CHAPTER I
INTRODUCTION

1.1. Background

One of the objectives of national development in the field of education is the intellectual life of the nation and improves the quality of the Indonesian people. Through improving the quality of education at all levels of education, which allows citizens to develop themselves as whole Indonesian people. To realize the national development in the field of education needed improvement and improvement of education in accordance with the development of science and technology.

Mathematics is universal science that underlies the development of modern technology, has an important role in various disciplines and develops the power of human thought. Mathematics is a major part of the elementary school curriculum. The actual selesction of what mathematics to teach is likely to be among your first major tasks (Ashlock, et al, 1983:22). Therefore, mathematics courses should be given to all students start from primary education to higher education to equip learners with the ability to think logically, analytical, systematic, critical, and creative as well as the ability to work together to survive in a state of ever-changing, uncertain, and competitively. And in this case the government through the Department of Education continues to develop the learning of mathematics in the school system through the development and reform the learning of mathematics curriculum.

To realize this fact, required a high level of capability that is logical thinking, creative and proactive collaboration capabilities. This way of thinking can be developed through the study of mathematics. One subject that cut across all the sciences is mathematics. Today, mathematical methods pervade literally every field of human endeavour and play a fundamental role in economic development of a country. In our match towards scientific and technological advancement, we need nothing short of good performance in mathematics at all levels of schooling.

Unfortunately performance of students in mathematics at the end of secondary education has not improved in the past decade (Umoinyang in Tella, 2007). As stated by Sudrajat in the seminar of the role of mathematics in the development of science and technology that mathematics is a basic science that is needed for the foundation for modern technology and science. In addition, mathematics provides the high skills on a person in terms of abstraction, problem analysis and logical reasoning. This shows that math is needed also by other disciplines due to develop the science of mathematics that is needed as the foundation. Given the importance of the science of mathematics, it is expected that students can learn the science well. By mastering mathematics, the students will also be easier to learn other subjects especially in science and engineering.

Science education had emphasized the importance of mathematics in science teaching and learning (Iroegbu, (1997). Abdullahi (1982) said, concerning science and mathematics. Although mathematics and science are taught as separate subjects in schools from instructional point of view, science activity in the classroom has mathematical implications as working mathematical problems has scientific imports (Adesoji & Ibraheem, 2009:15).

Algebra is a branch of mathematics that uses mathematical statements to describe relationships between things that vary over time. These variables include things like the relationship between supply of an object and its price. When we use a mathematical statement to describe a relationship, we often use letters to represent the quantity that varies, since it is not a fixed amount. These letters and symbols are referred to as variables (MerriamWebster, 2002).

And the other definition of algebra namely algebra is a generalized form of arithmetic, and for the purpose of generalization of arithmetic, letters and signs are used. No doubt, the use of letters and signs that make an abstract subject. Because of the nature of generalization and abstraction, algebra is considered to be the mathematics subjects which is difficult to understand. Factorisation is the process of using the distributive law to reverse the process of multiplying out brackets (Pauls, 2008).

According to Gomez-Chacon (in Ignacio, et al, 2006:18) that:

> “one of the variables with most influence on mathematics teaching and learning, related to the pupils' attitudes, their perspective on the world of mathematics, and their social identity. The most important elements of this construct are their subjective knowledge and emotions relative to the following aspects: interest in mathematics, efficiency in performing”

Quality of Indonesian mathematics education has not achieved the expected results. So it is not surprising that mathematics achievement needs to get the attention of various parties. Besides the student learning outcomes in mathematics are less exciting as stated by Suharyanto (2006), “math is still the main cause of students not graduating UAN. Of the participants who did not pass, as much as 24.44% fall in the subjects of mathematics ".

Mathematicians from the Technology Institute of Bandung, Iwan Pranoto, in a roundtable discussion organized Indonesian Teachers Association states that, mathematical illiteracy condition has not changed even since 2003. For seven years, from the scale of 6, Indonesian students' math skills are only at level-2. Another study from the Program for International Student Assessment (PISA) in 2010 showed a similar condition. The position of Indonesia was ranked third from the bottom, better than Kyrgyzstan and Panama. However, Iwan explained that it is not to worry about the position, but two other important facts. First, the percentage of students in Indonesia are below the level of two very large (76.6 %), and the percentage of students who are at level five and six are statistically nothing. According to the definition of math proficiency level of the Organization for Economic Cooperation and Development (OECD), student below the level two will not be able to be function effectively in 21st century life (Nadia, 2011).

One cause of low mathematics learning outcomes this is because many students who consider mathematics as a difficult subject to learn. From the various fields of study that are taught in school, mathematics is a field of study that is considered the most difficult by the students. Often, students with mathematics learning difficulties due to their repeated experience of failure are those who present the most maladapted attributional patterns. Doubting their own abilities, they exaggerate the magnitude of their deficiencies, and tend to attribute

their failures to their lack of ability. They also show low expectations of success, and give up easily in the face of difficulties. When they are successful, they attribute it to the easiness of the problem, to help from the teacher or their classmates, or to luck. Continued failures are seen as confirmation of their low level of ability. Their negative beliefs about themselves as learners prevent them from improving their mathematics performance, since they believe that it is beyond their possibilitiesto do well (Chapman in Ignacio, 2006:18)

One of the mathematical materials that considered difficult by students is algebra that is taught of grade VIII. Based curriculum, intended target after completion the learning process is students can completing a matter of algebra in junior MTs Islamiyah, by giving 5 items to students, as analyzed by many students that cannot be solve the problems algebra properly.

Thus, to achieve better learning outcome in the learning process to choose appropriate teaching can help students gain information, ideas, skills, values, ways of thinking and can make students participate in the learning process. One solution is to implement cooperative learning model. There are several types of cooperative learning model that can be developed in mathematics; one of them is a cooperative learning model Group Investigation (GI). Group investigation is cooperative learning strategies that put the students into groups to investigate a topic. From these statements it can be concluded that the GI method has a major focus for the investigation of a topic or a specific object (Eggen & Kauchak, 2012).

A much more effective form of cooperative learning that uses task specialization is group investigation (Sharan & Sachan). In which students take on subtasks within an overall group task. In contrast to jigsaw. Group investigation bases individuals evaluations on the group's product or report, so this method may in actuality be an in stance of group goals and individual accountability (Slavin, 1988:32).

As stated Shran and Sharan (1989:17) the group investigation is as follows:

> "In group investigation, student take an active part in planning what they wiil study and how. They form cooperative groups according to common interest in a topic. All group members help plan how to research their topic. Then they divide the work among themselves, and each group member carries out his or her part of the investigation. Finally, the group synthesizes and summarizes its work and presents these finding to the class."

As stated by Arends (2007:353) states that:

> "Group investigation is perhaps the most complex of the cooperative learning approaches and the most difficult to implement. In contrast to STAD and Jigsaw, the GI approach involves students in planning both the topics for study and the ways to proceed with their investigation. This requires more sophisticated classroom norms and structures than do approaches that are more teacher-centered".

Meanwhile, the main problem in learning in formal education (school) today is the low absorptive capacity of learners. This is evident from the study of students that is always very alarming. This is based on the interest and willingness of students who lack in math. The definition of interest is the tendency of a person to an object or something popular activity, which is accompanied by feelings of pleasure, lack of attention, and the activity of doing. From this definition, we can say that without any interest in math then it could not have liked math students, can't be addressed by the student and no student activity therein. Besides interest, willingness also is the basic thing that is needed for students to learn because with the willingness of students to learn without perforce from others that means that he/she can learn from his own willingness. Student learning environments also affect student learning outcomes. The learning environment is very important, namely:

- Effective learning begins from the student-centered learning.
- Teaching should focus on how students use their new knowledge. Learning strategies is more important than the result.
- Feedback is very important for the students, who come from the correct assessment.

- Develop a learning community in the form of group work is important.

In addition to the internal factors of students, external factors also affect the results of learning are teachers and students. One that leads to lower of students learning is the learning model that is conducted by teacher is still conventional.

Based on the analysis of research about the low of learning outcomes of students due to the dominance of conventional learning process. In the conventional learning environment tends to teacher-centered classroom so that students become passive. In this case, students are not taught learning strategies to understand how to learn think and motivate yourself (self-motivation), but these aspects are key to success in a lesson. This problem is often found in the teaching and learning activities in the classroom. Therefore, it is necessary to apply a learning strategy that can help students to understand the teaching materials and applications as well as its relevance in everyday life.

Based on the interview (September 3, 2013) with the mathematics teacher in MTs. Islamiyah, Mrs. Hernawati, said that:

> "Students are difficult to study mathematics and one of the topics that they can't understand is factorization algebraic. Students think that algebraic factorization has many formula and they are difficult to remember and to apply that formula in the algebra problem. In learning process, the student also inactive to ask or answer the question from the teacher. The evident, in daily examination of algebra, all of students can't reach the standard value and all the value is very concern, so the student achievement in the topic of algebraic factorization is low".

From the some descriptions above researcher can conclude that many of students are not able to understand the subject matter well. This can happen due to lack of student interest in learning so that every student learning seems less active and saturated in learning. In addition to the student, activity that is still lacking in learning, things that affect students' learning is their ability in terms of completing the given problem.

From the results of diagnostic test that is conducted, the researchers noticed that students still have low capability in solving problems in essay

questions. The result of survey that conducted by researcher (September 9, 2013) by conducting diagnostic test to the students of grade VIII of MTs Islamiyah in topic of algebraic factorization. From 32 students who take the test, the average of test is 65.23 or in very low level. Total of students who complete in student achievement is 12 students (37.5%) and the incomplete students in student achievement is 20 student (62.5%). From the data, it can be concluded that student achievement in the topic of algebraic factorization is low.

Seeing this situation, it should be the task of the teacher is not only teaching science alone, but also plays a role in terms of helping students in each solve existing problems. Teachers are also expected to master math learning concepts well and able to think critically in terms of finding the solution of problem. In this case, the teacher has the task of trying to improve the ability of students to understand the material so well that with it, the results can also be improved student learning. In addition to learning outcomes, things that should be considered by the teacher are the activity of the students. Students are expected to be more active in the learning process so that there is good feedback between teachers and students so that students can be more interested in learning math

One way to enhance student learning outcomes is the adoption of cooperative learning model. Learning is using small groups so that students work together to achieve learning objectives. Students in cooperative learning group discussions, help each other and work together to overcome learning problems. Cooperative learning consists of several types that have the advantages of each. One of them is the strategy of Group Investigation (GI). GI strategy is the learning of investigation student work freely, individual or group. Teacher only acts as a motivator and facilitator that given a boost to students to be able to express or pouring of thoughts a new situation, so that with learning is expected to attract more students, so that students can understand math concepts was learned and ultimately improve comprehension and learning outcomes students. Thus, students can be more active in following and learning can improve student learning outcomes.

Based on explanation above, then research in interested to conduct a research entitle ***"Implementation of Group Investigation (GI) To Know The Student Achievement in Factorization Algebraic Topic in Grade VIII in the Year 2013/2014".***

1.2. Problem Identification

Based on the background above, some problems can be identified as follows:

1. Mathematics students outcome are still low.
2. Mathematics is a field of study that is considered difficult by students.
3. Students still dominant passive and tend to only receive information from the teacher
4. The use of learning model that is chosen by teacher irrelevant.

1.3. Problem Limitation

Based on the problem identification, the problem that is exist limited on the implementation of Group Investigation (GI) to know the student achievement in the factorization algebraic topic in grade VIII of MTs Islamiyah in the year of 2013/2014.

1.4. Problem Formula

Based on the problem limitation above, then the problem can be formulated as follows.

1. How the student achievement in grade VIII in the topic of factorization algebraic by implementing GI?
2. How does student respond to the implementation of GI in the topic of factorization algebraic?

1.5. Research Objective

1. To know the student achievement in grade VIII in the topic of factorization algebraic by implementing GI.

2. To know student respond by implementing GI in the topic of factorization algebraic.

1.6. Research Benefit

1. For student, to increase student achievement especially in the topic of factorization algebraic.
2. For teacher, as information material, overview and consideration in choosing learning model that can increase student achievement.
3. For school, can use the result of research as reference that can be used by the other teachers.
4. Academicians gain an overview of cooperative learning model in type of GI.