

CHAPTER I

INTRODUCTION

1.1 Background

Learning is an activity that involves a person in an effort to acquire the knowledge, skills and positive values by utilizing a variety of sources to learn. Education seeks to improve the ability of learners to a certain degree. To improve the ability of learners, can begin with improving the quality of teachers in teaching and behave professionally. The teacher as an educator is required mastery of various abilities as a professional teacher in his field. The learning process can not be separated from the activities of the teacher and student activities in which teachers teach and students learn. Learning should not be done by the students, but the teachers as a source of knowledge must be learned and practiced in an effort to increase the competence of teachers. Thus creating a professional teacher can be improving the quality of education. One of teachers training model to achieve the quality of learning in schools is Lesson Study (Wanarsih 2012). Lesson study is a comprehensive approach to the professional learning and sustain teachers become lifelong learners in an effort to develop and improve the quality of learning in the classroom. Lesson study conducted in the classroom with the aim of for students to better understand and done jointly with other teachers (Rahayu, 2005). The number of students in a class sometimes make teachers are not able to pay attention to the development of students in the following study, whether all students have actually learn, whether all has been reached by the teacher's attention or just certain students who got the attention of the teacher. Lesson Study is the teachers pay more attention to the development of students, and students' competencies because the quality learning to be a focus and point of attention. And because the present of teacher in class more than one, so the chance of the interaction between student and teacher is more.

Several factors are seen as the causes of the global problems in education are: (1) instructional methods used by teachers are often monotonous. Lecturing method is method that is consistently used by teacher in the order of explaining

and then giving examples, exercise, and homework. There is no variation in learning methods/ models based on the characteristics of the material to be studied, (2) Teacher rarely give students the opportunities to interact with their friends or teachers in developing an understanding of the concept and principles. (3) Teaching process conducted by the teacher more emphasize on mathematical manipulations; they start with the definition concept, and then put in mathematically. (4) Teachers rarely give method of resolving the problems systematically. Teachers only see the final result of the assignment or task that the students do. (5) Teachers are more interested in the students whose the correct answer without analyzing the mistakes of the students and completion procedures. (6) Teachers generally assume that all subject matters of sciences are enough taught by lecturing or giving complete theories without considering that some also need additional activity such as laboratory and outside activity to get deeper understanding. (7) Teachers focus only on giving materials without inviting students to do some projects to discover something which absolutely can improve students' discovery ability (Slavin, 2004). All of that problems are related to the teachers rule as the determination process and the result of learning in class. Professional teacher can manage the learning well. Then, Lesson Study can be used in improving the professionalism of teacher.

Chemistry lesson is one of the subjects at Senior High School which is categorized as a difficult subject for some students. Due to the difficulty of studying this chemistry, the students often do not pay more attention to this subject or less interest so that student achievement in Chemistry Subject is low. It is also further exacerbated when the subject teachers of Chemistry explain the materials monotonously, not using appropriate learning strategies in each topic and not using varied media. Students just sitting, record, and listen to what the teacher and few opportunities for students to ask. Thus, learning becomes not conducive condition then students become passive.

Based on researchers observation in SMAN 15 Medan, the using of learning media is still limited. And the learning is still using direct instruction. It is also happened on the Integrated Field Experience Training (PPLT) of researcher at

SMAN 1 Sidikalang, media use is still limited in the learning process. This makes students become less interested in studying chemistry or in other words a low of student interest. Compared with researcher conducted during PPLT, by using media power point in presenting the material, students pay more attention and more enthusiastic in receiving learning. It can also be seen in increasing the student achievement from UH-1 to UH-2. The average of UH-1 in class X-MIA 3 is 66 and the average of UH-2 is 80. Thus it can be said that the students are more interested in receiving material by using media and also can increase the student achievement.

Developments in science and technology can have a positive impact in the learning process. Teachers are required to be creative in creating learning media that make learning more interesting. Hamilk (1996) in Arsyad (2011: 15) states that the use of learning media in the learning process can generate new desires and interests, raise motivation and stimulation of learning activities, and even bring psychological effects on students. By utilizing current technology would be easier someone teachers to give information or teaching materials to students. Nowadays, information and communication technology innovations is conducted continuously for the benefit of the learning activities, one of the breakthrough is the use of interactive multimedia learning. (Nandi, 2006). Learning by using interactive multimedia evolved on the basis of conventional learning that can not fulfill the needs of learners in learning so that students feel less motivated to learn and students feel difficult in understanding of materials that given by teacher. As a result, students' interest has decreased.

Sunyono et all (2009) said that low interest, activity and the chemistry student' achievement are caused by several factors those are : (1) Delivering the chemistry materials by the teacher using demonstration method is only once and discussion tends to make students saturated. Student is only crammed with information which is less concrete and less interest discussion because of theorist characteristic. (2) Students have never been given the real direct experience in observing a chemical reaction, so that students assume that chemistry subject is abstract and difficult to understand. (3) Teaching method that used by teacher is

less varied and not innovative, so that its boring and make not interesting to students.

Not only in creating a learning media, the successful of the learning process is also influenced by the ability of teachers in designing learning strategies appropriate to the objectives or competencies to be achieved. Chemistry lessons that have abstract characteristics is very difficult to make students in developing an understanding of chemical concepts. For that teachers should be able to make appropriate learning strategies to make students able to understand chemistry concepts and can apply it in everyday life.

One of the strategies that can be used is a Process Oriented Guided learning strategy inquiry Learning (POGIL). In POGIL classroom students work in groups (called learning in teams) that aims mastery of concepts (Zawadski, 2010). So that students are more focused in a process that involves their knowledge to construct their own understanding of the material. Through POGIL pupils develop skills, high level thinking and metacognition, communication, teamwork, management, and assessment, and no longer rely on rote, but developing skills for success in learning. Research about POGIL strategy has already done by Sri Wahyuna Saragih (2012) with title Pengaruh Strategi Pembelajaran Process Oriented Guided-Inquiry Learning (POGIL) Dengan animasi Komputer Terhadap Motivasi dan Hasil Belajar Siswa SMA Pada Materi Pokok Stoikiometri obtained that the students who taught using POGIL learning strategies is higher learning outcomes than student who is taught by conventional teaching with $Z_{hitung} > Z_{tabel}$ ($6.51 > 1.71$)

In the science of chemistry, stoichiometry lesson is the study and calculate the quantitative relationship of the reactants and products in chemical reactions (chemical equations). This word comes from the Greek stoikheion (elements) and Metria (size). Thus, the stoichiometry means chemical calculations. The concepts underlying chemical calculations is the relative atomic mass, chemical formula, equation, and the concept of the mole. Therefore, before entering into chemical calculations, will discuss the concept.

Thus POGIL learning strategies can be applied to study the stoichiometry to assist students in mastering concepts to the underlying chemical calculations. By combining the POGIL strategy with Lesson study, expected that teacher can guide student directly in developing their concept understanding of the learning material and also the using of interactive media can increase the student interest and students achievement. Based on that background, the authors is interested do the research with a title : **The Implementation of POGIL Strategy Based On Lesson Study With Interactive Media in Increasing Students Achievement And Interest On Teaching Of Stoichiometry.**

1.2 Problem Identification

Based on the background described above, the identification of the problem in this study are :

1. The results of student learning in chemistry lesson is still low
2. Using of media in learning Chemistry is unvaried
3. The learning strategies which is not appropriate to teaching materials.

1.3 Problem Limitation

In order to achieve the expected goals, focus and direction research so based on the identification of the problem, the researchers limited to:

1. The subject material is a stoichiometry class X Senior High School Academic Year 2014/2015
2. The learning strategy is limited as follows: for the experimental class using the POGIL strategy with Interactive media. For the control class using the direct instruction with interactive media on the subject matter stoichiometry.
3. Learning media that will be used is Macromedia flash software

1.4 Problem Formulation

To make research brief that can be used as reference, so the problem statement is made as follow :

1. Is the students' Achievement that taught by POGIL Strategy based on Lesson Study using Interactive Media significant higher than taught by Direct Instruction with Interactive Media ?
2. Is the students' Interest that taught by POGIL Strategy based on Lesson Study using Interactive Media significant higher than taught by Direct Instruction with Interactive Media ?
3. Is there a significant correlation between student's interest and the increasing of student's achievement?

1.5 The Objectives of Research

The objective of this research is to implement the POGIL Strategy based on Lesson Study using Interactive Media in increasing the student's achievement and interest on the teaching of Stoichiometry . Whereas the specific objectives of this research are:

1. To determine whether there are significant higher of student's Achievement that taught by POGIL strategy based on Lesson study with Interactive Media than taught by Direct Instruction with Interactive Media
2. To determine whether there are significant higher of student's interest that taught by POGIL strategy based on Lesson study with Interactive Media than taught by Direct Instruction with Interactive Media
3. To investigate the correlation between student's interest and the increasing of student's achievement.

1.6 The Benefit of Research

This research is expected to give a benefit especially for Chemistry teacher about how to repair the learning process by using POGIL strategy based on Lesson study with Interactive Media to Chemistry teaching on Senior High School. Generally, the benefits of this research are described as follow :

1. Getting learning strategy that suitable and effective on teaching of abstract concept to increase the student's achievement and student's interest.

2. As input for Chemistry teacher how to make the chemistry subject become interesting so that make the student' achievement and the students' interest increase on learning of Chemistry.

1.7 Operational Definition

To avoid the difference or lack of clarify of meaning, the operational definition on this study are :

1. Process Oriented Guided Inquiry Learning Strategy is a learning strategy which student work in groups that focuses on the ability process on mastery a concept by using the inquiry approach.
2. Lesson study is a learning assessment activities carried out by a group of teachers in order to determine the effectiveness of learning.
3. Interactive Media is learning media based on multimedia applications are used in the learning process that used to deliver the materials of learning
4. Macromedia Flash is one of the programs in the form of audio-visual display a clear message to students with a variety of animated images that can stimulate student interest.