CHAPTER I
INTRODUCTION

1.1. Research Background

In the process of learning, success is measured based upon achievement of competence of teaching and learning established since the beginning of the learning activities. Teacher's role is very important in learning. The teachers act as facilitators, mediators, and counselor. In this role, the teacher should also be able to work well with students, support each other so that the achievement of competence specified. An important element in the process of teaching and learning media that used in accordance with the material being taught. It is trivial, but these link to each other. (Slamateo, 2003)

Learning is a change in an individual as a result of experience. People began to learn since they were born, and learning is related to experience (Slavin, 2005). These changes occur in cognitive structure established by the process of assimilation and accommodation as a result of the interaction between a person and the environment (Hill, 2002). PBL is considered as one of the strategic ways to improve higher-order thinking. The implementation of PBL involves teaching through problem solving in groups on real life situations which require students to think critically to solve given problems.

The lack of student's learning outcomes can't be separated from the quality of teacher performance in teaching and learning process in the classroom, where the teacher is an element in the process of teaching and learning that has important role in the success of students receive lessons and master optimally. The barriers in learning chemistry is where students are not comfortable the teacher's way in learning process because it just uses a speech method of making a boring lecture for the students to absorb the lessons without understanding it well.

The problems that often arise in the world of education is the weak ability of students to use thinking skills to solve problems. Students tend to be bombarded with information that requires memorizing only. Lots of knowledge and information held by the students but it is difficult to be associated with their situation. Rather than resolve the problem, knowledge of them as irrelevant to

what they are facing. Barrow (1980, Barret, 2005) defines PBM as *"The learning that results from the process of working towards the understanding of a resolution of a problem. The problem is encountered first in the learning process. "While* Cunningham et al (2000, Chasman er.al., 2003) defines PBM as "... *Problem-based learning (PBL) has been defined as a teaching strategy that" simultaneously develops problem-solving strategies, disciplinary knowledge, and skills by placing students in the active role as problem-solvers confronted with a structured problem roomates mirrors real- world problems ".*

Problem-based learning (PBL) is an instructional approach that enables learners to conduct research, integrate theory and practice, and apply knowledge and skills in order to develop a solution to a defined problem (Savery, 2006, p.9). Barrows (1996) also suggests that learning in a PBL environment should be integrated from a wide range of disciplines or subjects such that students study and integrate information from diverse disciplines that might relate to understanding and solving a particular problem. PBL is an approach to learning in which students work together to find solutions to complex problems (Ferreira & Trudel, 2012), then including (Nendaz and Tekian 1999) many studies also show that PBL method not only enhances students' knowledge of the basic principles, but also has the potential to increase students' ability to solve real world problems and to increase students' motivation for learning. Other opinion is suggesting that Problem Based Learning (PBL) environment study that using problem to study. That is, before the students learn something, they are required to identify a problem, whether real or study dealt with the case. *Problem Based Learning* (PBL) is a learning process that begins from the problems found in a work environment (Pusdiklat, 2004). Next, Hmelo-Silver (2004) argues that there is considerable evidence in the literature supporting claims that PBL helps students develop flexible knowledge, effective problem-solving skills, and self-directed learning skills, yet little research has been done to understand the influence of PBL has on effective collaboration skills and instinctively motivation. Hmelo-Silver (2004) Also cautions that too little research has been conducted outside of medical and gifted education and, therefore, understanding how goals are Achieved with less skilled learners is important for future research.

Problem Based Learning (PBL) is an effective approach to teaching thinking processes with a high degree of problem-oriented situation, including learning how to learn. According Santyasa (in Ghofur: 2013). *Problem Based Learning* (PBL) is a strategy or approach designed to help the learning process in accordance with the measures contained in the pattern of problem solving ie starting from the analysis, planning, solving, and judgment inherent at each stage. Then according Dasna (2007), PBL should be used in learning because: (1) With the PBL will happen meaningful learning. Students who learn to solve a problem then they will apply the knowledge possessed or sought to know the necessary knowledge. (2) In situations of PBL, students integrate knowledge and skills simultaneously and apply it in a relevant context. (3) PBL can improve critical thinking skills, the initiative fosters student / student work, internal motivation to learn,

Problem Based Learning Collaborative learning model as a model of Involves both teachers and students. The teacher project to solve a particular problem in order that students could solve it. They are forced to think critically Also in analyzing the while doing inquiry process. Eventually so that they can draw a conclusion during the process under teacher guidance.

Problem based learning (PBL) is an instructional approach where students learn by solving challenging, open-ended problems. The problems are authentic tasks and are solved in socially and contextually based teams of students. The students rely on their current knowledge of the problem, identify "information they need to know to solve the problem, and the strategies they use to solve the problem" (Stanford University Newsletter on Teaching, 2001). Some research with using Problem Based Learning (PBL) model have done, are: Based on Yunita Selviana Tany and Tri Hapsari Utami (2013) *Penerapan Problem Based Learning (PBL) Untuk Meningkatkan Hasil Belajar Siswa Di Kelas IX SMA Katolik Frateran Celaket 21 Malang* the percentages show that the number of students who reach the KKM less than 75%, so that the implementation of learning with *Problem Based Learning* (PBL) is said to be less successful. The percentage of completeness class IX in the test-II was 80.00% with an average grade 76.58.

Based on the observation of the second cycle of learning activities that teachers and students performed relatively well.

An then on Ali Muhson (2009) "*Peningkatan Minat Belajar Dan Pemahaman Mahasiswa Melalui Penerapan Problem-Based Learning*" the level interest of the students to learn: If the first cycle of interest in learning in the classroom in the high category, only 27% increased to 37% in the second cycle. So also the interest of student learning outside the classroom. If in the first cycle are categorized as high as 35% increased to 37% in the second cycle. This indicates that the improvement made to the learning process in the second cycle is able to increase student interest in learning. Based on the table can be obtained that the student is still relatively low. This is evident from the average value only reaches 67.8 class. Although the average value of these can't be said to be optimal. The level of understanding of students: If the first cycle level of understanding of students who enter high category only 16%, then in the second cycle is the figure increased to 22%.

On Susilowati (2015) "*The Development Problem Based Learning Collaborative Model in Sociology Learning in Senior High School*" Mean of the affective mark of the group using varied lecturing models = 73.00. Group using Problem Based Learning Collaborative affective model has a better mark than the control group items, namely 87.59> 73.00 so can also improve the students character. The students achievement of the group using Problem Based Learning Collaborative Model is 75.64 the mean of students achievement of the group using Varied lecturing Model = 68.74, so the group using Problem Based Learning Collaborative model has a better achievement than that using Varied lecturing Model students achievement of the groups using Problem Based Learning Collaborative Model 75.56> 68.74 the mean of the students achievement of the group using Varied lecturing Model = 65.57. So it can be concluded that the group using Problem Based Learning Collaborative model is better than the group using Varied lecturing Model.

Based on Cendika M Syuro "*Penerapan Pembelajaran Problem Based Learning (PBL) Dapat Meningkatkan Hasil Belajar Siswa Kelas 7F Mts Al-Maarif 01 Singosari*" in material fractions. Learning outcome is evident from the

increase in student test results conducted at the end of each cycle. In the first cycle as much as 58.53% of students has increased its value by 2 points above SKM while in cycle II reached 75.61%. In terms of cognitive predetermined by the researcher, in the first cycle as much as 82.35% of students pass the study and increased in the second cycle into 87.46%.

In the learning process, so that the subject matter received by students and in accordance with the purpose of teaching that has been planned, it is necessary to use appropriate learning media and more meaningful. Many media that can be cultivated teachers to overcome learning difficulties experienced by students. One of the media to provide handouts. The use of tools or teaching materials is a part that can't be separated and it is an integration of the learning methods used. Learning aids including one dynamic element in learning. Notch tools have an important role because it can help the learning process of students. Use of assistive devices, teaching materials that can abstract concreted and create a learning environment that is not attractive to be attractive. Tools or teaching material in the era of technological progress is needed in the learning process. The use of a medium of learning and teaching materials are good sources are indispensable in order to help the learning process effective and efficient. In an effort to improve the effectiveness students in study, so the teachers are required to use teaching materials and detailed content of the material is more appropriate in this case like handout or students handbook. Handouts will reduce the use of verbal material submitted and is able to increase the active participation of students in learning, which ultimately is expected to improve student learning outcomes.

Curiosity is human nature that makes people always wonder "what it is?" then follow the questions "why must like that?", why is this?", And then the question developed into questions such as "How did it happen?", "How to solve it?", and so on. People must have desire of curiosity to know enables humans to solve the problem. If curiosity can be put to good use, it will bring increasingly understand to people. Someone who has a high curiosity will seek detailed information about everything that is questionable. Through curiosity, people will

try to solve the problem and maximize every effort to obtain a satisfaction in learning.

Next, other alternative model is teaching model Two Stay Two Stray (TSTS) is one of cooperative learning. Lie (2010:29) pointed out that cooperative learning is not same with learning in group. There are some basic elements of cooperative learning that different with dividing group inappropriately. The right procedures of cooperative learning will make the teacher manages the class more effectively. According to Roger and David Johnson, to achieve the maximum result, five elements of cooperative learning must be applied: (a) positive dependency, (b) individual responsibility, (c) face to face interaction, (d) communication each members, and (e) evaluation group process. In Elin Rosalin (2008: 120) *Two Stay - Two Stray* is the learning done by the students to share their knowledge and experiences with other groups. According Lukmanul Hakiim (2009: 54) is a cooperative learning that emphasizes active learning activities of students together in groups and not individually. In Sugiyanto (2008: 51-52) stated that the techniques learned Two Stay Two Guest *(Two Stay Two Stray)* was developed by Spencer Kagan (1992). The structure of two stay two guests provide an opportunity for the group to share results and information with other groups. Excess techniques *Two Stay Two Stray* according Daryono (2012) is to give an opportunity to the students to define the concept of its own to solve the problem, giving students the chance to create the creativity in communication with the theme group of there, familiarize students to be open to friends, increase students' motivation, as well as can assist teachers in learning achievement because the steps are easy to implement cooperative learning in schools.

Some research that have done are on Siti Sudarsih (2013) "*The Effectiveness of Using Two Stay Two Stray (TSTS) Method for Teaching Narrative Text for Improving Reading Comprehension*" For the students, using TSTS as a method in learning English in the class room is something pleasure. Students become more related and interesting in learning English. The group that used TSTS as a method got better improvement in the average score 75.444 its mean that the category is good and the group who did not use TSTS method who got

65.889 its means that the category is sufficiency. It means that the use of TSTS could give positive effect and motivate the student.

And then on Lukluk Ibana, dkk (2013) *"Penerapan Pembelajaran Kooperatif Tipe Two Stay Two Stray (TSTS) Untuk Meningkatkan Aktivitas Dan Hasil Belajar Siswa"* the results of the research showed that the learning activities of students increase from 69,67% in cycle 1 to 80,11% in cycle 2. The results of the percentage formula in cycle 1 showed that the students is inactive, while in cycle 2 showed that the students were classified as active. Furthermore, the students learning outcomes had increased. The students who reached KKM in first cycle is 22 students or 73,33%, while in cycle 2 they were 25 students or 83,33%. The result showed that the student's outcomes increased 10% from cycle 1 to cycle 2. And the on Titik Hariyani (2013) "*Cooperative Learning Type Two Stay Two Stray Model On Civic Education Of Elementary School"* the average value of student learning outcomes in the cycle I of (64.74), cycle II of (69.74) and cycle III of (77.37). Thus there was an increase from cycle I to cycle II is 5 and from cycle II to cycle III 7.63.

From the result of an expert, I do research at three schools to see this learning model where this model can implement every school, because not all schools the learning model is good.

Based on the discussion above, I would like to investigate the "**Implementation of Collaboration PBL with Two Stay Two Stray Model to Increase Student's Achievement and Curiosity Using Handout Media on Solubility and Solubility Product Topic**."

1.2. Problem Identification

Based on the background of the problem, the problem identification of this research that can be identified:

1. Lack of variation model in teaching
2. The low student's curiosity
3. The weak ability of students to use thinking skills to solve problems.
4. The comparison of student's achievement using PBL with Two Stay Two Stray model
5. Domination teacher that cause student activity be passive

1.3. Problem Limitation

Based on the background of the problem, the problem limitation can be identified as below:

1. The topic that will teach in this research solubility and solubility product on grade XI second semester
2. The model of teaching that will use in this research is collaboration PBL with TSTS model
3. Media of learning that will use handout media
4. This research will be conducted in SMAN 1 Air Putih
5. There is character that will measure; curiosity

1.4. Problem Statement

Based on the background above, the problems that identified:

1. Is any the significant different student's achievement that teaches by PBL with TSTS model using handout media than taught by PBL model using handout media
2. Is there correlation student's curiosity character and student's achievement that teach by PBL with TSTS model with using handout media on the topic of solubility and solubility product

1.5. Research Objectives

General purpose of this study was to determine the comparison of chemistry student's achievement to SHS is none other than to increase the completeness of chemical learning outcomes through PBL and TSTS model using handout media on the subject *Solubility and Solubility Product* of a grade XI. And then special purposes of research are:

1. To determine whether the student's achievement that teaches by PBL with TSTS model with using handout media is significant higher than teach just using PBL
2. To know the correlation student's curiosity and student's achievement that teach by PBL with TSTS model with using handout media on the topic of solubility and solubility product

1.6. Operational Definition

1. Cooperative learning model *Two Stay – Two Stray* (TSTS)

   Two Stay Two Stray was developed by Spencer Kagan (1992) Cooperative Learning Model is learning model that gives the group to share their opinion and information to other group. This learning model used in all learning subjects and all students'. This learning involved by teachers and students'. It will be success when teacher and students' have good communication.

2. *Problem based Learning* (PBL)

   PBL is an educational format that is centered around the discussion and learning that emanates from a clinically-based problem. Problem solving is the solving process used to solve a problem. Since PBL starts with a problem to be solved, students working in a PBL environment should be skilled in problem solving or critical thinking. One indicator of effective problem – solving skills is the ability to transfer reasoning strategies to new problems (Patel et al, 1991)

3. Handout Media

   Handout is one form of print media. Handout are more concise than the module as its primary function as a supplement. From the above opinion can be concluded that the handouts are sheets of paper containing the learning resources that are used to help students understand the lesson with a more optimal.

4. Curiosity

   Curiosity includes the introduction of an active, search and regulations in one experience in responding to the challenges occasion. Someone with a strong curiosity level has a special advantage in life because his attention is not fixed, always with new ideas and new object, pleasure, self-exploration and integration self-development