CHAPTER I
INTRODUCTION

1.1 Background

In Indonesia, generally in the learning science, students are required to learn the concepts and principles of science in verbalistic. This type of learning lead students in general, just knows a lot of science terminology in rote without meaning. On the other hand, because of many concepts and principles of science that student needs to learn, causing students getting bored to learn science by rote. Thus, the study of science is only meant as an introduction to a number of concepts and terminology in the fields of science course (Liliasari, 2007).

Reality on the school that many students just memorize concepts and less able to use the concept if encountered in real-life problems associated with the concept owned. Furthermore students even less able to pinpoint the problem and formulate it. Talking about learning and teaching process often makes us disappointed, especially associated with students' understanding of teaching materials. However, we realize that there are students who are able to have a good level of memorization of the material that they receive, but in reality they are often poorly understood in depth knowledge that is rote. Understanding in here is referred to students' understanding of where the basic qualitative facts intertwined with its ability to use knowledge in new situations. Most students are less able to link between what they learn with how that knowledge will be utilized to new situations.

Analysis of preliminary studies has been held in the junior high school in SMA Negeri 1 Perbaungan. Biology Teaching and learning processes tend to be conventional method that just deliver the concept or information from book or presentation that followed by test for that topic. Besides, learning lab is rarely performed, so that the learning experience was lacking. The less of variation in this learning model become one of the reason learning process becomes less attractive, students less participate in class and in the end resulting negative impact on student learning outcomes. Furthermore, facilities such as multimedia

and LCD (Liquid Crystal Display) are present but rarely used in the teaching and learning activities.

On the cognitive aspect, unsatisfactory results can be seen from the low value of minimum criterion completeness (KKM), which are only 62 for biology subject matter. The analysis of the topic problem was also been done by taking the students' learning outcome especially about environmental management, most of them are passed KKM. But, because of the low value minimum criterion even though student had passed the minimum criterion completeness, we cannot espect student fully understand about the topic.

Based on the problems above, it would require a more concrete learning activities, active, build concepts, and can motivate students to learn, so that the whole aspect of the learning outcomes can be done well and also can facilitate students to get used in doing the learning experience. One way to do that is by applying ***inquiry*** in learning activities. Recent study done by Dunlosky (2013) states that improve learning outcomes conducted with effective learning techniques, one of them are that by doing "practice testing". Science education, especially biology, more emphasis on the process and experience. Provide a learning experience to make students active in the process to achieve the concept of biology that want to be implanted. In this case the students does not serve as an object but a subject in the learning process, makes them will produce a learning experience. This situation also had been studied by Alberta Education (2004: 11) whom said, "One of the main reasons to think about using inquiry is because it provides a means to actively involve students in the learning process. With the trend in higher education to move away from teacher-centered instruction to a more student-centered approach, inquiry gives the opportunity to help students learn the content and course concepts by having them explore a question and develop a hypothesis and research. Thus, giving students more opportunity to reflect on their own learning, gain a deeper understanding of the course concepts, and Become better critical thinkers".

Furthermore, according to National Science Education (Howard and Miskowski, 2005), ''Science as inquiry'' was one of the eight content standards

that put forth in , where it was described generally to ‘‘require that students combine processes ‘of science (i.e. observation, inference, and experimentation)’ and scientific knowledge as they use scientific reasoning and critical thinking to develop their understanding of science’’

Inquiry successful in gaining student achievement has been prove by Brown (2010) in process-oriented guided-inquiry learning (POGIL) in an introductory anatomy and physiology course shows that the grade distribution of student learning outcome moved steadily away from the C/D/F distribution and toward an A/B/C distribution after the introduction of POGIL, with no students failing the final exam in fall 2009. Although student perceptions of the course overall showed little difference between the lecture-only semesters and POGIL semesters. Student perceptions of the importance of their peers in helping them to understand ideas and concepts did increase significantly after the introduction of POGIL. In addition, research by Opara (2011) shows mean score of the students taught using inquiry method was higher than conventional class, means that inquiry teaching method is considered to be superior to conventional method.

The design of this model of learning which is composed, in addition aimed at improving understanding of the concept of pollution and environmental management, increase student participation in the learning process as well done as the use of facilities provided by the school to improve student achievement.

In learning methodologies there are two of the most prominent aspects of the method and medium of learning as a teaching aid. Learning media can be categorized as external factor that influence the learning process in the classroom, both teachers and learners themselves. Based on the results of Arif (Sutikno & Isa, 2010) suggests that the knowledge gained from person experience of hearing is 11%, and 83% of the viewing experience. Meanwhile, the ability of memory in the form of the experience gained from what is heard 20%, and visual experience is 50%. The use of appropriate learning media can enhance the learning process and learning outcomes achieved in the learning process. Here, teacher has a role in putting learning media in accordance with the demands of the curriculum, methods and level of student understanding.

According to Rivers (2002), when used as part of an integrated approach to help students learn, computer-based technology has been an effective addition to the classroom and laboratory. However, it is also apparent that overuse of technological aids can undermine student active learning. Although the school has provided facilities to support learning Biology, some students still have difficulty in accepting the material of Biology. This may caused by some topic in biology, required ability to understanding, application and higher-order thinking in processing the knowledge. This is proven by result of study by Sutikno & Isa (2010) showed that teaching assisted by multimedia using guided inquiry is needed to increase student learning achievement average and interest of learning.

Environmental issue such as global climate change, land use, availability of freshwater, loss of biodiversity, and pollution all touch on areas of controversy (NSTA, 2009). Environmental science explores the complex interactions among human populations and their environment. Biology teachers should recognize how the understandings gained through environmental science interact with local, national and global environmental issues. That's why learning environmental issues student should invited to face the environment problem around them. Teaching about environment should provide interdisciplinary, multicultural, and multi-perspective viewpoints to promote awareness and understanding of global environmental issues, potential solutions, and ways to prevent emerging environmental crises.

Based on the description above, researchers interested in conducting a study entitled "**The Effect of Inquiry-Based Model Combined with Multimedia towards Student Cognitive Achievement in Environmental Pollution and Management Topic for Grade X in SMA Negeri 1 Perbaungan Academic Year 2012/2013".**

1.2 Problem Identification

Based on background above the problem can be identified into:

1. Student less interest in learning biology because lack of learning variation model
2. Student cognitive achievement is low
3. The learning process tend to teacher centered
4. Lack participation of student in learning biology

1.3 Problem limitation

In this case, researcher limited the problem into effect of using inquiry-based model combined with multimedia in learning environmental pollution and management towards student cognitive achievement and activity grade X in SMA Negeri 1 Perbaungan.

1.4 Research Question

1. Is there any difference in student cognitive achievement score of students taught using the inquiry-based model combined with multimedia and those taught using the traditional method?
2. Is students' learning activity in learning Environmental Pollution and Management topic that taught by inquiry-based model combined with multimedia is more active than students' learning activity that taught by traditional method?
3. Is there any effect of Inquiry-based model combined with multimedia on student cognitive achievement in Environmental Pollution and Management Topic for Grade X in SMA Negeri 1 Perbaungan Academic Year 2012/2013

1.5 Research Objective

1. To find Is there any difference in student cognitive achievement score of students taught using the inquiry-based model combined with multimedia and those taught using the traditional method
2. To find whether students' learning activity in learning Environmental Pollution and Management topic that taught by inquiry-based model

combined with multimedia is more active than students' learning activity that taught by traditional method

3. To find Is there any an effect of Inquiry-based model combined with multimedia on student cognitive achievement in Environmental Pollution and Management Topic for Grade X in SMA Negeri 1 Perbaungan Academic Year 2012/2013

1.6 Research Significant

This research will benefit some parties, namely:

1. Author

   Being a thesis writing material which is a prerequisite for completing Undergraduate Biology Science Education Program Unimed

2. Teachers

   Become an input for teachers to recognize students for teaching especially those with problems in academic achievement.

3. Student

   As source information in put to the students of Department of Biology for the future research