CHAPTER I
INTRODUCTION

1.1 Background

Chemical is one of the subjects whose concepts are mostly abstract. The abstract concepts sometimes make it difficult for students to understand what is conveyed by the teacher when chemical learning takes place. Therefore, we need a learning resource that can make concrete abstract concepts so that students better understand what the teacher has to say.

Given the importance of chemistry subjects, it is necessary to have optimal learning efforts so that the expected goals can be achieved. In the learning process in school chemistry, concept walks in obtain only from direct observation but also the involvement of teachers in selecting and using appropriate learning resources so that students are able to understand the concepts acquired in learning.

Constructional experts argue that knowledge cannot be simply transferred from teacher to student. Students must actively construct their knowledge of new information and experiences and new knowledge they get. Students use their knowledge as a basis for evaluating new information. If new information is consistent with existing knowledge, this new information will be assimilated, but if it is completely different (contradictory), knowledge accommodation will be carried out to fit the new information.

For that, we need a learning model that makes students become active, creative and motivated in carrying out learning in school. The fact that is often found in schools is the tendency of teachers who provide chemistry learning with the method of friendly, invite students to read teaching materials, and memorize chemical concepts. Chemistry learning conditions like this will cause chemistry learning to be unattractive, unpopular and thus student learning outcomes to be low.

Based on the results of observations and interviews with chemistry teachers at SMA Methodist – An Pancurbatu still uses the chemistry learning process by means of a conventional method. To achieve a goal in learning that is

expected in the learning process needs experience to problem solving. The existing learning resources generally only serve as material; students are still dependent on the teacher in the process of understanding. The existence of these problems encourages the need for supportive and enjoyable learning resources.

To grow the liveliness and creativity of students in the learning process, the teacher is expected to develop a learning model that can increase student motivation and learning outcomes. One way is to change conventional learning methods (lectures, questions and answers, and assignments) by applying cooperative learning models. The cooperative learning model is using a problem-solving model. The problem-solving model is a learning model that concentrates on teaching and problem-solving skills followed by strengthening skills.

With this model, it is expected that when students are faced with a problem, they can perform problem-solving skills to choose and develop their responses. This can be done not only by means of memorizing without thinking, problem-solving skills but also can expand the thought process.

There are several results of research on learning models Problem solving, demonstration, among others, Nuky et al. (2015) that the application of problem solving learning to improve creativity and learning achievement in the subject matter of the buffer solution for students of class XI even semester high school batik 2 Surakarta 2014 school year / 2015. In the first cycle, the percentage of students' creativity reached 47% which then increased in the second cycle to 74%. The percentage of achievement of learning achievement for knowledge aspects in the first cycle reached 59% and increased in the second cycle to 79%, for the attitude aspect the percentage of achievement in the first cycle was 76% and increased in the second cycle to 100%. Whereas for the skill aspect learning achievement is only done in the first cycle with an achievement percentage of 100%. Yudi, et al. (2016) research results showed that the application of problem-solving learning models was effective in improving critical thinking skills and student learning outcomes with the results of the percentage of pretest, posttest, and N-Gain in the experimental class 38.80%, 82, 62% and 70.9% while the control class was 38.42%, 75.62%, and 58.2%. In addition, the responses given by

students to the problem-solving learning model are positive with good criteria, because the number of students who answer strongly agree is higher in the percentage of 83.33% and 80.00%, compared to agreeing on statements, disagreeing and not very agreeable. This study concludes that learning models with effective problem-solving models are used to be able to improve critical thinking skills and student learning outcomes. As well as the responses were given by students to a good problem-solving learning model.

Based on this, chemistry learning must be directed at the learning process that can enable students to help students understand students' concepts in chemistry learning, research will be carried out with the title: "**The Influence Of Problem Solving Models With Demonstrations On Student Learning Outcome And Activities In Buffer Solution In Class XI Smas Methodist-An Pancurbatu** ".

1.2 Identification of Problems

Based on the background of the above problems, several problems can be identified as follows:

1. Less varied learning models in schools

   In this case, teachers tend to be less clever in adjusting models that can be used in any chemical material. Because not all learning models can be applied in the teaching and learning process and must pay attention to the characteristics of the material to be presented.

2. Lack of emphasis on character in school

   As a cultured nation, this situation is clearly very unfavorable for the future of the nation, especially in giving birth to intelligent future generations, both intellectually, emotionally, spiritually, and socially.

3. Students' relatively low chemistry learning outcomes

   This is also a benchmark for the success of a teacher in the teaching and learning process in the classroom.

1.3 Limitation of Problems

Given the many problems contained in chemistry learning, then in this study the problem is limited to:

1. The learning model used in this study is the Problem Solving model.
2. The material presented in this research is Buffer Solution (limited by the Concept of Buffer Solution, Component of Buffer Solution, Calculating pH of Buffer Solution, Working Principle of Buffer Solution, How to using of Buffer Solution).
3. The subjects of the study were limited to the XI IPA even semester students.
4. Student learning outcomes are measured by cognitive aspects of the test and non-test.

1.4 Problem Formulation

The problems identifications of this research are:

1. How is the effect of the problem solving model accompanied by demonstration in student's learning outcomes on buffer solution
2. How is the effect of using the problem solving model accompanied by demonstration in student's activities on buffer solutions
3. How is the significant correlation between student's learning outcomes and activities on buffer solutions is using the problem solving model accompanied by demonstration?

1.5 Research Objectives

Based on the formulation of the problem stated above, the objectives of this study are:

1. Knowing the effect of a problem solving model accompanied by a demonstration in student's learning outcomes on buffer solution
2. Knowing the effect of using the problem solving model accompanied by a demonstration in student's activities on buffer solutions

3. Knowing the significant correlation between student's learning outcomes and activities on buffer solutions is using the problem solving model a accompanied by demonstration

1.6 Research Benefits

The results of the study are expected to be useful, among others:

1. For students

a. Through the application of Problem Solving-based chemical learning models along with problem solving in teaching and learning activities are expected to improve student learning outcomes in the Main Material Buffer Solution.

b. For students, this research is expected to be an interesting and meaningful learning experience so that it can be applied in various other disciplines and they can be applied in daily life.

2. For Teachers

Giving inspiration and experience directly to the teacher in the activity of teaching chemistry by applying the Problem Solving based chemistry learning model as an alternative model in both the Main Material of Buffer Solutions and other material that has the same characteristics.

3. For schools

The application of Problem Solving-based chemical learning models in chemistry learning is expected to improve the quality of chemistry learning in schools.

4. For Researchers

Delivering information about the influence of student learning outcomes in the class using experimental based problem solving learning models. The results of this study will add insight, ability and experience in improving competence as teacher candidates.

1.7 Operational Definition

1. Problem solving learning model in this study is a learning model that trains students to solve a problem. Steps problem solving learning model (Djamarah and Zain, 2010) namely (1) There are clear problems to solve; (2) Looking for data or information that can be used to solve the problem; (3) Establish temporary answers to the problem; (4) Test the correctness of the temporary answer; (5) Drawing conclusions.
2. Dahar (1989) states the concept is an abstraction that represents a class of objects, events, activities, relationships that have the same attributes. Mastery of concepts is the ability of students to understand concepts after learning activities. Increased mastery of concepts is measured through pretest and posttest tests. The increase in mastery of concepts is shown through the acquisition of gain scores, namely the difference between posttest scores and pretest scores (Sunyono, 2012) but, to avoid refraction on the gain score, the gain score normalization is done by referring to the Hake formula (2002) so that the value of gain is obtained.
3. The practicality of a problem solving learning model in this buffer solution material can be measured by the feasibility of a problem solving learning model (seen from the observation sheet of the learning model) and the attractiveness of a problem solving learning model (seen from the student response questionnaire).
4. Affectivity instructional model of problem solving in this study was measured by observation sheets teacher's ability to manage learning, student activity observation sheet during learning, attitudes and skills assessment sheet as supporting data during the practicum student activity and the resulting increase students' mastery of concepts.
5. Size of influence (effect size) with regard to the level of success of a treatment applied in a learning (Jahjouh, 2014). The size of the influence can be determined by the t-test and the effect size test on the problem solving learning model in increasing the mastery of students' concepts in the buffer solution material.