

CHAPTER I

INTRODUCTION

1.1 Background

The development of educational technology and highly colored influenced by the development of science and technology. It was indeed very reasonable, because the technology and education starting from the application of the principles of science and technology in education.

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 should be able to put it into practice in solving problems, solve problems, or scientific skills.

Chemistry in SMP / MTs is a clump of science subjects so that in the learning process refers to the process of learning science. This learning process emphasizes providing direct experiences to develop competency in order to explore and understand the universe around scientifically. The process of learning science in emphasizing the approach of process skills, so learners can find facts, build concepts, theories and scientific attitude of learners themselves (Trianto 2010: 143.153).

One method in accordance with the process skills approach is a method practicum. In practical methods learners gain direct experience and discover for yourself the facts, concepts, from the existing theories.

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 research from Siti Nurhasanah (2013) showed that the use of a guide practicum class VII a positive impact on student achievement with significant value of <0.05 . Based on research Mya Rahmayani (2012) chemistry lab manual that can be used in teaching chemistry for class VII based SBC is 83.91% of teachers respondents and respondents 77.62% students of manual laboratory chemical qualifies as a source for support on learning chemistry. Based on research from Suparni (2010) showed that the practical learning methods to

improve learning student outcomes seen from the results of students increased, the average value of students in the psychomotor aspects, namely 77.57%. Based on the research of Indra Rahmatul'Ula (2014) The response of students to the practical guidance IPA response agrees with the percentage of 87.28% and 94.71%.

Based on observations at some of the junior high school in Medan that the school has not had a manual lab especially chemical aspects so that the practical implementation refers to the manual lab which made based educator handbook learners. The manual lab does not include all the activities in the lab.

Based on interviews (Mr. Simbolon) explained that laboratory experiments are rarely held. While laboratory building adequate infrastructure and practical implementation difficult to establish because of the limitations of materials chemistry lab, besides the absence of manual lab makes it difficult educators coordinating learners are quite a lot, so the methods used educators are lecturing method.

Seeing the poor of this condition, we are reminded to go back on the principle of learning chemistry is learning based on experiment. Unavailability of practical handbook is also one of the factors hamper the practical implementation in schools. Due to manual lab 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.

Using the Science manual lamb that have not been standardized. lab that can be used by junior high school students as well as one junior 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 Chemical Reaction . Chemical Reaction 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 for some of chemistry lecturer, chemistry teachers, and student's in Junior High School. 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 Development of Science Lab manual for grade VII of Junior High School on Learning Chemical Reaction”**

1.2 Problem Identification

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

1. Facilities and infrastructure in the laboratory inadequate includes materials of experiment.
2. Incompatibility the Science lab manual for grade VII of Junior High School used to the needs of students and the existence of school laboratories.
3. Using the Science lab manual that have not been standardized
4. Unavailability science lab manual used schools and teachers still use leaflets worksheet made by teachers themselves or were still based on textbook in which there students worksheet (LKS) of experiment.

1.3 Problem Limitation

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

1. Collate and development of Science lab manual in Junior High School for grade VII based on K13 on Learning chemical reaction
2. Trials of Science lab manual for grade VII in Junior High School performed at student in SMP N 27 Medan, SMP N 35 Medan laboratory.
3. Calculate the Effectiveness using Science lab manual based on the student's outcomes in Junior High School

1.4 Problem Statement

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

1. Whether the Science lab manual circulating in school for grade VII of Junior High School on learning chemical reaction that have criteria based on BSNP ?
2. Whether the Science lab manual for grade VII of Junior High School on learning chemical reaction that have been developed based on BSNP ?
3. How the effectiveness of science lab manual for grade VII of Junior 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 science lab manual for grade VII of Junior High School on learning Chemical reaction
2. To get science lab manual that been developed for grade VII of Junior High School on learning Chemical reaction
3. To get the effectiveness of science lab manual for grade VII of Junior High School based on student's outcomes that 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. A 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 the develop the chemistry lab manual book

1.7 Operational Definition

The avoid differences or lack of clarify of meaning, then the operational definition in this research are :

- 1. development** is a process that aims to create a product through several stages, including planning, manufacturing of the product itself and evaluation.
- 2. Science lab manual book** is a book that contains a collection of lab manual can be use by teacher as a reference in practicum and can be implemented in the school either during school hours or outside of school hours with the facilities and infrastructure available in the school itself.

3. **Science** is knowledge about a set of theories that can be accepted and verifiable that examines the phenomena of nature and its development not only with the sets but by their scientific facts and scientific attitude
4. **The development science manual book** is a process to create a science manual book in chemistry through several stages of development that determine the objectives, collect reference, draft lab manual book, making lab manual book, as well as to validate the assessment by science teachers SMP / MTs and lecturers to determine the quality of the lab handbook has been developed.
5. **Chemical reaction** is A chemical reaction is a process whereby new substances which the reaction proceeds, the original form of some substances called reagents. Usually a chemical reaction accompanied by physical events, such as discoloration, the formation of precipitates or the emergence gas. Chemical reaction is a simple changes that occur on a substance if it is reacted or mixed with other substances among them include changes in content and characteristics of chemical reactions.