CHAPTER I
INTRODUCTION

1.1. Background

Education is an investment or asset that is valuable to everyone. Where the investment will improve the quality of the human resources due to quality of education. Without education, living standards and quality standards of a human being can say will be bad. A person who obtained a higher education course will have a much better quality than those who only finished primary school. But in fact, education in Indonesia is still far behind from other countries especially the education of developed countries. This is proved by the development index education for all in Indonesia decreased. If in 2010 and Indonesia is ranked 65, this year's ranking slipped to 69. Based on the data in the Education For All (EFA) Global Monitoring Report 2011: The Hidden Crisis, Armed Conflict and Education issued by the Organization for Education, Science, and Culture of the United Nations (UNESCO), launched in New York on Monday (1/3 / 2011), an index of educational development or education development index (EDI) based on 2008 data is 0.934. The value was put Indonesia in the 69th position from 127 countries around the world. Currently, Indonesia still lefts behind Brunei Darussalam that is ranked in 34th, Brunei Darussalam into a high achieving group with Japan, which reached the number one in the world. As Malaysia is ranked 65th or still in the medium category of achievement as well as Indonesia. Indonesia position is still far better than the Philippines (85), Kamboja (102), India (107), and Laos (109) (Kompas, 2011).

Conditions above inhibit Indonesia can rise up to overcome the problem of poor quality human resources and high unemployment. The lack of quality and educational facilities would significantly impact on the quality of the human self. Many problems facing the government certainly cannot be completed quickly.

Government of Indonesia through the Directorate of Early Childhood Education is promoting early childhood education program that includes the age of 0-8 years. Then, by providing free education through the National Operations
Support (BOS), improving school infrastructure, improve supporting facilities of education, improve education quality, improve the curriculum and the last efforts still hot the character building for all elements involved in education.

In the learning process, improving the quality of education involves evaluating components such as Lesson Plan (RPP) with characterized, re-examine the indicators of material, improve the quality of teaching that is now only focused on developing methods, media and variety of learning models.

However, improving the quality of learning by developing the teaching material itself is still small, because the learning process is currently only focused on the development of media, models and learning methods. In fact, it is important that teaching materials should be noticed and developed to enhance students' understanding of materials, particularly chemistry subject.

Chemistry subject is a field study to learn the things that make their students more in their brain. Chemical characteristics of the study area include (1) some basic material is considered to be abstract (2) the rapidly expanding science of chemistry (3) the chemical is not just solving a problem in the form of calculation but also lays the facts, laws, and chemical terms (4) the materials studied have a broad scope. One subject that covers almost all chemical Characteristics are "solubility and solubility product" (Situmorang, 2011).

To overcome this problem, researcher offers a development of critical thinking that can enhance students' understanding of learning materials. There are 4 higher level of thinking, they are critical thinking, creative thinking, problem solving, and making decision. Among the four higher level thinking, the critical thinking that base the other three thought patterns. This means that critical thinking need to be mastered first before reaching other three higher level thinking. Several studies have been conducted show an understanding of scientific concepts can be enhanced through the development of critical thinking skills of students.

In practice the application of the learning process is less encouraging to the achievement of critical thinking skills. Two factors did not develop critical thinking in the learning process and especially the general education curriculum
that is designed with a broad target material so that teachers are more focused on solving the material and the lack of understanding of teachers about teaching methods that can enhance critical thinking skills. Students requiring an academic setting that provides the freedom and safety to express their opinions and decisions for participating in learning activities.

Formal teaching at school tends to train analytical thinking power. Students are required to make logical arguments, seek answers, eliminating the wrong choices, and focus on the correct answer. The side effects are not used for students to think critically and creatively, that dare to try new ideas and look for alternative answers, not just focus on one answer that is believed to be correct. Rational and objective thinking process is a process of critical thinking that is the key to success in solving the problem (Jahro, 2010).

The literature Diane Halpern, a professor of psychology at California State University, refers to many educators and their opinions of critical thinking. Most agree that critical thinking is a purposeful, reasoned, and a goal directed method of solving problems and making decisions. Halpern states that the vast amount of material available on the Internet increases the need to teach critical thinking skills to evaluate information. Students need (1) instruction, as well as the (2) disposition to use these skills. Halpern proposes a four-part model to teach critical thinking which includes the two parts mentioned as well as (3) structure training to help students recognize when a certain thinking skill is needed and (4) metacognitive monitoring or the ability to reflect on thinking processes (Halpern, 1999).

The concept of student disposition is particularly interesting. A student not only needs to know skills but be willing to use those skills. Instructors need to employ a variety of methods to engage students in applying critical thinking skills. As one pedagogical suggestions, Halpern recommends utilizing the professional Web sites associated with individual disciplines, many of which offer free activities that promote critical thinking skills.
Most of the chemical materials published by Yudhisthira, Yrama Widya and Tiga Serangkai lists of questions to gauge students’ understanding of the material only at the end of the matter so that less develop students critical thinking skills. Beside, questions provided are less gauge their ability to think more deeply.

Based on the description above, researcher conduct research aimed to develop critical thinking in the designing of chemistry module with the title “The Influence of Critical Thinking Development through Chemistry Module to Increase Student’s Achievement Grade XI on The Topic Solubility and Solubility Product”

1.2 Problem Identification

1. The quality of education in Indonesia still far behind from other countries.
2. The way to improve quality of education by development of teaching module still rare.
3. Most of teaching modules are less in developing critical thinking skill of students.

1.3 Research Scope

This study was conducted to increase student achievement and critical thinking skills of high school student grade XI school year 2011/2012, especially in the developing of solubility and solubility product module of grade XI.

1.4 Problem Statements

1. How the propriety level of the solubility and solubility product module that develop critical thinking skill of students?

2. Is there any significance effect of critical thinking development through teaching module to increase student’s achievement?
3. Is there correlation between the student’s critical thinking skill with the student’s achievement?

1.5 Problem Limitation
1. The chemistry module limited in chemistry material on XI grade in the second semester.
2. The chemistry module treated in learning process only on solubility and solubility product topic.
3. Student achievement measured by objective test only the cognitive skill from level C1-C4.
4. Critical thinking skill of student measured by essay test that have C2-C5 level.
5. The solubility and solubility product module that developed is the chemistry module that written by J.M.C Johari and M. Rachmawati with the title “CHEMISTRY”.

1.6 Research Objectives
The objective that will be expected for this research is to determine the accurate information about
1. The propriety level of the solubility and solubility product module that develop critical thinking skill of students
2. The significance effect of critical thinking development through teaching module to increase student’s achievement
3. Correlation between the student’s critical thinking skill with the student’s achievement

1.7 Research Benefit
The benefits that expected from this research are:
1. Obtain the propriety level of the solubility and solubility product module that develop critical thinking skill of students
2. Obtain the significance effect of critical thinking development through teaching module to increase student’s achievement
3. As a solution and suggestion for teacher in developing teaching module to increase student’s achievement and understanding the subject material
4. Obtain correlation between the student’s critical thinking skill with the student’s achievement

1.8. Operational Definition

2. Chemistry

Chemistry is one of the subjects listed in the national curriculum. As one branch of science, chemistry was developed based on observations and experiments (MOEC, 1995 in the Light Goddess, 2003). On that basis, Teaching and Learning Activities (TLA) of Chemistry is more emphasis on skills development process. (Http://gudangmakalah.blogspot.com/2009/08/prosedur-dan-ejektifitas-pengembangan.html)

3. Module

Module is one form of teaching materials that are packed full and systematic, it contains a set of planned learning experiences designed to help student mastering in specific learning objectives. The module serves as a learning tool that is independent, so that students can learn according to their speed.

4. Solubility and Solubility Product
   - Solubility

Solubility is the property of a solid, liquid, or gaseous chemical substance called solute to dissolve in a solid, liquid, or gaseous solvent to form a homogeneous solution of the solute in the solvent.
Solubility Product

Solubility product or $K_{sp}$, is the equilibrium constant for a chemical reaction in which a solid ionic compound dissolves to yield its ions in solution.

(\[http://wikipedia/2009/01/05/solubility_and_solubility_product/\])

5. Critical Thinking

Critical thinking is a process that is widely acknowledged in the literature to be crucial to the learning process, to cognitive development, and to effective information seeking.

(\[http://www.criticalthinking.org/pages/defining-critical-thinking/766\])