

CHAPTER I

INTRODUCTION

1.1 Background

Chemistry is the study of composition, properties, and changes in matter. Chemistry is a branch of science which is the basis of many other sciences (Rahayu, 2009). The development of chemistry is inseparable from laboratory activities, such as practicum, so that laboratory activities become an important part of chemical learning activities. Many new discoveries are produced in the laboratory by chemists who can improve the quality of human life (Widjajanti et al., 2010). For students, practicum is held in addition to being able to train how to use the right tools and materials, also help their understanding of chemical material learned in class for students who have high curiosity, then through practicum they can get answers from their curiosity in real (Purba et al., 2015).

Based on the results of research conducted by Nuha et al. (2015) which states that laboratories contribute to high school chemistry learning which can facilitate achieving knowledge, skills and student character competencies. While Sumintono et al. (2010) explain that practical activities can improve science process skills, or students scientific attitudes. Similarly, the research conducted by Jahro et al. (2009) show that which concluded that 83.6% of students admitted that practicum activities in the laboratory could improve their chemical learning achievement.

However, in reality, there are still a number of practical activities that less successful in fulfilling the expected goals. Because of due to several factors, namely the availability of laboratory equipment and materials is still lacking, the practical implementation time in face-to-face hours is always insufficient, the teacher's intensity in attending laboratory training is still low, science subjects are quite dense so the teacher prefers the lecture method, and inadequate practical guide. Where inadequate practical guidance is still a neglected factor.

Practical guide is a guideline in implementing practicum and also as an evaluation tool in teaching and learning activities. The practical guide needs to be designed in such a way that it attracts and guides students to better understand the material being studied. Therefore, one of the good chemical practicum guides is an innovative guide that can improve student learning outcomes and process skills. According to Eko Wahyudi (2009) innovative is the ability of humans to use the thoughts and resources around them to produce a new work. The result analysis of several practical guides on the market, with publishers Masmedia, Ganeca, and Grafindo it is evident that there are still a number of practical guides that have not met the expected quality, for example, the explanation in the practical guidebook is too long and complicated, using language that is difficult to understand for high school students, the material to be practiced is still difficult to obtain and the content tends to boring because there is only writing.

Therefore, researcher will create innovative practical guides to improve the quality of existing guides. An innovative guide is that it contains clear explanations, easy-to-understand languages for high school students and innovative guides that will contain interesting things such as images that support the contents of the practical explanation and can also go through the CD about how to do a practicum and observe the results.

Redox reaction material is material whose learning process is quite difficult. The redox reaction is a material that discusses oxidation reduction based on electron release and capture, oxidation reduction based on oxygen binding and release, oxidation reduction based on changes in oxidation number. The concepts in this material will be more easily understood if theories about that are proven by laboratory activities.

In the study of Anisah et al. (2016) explained that the repetition of the chemistry daily semester 2 of 2014/2015 school year, learning completeness in the material redox reaction is quite low, which is around 34.1% with minimum completeness criteria (KKM) which is 75. Redox reaction material is closely related

to laboratory activities. As explained in Nur Masyitah et al. (2016) 's study which explains that many chemicals are difficult to understand only in theory, redox reactions are one of the materials that are difficult to understand in theory such as discussing oxidation reduction based on electron release and oxidation, oxidation reduction based on oxygen binding and release, oxidation reduction based on changes in oxidation number. the concepts in this material will be more easily understood if theories about that are proven by laboratory activities.

Based on the background above, the researcher is interested in developing practical guidance in chemistry learning in high school and will conduct standardization of this practicum guide to several chemistry lecturers, chemistry teachers, and high school students with research titles *"The Development Of Innovative Practical Guide On Redox Reaction to Increase Student's Achievement And Process Skills"*

1.2 Scope

Based on the background described above, the scope of this research are to make a practical guide and to test a practical guide to obtain learning achievement of high school students of class X on redox reaction material. The research will be conducted at SMAN 14 Medan.

1.3 Problem Formulation

Based on the background and identification of the problems above, the problem formulation in this research:

1. Is the chemistry practical guide used in the school for redox reaction material according to the BSNP criteria?
2. Is the innovative practical guide on redox reaction material according to the BSNP criteria?
3. Are the learning achievements of students who use the innovative practical guide on redox reaction material higher than using in school?

4. Are the process skills of students who use the innovative practical guide on redox reaction material higher than using in school?

1.4 Problem Limitation

To avoid widespread problems in this research, a problem is needed. The limitations of the problem in this research are as follows:

1. Analyzing the chemistry practical guide for high school class X redox reaction material based on BSNP criteria.
2. Compile and develop chemistry practical guide for high school class X redox reaction material based on the 2013 curriculum.
3. The chemistry practical guide will be conducted at SMAN 14 Medan.
4. Seeing the level of understanding of students based on learning achievement on chemistry practical guide that have been developed before and after practicum.

1.5 Research Objectives

The objectives of this research are:

1. To obtain data on the feasibility of innovative practical guide on redox reaction material that used in school.
2. To get an integrated the innovative practical guide on redox reaction material to BSNP criteria.
3. To find out whether the learning achievement of students who use the innovative practical guide on redox reaction material are higher than used in school
4. To find out whether the process skills of students who use the innovative practical guide redox reaction material are higher than used in school

1.6 Research Benefits

The benefits of this research are:

1. Increase the knowledge and experience of researcher to develop and compile a class X high school practical guide on redox reaction material.
2. To obtain practical guide high school X class on appropriate and interesting redox reaction material, it is easy to implement and can assist students in studying chemical material especially doing lab work.
3. Contributing ideas for chemistry teachers in developing practical guide.
4. Providing guidelines for science teachers to carry out practical work in school.

1.7 Operational Definition

Operational definitions in this research are intended to equate views about several terms used as research titles.

1. In this research the meaning by learning achievement is the value obtained by students at the beginning (Pretest) and end (Posttest) of research.
2. In this research the meaning by innovative is a renewal or new creation on the techniques of presenting chemistry practical guides such as the availability of tools and materials that are easily available in daily life, guidance content are interesting, creative and communicative etc.
3. In this study the meaning by process skills is intellectual, social, and physical skills derived from fundamental abilities which in principle already exist in students which include the skills of making observations (observe seen from practicum and using tools and materials), submitting hypotheses (calculate seen from observe lab and fill out the observation sheet) and draw conclusions (interfere and communicate seen from problem solving and draw conclusions).