CHAPTER I

INTRODUCTION

1.1 Background

Effective education is an education that makes students can be achieved the learning objective easily and funny. Thus, educators (lecturers, teachers, instructors, and trainers) are required to be able to improve the effectiveness of learning, so, the learning can be effective and useful.

Some problems in the teaching efficiency in Indonesia is the high cost of education, time spent in the educational process, the quality of teacher and many other things that lead to inefficient processes of education. Were also influential in the improvement of education need to increase human resources better.

The quality of national education is still low. It can be seen from the operates of value test of mathematic and natural science include chemistry. It can be provenfrom the average of value of daily test in SMA N 1 Berastagi in Science subject especially Chemistry subjectonly obtained average equal to 60, where the standart valuein SMA N 1 Berastagi is 80. There is a half of students could pass the standart valuebut there are also a half of students could not pass the standart value. From 32 students only 10 students pass the the standart value. Based on the data above shown that the student achievement in the learning chemistry especially in colloid is still low, teacher when colloidal material need learning increase achieve the main objective of natural science educational. Inovation to increase student achievement.

Lack of cooperation and involvement of the student shown by learning in the classroom, student just listen to the teacher which explaining information from morning until noon, students are taught how to attention and listening to the teacher explanations, while competence ask untouch.

The cause of lack the result of study in cognitive and affective attitude of cooperation and involvement student, is shown by the learning method that still become favorite for teacher, might only one, namely the method of lecturing or conventional method. Because it is easy and light lecturing, without capital,

without power, without elaborate preparation, method of discourse into used method that most teachers because that's the only method that is truly in control the majority of teachers.

Sometimes students think that chemistry is abstract knowledge because teacher only explains theory and formula based on the book in front of class without give the direct experience. They couldn't to imagine what's that real in chemistry. Sometimes teacher forget to explain it to the student how's this lesson really has relationship in our daily life. That's why we need to give direct experience and increase student activity, so it can help to increase theirunderstanding in chemistry. More over teaching chemistry in schools is expectedto be a vehicle for students to develop skills and scientific attitudes in the learning of nature and phenomenon of nature in surrounding so has impact to development further in the application in daily life or industry (Iis Siti Jahro, 2009).

Previously research about experimental methods of learning had beeninvestigated by Marlon (2008) which suggests that teaching by using the experimental method can enhance students 'mastery of chemical materials because experimental methods can improve students' skills and stimulate students to learn chemistry theoretically and practically. Rahmah (2009) showed that there are significant differences between student learning achievement using experimental activities with conventional methods on the subject of acid-base and salt. The most of teacher attend to use lecture method in the teaching chemistry. according to research that have done by Iis siti jahro (2009) shown that from 29 senior high school in Medan and around shown 65.5% that experimental activity is seldom done because of lack facility in the laboratory and lack of ability and motivation of the chemical teacher to manage laboratory and experimentalactivity. The same results in senior high school in Binjai shown that 37.8 and 36.4% student ever done experimental only 1-3 times and 4-6 times during learn chemistry in senior high school. Student that done experimental 7-10 times and 10 times only 22.2 and 3.6 % actually there 20 title of experiment or experimental themes that can be

done by student during learn chemistry in senior high school. From the fact about some of schools still not effective to do practicum method because of the expensive fee to provide apparatus and materials that needed, and also students are afraid to use chemicals in laboratory, as we know that there is general assumption in our society that chemistry is dangerous.

Lack of facility materials or apparatus for experiment is not the logical reason to avoid experiment because actually it can be handle using design of the ***PAS*** (*Praktikum Alternatif Sederhana)* **PAS** is an alternative method where in this method conducted by using tools and materials that are easily obtained in the surrounding of students. **PAS** is an alternative method that easy for teacher in senior high school when learning process, because can be used as replacement of usual experimental method using apparatus and material that easy to get in nature or around student environmental (Iis Siti Jahro,2009). By using *PAS* we can implement contextual approach to student by giving them the real example in their life and direct experience. *PAS* has some advantages that are; it can be done not only in laboratory, easy done, cheap, and can develop student creativity and increase value of local natural materials (Iis Siti Jahro, 2009). Teachers should have hard motivation and creativity also mastery science process creativity to design experiment (Iis siti jahro, 2009). In here *PAS* is design to reach a good learning achievement also student can increase their process skills in sciences. Teacher also should remember that chemistry not only as product but also as process. Jahro,et all (2010) said that chemistry is part of natural sciences where generally involve two parts, as chemistry as process and chemistry as product. Chemistry as product involves a group of knowledge that consists of facts, concepts, and principals of chemistry. Otherwise chemistry as process involvesskills and attitude that should be owned by scientist to get and develop chemistry product. We often wrong to think in teaching learning process where teacher only think that the most important is the product than process. Ratna Wilis Dahar in Jahro et, all (2010) said that *IPA* skill process involve skills: observing, inferring the observation, predicting, use apparatus and materials, implement the concepts, planning the research, and communication. Chemistry is experimental

science, can't be learned through reading, writing, or listening only, learning chemistry not only mastered a group of knowledge involve facts, concepts, principals but also mastery in discovery process and mastery in scientific work (Jahro,et all 2010). Some researcher have proved that *PAS* And through experiment activities in laboratory student can implement *IPA* process skill because in laboratory student will do experiment to prove theory that learned so they will get direct experience and deep understanding through *PAS* that design. The average of student's perception to *PAS* guidance is 83,31%. It means thatstudents perception in experiment class is good, and the students understand about the instruction and the content of *PAS* guidance (Lia, 2010).Based on the results of research conducted by Neni (2010) show Thatstudent's achievement in experimental class (75.48 ± 6.01) is higher than the control class (67.53 ± 4.69). And in other result, student achievement in experiment class is higher than control class. It canbe seen from the average of posttest of experiment class is 86.41 ± 6.96 while in control class is 72.95 ± 5.35 (Rahmi, 2013).So, based on restatement above writter feel attract to conduct research with the title "The Effectiveness Experimental Method Using Praktikum Alternative Sederhana (PAS) to Increase Student Achievement and Student Character in Learning Colloid at Senior High School 2 Medan Class XI Academic Year 2014/2015".

1.2 Problem Identification

Identification of Problem in this research:

1. Does the teaching and learning with experimental method using *PAS* increase student achievement and student character in chemistry especially for colloid material?
2. Does the teaching and learning with experimental method using *PAS* help student that hard to understand chemistry because they think chemistry concept is abstract, there is no real in chemistry?
3. Does the teaching and learning with experimental method using *PAS* help student understand colloid more because a lot of teacher in senior high

school only teach colloid material by lecturing method so they only remembering the material without understand about it?

4. Can *PAS* handle lacking facility and materials to do experimental method in senior high school especially for colloid material?

1.3 Problem limitation

It has been given the wide scope of problems in identifying the problems mentioned above, but in this study is limited to the following:

1. The study have been conducted at the senior high school level class XI sciences semester 2 *TA* 2014/2015, in SMA N 2 Medan. In this research used experimental method using *PAS*.
2. The material that observed in this study was the colloid.
4. Learning achievement that measured in this study was the cognitive aspect of the level of C1, C2, and C3.
5. The research investigates student's achievement, and character.

1.4 Problem Formulation

In this research, problem of study formulated as follows:

1. Is the student's achievement who have learning through experimental method using *PAS* are higher than students by using direct instruction?

2. Is there significant correlation between student's activeness and teamwork character with student's achievement?

1.5 The Research Objective

The research objective is to investigate the affectivity of practicum method using *PAS* on the teaching of colloid subject. The specific objectives of study were to know;

1. Whether the learning achievements of students who have learning by using the *PAS* are higher than students by using direct instruction.
2. To know the average percentage of student's activeness that applying experimental method using *PAS*
3. To know the average percentage of student's teamwork that applying experimental method using *PAS*
4. To know the significant correlation between student's activeness and teamwork character with student's achievement.

1.6 The Research Benefit

1. To make students have meaningful knowledge by using experimental method using *PAS*.
2. To be an input in teaching-learning process, especially for chemistry teachers in teaching of colloid material.
3. To be an input to others researches who want researching the same research.
4. Researcher will be able developing himself in experimental method using *PAS* in teaching of chemistry as a teacher in future.