

CHAPTER I

INTRODUCTION

1.1. Background

Education in Indonesia still has many problems related to the quality of education, some of these obstacles are the lack of access to education, the number of teacher who have not been evenly distributed, the quality of teachers are still lacking, the application learning models are not maximized, and utilization of instructional media are still minimum.

According to *The Learning Curve Pearson* (2014), which is one of the ratings educational in the world, from data *the Global Index of Cognitive Skills and Educational Attainment*, explained that Indonesia position is in the last rank with the z-score -1.84. Making the position of Indonesia is the worst. Where Mexico, Brazil, Argentina, Colombia and Thailand, into five states with the lowest rank above of indonesia.

Chemistry is the study of the events or phenomena that occur in nature, more specifically, to learn the material and accompanying changes. Based on Government Regulation No. 22 of 2006, learning chemistry in high school aims to enable students to have the ability to understand the concepts, principles, laws and theories of chemistry, the interrelationships and application to solve problems in daily life and technology. Moreover, the purpose of learning chemistry in high school also fosters scientific attitude, honest, objective, open, resilient, critical, and can cooperate with others. Based on this, can be said that student should have ability to understand chemistry concept and critical thinking skill to solve problems in daily life.

In chemistry subject, the teacher must be creative because are some characteristic of chemistry itself. It can be seen from Situmorang (2010) that told us about the characteristic of chemistry subject, they are: 1) a number of chemistry is abstract, 2) chemistry was implication from the fact, 3) chemistry are successive and develop quickly, 4) chemistry are not only about the explanation of

facts, laws, terms and etc. but also the numeric problem that has important part in learning chemistry, and 5) there are so many topics in chemistry that must be studied. Furthermore, the topics in chemistry is belongs to 3 characteristic, they are the decomposition of concepts, mathematical calculation, and execution experiment, we need a creative teacher that has proper model of teaching for chemistry topics.

One of chemistry subjects in second semester high school is colloidal systems. Highlights colloidal system consist of subtopics, among others: the sense of colloidal systems, the types of colloids in life, colloidal characteristic, lyophobic and lyophilic colloid, and the making of colloids. Highlights colloidal system is one of the chemical material which is abstract and requires an understanding of the execution experiment and the decomposition of concepts are very much, but the application and examples in daily life are concrete.

The tendency of current chemistry learning focus on students' active involvement. But the reality on the ground shows that the chemistry study conducted in school is still running in the direct instruction method and many teachers who dominate the learning so that students tend to be less active. Besides that, the scope of the chemistry which is complex and broad that cause difficulties for students to understand and feel bored when learning chemistry in the form of concepts, principles and laws. These difficulties have an impact on student achievement are still not satisfied.

According to Ninda Hardiani (2014), student's achievement about are still low which 36 students on average only about 50% of students who completed in the daily tests on materials colloidal system, whereas 50% of students stated are not completed in the daily tests of the colloidal system with KKM implemented by the school is 75, which is in accordance with the set value list (DKN) at SMAN 1 Percut Sei Tuan Academic Year 2012/2013.

To cultivate students active, preferably in the learning process students are given the opportunity to be involved in the issues, activities and scientific experiences. The ability to play a major

role in solving scientific problems will encourage students in improving the quality of each individual student. Besides that, for this problem the students need a good ability, so that their problems can be resolved truly by student. The ability that means is the curiosity ability.

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. The further one's way of thinking, the more questions arise, the more effort to understand. When the answer to those questions reached by the reason or basis, cause or explanation profusely, then be satisfied and not ask again. 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. This curiosity needs to be invested in students so that they can improve learning outcomes. When students already have a curiosity, the students will try to solve the problem and maximize every effort to obtain a satisfaction in learning.

According to Nur Fadhilah (2013) on "*Penerapan Model Pembelajaran Peer Tutoring Dilengkapi Lingkaran Hidrokarbon Untuk Meningkatkan Rasa Ingin Tahu Siswa Dan Prestasi Belajar Kimia Pada Materi Pokok Hidrokarbon Siswa Kelas X-6 Sma N 3 Boyolali Tahun Pelajaran 2012-2013*", that: data obtained curiosity of student in first cycle about 70.59% and it increases in the second cycle, the curiosity of student about 73.53%. This study concluded successfully because the curious aspects of the measured has reached the target.

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. Handout is one medium that can improve the

quality of the learning process. The handout is a medium of learning in the learning process that contains subject matter in the form of charts, images, and brief explanation. Giving handouts is expected to increase the readiness of teachers and students to learn in order to improve student learning outcomes.

According to Erna Agustina (2013) on “*Penggunaan Metode Pembelajaran Jigsaw Berbantuan Handout Untuk Meningkatkan Aktivitas Dan Prestasi Belajar Siswa Pada Materi Pokok Hidrokarbon Kelas Xc Sma Negeri 1 Gubug Tahun Jaran 2012/2013*”, that: the percentage of student learning outcomes in the first cycle of 27.78%, in the first cycle has not yet reached the desired target by 70%, so it needs the second cycle. Improved learning outcomes in cycle II about 72.23%, it means has reached target. This suggests that learning jigsaw assisted handouts can improve cognitive learning achievement in the subject matter of hydrocarbons.

Based on the data above, writer wants to use a way to overcome the education problem by replace the model of learning that used by teacher in class, from direct instruction method to problem based learning model that help by handout media. It is because the problem based learning is one of the innovative learning model that provides active learning conditions for students, and with help of media of learning, student more interest to solve problem. Problem Based Learning (PBL) is model makes students better understand the concepts, they learn through direct experience and real-linking between the concepts of the real problems in everyday life as well as provide an opportunity to show the best of their ability. So that students are trained to take on a responsibility, sharpen thinking skills to a higher level through problem identification, problem analysis, and create solutions.

PBL models can be interpreted as a series of learning activities that emphasize the process of resolving the problems encountered scientifically (Sanjaya, 2010). There are three main features of the model PBL: 1) PBL is an instructional activity, meaning that in the implementation of PBL there are a number of activities that must be carried out students. PBL did not expect the students just listen, take notes, and then memorizing of subject matter, but through

learn by PBL, student active to think, communicate, seek and process the data, and finally concluded, 2) the learning activity is directed to resolve the problem. PBL put the issues as the key word of the learning process. There are problems there can't be a learning process, c) problem solving is done by using the approach of thinking scientifically. Thinking of using the scientific method is a process of deductive and inductive thinking. This thought process is done systematically and empirically. Systematic means of scientific thinking is done through certain stages, while empirical means problem-solving process is based on data and facts are clear.

There are some research that has been done by using problem based learning model. KhairatunNisaManik (2014) on "*Penerapan Model Pembelajaran Problem-Based Learning Terhadap Hasil Belajar, Kerjasama dan Berpikir Kritis Siswa Pada Materi Pokok Koloid Kelas XI SMA Negeri 1 Medan*", that: student's achievement that teach by PBL model in experiment class about 81.24% and student's achievement on control class about 60.72%. Distinguish of student's achievement use PBL model in experiment class is significant higher than on control class. IlmiFadhilahRizki (2014) on "*The Effectiveness Of Interactive Learning Module With Macromedia Flash In Problem Based Learning To Increase Student's Achievement And Foster Student Creativity In Teaching Colloidal System*", that: the result of this research showed that in experiment class , that taught using interactive learning module with macromedia flash in PBL model have the percentage of gain is 74% and in control class that taught using direct instruction using regular chemistry textbook have the percentage of gain is 59%. Based on the background mentioned above, the writer wanted to do research with the title is "**The Effectiveness Problem Based Learning with Handout Media to Increase Student's Achievement on Colloidal System**".

1.2. Problem Identification

Based on the background of the problem, the problem identification of this research as follows:

1. The quality of education in Indonesia still low
2. Lack of variation model in teaching
3. Lack of variation media in teaching
4. The low student's achievement
5. The low student's curiosity

1.3. Problem Limitation

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

1. The model that will use in this research is problem based learning
2. The topic will teach in this research only colloidal system topic on grade XI second semester
3. This research will be conducted in SMAN 2 Balige
4. Media of learning that will use handout media
5. Student's achievement that will measure only cognitive skill from the level C₁-C₃
6. There is one characters that will measure; the curiosity of student.

1.4. Problem Statement

To give the direction of this research, the problem statements in this research are as follow:

1. Is the student's achievement that teaches by problem based learning model with using handout media significant higher than teach by direct instruction method?
2. How percentage of the student's curiosity character can be developed by problem based learning model with handout media?
3. How percentage of the student's responsive that gives to handout media?
4. Is there correlation student's curiosity character and student's achievement that teach by problem based learning model with using handout media on the topic of colloidal system?

1.5. Research Objective

The objectives of this research are:

1. To determine whether the student's achievement that teaches by problem based learning model with using handout media is significant higher than teach by direct instruction method
2. To know the percentage of the student's curiosity character can be developed by problem based learning model with handout media?
3. To know the percentage of the student's responsive that gives to handout media
4. To know the correlation student's curiosity character and student's achievement that teach by problem based learning model with using handout media on the topic of colloidal system.

1.6. Research Benefit

The benefits that will be hoped from this research, are:

1. Getting learning model that suitable and effective on teaching subject to increase the student's achievement and student's curiosity character.
2. As consideration for teachers to use problem based learning model with using handout media in the classroom teaching and learning process in order to increase student's learning achievement and student's character
3. As a matter of information for researchers in order to improve the quality of creative learning process and innovative in chemistry