

CHAPTER I INTRODUCTION

1.1 Background

Education is a fundamental human right and essential for the exercise of all other human rights (UNESCO, 2014). Through education, a wide variety of knowledge can be transferred to achieve quality and useful life. The best quality of education will develop knowledge, intelligence, skill, creativity, ability in solving problems and controls an emotional, attitude, and character. A central point of education is teaching people to think, then able to solve problems that faced.

According to UNESCO in World Data on Education (2010), “Although student outcomes have been improving, Indonesian student rank still low in international standardized test. The results for Indonesia showed that about 54% of graduates of ninth grade had not achieved a level of basic competency”. The government has made a lot of effort to increase education qualities in Indonesia through the development of curriculum, education facility and infrastructure, also the quantity and the quality of educators in order to prepare human resources being independent, critical thought, and qualified. Wiyarsi and Partana (2009) justified by stating the three main issues that focus in education renewal, they are the renewal of a curriculum, increasing the learning quality and effectiveness learning methods. The present of professional teacher in schools will increase the quality of education in Indonesia because teacher has the main role in learning process. Teachers through their teaching devise a way to make their students develop positive attitudes towards science and science related disciplines.

Chemistry is one of a branch of knowledge which has a great influence on the development of science and technology. Chemistry in high school requires special acquisition, in order to get a better result, (Wijayati et.al, 2008), but the fact chemistry in school does not generate satisfactory outcome yet. Generally, chemistry learning has a purpose to study fact and arrange the theory that can explain it. Thus, presentation of chemistry material in the process of learning need

to be made with attractive and excited so that students understand the concept independently. Learning chemistry in school is less precise if only pay attention on final result (learning outcomes) without considering the process that takes place in every learning process. It happens due to the lack of variation of teaching models that are used by teachers in high school makes the role of students in learning process is still passive, most of learning is still dominated by the teacher (teacher-centered), which make the learning process very monotonous and boring.

According to Silitonga and Situmorang (2011), educational experience was often faced by chemistry teachers in high school, most students assume that chemistry as difficult subjects, that's why they have felt less able to learn it and scary for them. As result of hard feel the chemistry become less attractive to most of students, that is the cause low in learning outcomes. In fact, that usually occurs in school, teachers tend to teach chemistry by direct instructional, asking student to read learning material, and remembering chemistry concepts. This condition causes the chemistry learning will not interest and dislike by student then it can be concluded their learning outcome become low.

Colloidal system is one of an interesting topic in chemistry which most of materials are concepts that needed to be understood. Colloidal system is in around us, so by using scientific approach to the environment, student can get deep understanding. In colloidal system topic will be learned the kinds of colloid, properties of colloid, differences of suspension, colloid, and real solution, application of colloid in daily life, and also how to make colloid. Generally, colloidal system is abstract and has many concepts, so must be applied with varied example in daily life.

Based on preliminary observations conducted in SMA Negeri 15 Medan, showed learning outcomes of students in chemistry is still low. The percentage of students who get value higher than KKM about 72 is only 30%. The same result also got from observation during the researcher running the PPL (Experience Field Program) showed that student's achievement in chemistry topic still lower than KKM (75). This condition shows they get chemistry outcome did not satisfactory yet.

In order to increase student's outcomes and get interesting in chemistry, students are demanded really understand and active during teaching and learning process. This condition can be made by teachers. Using a suitable learning model, student can be directed to be active during lessons. Learning model is a ways that helps and supports teacher and student in teaching-learning. The present of learning model in class is useful because it can change the class conditions become interesting and fun for both teachers and students. In this research, the researcher develop strategy in learning by integrate two leaning model they are Problem Based Learning model with Cooperative Learning type Teams Games Tournament.

Problem Based Learning (PBL) is an instructional method where relevant problems are introduced at the beginning of learning to be solved by collaboration (interaction) with their group to be done to build an understanding to each member. PBL is used to provide the context and motivation for the learning that follows. It is always active and encourages the practice of information – gathering, reasoning and problem-solving skills, interpersonal and team working skills, as well as the acquisition of content knowledge, in the process of working out the problem in collaborative groups. The research in using PBL has been done by Khairatun (2014), showed there was a difference in student learning outcomes using model PBL in experimental class (81,24%) better than control class taught using lecturer method (60,72%) furthermore, Sri Rahmania (2014) examined the influence of PBL using molymod made of plasticine towards improving senior high school student's achievement in the hydrocarbon topic, from the results of this research showed improvement in student achievement by 82% in the experimental class.

Teams Games Tournament (TGT) is one type of cooperative learning which emphasizes the cooperation between members of the group to achieve the learning objectives. The interesting thing from the TGT and which distinguishes it from other types of cooperative learning is the tournament. In the tournament, the same academic ability of students who will be competing to get the highest score in the tournament table. Therefore, every student has the same opportunity to be

the best in the tournament table. This will certainly motivate the students to learn that also affect student achievement. (Nuril, 2009). Isjoni (2011) argues that TGT is one type of cooperative learning that puts students in groups study consisting of 5 to 6 students who have ability, gender, and ethnicity or a different race. The teacher presents material, and students work in their groups. The research using TGT has been done by Wiwit et.al (2012) concluded there was significant effect of media use animation in the application of cooperative learning model TGT to chemistry student learning outcomes. In addition, Luluk Fajri et.al (2012) in their research to improve process and learning outcomes of chemistry in colloidal system topic through cooperative learning type of TGT give positive result.

Cooperative learning and PBL are common methodologies used in response to challenges posed by today's educational outcomes. Colloidal system will be suitable taught by PBL integrated with TGT according to each advantage of models. In TGT model, students work together in a small group to accomplish a shared learning goal and to maximize learning and this condition will develop their creativity and being active in class (Helmi et.al. 2008), and in PBL, besides promoting the construction of knowledge, it also contributes to the development of skills and attitudes deemed important for learning and practice chemistry. Based on research conducted by Sri Handayani Siregar (2014) obtained the result of application integrated model of PBL and Guided Inquiry and with computer media and Direct Instruction can improve learning outcomes and different compared to direct significant interaction indicated by significant value 0,036.

Based on the discussion above, the researcher would like to investigate the case of **“Implementing Problem Based Learning Integrated with Cooperative Learning Teams Games Tournament in Improving Students' Achievement in Teaching Colloidal System”**.

1.2 Identification of Problem

Based on the backgrounds that have been presented above, some problems are identified as follows: 1) Whether chemistry teachers do not implement learning methods beside conventional method? 2) Do students

consider that chemistry is less attractive and difficult to understand? 3) Is the learning process through problem based learning integrated with cooperative learning teams games tournament can be categorized as an innovation of learning process through direct instruction model for teaching chemistry? 4) Lack of variation of teaching models makes it difficult for student to study.

1.3 The Scope of Problem

Problems that can be researched based on the background above too large. In order to make directive study in this research, then some things that identified as the scope of problems as follows:

1. This study is limited to find out the effect using Problem Based Learning Model integrated with Cooperative Learning Teams Games Tournament in improving student's achievement in teaching Colloidal System.
2. The student's achievement would be obtained through evaluation test (pretest and posttest).

1.4 The Problem

The problems can be stated as follows:

1. Is the student's achievement taught by Problem Based Learning Model integrated with Cooperative Learning Teams Games Tournament higher than taught by Problem Based Learning Model in teaching Colloidal System?
2. How many percents are increasing of student achievement taught by Problem Based Learning Model integrated with Cooperative Learning Teams Games Tournament?

1.5 Research Objective

The objectives of this research are to look for,

1. Significant difference between student's achievements taught by Problem Based Learning Model integrated with Cooperative Learning Teams

Games Tournament and Problem Based Learning in teaching Colloidal System.

2. Increase percentage of student's achievement taught by Problem Based Learning Model integrated with Cooperative Learning Teams Games Tournament.

1.6 Research Benefit

This research is expected to provide benefits, especially for chemistry teachers, students and also for the other researchers concerning with learning through Problem Based Learning Model integrated with Cooperative Learning Teams Games Tournament to improve student's achievement in Colloidal System. The expected benefits of this research are generally described as follows:

1. Getting learning model that suitable and effective on teaching of concept in chemistry to increase students' achievement.
2. As input for chemistry teacher to make chemistry subject become interesting and active learning thus increase students' achievement.
3. Improving student motivation to learn and understand about colloidal system through attractive learning model.
4. To provide inputs for next researchers who want to do similar research.

1.7 Operational Definition

To avoid confusion, then some of the terms in this study need to be defined like as,

1. Problem Based Learning (PBL) is an instructional method where relevant problems are introduced at the beginning of teaching and used to provide context and motivation for learning later. It is always active and usually (but not necessarily) collaborative or cooperative using above definitions, (Michael, 2004).
2. Cooperative learning; Teams Games Tournament (TGT) is a model of learning by forming small groups in class consist of 3-5 students who heterogeneous in terms of academic, gender, race or ethnicity. TGT

cooperative learning consists of five main components, namely: a presentation in class, team (group), games, tournament, and team recognition (awards groups) (van Wyk, 2011).

3. Student's achievement is learning outcome which achieved by student after he makes change in learning. Learning outcomes are used as a measure of success in learning, usually from final test. In the Webster's New International Dictionary reveals about the achievements are:

“Achievement test is a standardized test for measuring skill or knowledge by person in one more lines of work a study” (Webster's New International Dictionary in Haryanto, 2010).

4. Colloids (Greek, *kolia means glue*) are dispersion systems which consist of tiny particles of one substance called **dispersed phase** in another phase called **dispersing medium** (Sudarmo, 2013).