

## CHAPTER I INTRODUCTION

### 1.1 Background

Chemistry is the study of the structure, composition, properties, material changes, and accompanying energy. The scope of chemistry learning is not limited to the use or derivation, but is a product of a collection of facts, theories, principles, and laws were obtained which was developed based on a series of activities that seek answers to the what, why and how. Based on the outline, the chemistry includes two parts, namely the chemical as process and chemical as process a product. Chemistry as product includes a set of knowledge consists of facts, concepts, and principles of chemistry. While chemistry as processes covering skills and attitudes possessed by scientists to acquire and develop chemical products. This means that in learning chemistry is not enough just through any cognitive aspect, affective and psychomotor aspects absolute involved (Depdiknas, 2005).

In reality, not all teachers implement practical chemistry in the learning process. From 29 senior high schools surrounded in Medan, showed that 65.5% of senior high schools have the laboratory but have not properly used it, because laboratory activity has not been implemented in accordance with the expected quality and quantity (Jahro, 2010). Other facts prove that in some schools the implementation of teaching methods with practical hard to do even implementation is often omitted because of: the absence of a chemistry laboratory, shared with the laboratory of physics and biology, insecurity in the laboratory as hazardous chemicals, classes are crowded, lack of time, lack of material, cost of equipment, as well as the inability of teachers to effectively use the laboratories and their negative attitude towards laboratory applications (Eralp, 2009).

In the teaching and learning activities, each teacher must develop the character of each student in accordance with the material to be taught, for

example, the character of cooperation and involvement of the student. Individualistic attitudes, selfishness, indifference, lack of sense of responsibility, communicate and lack of empathy is a phenomenon that shows no social value or character in daily life. In fact, in these conditions, education can provide a substantial contribution. Education can contribute in overcome social problems because education has the function and role in improving human resources. But the character development in schools has not yielded the expected results. Many of the causes behind why the development of character in the world of education has not yielded the expected results. Factors could cause stems from the curriculum, design or implementation of the supporting factors of learning (Syaodih, 2009)

Given this research, need for a variety of learning approaches that can help students to understand and explore the chemistry subject matter. After preliminary studies derived from researcher Zawadzki (2010) concerning the application of the method of guided inquiry learning are senior high school students, it is known that the process of learning with guided inquiry allows students to develop students' skills in communication, teamwork, management, and the ability to think a high level, like thinking about things that are abstract, and then represented it into something more tangible.

Based on the research that has been conducted by Rosyda Safrida (2007), using the inquiry method shows that the average cognitive achievement in the cycle I increased of 47.61 with classical completeness 27.91% to 77.42 with thoroughness 83.72% classical. In the cycle II reaches 86.89 with classical completeness 100%. In the cycle III reached 89.77 with classical completeness 100%. Average results affective learning cycle I, II, and III are respectively 72.31; 77; and 80.39. While the average results of psychomotor learning cycle I, II, and III consecutively is 72.09; 76.31; and 78.78. This suggests that student learning outcomes can be improved through the application of the model inquiry learning approach.

Results of research conducted by Barthlow (2011) shows that guided inquiry can help students to represent chemical phenomena that are macroscopically into symbolic, such as the nature of the acid-base titration that can not be observed by naked eye can be determined by calculating the pH of the solution with the formula titration , so that students are easy to understand. Based on the research that has been conducted by Lina Veronica Purba (2015), shows that the results, for the class of guided inquiry obtained by the average value of 75.63 while for class Direct Instruction was 69.1. The experimental class I obtained percent increase learning outcomes as much as 63.02%, while the experimental class II obtained percent increase learning outcomes as much as 60.98% , thus it can be concluded that the results of studying chemistry student with guided inquiry-based learning powerpoint media. Nurhamidah Nasution (2014), results showed differences in learning outcomes of students who are taught chemistry with guided inquiry using with a chemistry student learning outcomes are taught without using guided inquiry. The average value of the pre-test experimental class of students is 28.27 and post-test 81.15 with an average gain of 0.50. While the average value of the pre-test students on control class is 29.52 and post-test is 78.3 with an average gain of 0.30. While the percentage increase in the experimental class learning outcomes 73% and 68% in the control class. This shows there is a learning outcome by 5%. It shows that the results of studying chemistry student using guided inquiry learning model is higher than the results of studying chemistry students without using guided inquiry learning model. According Recktenwald & Edwards (2010), the guided inquiry learning process students are given tasks that are authentic. So that students are expected to choose the method of solving problems independently, not only run a series of standard measures.

To overcome the problems occurred, guided inquiry method can be applied in the learning process. According Roestiyah (2001) excess guided inquiry learning methods are: (1) To encourage students to think and formulate their own hypotheses, (2) To encourage students to think and work on his own

initiative, (3) Teaching is becoming more focused on students, (4) Students can establish and develop their own concepts. With the application of guided inquiry learning method is expected to increase students' understanding of the subject matter of acid-base titration, so that student learning outcomes will also increase. In addition to the expected application of guided inquiry method will also enhance the activity of students in following the lessons or think.

Based on the problems that describe above, the author are interested in doing research with title :

### **The Implementation of Guide and Free Inquiry Learning Model to Improve Student's Learning Outcomes in Senior High School on Learning Acid-Base Titration**

#### **1.2. Problem Identification**

Based on the background that explained above, problems can be identified as follows:

1. Why do little teachers not apply the experimental method in learning chemistry?
2. Is the strategy that has been applied of teacher can improve student's achievement on learning chemistry?
3. Is using inquiry learning model can improve student's achievement?
4. Is using inquiry learning model can improve student's character?

#### **1.3. Problem Limitation**

Based on the scope of problems in indentifying the problems above, the problem limitation are:

1. The subject matter that had been in this research is Acid-Base Titration.
2. Teaching method was applied in this research are Inquiry Learning Model.
3. Student's character that had been measured in this research are cooperation and activeness through observation sheet.

4. Student's achievement that had been measured in this research is cognitive aspect of the level C1,C2, C3,and C4.

#### **1.4. Problem Statement**

Based on the background described above, then the problem can be formulated as follows:

1. Is the student's achievement using the guide inquiry model higher than using the free inquiry model?
2. Is the student's character of cooperation using the guide inquiry model higher than using the free inquiry model?
3. Is the student's character of activeness using the guide inquiry model higher than using the free inquiry model?

#### **1.5. Research Objective**

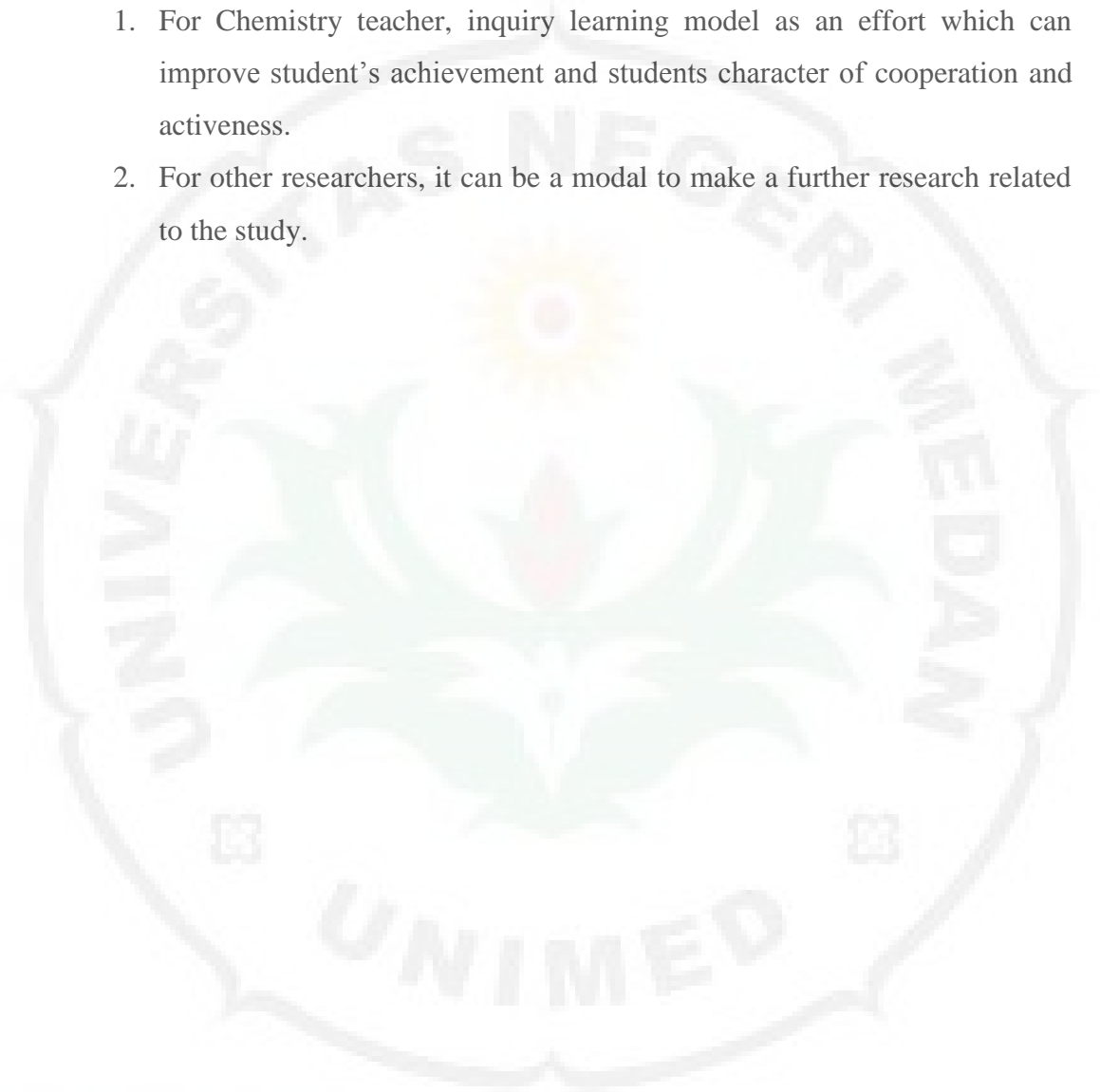
Based on the problem statement above, the objective in this reasearch are:

1. Knowing the student's achievement which taught by using the guide inquiry model higher than student's achievement which taught by using the free inquiry model.
2. Knowing the student's character of cooperation which taught by using the guide inquiry model higher than student's character of cooperation which taught by using the free inquiry model.
3. Knowing the student's character of activeness which taught by using the guide inquiry model higher than student's character of activeness which taught by using the free inquiry model.

#### **1.6. Research Benefits**

This study is expected to provide benefits, especially for chemistry teachers and also for the other researcher about how to improve learning through inquiry leaning model in student achievement on the learnig of acid-base titration. The expected benefits of this research are spesifically described as follows:

1. For Chemistry teacher, inquiry learning model as an effort which can improve student's achievement and students character of cooperation and activeness.
2. For other researchers, it can be a modal to make a further research related to the study.



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