

CHAPTER I INTRODUCTION

A. Background of Study

In globalization era, Indonesian should have best human sources to build this country. Now, our country will join to MEA (Masyarakat Ekonomi ASEAN), it means the competition in all aspects is increasing. As teachers, we can help this country in all aspects of education. Education is one of important aspect to increase quality of human sources. It is suitable with UU No. 20 Tahun 2003 Tentang Sistem Pendidikan Nasional Pasal 3 :

“Pendidikan nasional berfungsi mengembangkan dan membentuk watak serta peradaban bangsa yang bermartabat dalam rangka mencerdaskan kehidupan bangsa, bertujuan untuk berkembangnya potensi peserta didik agar menjadi manusia yang beriman dan bertakwa kepada Tuhan Yang Maha Esa, berakhlak mulia, sehat, berilmu, cakap, kreatif, mandiri, dan menjadi warga negara yang demokratis serta bertanggung jawab”

Education is important for development of science knowledge, technology, and human sources in a country. Education is all alive situations that influence individual growth as learning experience in their environment. Factually, education activity is activity between human, by human, and for human. Education is managed to develop all human potential for positive and better purpose.

Chemistry is a science which is started and developed based on experiment (inductive). In the next development, chemistry is found and developed based on theory (deductive). There are two things which can not be separated with chemistry, they are chemistry as process and product. Chemistry as process is knowledge of scientific activity. Chemistry as product is factual, conceptual,

procedural, and metacognitive knowledges. Process of chemistry learning and assessment of chemistry learning achievement must pay attention to characteristics of chemistry as process and product (Sukardjo dan Sari, 2009: 1-2).

As teacher of chemistry, we know that chemistry is one of science branch which gives good contribution in science and technology for country development. In learning teaching process, there are some weaknesses that can influence learning achievement of students. As we know, many teachers can not improve their creativity and innovation for their learning teaching process so there is no student center system. We know that student center system can increase the understanding of student about chemistry. In other case, curriculum-2013 wants students as center of learning teaching process and teacher just as a facilitator. It means teacher should be more creative to choose and make their learning teaching model.

Because of using curriculum-2004 in long term, many teachers still use conventional model. The teacher often just transfers the knowledge. So, there is no active and independent learning, it makes the student learning outcome is not maximal. According to PISA (Programme for International Student Assessment) survey (OECD: 2012) showed that Indonesia joined three times survey in 2006; 2009; and 2012. This survey shows the mathematics and science ability in a country. The result in 2006, Indonesia was in 50th grade from 57 countries and the average score was 371. Then, in the 2009, Indonesia was in 64th grade from 65 countries and the average score was 375. The last survey data which was released by OECD, the result of PISA survey for

Indonesia was in 64th grade from 65 countries and the average score was 375. The international average score was 500, it means that Indonesia has low learning outcome in science.

Learning cycle 5E is one of alternative for teacher to make teaching learning process to be more creative. The learning cycle 5E makes student as center in this process. Dean Zolman and N. Sanjay (1998: 1) stated that this model is developed by J. Myron Atkin, Robert Karplus, and SCIS (Science Curriculum Improvement Study) in California University, Berkeley, USA since 1967. The learning cycle 5E can be modified, for example we add video, animation, sound, or power point slide so the learning teaching is interesting for students. In globalization era, the alignment between quality of education, science and technology is important. Teacher should motivate student to learn by technology. Technology is important in learning teaching process because most of student is interested into it. Sometimes, we can not do experiment in laboratory so we can replace it with video or animation about this experiment. The learning cycle 5E can be combined with technology to make interesting alternative learning model.

Learning cycle 5E is active learning model which students are as center and based on constructivism view that science is built from student knowledge. The learning cycle is useful for teacher to design curriculum material and learning strategic in science knowledge. In the beginning, learning cycle model is divided into three phases. They are exploration, concept education, and concept application. Then it is developed by Lorschbach into five phases, they are

engagement, exploration, explanation, elaboration, and evaluation. Then, it is known as learning cycle 5E (Wena, 2009: 170-171).

The strengths of learning cycle 5E are (1) the character of learning is student center; (2) the students can find the concepts by themselves; (3) the students can explore their knowledge without limitation of their idea; and (4) the teacher is as facilitator so can guide the right information although the students use their own sentences to build up their knowledge. It means that learning cycle is relevant with the curriculum-2013.

In other side, the learning-teaching instrument must be arranged well. So there is limitation of problem and no misconception in subject-matter. All of instrument should be made based on concepts. The concepts also can be used as instrument to explain the students about the concept. So, the teacher can use Cmap Tools to make concept map, it is one innovation of education technology. Concept Map Tool (Cmap Tool) is one of application to make concept maps. The teacher makes learning media to attract attention of student. The teacher makes concept map to arrange the concept easily to understand by students.

Based on the description above, we take a title of thesis about “The Effectiveness of Learning Cycle 5E Assisted by Prototype Media Based on Cmap Tools”. This learning model combined with technology is wished as alternative for increasing student learning achievement.

B. Identification of the Problems

Base on the background of study, there are some problems relating to this research. The problems are as follows.

1. Many Indonesian chemistry teachers are still using conventional learning model, we know it is as lecturing. This model makes decreasing of learning achievement.
2. Many Indonesia students are not so active in teaching learning process.
3. The students consider that chemistry is difficult to understand.

C. Limitation of the Problem

Base on identification of the problem, the research limits the problem to reach the purposes. The limitations of the problem are as follows.

1. The increasing of student learning achievement in knowledge aspect or cognitive domain is shown by the positive change between initial knowledge and final knowledge. In the research, cognitive aspects used are C_1 , C_2 , C_3 , and $C_{4,5,6}$.
2. The learning achievement of attitude aspect or affective domain is shown by profile of attitude aspect/ affective learning achievement after the learning cycle 5E assisted by prototype media based on Cmap Tools. This research used average value of observation sheet about affective aspect which was assisted by rubrics. In this research, attitude aspects/ affective domains used were tolerance, responsibility, and cooperative in teamwork.
3. The learning achievement of psychomotor aspect is shown by profile of skill aspect/ psychomotor learning achievement after the learning cycle 5E

assisted by prototype media based on Cmap Tools. This research used average value of observation sheet about psychomotor aspect which was assisted by rubrics. In this research, skill aspects/ psychomotor domains used were the question and answer responses, how to give argumentation in discussion, and presentation ability.

D. Formulation of the Problem

The problems are formulated as follows.

1. How to apply the learning cycle 5E assisted by prototype media based on Cmap Tools to give increasing of student learning achievement?
2. What is the application of learning cycle 5E assisted by prototype media based on Cmap Tools to be more effective than conventional model?

E. Objectives of the Research

The objectives of this research are as the followings.

1. To know the increasing of student learning outcome after the learning cycle 5E assisted by prototype media based on Cmap Tools.
2. To know the effectiveness of learning cycle 5E assisted by prototype media based on Cmap Tools.

F. Benefits of the Research

The benefits of this research are as follows.

1. For students
 - a. Giving new situation of teaching-learning activity in the classroom.

- b. Helping them to understand the concepts in the chemistry.
 - c. Making active students and student center in the teaching-learning activities, so the learning outcome is increasing.
- 2. For teacher
 - a. As a alternative of teaching-learning model which can be used, so the learning achievement is increasing.
- 3. For researcher
 - a. Giving experiences of teaching activity to the researcher directly.
 - b. The result of research may be used as reference to the next research.
- 4. For school
 - a. Giving information about learning cycle 5E so it can be done rightly in the school.
 - b. Increasing the students achievement so the quality of learning is better than before.