

CHAPTER I INTRODUCTION

1.1. Background

We as educators is one of important sector in the building of our country, it can be as an investment for a human in long term. Beside that, education is also one of the effort to develop all potency have by all students through learning processing. That's why the learning process should be able to make the students potency for future of the students, due to the knowledge can be implemented as long as the student's life.

Chemistry is Natural Sciences (IPA) which is difficult to be understood by the students because of the chemistry of the majority of abstract, complex and each sequence with the material so much coverage, includes facts, concepts, rules, laws, principles, and questions. (Purba, 2007) explains that the chemistry as a science that is based on practice and experimentation. Students are not quite "feel" to understand but really really should be able to put it into practice in solving problems, solve problems, or scientific skills.

According to Soebagio (2001) there are two important things that must be considered in the study of chemistry, that chemistry as a product of the scientists in the form of knowledge, facts, concepts, principles, laws, theories and chemistry as the process gained through scientific work. Thus, not appropriate in studying the chemistry of the learning process is only done by lecturing in the classroom and the students just listen and criticize the teacher's explanation. Students will be easier to understand and study the chemistry when given the opportunity to actively learn while working in directly observing phenomena or events that occur in chemistry through practical activities that can help learners to understand an event (Permendikbud No. 59, 2014). The implementation of practical activities in chemistry teaching will be effective if supported by the lab user guide.

One each precise method applied in teaching chemistry is practical because it provided a greater opportunity for students to exercise the power of reason, rational thinking, applying attitudes and scientific methods in the search for truth or proof of a theory he had learned (Jahro, 2009). Practicum is a method

of giving an opportunity to the students individually or collectively, to conduct a process or a trained trial (Djamarah, 2000). Through practical activities students have opportunities to participate actively to the conduct of scientific work in discovering the concept, student's in total were involved in the observation it self, following a process, observing an object or situation / specific process. Therefore, the achievement of learning objectives must be accompanied chemistry laboratory work (Siagian, 2012).

The results of field studies conducted by Jahro and Susilawati (2009) showed that most of the subjects in chemistry requires strengthening the understanding and knowledge development through the application of practical methods. Until now, There are senior high school who do not carry out laboratory work in chemistry learning process. Some of the causes is the lack of practical organizer, a lack of tools and materials lab, and the lack of time available to the laboratory. Moreover, in the practical implementation requires considerable preparation such as setting goals lab, set up a laboratory procedure, prepare observation sheets, preparing tools and substances, prepare observation sheets laboratory activities. Components practical guidance to be prepared optimally is a laboratory procedure.

In others, a survey conducted by Rosmalinda (2013) showed that the desire to create teaching and learning activities in the classroom are ideal and the demand amount of material that must be mastered students, teachers sometimes make trouble focusing attention on the quality of the student practicum.

Based on the research of Hartika (2012) chemistry lab manual that can be used in learning chemistry for grade X of Senior High School in even semester based on KTSP is 81% eligible to use in the school. Based on the research of Fransisca (2011) chemistry lab manual book that can be used in learning chemistry for grade X of Senior High School based on KTSP is 79.66% teacher responden and 77.00% student's responden of chemistry lab manual eligible as source to support on learning chemistry. Based on the research of Suparni (2013) from the eligible test result of chemistry lab manual is 85.59% can be used in the

school and the result of student's learning outcomes shown an increase in SMA Negeri 1 BatangKuis 41% and SMA Swasta Josua Medan 63%.

Based on the research of Wirna (2013) from level of student's understanding test result of chemistry lab manual is 81.39% students in SMA Negeri 1 Percut Sei Tuan understand with chemistry lab manual after tested and collate based on KTSP in the chemistry laboratory.

Based on the experience of researchers while exercising PPLT in SMA Negeri 1 Berastagi which consists of 33 classes that rarely have science teachers that make the process of learning in the laboratory. Whereas laboratory buildings and infrastructure is adequate. Which again surprised researchers the laboratory building used for science class because of the lack of facilities for student's at the school. Less than optimal implementation of learning in the laboratory is caused by difficulties in coordinating student teachers during their practicum and laboratory science handbook as well as the availability of less material.

Seeing the poor of this condition, we are reminded to go back on the principle of learning chemistry is learning based on experiment (experimental). Unavailability of practical handbook is also one of the factors hamper the practical implementation in schools. Due to practical guidance is a guideline in carrying out practical work and also as an evaluation tool in learning activities. Guidance practicum adopted from the outside and not in tune with the school laboratories are also often an obstacle. Therefore, practical guide needs to be designed in such a way so as to attract, according to student's needs, easy to implement and does not require too many tools and materials. For that we need to formulate a guideline (guide) chemistry lab by means reviewing all documents / books on chemistry laboratory management that has been there all along.

Julaiha (2014) also said the use of teaching materials is important as a support in the learning process chemistry to get the learning experience in the form of science skills. Given the importance of teaching materials chemistry in the learning process in the form of handbooks chemistry laboratory, most of the teachers high school chemistry just using textbooks and student worksheet (LKS) are not standards it needs if it were carried out development handbook chemistry

lab that can be used by high school students as well as one high school chemistry teaching materials for chemistry teachers.

The existence of practical handbook gives considerable influence in the learning process so that the preparation of practical handbooks must conform and adapt to the demands of K13. Therefore, the source of this study need to be examined for the learning process to be optimal.

One subject on chemical subjects who need assistance in the form of laboratory experiments to better understand it is a colloidal system. Colloidal system is a material that is directed to "seek out" and "doing" that can help students to apply the concepts understood through scientific work (experimental) we need a media for lessons that emphasize students actively.

Based on the above background, the researchers are trying to develop chemistry lab manual in learning chemistry and will standardize chemistry lab manual to some of the chemistry lecturer, chemistry teachers, and student's in Senior High School/MA. Based on the background that has been stated that the guiding practicum is very important to the success in the practicum, the researchers are interested in doing a study entitled **“The Analysis and Development of Chemistry Lab Manual for Grade XI of Senior High School on Learning Colloidal System”**.

1.2. Problem Identification

Based on the background of the problem, the problem identification of this research are as follows:

1. Facilities and infrastructure in the laboratory inadequate includes tools and materials of experiment.
2. Incompatibility the chemistry lab manual for grade XI of Senior High School used to the needs of students and the existence of school laboratories.
3. Using the chemistry lab manual that have not been standardized.

4. Unavailability chemistry lab manual used schools and teachers still use leaflets worksheets made by teachers themselves or were still based on textbooks in which there Student Worksheet (LKS) of experiment.

1.3. Problem Limitation

Based on the problem identification above, the problem limitation of problems can be identified are as follows:

1. Collate and development of chemistry lab manual in Senior High School for grade XI in even semester based on K 13 on learning colloidal system.
2. Trials of chemistry lab manual for grade XI in Senior High School performed at students in SMA Negeri 1 Berastagi laboratory.
3. Calculate the influence using chemistry lab manual based on the student's outcomes in Senior High School.

1.4. Problem Statement

To give the direction of this research, the problem statements in this research are as follow:

1. Whether the level of feasibility chemistry lab manual for grade XI of Senior High School in the school based on BSNP?
2. Whether the level of feasibility chemistry lab manual for grade XI of Senior High School that have been developed based on BSNP?
3. How the influence of chemistry lab manual for grade XI of Senior High School based on the student's outcomes that have been developed?

1.5. Research Objective

The objectives of this research are:

1. To get data on the feasibility of chemistry lab manual for grade XI of Senior High School on learning colloidal system circulating in schools.
2. To get chemistry lab manual that have been developed for grade XI of Senior High School on learning colloidal system.

3. To get the influence of chemistry lab manual for grade XI of Senior High School based on the student's outcomes that have been developed.

1.6. Research Benefit

The benefits that will be hoped from this research, are:

1. Teacher
 - a. As reference to bring students doing activities experiment of chemistry.
 - b. As source of reference to make the chemistry lab manual book.
2. Student's
 - a. As reference in implementing activities experiment of chemistry.
 - b. As source of self - learning.
3. College
As source of reference to develop the chemistry lab manual book.