CHAPTER I
INTRODUCTION

1.1.Background

Mathematics is one of the subject that occupies an important role in education. This can be seen from the time of school hours more than other subjects. In addition, as stated in the content standards for elementary and secondary mathematics education units (Depdiknas, 2006: 139) it has been stated that mathematics subjects need to be given to all students starting from elementary school to equip students with logical, analytical, systematic thinking skills. critical, creative, and communication skills (Jumaisyaroh, 2014).

The students' basic mathematical abilities achieved require logical, analytical, systematic, critical and creative thinking skills, as well as the ability to work together. Critical thinking skills are needed to improve basic abilities in reasoning. Students are required to have thinking and acting skills which include creative, productive, critical, independent, collaborative, and communicative. This has been stipulated in the Regulation of the Minister of National Education No. 22 of 2016 concerning Student Competency Standards which refers to the 2013 curriculum. Basic critical thinking skills are useful for improving process skills and student learning outcomes. Critical thinking skills are also useful for students to face future problems. So it is important for students to have basic critical thinking skills (Affandy, 2019).

Critical thinking ability is thought to have a close relationship with mathematics, because critical thinking skills provide more precise direction to students in thinking, working, and helping more accurately determine the relationship between something and others (Mursari, 2019).

Mathematical critical thinking skills and student learning independence are still low due to several factors, one of which is the learning carried out by the teacher in which the teacher is still less precise in choosing and using learning models that can improve mathematical critical thinking skills and student learning independence (Jumaisyaroh, 2014).

Based on the characteristics of critical thinking skills, it can be interpreted that the character, criteria, arguments, considerations, viewpoints, and procedures for applying criteria can affect the basic abilities of students who create critical thinking skills. So to maximize students' ability to think critically, this study tries

to use the PBL model in learning that will improve students' critical thinking skills (Hagi, 2019).

Models in learning can affect the process and acceptance of learning materials by students. One of the learning models that enable students to think critically is the PBL model. PBL or Problem based Learning is an innovative learning in which the learning process exposes students to concrete problems and creates an active learning atmosphere that is student-centered with the teacher as a facilitator (Koeswanti, 2018: 67).

Based on the above, the teacher needs to choose an appropriate learning model to improve mathematical critical thinking skills and student learning independence, one of which is by applying problem-based learning. Problem-based learning is learning that refers to the following learning steps: (1) student orientation to problems, (2) organizing students to learn (3) guiding individual and group investigations, (4) developing and presenting work and, (5) analyze and evaluate the problem solving process (Arends, 2007:57). Problem-based learning has the characteristics of student-centered learning through giving problems at the beginning of learning as a starting point for the acquisition and integration of new knowledge (Cahyo, 2013: 283). Through giving problems at the beginning of learning, it will encourage students to be able to solve the problems given through analyzing, criticizing, and drawing conclusions from these problems so that they can train students' mathematical critical thinking skills. Based on this, it is hoped that later with the implementation of problem-based learning in the classroom, it can improve students' critical thinking skills (Jumaisyaroh, 2014).

1.2.Problem Identification

As for who becomes the identification of problems in the research is that obtained from the description of the background behind is:

1. The ability to think critically mathematical students in the learning of mathematics is still low.
2. Mathematics learning is still teacher- oriented so that students are passive in learning activities.
3. The diversity and different the results of research on the model of Problem Based Learning to improve the ability to think critically mathematical students that cause differences in the perception of the researchers and readers.

1.3.Problem Limitation

Based on the identification of the problem above, which became the focus of the problem of research, this is the result of research on the use of the model of Problem Based Learning to improve the ability to think critically mathematical students. The results of research that is used is the article of the journal study 5 years past that article years 2015-2020.

1.4.Problem Formulation

Based on the identification and limitation problem above, then that becomes the formulation of the problem in the study of this are:

1. Is the model of learning Problem Based Learning effectively used in learning mathematics to improve critical thinking abillity?
2. How does the influence of the model of learning Problem Based Learning to improve critical thinking abillity?

1.5.Research Objectives

Based on the formulation of the problem above, then the research objectives which wish to be reached are as follows:

1. To determine the effectiveness of the model of learning Problem Based Learning in improving critical thinking abillity.
2. To determine the effect of the Problem Based Learning learning model on improving critical thinking abillity.

1.6.Research Benefits

This research is expected to:

1. For the authors, the study is expected to provide benefits to add knowledge of the author about how to increase the ability to think critically mathematical students after using the model of Problem Based Learning.

2. For the reader, is expected to add knowledge and insight regarding the improvement of the ability to think critically mathematical students after using the model of Problem Based Learning.

3. For the State University of Medan, the results of this research can be used for library materials.

1.7.Operational Definition

To reduce differences or lack of clarity of meaning, the operational definitions in this study are:

1. The ability to think critically mathematical is the ability to Able to think is reasonable and reflective are dedicated to analyze, assess and evaluate an argument that can be trusted kebenaranya to resolve or solve a problem of mathematics.
2. Problem Based Learning has a characteristic that is learning she'd focus on students through the provision of a problem at the beginning of the learning that will encourage students to be able to resolve the problems that are given through the activities analyze, criticize and draw conclusions from the problems.