the abstract learning material is still weak so can effect to their cognitive learning outcome.

### **1.3. Research Scope**

Based on the problem identification, the problems that will be discussed are:

1. Seed Plants (Spermatophytes) sub material in Biology lesson based on KTSP 2006 curriculum, at X grade in 2<sup>nd</sup> semester
2. The learning process in this research using direct instruction strategy.
3. The media used in the learning process are audio-visual media, mind mapping media and two dimension image media.
4. Students' retention limited to the cognitive domain (knowledge, comprehension, application, analysis, and evaluation) performed at 21 days after the post-test.

### **1.4. Research Question**

Based on the background and problem identification, the problem formulation is:

1. Is there any effect of learning media (audio-visual media; mind mapping; two dimension image) on students' learning outcomes at X grade SMA Negeri 1 Sidikalang 2013/2014 academic year?
2. Is there any effect of learning media (audio-visual media; mind mapping; two dimension image) on students' retention at X grade SMA Negeri 1 Sidikalang 2013/2014 academic year?

### **1.5. Research Objective**

The research objective is to know:

1. There is any effect of learning media (audio-visual media; mind mapping; two dimension image) on students' learning outcomes at X grade SMA Negeri 1 Sidikalang 2013/2014 academic year.
2. There is any effect of learning media (audio-visual media; mind mapping; two dimension image) on students' retention at X grade SMA Negeri 1 Sidikalang 2013/2014 academic year.

## **1.6. Research Significance**

The research results are expected can be beneficial, both theoretically and practically as follows:

1. Theoretically, this research results are to help teachers, administrators, developers, and education institution in the dynamics with best learning media to help easier to understand the biology material.
2. Practically, this research result expected can be beneficial for teacher to use and develop the learning media especially audio-visual, mind mapping, and two dimension image media.

## **1.7. Operational Definition**

1. Mind mapping media is one way to organize and present concepts, ideas, tasks or other information in form of radial-hierarchic non-linier diagram and present information that connects with central topic, in form of keyword, image, and symbol and picture and color.
2. Learning outcome is the students' post test score, range 0-100, as a result of students' answer on the posttest made for the students comprised of 20 multiple choice questions and 4 essay questions.
3. Retention is students' score on a test similar to the post test but the students were tested 21 days after posttest. The score range between 0-100.