

CHAPTER 1

INTRODUCTION

A. Background of Research

Abundant natural resources in a country are not guarantee for a country to be called as a wealthy country if the education for human resources is still supervised. A country which has so many natural resources will be unsatisfied if these resources are not handled by qualified human resources.

As said by Gardner (Hamzah B. Uno, 2009: 11) that the level of intelligences which is used now is still having so many limitations, so it is less in predicting the successfulness of people's performance. According to Gardner someone's intelligences consists of some matters such as logical mathematic intelligence, language intelligence, musical intelligence, visual and spatial intelligence, kinesthetic, intrapersonal, inter personal and naturals intelligences.

Some efforts in improving human resources capabilities are big jobs and taking long period of time. Improving human resources must be passing through good and directional education process. In facing the globalization era which full of challenges, education is the most important thing. Education can establish creative, skillful and innovative human resources. According to Lif Khoiru Ahmadi (2011: 3) in the "Paikem Gembrot" book says that creative learning is the ability to create, imagine, have innovation and do some other artistic activities. Here, creativity is ability in giving new

ideas by giving some possible responds to resolve the problems which focuses on quantity, dependence and variety aspects. It is also apply them in resolving problems.

In forming the human resources which suits to developing decade is needed mastery of knowledge and technology. Education focuses on the process of learning which aims to develop the whole human resources' potential in cognitive, affective, and psychometric aspects. The formal education that is done by schools is still as mainly education institution as a centre of human resources development by supporting family and society's education.

In fact, the education's quality in Indonesia is still low. So if this condition cannot be changed, out graduate students as the next generation will be difficult to compete with other graduations from other countries. The needed graduation cannot only remember and comprehend information but also can contextually apply by variety of competitions. The best way in resolving that problems is a paradigm changing in learning from teacher centered learning to students centered learning. In line with Bobbi De Porter (2008: 3) in *Quantum Teaching Book* states that teaching and learning process is a complex phenomenon. It means that all of them are every words, thoughts, actions and associations. How far do you change the environment, presentation, lesson plan and also process of teaching and learning (Lozano, 1978).

Math is a mean of scientific thinking which needed to improve logic, systematic and critical thinking capabilities in each individual learner. Math is also one of basic knowledge for students in supporting the success of learning to take higher level of education. Math is useful for human daily life. So, students are needed to have knowledge of math in facing their future. Because the important of math in structuring of reason, the formation of attitudes and the usage of mathematics, so improvement of math learning in every level of education is really needed to be paid attention. In getting into the globalization era and taking off the national development, it is felt that the higher quality human resources demanded. In line to Richard I. Arends (2008: 7) in *Learning to Teach Book* written by Dewey, in his education concept states that a class should reflect as large society and become laboratory for learning real life. Dewey pedagogic requires teacher to create learning environment which is marked by democratic procedures and scientific process. Teacher's responsibility involves students in doing inquiries of some social and interpersonal problems.

Today there are still many students having low achievement in mathematics from elementary level to senior high school or vocational school level. Actually the math's score is necessary for students' graduation because this score is one of compulsory subject that is tested on the national examination. Student's low math's score is caused by most students' perception that math is difficult subject and not interested on students' mind because it consists of some complicated principals and concepts to be learned.

Math is also contains some formulas and quantifications in resolving complicated problems. According to Sallis (2010: 87) in Total Quality Management in Education declares that education institution has responsibilities to create the students' awareness of learning method variation which is given to them. Education Institution must give students chances to imitate learning in different models variation. Institution must comprehend that some students are interested on the combination of learning styles and it also try to implemented some choices about that. Miller, Dower and Inniss agreed in their book of Improving Quality in Further Education that their arguments will apply to all forms of institutions stated that institutions must give some teaching and learning models, so students have chance to get success maximally.

By knowing the problems above, the math teacher should understand and develop various methods in the teaching math process. Teacher should arrange learning program which can arouse students' motivation in learning so students will actively get involved in the teaching and learning process. So, in math appreciation will be stabile. This also can relieve the students' perception that math is a difficult subject.

One of the causes of low mathematics achievement is the less of student's understanding in math's concepts and the difficulties of student's communicating mathematically. Because of the teacher has not used the methods of teaching in teaching mathematics which motivate to think and let students in teaching process actively. There are still some teachers using

conventional method in teaching mathematics. This method is teacher centered learning method. In line with Silberman (2009: 126) in Active Learning Book explains that a debate can be a method in developing thoughts and reflection, especially if students can be hopefully taken the contradict ideas. This condition is a kind of strategies to debate actively which let students in a class.

In the teaching process, teacher will deliver materials in spoken or discourse, also it can be by asking questions, responding it, giving tasks and homework. In this method, it is still teacher centered learning so students cannot be active in this teaching and learning process. Students just listen to, pay attention and take a note what the teacher explained. Other reality which can be found in the process of teaching and learning mathematic is still many students having no materials when the process of learning done. According to Wena (2010: 41) in the Contemporary Innovative Learning Strategy writes that teachers should know about students' profile, their level of development, their cognitive style, their learning habits and etc. By knowing all aspects above, teacher can be easily to adapt strategy in delivering materials of learning. So, with suitable teaching strategy, students can learn enjoyable. So, in mathematic learning should be adjusted by specific materials which are suitable with students thinking development. In accordance with Wena (2010: 13) in Contemporary Innovative Learning Strategy as said by Degeng (1989) that the role of explaining strategy to increase learning motivation is more real than organizing strategy. It means that the art and way of

explaining strategy schedule can influence students learning motivation. So as a teacher must develop some tips to schedule the use of explaining strategy.

The learning process is an organized pattern and a planned procedure which be directed and it has a purpose. From some of these factors, there are two factors that greatly influence student achievement in addition to one factor to others. The second factor is the method of learning and achievement motivation of the students themselves. Motivation itself is energy to change someone who is characterized by the emergence of feelings and reactions to achieve the desired goal. With the student's motivation will make result in the emergence of a desire to prepare them well in utilizing the available time or opportunity to fully concentrate in learning something. By Arends (2008: 17) in *Learning to Teach* written that there have been several studies to provide a guide in forming groups or teams of students. Many of them are pointing to the benefits of the group selected by the teacher to ensure the composition of gender, ethnicity, and skill. However, the exact composition is not always easy to understand. He found that although a heterogeneous group scored slightly better performance in mathematics compared to homogeneous group, but many students are more influenced by the interaction of group cohesiveness rather than by its composition.

The use of methods in learning motivation of students is an important influence in determining learning achievement. Besides it is also important to note the differences of each individual student, such differences include,

among others; interests, talents, abilities, available infrastructure, motivation and others. It is not surprising that student achievement is also different. According to Hamzah B. Uno (2010: 101) in *Managing Learning Intelligence* describes the logical mathematical intelligence involves many components: a mathematical calculation, logical thinking, problem solving, deductive and inductive considerations, and the sharpness of the patterns and relationships. At the core of mathematical ability is the ability to recognize and solve mathematical logical intelligence problems. The logical mathematical intelligence is becoming the most important thing for western society and is often valued as a guide and history lesson for humans.

From the fact above, the learning process can take place and run in accordance with what was planned and what is expected if the teacher in delivering the materials using appropriate teaching methods and appropriate, in addition to the motivation of the students themselves and the discipline of students in utilizing the time to learn. The results of studying mathematics achievement are generally lower when compared with other subjects. Such a situation provides a challenge to the holding of a study on the causes affecting the learning achievement outcomes and ways to overcome them so that a solution was found to enhance the learning of mathematics achievement.

B. Focus of Research

Based on the above background can be identified the problem as follows:

1. The low math scores due to learning methods that are less attractive to students.

2. Low levels of learning achievement of students in grade XII Engineering Building by some student's factors that are less active students in participating the learning activities.

C. Limitation of Research

The low students' score so it is needed a more interesting application of the method in using a guided discovery learning model.

D. Formulation of Research

1. How to increase student interest in mathematics learning process integral to the use of guided discovery learning model?
2. How to increase integral math learning outcomes to the use of guided discovery learning model?

E. Objective of Research

1. To know the increasing interest of students towards mathematics using the integral model of guided discovery.
2. To find out the improvement of mathematics learning outcomes integral to the model of guided discovery learning.

F. Benefits of Research

1. Theoretical Benefits

- a. Provide feedback to teachers or prospective teachers of mathematics in determining the appropriate teaching strategies with teaching materials, as an alternative to give variation in learning.
 - b. Consideration in improving the implementation of learning activities that teachers do mathematics.
 - c. Input materials for teachers and students that students' motivation to give effect on student achievement.
 - d. For consideration and input as well as additional reference material for teachers of mathematics and other subject teachers to expand the horizons of learning.
2. Practical benefits.

According toutama (2010: 137) in Educational Research Methodology classroom action written research benefits are:

- a. Teachers can make learning innovation.
- b. Teachers can enhance the ability of reflective learning and able to solve the existing problems.
- c. Teachers will be trained through the PTK to develop a creative curriculum in the classroom or school.
- d. Reflective capabilities of teachers and teacher involvement are detailed on innovation and curriculum development efforts will ultimately lead to the achievement of improvements in the professionalism of teachers.