CHAPTER I
INTRODUCTION

1.1   Background

Indonesia is a country that cares deeply about education. The government has made various efforts to continuously improve the quality f education in Indonesia. This can be seen from the contents of Article 31 Paragraphs 3 and 4 of the 1945 UUD 1945 which states that the givernment is obliged to strive for the realization of national education to educate people in the life of law.

Mathematics as one of the subjects that plays a very important role, because it can increase students' knowledge in thinking logically, nationally, critically, carefully, effectively, and efficiently. One of the most prominent characteristics of mathematics is that emphasizes the reasoning process which requires logical thinking.

Mathematic has a very important role in education in Indonesia. However, in reality, it is very behind of countries in ASEAN, the average achievement of students in TIMSS (Trends in International Mathematic Science Study) is still relatively low. Even the average ability of Indonesian students in TIMSS results is still far below Malaysia, Thailand and Singapore. Facts show that the mathematical reasoning ability of Indonesian students is still low, this statement is based on : 1) the result of the 2016 Indonesia National Assesment Proggrame (INAP)/ Indonesia Students Competency Assesment (AKSI), which measured Indonesian student's abilities in mathematics, reading, and science showed that Indonesian Student's reasoning skill were low at 77,13% (weak), 20,58% (moderate), dan 2,29% (good) (Puspendik, 2016 ; Tim GLN Kemendikbud, 2017a). 2) PISA 2018, Indonesian student's mathematic score was 387 out of an average score 490, while in TIMSS 2016 Indonesian student's mathematics score was 395 out of an average score 500 which placed Indonesia behind Vietnam and at the bottom (GLN Team, 2017b), 3) PISA 2022, shows that Indonesia was on position 67 out of 81 countries participating in PISA, which shows a decrease in student ability from the 2022 PISA ranking (OECD, 2023).

Based on the results of observations and interviews conducted by researchers to students and teachers at SMA Negeri 8 Medan, by giving several mathematical reasoning questions,from 60 students (From control class and Experiment class) only 20% of students were able to answer the question completely and correct 35% of students were only able to write the information from the question and others students not able to answer the question given. From these results it can be said that students' reasoning skills are still low. It is caused because students in learning mathematics tend to just memorize the formulas given by the teacher. So that there are often mistakes in applying formulas in solving problems or students have not been able to work on modified problems because they only follow the formulas given by the teacher. The results of interviews with several students, students also stated that one of the tendencies that caused them to fail to master well the topics in mathematics is that students lack understanding and use good reasoning in solving the problems given.

Seeing this condition, the reasoning competence which is an important aspect when learning mathematics must be improved. In addition, the fact that the application of conventional learning applied in schools has not been able to improve students' reasoning skills in schools, because students are not given the opportunity to explore and build their own knowledge. This should be a point that should be given great attention for teacher.

To improve students' mathematical reasoning skills, among others, by choosing a learning model based on the principle of problem solving. According to Sudarman and Vahila (2016), the application of the right learning model in the classroom will affect the success of achieving learning objectives. Leeuw (in Lia Kurniawati) argues that when someone learns problem solving, in essence he is also learning to think and learning to reason to apply the knowledge that has been obtained to solve problems that have never been encountered. The description explains that problem solving learning can be used as an alternative to train students' mathematical reasoning in understanding mathematics as a whole. Moreover, in everyday life it is inseparable from problems both mathematical and non-mathematical that need to be solved.

One of the solution that can use to develop students' mathematical reasoning skills is by using a Realistic Mathematic Education Learning Approach. The main principle of RME is that learning have to start from something real and based on contextual problem so that students are able to be more active and easier to stimulate students' knowledge and can develop students' minds to find a problem from daily life. This is also in line with one of characteristic of RME, namely students are able to making a conjecture based on phenomena that occur in everyday life (contextual problem) related to the material being studied. Another characteristic of RME is being able to provide evidence and generalize vased on existing conjectures based on guidance of an expert (teacher). Based on the result of generalisation, a solution to the initial conjecture (contextual problem) is found which can be used as a formal mathematical knowledge. (Supinah 2011 : 71)

Based on the problems that have been described, the authors are interested in examining whether there is an effect of RME learning on students' reasoning skills, so this study is entitled "The Effect of Applying Realistic Mathematic Learning (RME) on Students' Reasoning Skill In Grade XI Of SMAN 8 Medan".

1.2   Problem Identification

Based on the background that has been described, the problem identification in the description is as follows:

1. In general, students' reasoning skills in Indonesia are still in the low category.
2. There are still few students who are able to do the routine task which the solution requires reasoning skills.
3. Learning applied in schools tends to be procedural and mechanistic, rather than developing students' understanding.
4. There are still few teachers who apply the realistic mathematics education learning model.

1.3   Problem Restriction

Based on the background and the identified issues mentioned above, to provide a specific and focused direction for this research and to narrow down the scope of the problem, the researcher confines the problem in this study to "The Effect of Realistic Mathematic Education (RME) Learning Approach on Students' Reasoning Skill At SMA Negeri 8 Medan".

1.4   Problem Formulation

Based on the problem identification and limitations mentioned above, the problem formulation in this research is: "Is there an effect of applying Realistic Mathematic Education (RME) learning approach on students' reasoning skill in the math subject of sequence and series on grade XI of SMA Negeri 8 Medan?"

1.5   Research Purpose

Based on the problem formulation above, the objective of this research is to determine whether the Realistic Mathematics Education Learning Approach has an effect on students' reasoning skills

1.6   Benefits of Research

1. For mathematics teachers, can expand their knowledge regarding improving students' reasoning skills by using the RME learning approach.
2. For researchers, as information material as well as guidance material for researchers in carrying out their teaching duties as prospective teaching staff in the future.
3. As information material for readers or other researchers who want to conduct similar research.