

## CHAPTER I INTRODUCTION

### 1.1. Research Background

The success of learning process is the main thing that is expected to carry out education in schools. Major Components in teaching and learning activities is students and teachers, in this case students who become subject of learning, not to be the object of learning. To present the material becomes more attractive teachers must have the ability to develop methods of learning and exploiting such instructional media so that the objectives can be achieved correctly.

Chemistry learning materials in senior high school contain many difficult concepts to be understood by students, because it involves chemical reactions and calculations as well as concerning the concepts that are abstract and considered by students is a relatively new material and have never gained while in SMA (sunnyono, 2009). The low achievement of students in learning chemistry can be seen in the average of UAS scores of students to the area of North Sumatra, namely: academic year 2004/2005 on chemical subjects is 4.01, the academic year 2005/2006 was 6.75, the academic year 2006/2007 is 6.50, and the school year 2008/2009 was 6.25 (<http://www.waspada.co.id/index.php//20.10>). This showed that the students had difficulties in understanding the subject matter of chemistry. The proof is the final UAS scores are 6.25 which are still relatively not optimal.

Based on the experience of researcher at PPLT UNIMED at SMAN 1 Sidikalang 2013, particularly in class XI Science, student learning outcomes in chemistry subjects were still relatively low because of the lack of students' motivation in learning chemistry. There was no great willingness of the students to learn and understand the lesson so they ignored this subject. Consequently the teaching-learning process was not running optimally due to the students could not achieved the settled standard score. The low student achievement in learning chemistry can be interpreted as a lack of effective

teaching and learning process, it could be seen in the average score of odd semester examination of the school year 2012/2013 in class XI Science i.e. 31.25 % passed and 68.9 % failed. From the data it could be concluded that the percentage of students learning outcomes were still low at only 31.25% which fulfill the Completeness Minimum Criteria (KKM) i.e. 75. Lack of students' motivation encourages teachers to use appropriate model and media in learning process to makes students' motivated in studying chemistry.

The learning process is still Teachers Centered Learning with verbal instruction, authoritarian teaching and the lack of variety in teaching and learning chemistry, plus the excessive emphasis on individual achievement. Furthermore, in learning chemistry students seem passive and boring because students just accept what is given by the teachers, students and even fear or phobia of chemistry lessons (Bayanto, 2009). Based on observation at SMAN 1 Sidikalang (PPLT 2013), information obtained by interview with some students in class XI Science, they said that the chemistry teaching and learning process in SMA Negeri 1 Sidikalang was still using direct instruction model where the teacher is the center of teaching and learning activities. Students generally only listened, read and memorized the obtained information, so the concept was not embedded deeply in students. On this issue, teachers are required to be able to choose the interesting model that can increase students' motivation to make student achievement better.

Based on observation at SMA Negeri 2 Karanganyar that conducted in February 2012, in particular some students of XI science and interviews the chemistry teachers, it could be seen that the most of students still has difficulties in learning of solubility and solubility product particularly in calculation concept. From the data obtained showed that the averages scores of class XI Science year 2010/2011 has reached the completeness minimum criteria (KKM), but there were still some students who have not completed is 44.74 % in solubility and Solubility product subject matter .This was caused by the inappropriate model which is used by teacher so the students became inactive and less creative to followed the lessons. In solubility and solubility

product material, students still have difficulties to understand the solubility and solubility product particularly of the effect of common ion toward solubility, predicted the precipitation based on solubility and solubility product value, determined the influences of pH toward solubility and precipitation reaction, the difficulty is at calculation materials, the students were still confused which coefficient or components of substances that should be put or not in the calculation (Utami, 2012). To solve the problems in solubility and solubility product it should be applied the appropriate model in chemistry learning process such as Guided Inquiry, mainly to increase students' motivation, achievement and curiosity.

Guided Inquiry (GI) is a way of presenting that teachers provide sufficient guidance to students and the vast majority of plans are made the teacher where students conduct experiments/investigations to discover the concepts that have been assigned a teacher. The method requires students to find their own concepts that must be obtained from the material being studied. By linking the material solubility and solubility product into daily life, students are expected to find a concept in a way to practice on the material of the solubility, so that learning becomes more active and interesting. There are many researches that used guided inquiry model to increase student achievement through motivation and learning activities. Paidi (2007), conclude that there was 37.5% increase number of students with good capability in making experiment design (from 12.5% to 50%). There was 25% increase number of students with good capability in doing the experiment and reporting its result (from 50% to 75%). The Guided Inquiry also increased number of students who have good understanding in scientific processes; from 50% to 72%. It has shown us the increasing of student's motivation in the scientific learning process. Ambarsari (2012) The t test value shown P-value is 0.014 that smaller than  $\alpha(0.05)$  it means that application of guided inquiry learning have a significant influence on basic science process skills of students in grade VIII Junior High School 7 Surakarta. Based on the researches, it

could be concluded that guided inquiry has higher influences model in scientific learning process.

Using Media is necessary in the learning process; especially the media which can be demonstrated directly for the issues are being discussed in order to increase students' interest in learning chemistry. As suggested by most students of SMAN 1 Sidikalang by using questionnaire distributed, they suggested in learning process should be used multimedia that makes easy to understand, relax and interesting because in their school most of teachers were still used only whiteboard as media in the learning process, so it made the students got bored and did not want to learn chemistry anytime. Khairani (2008) Improved student learning outcomes and calculated the gain percentage of students' successes as high as 77.94%. Based on the test obtained, the effectiveness of the treatment that was declared was effective learning because there is a significant difference between pretest and posttest was 32.414, which is given as a supporting essay test and posttest results gained an average 65.96% of essay test. Based on questionnaires distributed was found that 74.31% macromedia flash media used can affect the student's knowledge through their interest. Wicaksono (2012) concludes that from t test value in student's interest after applying the treatment. t-count is 2.160 and t-table is 1.668, it means that t-table is smaller than t-count and also the average value of experiment class is higher than control class ( $136.82 > 128.88$ ). so the macromedia Flash MX has influence in student's interest. Based on data explained above, it can be concluded that the use of macromedia flash are needed as well as play an important role in the teaching-learning process in order to increase student's interest in learning outcomes.

So, based on background explained above Researcher interested to do research with the title of this research is **“The Effectiveness of Guided Inquiry with Macromedia Flash to Increase Student Achievement in the teaching of Solubility and Solubility Product”**.

### **1.2. Problem identification**

Identification of problems in this study is as follows:

1. Chemistry is a difficult/abstract theory
2. Student's achievement is low
3. The lack of student's motivation makes chemistry become bored subject matter
4. Teacher's model is still direct instruction and dominated by teacher centered learning
5. Teacher doesn't use appropriate media in learning process.

### **1.3. Problem limitation**

Problem limitations in this research are:

1. Research will be conducted in SMAN 3 MEDAN, Class XI science of Senior High School
2. Subject matter is solubility and solubility product
3. Low student activity caused by the lack of student's motivation so Learning model that will be used is guided inquiry
4. Low interest of student caused by the lack of media used so Media that used is macromedia flash software

### **1.4. Problem statement**

Problem statements in this research are:

1. Is the student achievement that be taught by guided inquiry with macromedia flash significant higher than student achievement that be taught by direct instruction with macromedia flash in the teaching of solubility and solubility product?
2. What is cognitive aspect that most improve through the experiment class?

### **1.5. Research objectives**

Research objectives in this research are:

1. To know the student achievement that be taught by guided inquiry with macromedia flash is significant higher than student achievement that be taught by direct instruction with macromedia flash in the teaching of solubility and solubility product
2. To know the cognitive aspect that most improve through the experiment class

### **1.6 Research benefit**

The research benefits on this research are:

1. For student, it can increase student achievement through innovative model learning to make interest of learning process so that it can increase student's motivation to learning chemistry and repeat the subject matter until they comprehend and it will result student's achievement and value increase.
2. For chemistry teachers and researcher, this research result can be as alternative model beside others model presented in increasing quality of teaching learning process in chemistry especially solubility and solubility product by applying guided inquiry using multimedia.
3. For principal and official government, this research will be used as foundation to make the wishes.
4. For other researcher, research result can add information for future research to make innovative, effective interesting model in teaching and learning process.

### **1.7 Operational definition**

Student achievement is the abilities of student after receiving the learning experience. The existence of learning outcomes because of the teaching and learning process and learning outcomes can be known through the test (sudjana, 1989).

Guided Inquiry (GI) is a way of presenting that teachers provide sufficient guidance to students and the vast majority of plans are made the teacher where students conduct experiments / investigations to discover the concepts that have been assigned a teacher. The method requires students to find their own concepts that must be obtained from the material being studied. By linking the material solubility and solubility product into daily life, students are expected to find a concept in a way to practice on the solubility of the material, so that learning becomes more active and interesting (Utami, 2013).

Flash is one of the software which is an excellent product animation maker vector image that is in demand today. A file generated from this software has the file extension \*. Swf and can be played in a web browser that has been fitted with the Flash Player. Flash uses a programming language called Action Script. Macromedia Flash is an animation program that has been widely used by designers to produce a professional design (Ramadianto, 2008).