CHAPTER I
INTRODUCTION

1.1 Background

Education pushes us forward, has curiosity and make it something new. Education is important for every country because it can be used as indicator of progress of the nation (Uus Toharudin, 2015). In school education is given evenly, with a level according to it's level. In education, one of the things that is done is thinking. In this context students are critical thinking in receiving education inn school, especially in mathematics education. The ability to think of one student with another is very different. The ability to think critically has become a matter of great concern in the development of students' thinking. Critical thinking is the ability to reason and think reflectively directed to decide matters convincing to do as a self-conscious process that uses a judgement based on the evidence, method and specific criteria to interpret, analyze and evaluate knowledge. Critical thinking ability are not obtained offhand but through be some process. Critical thinking is a process of assessing self-regulatory aiming to encourage problem-solving and decision-making, or "engine" that drives how we decide what to do or to believe and can be either mental activity. (Uus Toharudin, 2015). For this reason, students's critical thinking ability need to be improved.

Mathematics is one of the subject that occupy an important role in education. This is because mathematics is used in all areas of human life. Human hold education to develop all their humanity toward positive goals. By education, they will achieve better. Humans are the only beings to be educated. Good education must be given so that it is aligned with the result to be achieved, students' critical thinking is the ability that every student must have to face his life in the future, even to live in this era must have the ability to think critically. The presence of technology has an impact on students' critical thinking ability in processinng a problem, especially in mathematical problems. So it is very clear that students' critical thinking ability need to be improved.

Based on observations during the Integrated Field Experience Program (PPLT), it was seen that the learning system used was still conventional (teacher centered) even though the school had used the latest curriculum which at the time was the 2013 curriculum. And from researchers who have done previous research (Lia Anggun Samosir, 2017) that the school learning system still uses conventional methods (teacher centered).

During the learning process students seemed passive and had difficulty digesting the material delivered and explained. In learning process, it is seen that there is little use of the technology in the school. So that students do not find new things or thoughts that are critical of an existing problem. In the teaching and learning process there is a lack of students' critical thinking ability in solving a problem in mathematics, students have difficulty issuing their ability to think critically in the learning process, and when facing a problem outside of the mathematical material delivered.

For this reason, an effort is needed to improve students critical thinking ability towards a mathematical problem as well as outside mathematics as in everyday life. Effort are also made with methods that support students' critical thinking ability with ICT assistance which facilitates the delivery of material in the teaching and learning process.

Critical thinking is a part of reflective thinking and focuses on establishing what it believes. So critical thinking defined as the ability to analyze, synthesize, and valuate. While four components creative thinking is fluency, flexibility, originality and ellaboration (Torrance, 1984). Base in the theory, critical thinking indicator is developed for analyzing and evaluating arguments and evidence, clarifying, making considerations, making explanations, and identifying an assumption. (Sumarno, Hidayat, Zulkarnaen, Hamidah, Sariningsih, 2012). Some expert define the term critical thinking mathematicaly with a similar meaning. The Fisher suggested critical thinking is to explain what someone is thinking. Learning to think critically is to learn how to ask, when to ask, what's the question, how to reason, when to use reasoning and what reasoning methods which use. Ennis

(1996) suggested that critical thinking is a process that aims so that we can make decisions that make sense, so what we think is the best of a truth we can do it right. Then Chanche (Huitt, 1998), a cognitive psychologist defines critical thinking as the ability to analyze facts, generate and organize ideas, defend opinions, make comparisons, draw conclusions, evaluate arguments and solve problem.

According Rahayu (2014), when students learn Math is separate from their daily experience it will easily to forget and can't apply mathematics. Based on the above opinion, mathematics learning in the class is emphasized on the interrelation between mathematical concept with experience of everyday children, in addition, it is necessary to reapply the mathematical concept that children have in daily life or in other areas. On method of mathematical learning that oriented to the mathematization of everyday experience and applying mathematics in everyday life is RME (Febrian,et al,2013) Mathematics learning basically sharpens the logical thinking of students through improvinng students' critical thingking ability. Fauzan (2011) stated that RME provides an opportunity for students to act actively in searching the answers for problems encountered and seek to examine, seek and summarize itself logically, critically, analytically and systematically. According to Daitin Tarigan, (2006: 4), in broad outline PMR is the orientation approach is towards student reasoning that is realistic and aimed at developing practical, logical, critical and honest thinking patterns oriented to mathematical reasoning in solving problems.So, RME learning is very suitable to improve students' critical thinking ability.

Nowdays, the development of science and technology is very fast and spread widely so influenced the field of life, including in education field. Technology can be used to solved any problems. In the learning process, it wil be more effective and efficient if it was supported by using ICT like a media, because students interacted directly to the learning resource which can lead to the optimal learning. Contextualized and activity-oriented instructions by the support of technology provides learners to learn in action (Harris, Bretag, 2003, Eurn, 2010).

Information and Communication Technology (ICT) can broadly be defined as the tools, facilities, processes, and equipments that provide the required environment with the physical infrastructure and the services for the generation, transmission, processing, storing and disseminating of information in all forms including voice, text, data, graphics and video. From the defenition, ICT has a role to play in any country's educational development.(Nana Yaw Asabere, 2012) ICT has had a major impact in the university context, in organisation and in teaching and learning methods. (Adel Ben Youssef, 2008). The potential benefits, implications and challenges of introducing ICT into schools can be very different depending on the vision and the understanding of the nature of this change, as well as strategies for its management adopted by the leadership at the school level and beyond (UNESCO, 2003). With the application of good and perfect ICT, the effects that are obtained will greatly affect students' abilities in learning. ICT is very easy for students to follow and digest the delivery of material provided by the teacher to students.

The use of ICT is inseperable from the daily lives of students, schools have also realized the use of ICT to facilitate the delivery of learning material. The small thing about the use of ICT is when the teacher delivers the material using the projector and uses the Ms. Application power point to explain a material. From here it is clear the impact of the use of ICT in the learning process in the classroom. The result given were very different from the result when the teacher gave a conventional explanation from the front of the class. For this reason, the use of ICT is highly recommended to make it easier for students to understand the material from the delivery of teachers in front of the class.

Based on the descriptions, the researcher want to do the research with method that has been mentioned above based on ICT to make a improvment with students's critical thinking ability. This title of this research is **"Improving Students Critical Thinking Ability by (RME) Approach Assisted by ICT in SMA NEGERI 1 Tebing Tinggi Academic Year 2019/2020"**

1.2 The Problem Identification

Generally, the issue in this research is: How to improve students' critical thinking ability in the learning process and in solving a mahtematical problem also in facing the daily life, so we do the identification of problem based on the background:

1) The student difficult to improve critical thinking ability in the learning process and in solving a mathematical problem
2) The method used is difficult to understand
3) The lack of media used to support clashroom learning

1.3 The Problem Limitation

1) Improving student critical thinking ability to solve mathematical problem
2) Using RME as a method to improve students critical thinking ability.
3) The respondent used in student who learn mathematics in senior high school.

1.4 The Problem Formulation

Based on the problem identification that has been stated previously, then the problem formulation in this study are:

1) How about the improvement of students critical thinking ability?
2) How about the effectiveness of RME in improving students critical thinking ability?

1.5 Research Objectives

The objectives of this research is to improving students' critical thinking ability by using realistic mathematics education (RME) learning approach based on ICT in senior high school. The specific objectives in this study are:

1) Improving students' critical thinking ability by using realistic mathematics education learning approach.
2) To find the stages of realistic mathematics education (RME) learning approach so that it is effective to improve students critical thinking ability.

1.6 Research Benefit

In the implementation of this study is expected to able to provide benefits to many people. This study is expected to provide the following benefits :

1) For researchers, is a valuable experience which can improve the students' critical thinking ability by using realistic mathematics education (RME) learning approach based on ICT.
2) For teacher, as a reference for increasing students' critical thinking ability by using realistic mathematics education (RME) learning approach based on ICT.
3) For students who learn mathematics using realistic mathematics education (RME) learning approach can improve the students' critical thinking ability based on ICT.
4) For futher research, provide information and reference in future studies for students, especially students in mathematics department in Medan State University.

1.7 The Operational Definition

To avoid differences in the meaning of the important terms contained in this study, the operational definition will be recorded as follows:

1. Critical thinking ability is a part of reflective thinking and focuses on establishing what it believes. So critical thinking defined as the ability to analyze, synthesize, and valuate. Learning to think critically is to learn how to ask, when to ask, what's the question, how to reason, when to use reasoning and what reasoning methods which use
2. Realistic Mathematics Education (RME) is the orientation approach is towards student reasoning that is realistic and aimed at developing practically, logically, critically, analytically, systematically and honest thinking patterns oriented to mathematical reasoning in solving problems.

3. Information and Communications Technology (ICT can broadly be defined as the tools, facilities, processes, and equipments that provide the required environment with the physical infrastructure and the services for the generation, transmission, processing, storing and disseminating of information in all forms including voice, text, data, graphics and video. ICT has a role to play in any country's educational development.

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