CHAPTER 1
INTRODUCTION

1.1 Research Background

Education is one of the component related to the human resources quality. Human resource quality is as the mirror of the education quality, where our human resource quality is commonly under expected means the education quality is low too. The development of education which is followed by the formation and development of human resources to face the recent era. Today's era demanded human to be a qualified person means in finding the critical thinking, stable logical, creative and innovative to find the education's goal (Daryanto, 2012). The definition of education as written in UU No.20 year 2003 about National Education System, 1st section said " Education is the factual effort and planned to create learning situation and learning process so that students actively develop self potential to have the spiritual strength, religion, self control, personality, intellectual, good behavior, and the skill which is needed by themselves, society, and this nation."

According to UNESCO study, "the physical, intellectual, emotional and ethical integration of the individual into a complete man/woman is the fundamental aim of education. The goal of education is also to form children into human persons committed to work for the creation of human communities of love, fellowship, freedom, justice and harmony. Students are to be moulded only by making them experience the significance of these values in the school itself. Teachers could achieve this only by the lived example of their lives manifested in hundreds of small and big transaction with students in the word and deed.

Faced with ever-changing challenges of the time it is necessary to human resources who have the competence and skills through education (Permendikbud,2013a). In the 2013/2014 school year at some designated schools have been enacted in curriculum 2013 that develops learning directly generate knowledge (KI-3), and psychomotor skills (KI-4) as well as indirect learning is the development of attitudes and values (KI-1 and KI-2). Chemistry learning is

still a lot of teacher-centered and material oriented (subject matter oriented). Learners tend to learn just to get a good grade by solving the problem without increasing skills to solve the problems that exist in everyday life. The inability of students to solve everyday problem cannot be separated from learning by teachers and have giving more lectures and quickly work on the problems exercise without understanding the concept in depth. Teachers provide practicum only one or two times in a semester. This cause learners less skilled to develop the power of reason to apply the concepts learned in solving problems encountered in everyday life (Sri, 2015).

Chemistry is one of those subject that have a very close relationship between the concept with their application in everyday life. This means that the learning is not enough just to teach chemistry conceptually, but students also need to understand how to use the concept significantly (Irhasyuarna, 2001). Process skill of science is very important to be developed in education because it is the basic competence to develop student's creativity and skill in solving problem, so it will produce creative with critical thinking students, open minded, innovative, and competitive in global competition. For students, experiment in laboratory not only exercise students in using apparatus and tools but also help their understanding about chemistry lesson in school. Besides that, for curious students, through the experiment they will get the answer of curiousness and may understand the environment problem (Haryono, 2009). Buffer solution is one of the topic in chemistry lesson which is related to our daily life. Because of that, it is important for students to master the buffer solution concept so it can be applied in daily life. Learning while doing more activity will give result for students, because the impression is memorable for students itself. Some concepts, formulas, will be easily forgotten if it is not practiced and proved through student's activity (Sa'adah, 2013).

Based on the observation in SMA Negeri 11 Medan on February 01st 2017and interviewed chemistry teacher called as Ms.Togatorop who taught in XI grade said that most of the student's problem in buffer solution topic consisted as below :

1. Most students can't differentiate weak acid, weak base, strong acid and string base.
2. Most students can't solve chemical equation problem.
3. Most students can't calculate the pH and pOH.
4. Teacher used conventional method in teaching buffer solution.

Project based learning is a model that focuses on the concepts and main principles of the discipline involves students in solving the problem and another meaningful tasks, give the chance to students individually construct their own learning process, and as the result is valuable and realistic student's creativity. This Project Based Learning model focuses on the questions or problems which will trigger students to do (hard working) the main concepts and principles of the discipline. The questions related to the student's activity, product, and work to fill their free time, must be changed by the tasks with intellectual purposes (Ngalimun, 2012).

According to Lasonen, as cited by (Rais, 2010) Project Based Learning may help to guide students to prepare them to face the entering working world, because students study not only theoretically but also direct practice in field. Project Based Learning Model also have the big potential to design the interesting and meaningful learning experience. Besides that, Project Based Learning also facilitated students to investigate, solve the problem, student centered and produce the actual product such project result. Students will collaborate in a group and each group will compete with other group to be the best. In the same time, students will feel happy while doing the project, trying something different and making them feel be valued(Bas, 2011).

Why should we use Project Based Learning? In the learning of science in particular, perhaps this model is not new, however, "traditional science course focuses on presenting the results of the scientific process rather than the story of how the scientist arrived at these results". As a result, teachers/teacher candidate are accustomed to seeing science as a collection of facts and theories that have been finished. This situation led to the learning process of science to a more transfer of knowledge from lecture/teachers to their students, but in line with the

Ministerial Regulation No. 81-A in 2013, which mandates that the principle of learning activities should: (1) centered on learner; (2) develop creativity; (3) creating a fun and challenging condition; (4) containing values, ethnics, logic, and kinesthetic; and (5) provide a diverse learning experience through the implementation of various strategies and teaching methods which is fun, contextual, effective, efficient, and meaningful. Everything which is stated in the above Ministerial Regulation contained in the Project Based Learning model. This Project Based Learning also focuses more on issues that are meaningful to student's lives, the role of the teacher in presenting a problem, ask questions and facilitate students in designing a project that they will work within the given time and also in accordance with the concepts taught. At the end, students will understand the concept of the project they are doing, and this will improve student's creativity (Yasin et al, 2009).

It is also the important role of teachers in classroom management to determine the quality of teaching is implemented. Teachers should think carefully and make the plan to improve learning opportunities or students and improve the quality of teaching. Teachers are required to make changes in the organization of the class, the use of teaching methods, teaching and learning strategies, as well as attitudes and characteristics of teachers in managing learning. Teachers demanded to manage the learning process that provides stimulation to the students so that he would learn (Daryanto, 2012)

Lesson study is a form of teacher training (in-service) that can be done to improve the learning process and the professionalism of teachers. Teacher with lesson study can freely improve performance and his professionalism which can ultimately improve the quality of learning and produced the high-quality students. Slamet Mulyana (2007) to a given formulation of lesson study as a model of professional development of educators through collaborative learning and assessment based on the principle of continuous principle collegiality and mutual learning to build a learning community.

Lesson study is not a strategy or method of stabling learning, but it is one of the development effort and thus increasing the learning process conducted by a

group of teachers collaboratively and continuously by plan (plan), execute(do), clicking observation and reported the results of learning/reflection(see). Lesson study proceed the agreement of the teachers on a common goal which is to increase the long-term period with a broader range of goals, the most important focus of Lesson Study is the development and learning of students. To address the issues contained in the learning process teachers should implement methods and learning model that can improve the ability, interest and active participation of student in accepting a subject matter as well as teachers are required to collaborate with other teachers to plan together regarding methods and learning models which would be used for a particular subject matter which is expressed to improve the ability of teachers together in teaching and managing classes.

Based on the above problem, the researcher is interested to do the research entitled " **The Implementation of Project Based Learning Model Integrated with Lesson Study to Increase Student's Learning Outcome in Buffer Solution for Senior High School**"

1.2 Problem Identification

Based on the background above the writer identifies the problem as follows:

1. The quality of education in Indonesia is still low.
2. The students need the active learning model to help them in increasing the ability to be better in learning and also be better in social community.
3. Nowadays the model that is implemented by most teacher is conventional model and it is still contrary with the curriculum requirement to achieve the learning process through teacher and students.
4. The teacher needs collegial to work, design, implementing, testing and improving one or several research lesson.
5. Buffer Solution is the topic in chemistry lesson which is related to our daily life. Some concepts, formulas, will be easily forgotten if it is not practiced and proved through student's activity.

1.3 Research Scope

This learning model that will be held aimed to increase student's learning outcome in learning buffer solution. The learning outcome can be proven through the effectiveness of the implementation of Project Based Learning model based on lesson study from their score value increased drastically on Buffer Solution topic. This research will be done in SMA Negeri 11 Medan involved the XI grade students year 2016/2017 and will be taken two classes by purposive sampling, one of them is control class and another is experimental class.

1.4 Problem Limitation

The problems limitation in this research consist of:

1. Research will be done in Senior High School (SMA) 11 Medan.
2. The subject matter is buffer solution.
3. Media is power point, hand book and worksheet.
4. The effectiveness will be observed by student's achievement that taught by project based learning model based on lesson study in experiment class.

1.5 Problem Formulation

The problem formulation of this research includes:

1. Is the student's learning outcome in learning buffer solution taught by project based learning model based on lesson study higher than student's achievement taught by conventional model?
2. What is the cognitive aspect will be improved by implementing project based learning model in buffer solution topic?

1.6 Research Objective

The research objectives are to know the suitable learning model on the teaching buffer solution. Specific objectives of the study consist of:

1. To know the student's learning outcome in learning buffer solution taught by project based learning model based on lesson study compared by student's achievement in buffer solution taught by conventional model.

2. To know the improvement of student's cognitive aspects in learning buffer solution with project based learning model based on lesson study compared with the cognitive aspects in learning buffer solution taught by conventional model.

1.7 Research Benefit

This research consist of some benefits, they are:

1. For students, this research may increase student's achievement in learning chemistry and student's interest to study more especially in buffer solution topic.
2. For students also, this research may increase the experience and the knowledge of the students in learning buffer solution.
3. For teacher, this research can be implemented in learning process through the aimed to increase student's interest on the subject matter.
4. For chemistry teacher, this research can be implemented in class to increase student's achievement, student's interest and break student's bad perception about chemistry especially for buffer solution.
5. For other researcher, it can be a modal to make a further research related to the study.

1.8 Operational Definition

1. Project Based Learning is a model that can organize projects in a learning process and it gives an opportunity to students as the centered of learning process, it will support students to be more active and collaborative in doing the project (Giilbahar&Tinmaz, 2006). PjBL approach is the approach that has syntax: (1) Starts with the Essential Question, (2) Design a Plan for a Project,(3) Creates a Schedule,(4) Monitor the Students and the Progress of the Project, (5) Assess the Outcome, (6) Evaluate the Experiences (Hung et al, 2004)
2. Lesson study is guidance model of teacher through the learning assessment collaboratively and continuously based on collegiality

principles and mutual learning to discover learning community. Lesson study is done through 3 step; plan, do, and see (Daryanto, 2012).

3. Learning achievement of students can be achieved when measuring the level of mastery of the material held by the test subject. Thus student achievement is the student's learning ability in mastering the subject matter that has been followed (Situmorang, 2010).
4. Buffer solution includes the topic about definition of buffer, kinds of buffer solution, pH of buffer and buffer in daily life (Sunardi, 2011).