CHAPTER I

INTRODUCTION

1.1 Research Background

Chemistry is the study of matter and the changes it undergoes. Chemistry is often called the central science, because a basic knowledge of chemistry is essential for students of biology, physics, geology, ecology, and many other subjects (Raymond Chang, 2010). Chemistry was born and developed on the basis of experiment in the laboratory. Therefore, in studying chemistry can't be separated from experimental activities or experiments in the laboratory (Soebagio in Eko Budi, et al, 2013). The laboratory is very important to make students more active in learning because by getting the opportunity directly to observe and do. Therefore, students will find it easier to remember material which be learned. So they have achieved permanently. In addition, laboratory activities also show that many benefits are obtained such as can choose, prepare, and use tools and chemistry materials, can measure temperature, volumes, and time properly, can apply and integrate existing chemistry knowledge/theories, provide opportunities to develop a number of skills and can develop cooperative attitude, discipline, and responsibility from students involved in the laboratory activities. Many studies have been carried out to determine the effectiveness of education that conducts laboratory experiments in science education in facilitating cognitive, affective, and practical goals (Zakiah et al., 2018). According to Altun et al (2009), experimental activities are part of the chemistry learning process. Laboratory activities can make abstract concepts become more concrete and easier to learn. While Kean and Midlecamp, (1985) expressed experimental activities can train students to think scientifically and creatively, make observations, collect and analyze data, and solve problems. By doing lab work in the laboratory students can find their own facts with their senses and can associate experiences that are full of symbols and calculations obtained in the learning process. Similarly, the research conducted by Jahro et al. (2009) showed that 83.6% of

students admitted that laboratory activities could improve their chemical learning achievement.

But in reality, there are still a number of practical activities that are less successful to achieve the expected goals, because of several factors, namely the availability of tools and lab materials is still lacking, practicum time in face-to-face hours is always insufficient, teacher intensity in attending laboratory training is still low, material Science lessons are quite dense so the teacher prefers the lecture method, and inadequate practical guide. Where in adequate practical guide is still a neglected factor.

Practical guide is a guideline in implementing practicum and also as an evaluation tool in teaching and learning activities (Jesse E. Day, 1930). Practical guides need to be designed innovatively so that they attract interest in learning and guide students not only to understand the material, but to understand the learning objectives of these students so that they can improve student learning outcomes and process skills. According to Anita in Eko wahyudi (2009), innovative is a human ability to utilize the mind and resources around it to produce a new work, and is beneficial for many people. Innovative are new updates or creations.

The results of the analysis carried out on several practical guides on salt hydrolysis material on the market, with publishers Bumi Aksara, Ganesa, and Grafindo, there were still several practical guides circulating in the market that hadn't met the expected quality with weaknesses such as presentation techniques like still lack of consistency of material or limitation of the problem with the purpose of the practicum to be carried out, explanation of the theory related to the material is too short but not on target to adjust the competency standards to be conveyed, presentation of material is less attractive and less colorful (too flat), some practical guides also don't include work safety / MSDS related to each practicum material to be carried out, and there are some of them less communicative and straightforward in conveying information that students want to do in laboratory activities related to language feasibility.

Therefore the authors are interested in compiling innovative practical guides on salt hydrolysis material to overcome weaknesses and solve problems that often occur in practical activities such as making clear limitation of the problem in the material and practical activities to be carried out, including occupational safety / MSDS at each practicum material that will be carried out to remind students related to supervision, present practicum material where the tools and materials are easily obtained because the absence of them often becomes an obstacle to not doing practicum, although the teacher has practical instructions, so creativity is needed in finding alternative materials and other tools which can be used so that the practicum is still carried out, namely by simply using tools and materials that are easily found in daily life, then the instructions to be conveyed are communicative, clear, and straightforward, and presents more interesting and colored of practical guides to see today's millennial students who are more interested in attractive colors and images add motivation / parables / short stories / puzzles / guesses at the end of the practical guide to motivate and increase enthusiasm for learning students in the activity and the CD's about how to do lab work and how to know it.

Salt hydrolysis material is material whose learning process is difficult because the concept requires proof in the laboratory. In the research of Farikha et al. (2015) showed the completeness of learning in salt hydrolysis material is quite low, around 44.1%, with minimum completeness criteria (KKM) which is 75. Salt hydrolysis material is need to laboratory activities. As explained in the research, according to the result of Wahyuningsih et al (2014) expressed salt hydrolysis is a material that discusses hydrolysis solutions, how the solution is made, determination /calculation of pH, and its application in daily life. The concepts of hydrolysis will be more easily understood if that are to proven by laboratory activities or practicum. Students get the opportunity to practice process skills in order to obtain maximum learning achievement. Experience that is experienced directly can be embedded in his mind for longer than just hearing the experiences told by others. The involvement of physical and mental and emotional learners is expected to foster learning conditions that can enhance self-confidence and innovative and creative behavior. By experimenting,

students are 'invited' to become chemical scientists. That way they can understand their own chemical processes and concepts in accordance with the results obtained during learning.

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 the research title ***"The Development of Innovative Practical Guide on Salt Hydrolysis to Increase Student's Achievement and Process Skills"***.

1.2 Scope

Based on the background described above, the scope of this research to make a practical guide and to test a practical guide to obtain learning achievement of high school students of class XI on salt hydrolysis. The research will be conducted at SMAN 21 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 hydrolysis of salt according to the BSNP criteria?
2. Is the innovative practical guide on salt hydrolysis according to the BSNP criteria?
3. Are the studet achievements of students who use the innovative practical guide on salt hydrolysis higher than using in school?
4. Are the process skills of students who use the innovative practical guide on salt hydrolysis higher than using in school?

1.4 Problems Limitation

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

1. Analyzing the chemistry practical guide for high school class XI salt hydrolysis based on BSNP criteria.
2. Compile and develop chemistry practical guide for high school class XI salt hydrolysis based on the 2013 curriculum.
3. The chemistry practical guide will be conducted at SMAN 21 Medan.
4. Seeing the level of understanding of students based on student achievement on chemistry practical guide that have been developed before and after practicum.

1.5 Research Objectives

The objectives of this study are:

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

1.6 Research Benefits

The benefits of this research are:

1. Increase the knowledge and experience of researchers to develop and compile a class XI high school practical guide on salt hydrolysis.
2. To obtain practical guide high school XI class on appropriate and interesting salt hydrolysis, 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 schools.

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.