

CHAPTER I

PRELIMINARY

1.1 Background

Basically, education should be able to prepare young people who are ready to meet the rapidly world changing as qualified human resources, both locally, nationally and internationally. Quality of human resources is characterized by a high level of thought, productive, creative, innovative, supported by high skills and expertise; has socio emotional abilities, spiritual, and cultural (Supriadie, 2012 : 2).

To make human resources with good quality, Indonesia align between the function and purpose of national education. Based on Undang-Undang Republik Indonesia Nomor 20 tahun 2003 (in Sanjaya, 2011 : 65), a national education serves to develop skills and form the character and civilization of the nation's dignity in order to achieve the life of the nation, aimed to develop the potential of students to be faithful man and devoted to God Almighty, noble, healthy, knowledgeable, skilled, creative, independent, and become democratic and responsible citizens. Minister of Education (in Sanjaya, 2011 : 74) mention that some Competency Standard of Graduation Unit for SMP is to understand the advantages and disadvantages of self, show a confident attitude, demonstrate the ability of think logically, critically, creatively and innovative, show ability to study independently according to their potential, demonstrate the ability to analyze and solve problems in daily life, as well as master the knowledge which is needed to follow secondary education. This suggests that the importance of learning motivation and self-concept to the ability of students' mathematical communication.

Mathematical objects is abstract, in the form of ideas, concepts, symbols, and linkages system among the community elements (the set) that is often to be a reason for students to dislike mathematics.

There are several factors that cause mathematical regarded as a difficult subject, who is characteristic of mathematical material, is abstract, logical and systematic as well as the full symbol and formula, or even teachers who are less fun and confusing. But mathematics is the important branch of abstract science, because it is one subject that makes it possible to develop the ability to think and is a means to improve the quality of human resources. Mathematics learning is also aiming to give everyday thinking towards thinking more technical and scientific at the stage of early childhood. While, Hudojo (2005 : 134) says that to solve learning problems in mathematics, needed some planning such as (1) to formulate the learning objective, (2) need knowledge, creativity and understanding, and (3) study of problem solving.

BSNP (in Pramono, 2010 : 1) say that the main goal of mathematics learning are given as follows:

1. Understanding a mathematical concept, explains the relationship among concepts and apply concepts or algorithms, flexibly, accurately, efficiently, and appropriately, in problem solving.
2. Using the pattern and nature of reasoning, doing mathematical manipulation in making generalizations, compile evidence, or explain mathematical ideas and statements.
3. Solving problems that include the ability of problem understanding, devised a mathematical model, solveing the model and interpreting the obtained solution.
4. Communicating ideas with symbols, tables, diagrams, or other media to clarify the situation or problem.
5. Having respect for the usefulness of mathematics in life, namely to have curiosity, concern, and interest in mathematics learning, as well as a tenacious attitude and confidence in problem solving.

National Council of Teachers of Mathematics (NCTM, 2003 : 1) also mention that some standards for mathematics basic are knowledge of mathematical problem solving, knowledge of reasoning and proof, knowledge of mathematical communication, knowledge of mathematical connections,

knowledge of mathematical representation, knowledge of technology, dispositions, knowledge of mathematics pedagogy, knowledge of number and operation, knowledge of different perspectives on algebra, knowledge of geometries, knowledge of data analysis, statistics and probability, knowledge of measurement, and field-based experiences.

Based on the explanation of the National Council of Teachers of Mathematics (NCTM), it can be said that one of the essential competencies of the students after mathematics learning is communication skills. Language and communication is central to every aspect of human life, including the learning activities in the classroom. Generally, communication is an event each conveys a message through a certain way to convey a specific purpose in a community. While communication ability is skills possessed by a person in describing behavior, describing feelings and impressions check. The difficulty in describing feelings or ideas in order to perceived accurately by the listener or even difficult to listen and interpret accurately something delivered by other is one of the problems posed by the lack of communication ability. Therefore, communication ability are very necessary, especially in mathematics learning which often in using of notation, symbols, vocabulary, and mathematics structure in describing an algorithm or even to explain and understand mathematical ideas and its relationships. NCTM (In Wichlet, 2009 : 6) also say that to make students feel comfortable talking about their understanding in order to become better students, Teachers must help students clarify their statements, focus carefully on problem conditions and mathematical explanations, and refine their ideas.

The ability of mathematical communication useful for students to hone mathematics skills, particularly in communicating ideas with symbols, tables, diagrams, or other media to clarify a situation or a mathematics problem. Some achievement indicators of communication ability (in Ansari, 2009 : 10) are (1) states the mathematical ideas by speaking, writing, demonstrations, and described it in a visual form, (2) understanding, interpreting, and assessing the mathematical ideas presented in writing, oral or visual form, (3) using vocabulary/language, notation and mathematical structures to express ideas,

describe relationships, and modeling. In this case, the indicators of mathematical communication ability is bounded as (1) the ability of stating mathematical problem from available figure into mathematical model, (2) the ability of explaining mathematical problem into figure, and (3) the ability of explaining problems situations by own words and doing calculation.

Mathematical communication ability is one of the achievement indicators of mathematics learning goals. There are several factors that have influenced the ability of students' mathematical communication. These factors can be classified into two types, namely internal factors and external factors. Internal factors are factors present in individuals who are learning, while the external factors are factors that are outside the individual that is being studied. Internal factors include physical factors (factors of health, disability) , psychological factors (intelligence, attention, interest, aptitude, self-concept, motivation, maturity, readiness) and the fatigue factor. While external factors include family factors (how to educate parents, relationships among family, the house, the family economic situation , understanding parents, cultural background), school factors (method of teaching, motivation, curriculum, teacher relationships with students, school discipline) and community factors (friends hanging out, the mass media, the activities of students in the community).

Generally, it can be defined that education is a conscious effort planned and strived to develop students potential, both physical and unphysically, developing the potential of thought (mental-intellectual), social, emotional, moral, spiritual, and economically (life skills), physically and culturally, so as to run her life and living in accordance with the expectations of themselves, their families, communities, nation and state, as well as to meet the challenges of increasingly advanced civilization. Education is connecting the two sides, on the one hand, individuals who are growing (and) on the other hand is the value of social, intellectual, and moral are the teachers responsibility to encourage the individual. Therefore, both internal and external factors have a same strong influence in affecting the ability of student's mathematical communication. In this study, the

problem is limited to student's motivation and self-concept as a factor affecting the ability of student's mathematical communication.

In essence, learning has to be able to change a person's behavior to be better, so he has the ability to adapt to its environment. Someone who has been studying the situation is not the same as the state as he has not learned. Pintrich (in Arends, 2008 : 142) mentions the motivation comes from the Latin *movere* which refers to what makes people move towards a particular activity or task. Motivation is a psychological phenomenon in the form of impulse arising from within oneself either consciously or unconsciously to act with a certain purpose. In learning concept, motivation is an art that encourage students to perform learning activities to achieve the learning goals.

Learning motivation of each students is different. There are students who have high learning motivation and there are also students who have low learning motivation. High motivation of students can make them work hard and never give up in the face of all obstacles in the learning process, especially in mathematics that had been regarded as a difficult subject by the students. Someone will have high learning motivation and understand when he/she realizes that the goal will be achieved in the future. If a person understands his goal well, then he/she will be forced to become more active in learning.

Motivation is divided into two parts; that are internal and external motivation. Santrock (in Dariyo, 2004 : 2) mentions 4 characteristics underlying the development of intrinsic motivation is self-determination (the ability to determine the purpose of self-performed or previously owned), curiosity (the tendency to learn and master something that is quite large from within themselves), challenge (a chance to get something in accordance with the ability of self), and effort (a skill that is used to achieve something according to his expectations), whereas extrinsic motivation is a form of stimulation in the can from the people around him/her. Internal motivation tends more durable than external motivation. Conversely, external motivation tends not to be long last, because when the outside stimulation lost then the person will also tend to reduce the learning spirit.

However, teachers are required to be able to motivate the students to learn so that motivations contained within the students become more optimized in learning achievement. Teachers should be able to develop a learning approach to motivate students. Topics that are considered attractive and useful for the student with a clear notice of the purpose of learning, giving special attention to the students activities, giving praise and prizes in recognition of student learning outcomes, as well as the efforts of a teacher in creating an atmosphere that is safe and fun learning a few things to encourage the emergence of student motivation. The stronger learning motivation will increase student's effort to achieve a better learning achievement. Student's low learning motivation tends to make the lack of learning activity and learning achievement, especially in student's mathematical communication ability, indicates that there is relationship between student's learning motivation and mathematical communication ability.

In addition, self-concept is also one of the most influential factors in students' learning activities, especially in mathematics. High motivation will increase the student's confidence, so as students are not hesitant and embarrassed and want to develop their potential contained within itself primarily related to the creativity potential. But in fact, there are many students who consider themselves incapable of completing tasks in school, especially mathematics. Students assume that mathematics is a subject that is scary because of the high degree of difficulty. Students limiting their ability before they try so that they lose self-confidence and belief in learning motivation.

Atwater (in Desmita, 2010 : 163) mentions the self concept is the whole of self-image, which includes peoples' self perception, feelings, beliefs, and values associated with him. Self-concept includes attitudes, values, or people's self-image. Self-confidence and belief of a person can be effective in any situation is the part of a person's self-concept about themselves. Desmita (2010 : 164) states that more positive or better a person's self-concept will easier to be successful, because of positive self concept, someone will be optimistic, daring to try new things, bold and daring success anyway failed, confident, enthusiastic, feeling self-worth, dare to set life goals, behave and think positively.

Relevant research by Nylor (in Desmita, 2010 : 171) also states that students will demonstrate high achievement in school, have higher self-assessment, demonstrate positive interpersonal relationships, determine realistic targets of learning achievement and direct the academic anxiety by study hard and diligently, and always directing every activity on academic activities, if they have a positive self-concept. Relevant research by Walsh (in Desmita, 2010 : 171) also mentions that underachieving students tend to have a negative self-concept that makes them often have the criticized feeling, rejected and isolated, conduct a defense mechanism to avoid and act even against and not being able to express feelings and behavior. Student's negative self-concept tend to make the lack of learning activity and learning achievement, especially in student's mathematical communication ability, indicates that there is relationship between student's learning motivation and mathematical communication ability.

That statement is supported by researcher's interview result with some of teachers and students at SMP Negeri 1 Lubuk Pakam. Based on the interview (March, 10th 2014), one of the teachers said that there are some factors which affect students' learning process. Students who have learning motivation are tend more active in learning process. They are also have more courageous to try and solve problems in learning process and try to communicate it. In addition, one of the mathematics teachers said that students who have learning motivation tend more confidence and be able to communicate mathematics problem which is given in mathematics' language and mathematics' symbol. On the contrary, there are also students who not confidence and consider that they are not able to solve problems in learning process, so the teacher needs to give more motivation to make them more brave.

Those teachers' statement also supported by some students who said that they consider mathematics as learning subject which difficult to understood. They consider that they are not able to solve learning problems so they are tend not interest to be more active in learning process. On the contrary, students who have understanding in learning objectives are tend to have strong motivation to be more active in learning process. In addition, they are also have more bravery to solve

problems which is given by teacher without fear of right or not. It is also supported by Weiner (in Arends, 2008 : 147) which is said that students with high motivation achievement tend to attribute their succes to their ability and to attribute failure to lack of effort. From the interview result which is related by Weiner's learning motivation theory, student's low learning motivation and negative self-concept tend to make the lack of learning activity and learning achievement, especially in student's mathematical communication ability, also indicate that there is the relationship between student's learning motivation and self-concept altogether toward to the student's mathematical communication ability.

Based on the above background, researcher intends to conduct a research on how positive the relationship between students' motivation and self-concept toward students' mathematical communication ability, entitled "The Relationship between Student's Learning Motivation and Self-Concept Altogether toward Student's Mathematical Communication Ability at Grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015".

1.2 Problem Identification

Based on the above background, problem identification in this research are:

1. The difficulty in describing feelings or ideas is one of the problems posed by the lack of communication ability.
2. Students limiting their ability before they try to solve learning problems so that they lose their self-confidence and belief in learning motivation.
3. Student's low learning motivation at grade IX SMP Negeri 1 Lubuk Pakam tends to make the lack of student's mathematical communication ability, indicates that there is positive relationship between student's learning motivation and student's mathematical communication ability.
4. Underachieving students tend to have a negative self-concept that makes them often have to criticized feeling, rejected and isolated, conduct a defense

mechanism to avoid and act even against and not being able to express feelings and behavior.

5. Student's negative self-concept at grade IX SMP Negeri 1 Lubuk Pakam tends to make the lack of student's mathematical communication ability, indicates that there is positive relationship between student's self-concept and student's mathematical communication ability .
6. Student's low learning motivation and negative self-concept at grade IX SMP Negeri 1 Lubuk Pakam that tends to make the lack of student's mathematical communication ability also indicate the positive relationship between student's learning motivation and self-concept altogether toward student's mathematical communication ability.
7. Mathematical object is abstract, in the form of ideas, concepts, symbols, and linkages system among the community elements (the set) that is often to be a reason for students to dislike mathematics.

1.3 Problem Limitation

Based on the above background and problem identification, problem limitation of this research are:

1. Student's low learning motivation at grade IX SMP Negeri 1 Lubuk Pakam tends to make the lack of student's mathematical communication ability, indicates that positive relationship between student's learning motivation and student's mathematical communication ability.
2. Student's negative self-concept at grade IX SMP Negeri 1 Lubuk Pakam tends to make the lack of student's mathematical communication ability, indicates that there is positive relationship between student's self-concept and student's mathematical communication ability .
3. Student's low learning motivation and negative self-concept at grade IX SMP Negeri 1 Lubuk Pakam that tends to make the lack of student's mathematical communication ability also indicate the positive relationship between student's learning motivation and self-concept altogether toward student's mathematical communication ability.

4. This research was conducted at grade IX SMP Negeri 1 Lubuk Pakam in the matter three dimensional space for pyramid Academic Year 2014/2015.

1.4 Problems Formulation

Based on problem limitation, problem formulation in this research are:

1. Is there a positive relationship between student's learning motivation and student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015?
2. Is there a positive relationship between student's self-concept and student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015?
3. Is there a positive relationship between student's learning motivation and self-concept altogether toward student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015?

1.5 The Objective of Research

The objective in this research are to know:

1. The positive relationship between student's learning motivation and student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015.
2. The positive relationship between student's self-concept and student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015.
3. The positive relationship between student's learning motivation and self-concept altogether toward student's mathematical communication ability at grade IX SMP Negeri 1 Lubuk Pakam Academic Year 2014/2015.

1.6 The Benefit of Research

The benefit of this research are:

1. As a recommended to headmaster and teachers to make a comfort learning condition to support student's learning motivation as the potential to drive and stimulates their action in learning process, so they have more courageous to be more active and more interest in learning process.
2. As a recommended to parents to support the forming process of self-image, self-assessment and self-control of students by lead a great interaction in daily activity so they have a great relationship between attitudes and beliefs of themselves in learning process.
3. As a recommended to students to control their activity, make a good mindset and can achieve a failure as the learning process to be success.
4. As a recommended to researcher when later become a good teacher.
5. As a reference to students of State University of Medan, especially in Mathematics Education Department.

1.7 Operational Definition

1.7.1 Operational Definition of Learning Motivation

Student motivation is an art that encourage student to perform learning activities to achieve the learning objective, which is divided into two parts, named:

1. Intrinsic motivation, the indicators consist of need, interest, curiosity, and pleasure.
2. Extrinsic motivation, the indicators consist of indicators about the clarity of learning objective and gift.

1.7.2 Operational Definition of Self concept

Self concept is an overall self-image, which is included by this following below:

1. Self understanding
2. Self-assessment
3. Self-expectations

1.7.3 Operational Definition of Mathematical Communication Ability

Mathematical communication ability is the ability to express mathematical ideas through oral, writing and demonstrating, related to the models of mathematical situation. The indicator of student's mathematical communication ability are bounded by writing aspect below:

1. The ability of stating mathematical problem from available figure into mathematical model.
2. The ability of explaining mathematical problem into figure.
3. The ability of explaining problem situations by own words and doing calculation.