

CHAPTER 1

INTRODUCTION

1.1 . Research Background

Basically education is a development effort and improvement of human resources. Through education, produced human with good quality as desired in the national education goals. One effort in improving the quality of education in Indonesia is to improve the education system. This improvement in order to realize a society that is able to compete and adapt with the times. Several attempts to improve the quality of education including the improvement of facilities and infrastructure, changes to the curriculum and the learning process, improving the quality of teachers, improvement of the assessment system, and other efforts included in the educational component. One way to improve the quality of education is to improve the educational curriculum at all levels of education. Curriculum applied at this time, no longer using and learning approach dominated by the teacher (*teacher centered*), but more teachers put students as subjects in the curriculum so that the students demanded the application of the use of the learning process is more centered on students (*student centered*).

The development of science and technology has led to the renewal in various fields of education. The curriculum in force today is the 2013 Curriculum. This requires active students. The curriculum is not only oriented on learning achievement (cognitive, affective and psychomotor) it means that the education process is a success. This means that students are no longer as passive recipients of information, but rather a student who has always been active and creative.

Senior High School (SMAN) 1 Berastagi which is the school where researcher implemented the Integrated Field Experience Program (PPLT), Based on observations in class especially class XI and chemistry teacher interviews revealed several problems experienced in teaching chemistry as follows :

1. Teachers are still using the conventional method of delivering a lecture in chemistry learning materials.
2. Students are less active in participating in learning chemistry, it is evident from the lack of interaction between students and teachers as well as students with students to overcome difficulties understanding the material.
3. Learning source of the students is still limited, only use LKS publications of Subject Teachers Council (MGMP) that less changes in terms of teaching material and practice questions in each year.
4. Many students experienced the difficulties especially for students who have not received prior to entering high school chemistry lesson.

As a result of learning difficulties such chemicals cause less enthusiastic students in a lesson. High school chemistry teacher is expected to choose a learning strategy according to the conditions of school and the condition of students. With the selection of appropriate learning strategies, teachers are expected to deliver chemical materials to more interactive, engaging and fun. Thus, students will be more enthusiastic in following the teaching and learning process.

Relating to the problem above, it requires a form of learning that is able to activate students and the presentation of chemical material with more attractive, so that it can help students to overcome learning difficulties and eliminate the bad perception of students towards chemistry lessons. Learning is a learning experience that not only materially but also have the formal ability, so it is expected to improve student achievement and also can make students actively involved in the learning process as much as possible that students apply knowledge, learn to solve problems, discuss issues with friends, have the courage to convey an idea and have a responsibility towards their duties.

Troubleshooting is an individual or group effort to find the answers based on the understanding that has been held previously in order to meet the demands of a situation that is not normal (Krulik & Rudnick in Santyasa 2008:4). Problem solving skills are also become important for students, because in the learning student quickly forgotten if only described verbally, they remember when given

examples, and understand if given the opportunity to try to solve the problem (Steinbach in Santyasa 2008:4). Learning activities that can help students develop thinking skills, problem solving and intellectual skills in the form of learning adult roles and involvement in a real or simulated experiences become autonomous students.

Chemistry is a subject that is seen by the student a little tricky compared with other subjects. A good understanding of the concept is very important. Due to grasp a new concept necessary requirement prior understanding of the concept. Chemistry concepts are arranged regularly. Beside it chemistry is closely related to daily life. So learning can be geared to everyday events experienced by students. Chemistry is the science that investigates the properties and behavior of all matter in the universe and use this information to meet human needs and build a peaceful environment and well being (Nuray, et al. 2010:1417). So far, most teachers only teach the concepts, without adding the application of the concept. Students are not only proficient in concept, but the understanding of the current reality in their lives associated with concepts they learned in school.

One solution that can be used is the application of learning activities that solve the problem because the activity is an attempt to develop student's thinking skills. There are various models of learning that can be used in chemistry learning that can train students in solving problems, one of which is Problem Based Learning model. According to Amir (2010), Problem Based Learning model has characteristics such as learning begins with the provision of the problem, learners in groups actively formulate problems and identify the gaps of their knowledge, learn and seek its own material related to the problem, and reporting solution of the problem, while educators more facilitated.

Excess of PBL Learning model is to encourage cooperation in completing the task, help thinking skills, problem solving, and intellectual skills in learning to become autonomous learners. This is supported by research conducted by Jefri (2013) examined that "The Improvement of learning outcomes concept of chemical equilibrium through PBL learning model ". The results showed that with the application of PBL learning model in the concept of chemical equilibrium can

improve student learning outcomes as measured by the average score of student achievement in each cycle, namely 67.33 in cycle I and 77.56 in cycle II. It also proved by Batubara (2013) the percentage of student's achievement is 51.781% on the subject of Reaction Rate using PBL model. And research by Fitri (2014) obtained the percentage of student's achievement improvement using PBL on the subject of the Redox Reaction is 75.12 %.

Cooperative learning is also a solution to increase student teamwork character among students in learning activity. One example of cooperative learning is the STAD. STAD is one of the many strategies in cooperative learning, which help promote collaboration and self regulating learning skills. The reason for the selection STAD is good interaction among students, improve positive attitude toward the subject, better self esteem, interpersonal skills Increased (Khan, 2001). Expected with the Implementation of STAD not only improve student's achievement in cognitive but also student teamwork character. Based on result research of Erwin Hutabarat (2011) "The Effect of STAD cooperative learning towards improving student learning outcomes on the subject Hydrocarbons in class X SMA" said that the magnitude effectiveness influence of STAD cooperative learning is 64.12%. Mean STAD gives a positive effect on learning activity. Using STAD had researched by Sumitro Silalahi (2012) he said that resulted achievement about 71% by implementing STAD. And the recent research by Intan (2015) on her thesis, the increasing of student's achievement that taught by cooperative learning STAD is 74%.

The researcher choose Solubility and Solubility Product as learning material. Solubility and Solubility Product is studied in even semester of Grade XI. The material of Solubility and Solubility Product contains many complex concept that require problem solving process. Many student struggle to learn it, especially if taught by direct method. Selection of learning model appropriate with the characteristic of material is important to overcome the problem faced by students. PBL model integrated with STAD is appropriate when applied to this material. This model engaged student to solve the problems through the stages of

scientific methods so that students can learn the knowledge related to the problem and can increase students activity and teamwork character.

Based on the background described, researcher interest to do the research by integrating PBL with STAD. Previous studies distinguish between the model PBL and STAD although both have the objectives to increase student achievement . Research carried out by integrating PBL and STAD expected can increase student achievement, include achievement in cognitive, and student teamwork character in the learning process with the title : **“The Implementation of Problem Based Learning Model Integrated with STAD (Student Team Achievement Division) to Improve Student’s Achievement and Teamwork on Solubility and Solubility Product Subject Matter in Senior High School Grade XI Academic Year 2015/2016”**

1.2 . Problem Identification

Based on the background described above, then obtained that :

1. What efforts are being made to improve the quality and quantity of education?
2. Does learning chemistry in high school in general still use the conventional method that is lectures?
3. Does the difficulty of high school students in the study of chemistry due to less active students in learning and learning media still limited?
4. Does the use of PBL learning model and STAD learning method can improve student’s learning activeness on the subject of Solubility and Solubility Product to class XI Senior High School ?
5. Are there several external factors that affect the learning process such as teaching methods, curriculum, teacher relationships with students, learning media and others?
6. As a prospective teacher what a major sign to increase the quality of education?

1.3 . Problem Limitation

Based on the problem identification above, there is a wide scope of issues , so this research is limited to know as the following :

1. This research will be conducted in Senior High School (SHS) at grade XI using curriculum 2013, in even semester Academic Year 2015/2016.
2. The subject matter that will be taught is Solubility and Solubility Product.
3. Teaching model that will be applied in this research is Problem Based Learning model integrated with STAD in Experiment Class and STAD learning method in control class.
4. The character that will be measured in this study is student teamwork
5. Student's achievement that will be measured in this study is the cognitive aspect of C1,C2,C2, and C4 level.
6. Student character that will be measured by using observation sheet and questioners.

1.4 . Problem Formulation

Based on the background described above, then the problem formulation can be formulated as follows :

1. Is the student's achievement that taught by PBL model integrated with STAD significant higher than taught by STAD?
2. Is the student's teamwork character that taught by PBL model integrated with STAD significant higher than taught by STAD?
3. Is there significant correlation between student's teamwork character with student's achievement?

1.5 . Research Objectives

The research objectives are :

1. To investigate whether the student's achievement that taught by PBL model integrated with STAD is significant higher than taught by STAD
2. To investigate whether the student's teamwork character that taught by PBL model integrated with STAD significant higher than taught by STAD

3. To investigate the significant correlation between student's teamwork character with student's achievement
4. To describe the average percentage of student's achievement that developed by applying PBL model integrated with STAD compared with STAD
5. To describe the average percentage of student's teamwork character that developed by applying PBL model integrated with STAD compared with STAD

1.6. Research Benefit

The benefits of this research are :

1. For teachers
As an input in selecting a learning model and learning method most appropriate, so that the learning process becomes more effective and achieve good quality learning outcomes.
2. For student
To provide motivation, increase student activity, and can develop student's thinking skills
3. For researchers
For additional insight and knowledge as well as guidelines that can be applied when it became a lecturer.
4. For schools
Being an alternative learning activity in other subjects in order to increase motivation and student learning outcomes.

1.7. Operational Definition

1. Problem Based Learning is a learning model that involves students to solve a problem through the stages of scientific methods so that students can learn the knowledge related to the problem (Sanjaya, 2006).
2. STAD cooperative learning model is a form of learning in a group discussion in which the interaction between two or more students are

involved faced on a problem (question) to be discussed and solved together.

3. The learning result is a change in behavior that is expected of students after doing the learning process. Behavioral changes are assumed as changes in knowledge, understanding and skills of existing attitudes on students.
4. Solubility and Solubility Product is a topic in grade XI at even semester discuss about the definition of solubility and solubility product, the effect of type ions to substances solubility and the relationship of K_{sp} and sedimentation.
5. Teamwork is an effort in people or a group of human to reach one or some purpose.

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