**CHAPTER I**

**INTRODUCTION**

**1.1. Background**

Science education researchers have presented the argument in which the students have difficulty in learning some science concepts. In this perspective, identifying students’difficulties in science learning has received a big attention in science education research (TopÇu, 2009).

In conducting the learning activity, one thing that have to be concerned by the teacher is that not every students capable in relating the old and new knowledge that they gained, and it will cause missunderstanding on a topic. This missunderstanding will further cause a problem to the student and make them difficult to learn (Ameruddin, 2013).

Students have difficulty with a wide range of concepts in biology. Biology is a course which requires students to be able to see the micro and macro relations among concepts. In contrast to the physical sciences where problems of understanding often originate in the counterintuitive nature of the ideas, many of the conceptual hurdles in biology results from the necessity to integrate knowledge from several sources. (Kurt, 2013).

Students’ difficulties in learning biology have been studied by various researchers among the world. Many concepts in biology can be perceived as difficult to learn by the students. Heredity has been considered by many students as the most difficult concept to be learnt. Tekkaya et al (2001) also found that hormones, genes and chromosomes, mitosis and meiosis, the nervous system, and mendelian genetic were considered difficult concept by the 12th grade students.

This difficulties caused by the heredity concept that are esoteric and abstract, that compiled by the microscopic objects and the process that never be directly experienced by the students. Heredity become one of the subject that difficult to be implemented in a hands on experiment. If only it will be forced for the hands on experiment, the time is unavailable (Bahar, 2003).

According to Duncan and Reiser (2007), asked the question that why learning heredity phenomena so difficult for the learners? Two answers were developed for this question in the literature. The first one is that students have difficulties in the invisibility and inaccessibility of heredity concepts. The second one is that heredity included complicated structure.

In addition to difficulty in learning of these heredity concepts, many students did not construct necessary relationships among these heredity concepts, and had the problems about the process and the mechanism of inheritance. Another problem mostly determined in the literature was mathematical expressions in learning heredity because these expressions caused problems and the heredity symbols (e.g., XX, XY) were not used consistently by teachers and textbook writers (TopÇu, 2009).

Heredity is a topic that often be included in the National Examination. According to Alfiah(2012) through the diagnosis of students’ difficulty in doing the UN (National Exam) question about heredity, showed that 53% of students have difficulties in solving the heredity problem. Those difficulties are caused by the students that do not understand the concept of mendelian law, gametes formation, replication and gene. Most of students are prefer to memorize than understanding the concept (Alfiah, 2012).

The learning difficulties that faced by the students are caused by various factors that coming from internal and external environment of the students. According to Djamarah (2011), factors affecting learning difficulty classified into internal and external factors. The internal factors are physical, psychological and exhaustion. While the external factors are family, school and society (Slameto, 2003).

Based on the researchers’ experience during the PPL (Program Pengalaman Lapangan) in SMAN 1 Matauli Pandan on August until November 2015, found that are 75% of XII grade students judge the heredity is a difficult concept to learn even when it have not be taught yet. After the heredity have been taught, the result of heredity daily test also showed that are 45% of students in each class that have a low score.

While according to the initial observation that done in SMA Swasta Harapan 1 Medan, that are 30% of XII grade students in each class that have low score in heredity subject matter that can be seen from the daily assignment, quiz and the test score. The percentage of students difficulties above are got by the interview with the biology teacher.

So far, the identification effort for the students learning difficulties in the heredity subject matter in XII grade students at SMA Swasta Harapan 1 Medan haven’t done before so the percentage of learning difficulties in each year are not detected well. To detect the level of students difficulties in learning heredity is important to do the research with the title “**Analysis of Students’ Difficulties in Learning Heredity of XII Grade Students in SMA Swasta Harapan 1 Medan Academic Year 2015/2016”.**

**1.2 Problem Identification**

Based on the background description above, researcher identified the problem as follows :

1. Every students have a different capability in relating the old and new knowledge that they gained, that it will caused a missunderstanding on a topic.
2. Heredity has been considered by many students as the most difficult concept to be learnt.
3. Heredity concepts are esoteric and abstract, that compiled by the microscopic objects and the process that never be directly experienced by the students.
4. Students learning outcome in heredity topic daily quiz, task and test in grade XII SMA Swasta Harapan 1 Medan still in a low level.
5. There are various external and internal factors that influence in students’ difficulties in learning heredity.
6. Lack of effort in identification and solving of students difficulties in learning heredity in students grade XII SMA Swasta Harapan 1 Medan.

**1.3. Problem Scope**

 In order to make this research become more focus, this research will discuss the limited problems as follows :

1. The students’ difficulties in learning Heredity topic on cognitive aspects in Grade XII Science of SMA Swasta Harapan 1 Medan Academic Year 2015/2016.
2. The students’ difficulties in learning Heredity topic on the learning indicators aspect in Grade XII Science of SMA Swasta Harapan 1 Medan Academic Year 2015/2016.
3. Factors that affecting the students’ difficulties in learning Heredity in Grade XII Science SMA Swasta Harapan 1 Medan Academic Year 2015/2016

**1.4. Problem Formulation**

1. In which cognitive aspect do the students have difficulties in learning heredity in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016 ?
2. In which learning indicator aspects do the students have difficulties in learning heredity in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016 ?
3. What are the factors that influences in the students difficulties in learning Heredity in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016?

**1.5. Research Objective**

 The purpose of this study was conducted to determine :

1. To know the students’ difficulties in learning Heredity on cognitive aspect in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016.
2. To know the students’ difficulties in learning Heredity on Learning Indicator aspect in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016.
3. To know the factors that influence in the students’ difficulties in learning Heredity in Grade XII SMA Swasta Harapan 1 Medan Academic Year 2015/2016.

**1.6. Research Contribution**

 The research finding will be useful for :

1. Improving and developing scientific perception that related into the analysis of students’ difficulties in learning heredity.
2. As a source of information for other researchers who are interested in doing further research.
3. As an additional information to teachers and school on the percentage of students difficulties in learning heredity at SMA Swasta Harapan 1 Medan Academic Year 2015/2016.