Incorporating Learning Motivation and Self-Concept in Mathematical Communicative Ability

Waminton Rajagukguk[1]

[1] Mathematics Department, Medan State of University, Indonesia

Correspondence: Waminton Rajagukguk, Mathematics Department, Medan State of University, Jl. William Iskandar, Psr V, Medan State, Indonesia. E-mail: warajagukguk@gmail.com

Abstract

This research is trying to determine of the mathematical concepts, instead by integrating the learning motivation (X_1) and self-concept (X_2) can contribute to the mathematical communicative ability (Y).

The test instruments showed the following results: (1) simple regressive equation Y on X_1 was $\hat{Y} = 32.891 + 0.43X_1$, simple linier regressive test Y on X_1 was $F_{cal} = 1.272 < F_{tab} = 1.897$ and pertained to linear regression at significant level of 5%, (2) simple regressive equation Y on X_2 was $\hat{Y} = 33.68 + 0.44X_2$, simple linear regressive test Y on X_2 was $F_{cal} = 0.616 < F_{tab} = 1.897$ and pertained to linear regression at significant level of 5%.

The data analysis of the variable correlation could be seen as follows: (1) learning motivation (X_1) with mathematical communicative ability (Y) was $r_{cal} = 7.730 > r_{tab} = 4.020$ indicated the positive correlation at significant level of 5%, (2) self-concept (X_2) with mathematical communicative ability (Y) was $r_{cal} = 8.375 > r_{tab} = 4.020$ showed the positive correlation at significant level of 5%.

The result of this study is that there was a positive relationship between learning motivation (X_1) and mathematical communicative ability (Y), and also self-concept (X_2) and mathematical communicative ability (Y).

Keywords: learning motivation, mathematical communicative ability, self-concept

1. Introduction

1.1 Background

In spite of the factors which caused mathematics being regarded as a formidable subject, further addition to mathematical material characteristics that consisted of abstract, logical and systematic that comprised symbols and formulas, might as well drives not only the students but even teachers might even fall to inconvenience and confusion. But mathematics is a predominant important abstract branch of science, because it is reckoned to exercise intelligence to think technically, scientifically and to improve the quality of human resources. Hudojo (2005:134) wrote that learning mathematical solving problems needed some disposals such as (1) to formulate the learning objective, (2) need knowledge, creativity and understanding, and (3) study of problem solving.

National Council of Teachers of Mathematics (NCTM, 2003, p. 1) also mentioned that some of the standards in mathematical-based are the knowledge of problem solving, reasoning and substantiating, mathematical communicative, mathematical connective, mathematical representative, technological disposition, mathematical pedagogy, numerical and operational, different perspectives on algebra, geometry, data analysis, statistics and probability, measurement, and sphere-based experiences.

National Council of Teachers of Mathematics (NCTM), described that one of the students' essential competence due to the mathematics learning is communicative skills. Language and communication is a central feature in every aspect of human life, including the learning activities across classroom. Generally, communication is an event that each speaker and listener conveys a message through a certain way to a specific purpose in a community. Even further, communicative ability is the skills possessed by a person in describing behavior, describing feelings and impressions. The misunderstanding in describing feelings or ideas in order to be perceived accurately by the listener or otherwise, and its complication to listen and interpret accurately about certain information for the others tends to be categorized as the communicative inability. Therefore,

mathematical communicative ability is very necessary, in such a way often applying notations, symbols, vocabularies, and mathematical structure in describing an algorithm or either to explain and understand mathematical ideas and its relationships. Wichlet (2009, p. 6) also remarked that in order to help the students to feel comfortable while discussing about their understanding about the subject matter and hoping to become better in their study, Teachers must help students to concisely present their statements, focus carefully on problem conditions and mathematical explanations, and present their ideas.

The mathematical communicative ability is useful for students to improve their mathematical skills, particularly in communicating ideas with symbols, tables, diagrams, or other media to clarify a situation or a mathematical problem. Mathematical communicative ability is one of the achievement indicators of mathematical learning goals, in addition to factors that influenced the intelligence of students' mathematical communication. These factors can be classified into two types, that is to say internal factors and external factors. Internal factors are the factors that exist in individuals who are learning, while the external factors are outside impacts contributing immediately to any individual. Internal factors included physical factors (state of health, disability), psychological factors (intelligence, attention, interest, aptitude, self-concept, motivation, maturity, readiness) and the fatigue factor. While external factors include family state (parental education, family relationship, the house, the family economy, parental understanding, cultural background), school factors (the state of teaching method, motivation, curriculum, teacher relationships with students, school discipline) and community factors (friends hanging out, the mass media, the activities of students in the community).

In general, the education is a conscious effort which is designed and attempted to develop the students' potential, both physical and mentally, developing potential of thought (mental-intellectual), social, emotional, moral, spiritual, and economical (life skills), physically and culturally, which in long turn will prepare the students to meet the expectation of their families, communities, nation and state, in their future lives, as well as to keep in pace the challenges which moving forward to an advanced civilization. Education connects across two sides; on one hand, an individual 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 common strong influence in affecting the ability of student's mathematical communication. However, the relation to this study is that the problem is to draw the boundaries within the students' motivation and self-concept as a factor that affect the ability of student's mathematical communication.

More importantly, learning is somehow assumed to improve then change person' s behavior to the better, and also enable them to adapt within environment's different circumstances. Learning motivation of each learner is different; some are high while the others are low. Learners with high motivation are expected to handle obstacles by not giving up easily, and it also applies when dealing with mathematics in particular. It is important to have self-encouragement and high motivation to cope with the goals that is set in the future and gain understanding why it is necessary to do so.

Motivation is divided into two parts; they are internal and external motivation. Dariyo (2004, p. 2) mentioned that there are 4 (four) characteristics underlying the development of intrinsic motivation such as self-determination (the ability to predetermine the purpose of self-performed or which previously owned), curiosity (the tendency to learn and know inside out of something that is quite substantially within themselves, challenge (a chance to get something in accordance with the potentiality of self), and effort (a skill that mustered to achieve something according to his expectations), whereas extrinsic motivation is a form of stimulation in the condition from the people around him/her. Internal motivation tends to be last longer than external motivation. On the other hand, external motivation tends not to be momentary, because when the outside stimulation is lost, then the person will also tend to reduce the learning ethos.

The stronger the learning motivation persuasiveness, the higher the ethos achieved for better learning. Student's low learning motivation tends to suffer the lack of learning activity, especially in student's mathematical communicative ability.

In regards to mathematical communicative ability, 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, as in effect, students are not hesitant and embarrassed and want to develop their potential contained within themselves primarily related to the potential creativity. But in fact, there are many students who consider themselves incapable of completing tasks in school, especially mathematics. Students assume that mathematics is a frightening subject because of the high level of its difficulty. Students often deterred before they try as the result they lose their self-confidence and belief in learning motivation.

Desmita (2011, p. 163) mentioned that the self-concept is the wholeness of self-image, which includes people's

self-perception, feelings, beliefs, and values associated with them. Self-concept includes attitudes, values, or people's self-image. Self-confidence and belief in an individual can be effective or not in any situation depends on the reflection of the person's self-concept about themselves. Desmita (2010, p. 164) stated that the more positive or better a person's self-concept, the easier the individual inclined be successful, because the idea of positive self-concept, it drives an individual to be optimistic, dare to try new things, confident, enthusiastic, the feel of self-worth, determined to set goals in life, behave and think positively.

Relevant research by Desmita (2011, p. 171) also wrote 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 Desmita (2010, p. 171) also mentioned that low achieving students tend to have a negative self-concept that turned them down very often also creating the image of self-criticism in terms of behavior and feeling, rejected and isolated, conduct a defense mechanism to avoid and act even against and not being able to express feeling and behavior. Student's negative self-concept tend to turn learning activity and learning achievement down, especially in student's mathematical communicative ability.

That statement is reinforced by the researcher's interview with some of teachers and Junior High School Students. Related to the interview (March, 10th 2014), one of the teachers testified that there are some other factors which affect the student's self-concept in their learning process.

Those teachers' statement also corroborated by some students who affirmed that their perspective on mathematics as one of the learning subjects is a subject that is very difficult to understand. It is also confirmed by Mursell (2008, p. 147) who said that students who have high motivation achievement tend to attribute their success to their intelligence and attribute their failure as their inability. From the interview segments which is related by Weiner's learning motivation theory, student's low learning motivation and negative self-concept potentially cause the lack of learning activity and learning achievement, especially in student's mathematical communicative ability.

2. Literature Review

2.1 Mathematical Communicative Ability

Basically, a communicative skill is the ability to describe the behavior, describing feelings, and impressions. But in learning mathematics, mathematical communicative ability is specifically described as the ability to express mathematical ideas by oral and written, the ability to understand and interpret and evaluate mathematical ideas orally, in writing, or other visual forms, as well as the ability to use the term, notation, and mathematical structures to present ideas and describe the relationship with models of mathematical situations. In other words, in solving math problems, students are involved communicatively to be able to think and express ideas, strategies and solutions for their best.

Standard National Educational Agency propounded that the main goal of learning mathematics are as follows:

1) Understand mathematical concept, explain the relationship between concepts and algorithms, flexibility, accurateness, efficiency, and appropriateness, in problem solving.

2) Imply the pattern and nature of reasoning, doing mathematical manipulation in making generalizations, compile evidence, or explain mathematical ideas and statements.

3) Solve problems comprehensively, devise a mathematical model, solving model and interpret solution.

4) Communicate ideas with symbols, tables, diagrams, or other media to clarify the situation or problem.

5) Having a mathematical usage such in curiosity, concern, and interest as a tenacious attitude and confidence in problem solving.

Uno (2011, p. 128) wrote that some components in mathematics is the language and statement that are used by mathematicians, some important questions which are left unsolved by now, the reasons in which is used to explain statements, as well as the mathematical ideas. This is certainly related to some indicators of the achievement of mathematical communicative ability. While, Bloom (2012) classifies three domains of intellectual behaviors; those are cognitive, affective, and psychometric. In terms of cognitive domain, it deals with the thinking skills based on the expected objective, reinforced by intellectual behaviors, such as knowledge and thinking skills. The cognitive domain inclusion are (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation, where the level of application employed knowledge to actual situations, and consist some verbs such as apply, change, choose, compute, demonstrate, discover, dramatize,

employ, illustrate, interpret, manipulate, modify, operate, practice, predict, prepare, produce, relate, schedule, show, sketch, solve, use and write (Utari, 2012).

Marsigit (2011, p. 18) suggested that the essence of mathematics is an investigation activity of pattern and relation. Where mathematics as media to offer opportunity to the students to try and find the pattern and make its relation, and encourage the students to find the series, the difference, the comparison, and make a conclusion. Wichlet (2009, p. 9) also suggested that students will acquire a deeper understanding of mathematics when they use their own statements, as well as those of their peers and teacher. In addition, Students need to be involved in the classroom discussions in order to help them understanding the material and to turn the connections of the mathematical concepts in themselves. It is related to the indicators of student's mathematical communicative ability which is furthermore asserted by Ansari.

Some achievement indicators of communicative ability proposed by Ansari (2009, p. 10) are (1) orally speaking mathematical ideas, writing, demonstrating, and describing visually, (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 communicative ability is bounded as (1) the ability of describing mathematical problem from presented figure into mathematical model, (2) the ability of explaining mathematical problem into a figure, and (3) the ability of explaining situational problems by the students own words and doing calculation. He also said that the mathematical communication is divided into (1) verbal communication (talking) which is a mathematical activity of the interaction of matter among students and between teachers and students, such as reading, listening, discussion, explaining and sharing, communication and writing, and (2) writing communication which is the ability of students to use the vocabulary, notation, and mathematical structures both in reasoning, connections, and in problem solving. Tandiling (2012) described about five aspects of mathematical communication:

1) Representation is the ability to create a new form as a result of translation of an idea or problem and the ability to translate a diagram or physical models into symbols or words that can help students to explain a concept or idea, allows students to earn solving strategies, as well as increase flexibility in answering mathematical questions.

2) Listening, is the ability to listen to a topic that helps students in response to questions and comments his friends carefully and completely construct mathematical knowledge and organize a more effective response strategy.

3) Reading, is a text reading activities actively to seek answers to the questions which have been prepared are beneficial to students in constructing knowledge in their minds based on what is already gotten, using strategies to comprehend reading texts and organize it in a visual form such as charts, diagrams or outline, monitor and devise and organize the formation meaning, interpretation or build a meaningful understanding of the reading text in short-term memory, and use the strategies and knowledge that already existed and that has been studied in long-term memory.

4) Discussion, to express and reflect the student's mind which can accelerate the understanding of learning materials and proficiency using strategies, helping students to construct mathematical understanding, in form and analyze and solve problems prudently.

5) Writing, as an activity to express and reflect on thoughts that can improve students' thinking toward a higher (high-order-thinking) to gain experience mathematics as a creative activity.

Ansari (2009) said that the importance of communicative ability improvement is related to the definition of mathematics that act as a language where it's function is not just a thinking tool (a tool to aid thinking), finding patterns, solving problems or drawing conclusions, but also as an important tool to communicate ideas and symbols appropriately and carefully, and learning mathematics as a social activity, as a vehicle among the students interaction and communication between teachers and students.

2.2 Learning Motivation

Utari (2008, p. 142) mentioned the motivation comes from the Latin 'movere' which refers to what drives people move towards a particular activity or task. What causes to move us to learn, read, sleep, eat, or even why we chose not to do so, as well as all the other factors has the potential to drive the action. Motivation is usually defined as a process that is consciously or unconsciously stimulates our behavior or moves us to action.

Motivation can be divided into two parts by psychologists, namely intrinsic motivation and extrinsic motivation. Arends (2008, p. 143) said that intrinsic motivation is usually characterized by behavior that is internally driven

by interest or curiosity in a certain way simply because it gives you personal pleasure or satisfaction derived from an experience, whereas extrinsic motivation can be characterized by behavior of individuals action by external factors such as reward, punishment and social pressures that come from outside the action or activity. He also said that one example of intrinsic motivations when someone wanted to see the sun set over the horizon at twilight that is so beautiful, whereas one example of extrinsic motivation is when a child wanted to get a high score because he wanted to get the reward promised by the parents.

In this discussion, the motivation is limited to those aspects of motivation that helps explain the behavior or achievement in academic situations and not in a wider range of situations. The discussion of this motivation is concentrated into four perspectives; they are Reinforcement Theory, Needs Theory, Cognitive Theory, and Social Learning Theory.

The first perspective on motivation is Reinforcement Theory. Reinforcement Theory and Behavioral Theory dominate the philosophy of thinking about the beginning of the twentieth century. Supriadi (20013, p. 143) said that the centrality of external events in driving behavior and about the importance of booster (reinforcement) become the focus of this approach based on reinforcement theory of motivation. He also said that the amplifier is divided into two, the positive reinforcement and negative reinforcement, wherein the amplifier is an event/ stimulus occurring contingent with a behavior that increases the emergence possibility of certain behaviors. Generally, positive reinforcement is a stimulus that is meant to prompt people to repeat the desired behavior, whereas negative reinforcement is an event/stimulus that can eliminate certain behaviors, but also made it possible to increase the likelihood that the behavior is repeated. In contrast to the negative amplifier sentence (punishment), because punishment reduces the likelihood of behavior to be repeated, or at least, there is no intention repetition.

The second perspective of the motivation theory is Needs Theory. Needs Theory is part of the reaction to the reinforcement theory that developed during the mid-twentieth century, which emphasized that individuals are driven to act not because of extrinsic reward or punishment, but because of the needs of innate and intrinsic stress. There are several theories that affirmed the Needs Theory. Maslow in Maslow's Hierarchy of Needs categorized the needs are categorized into seven levels, which is divided into two parts of needs, the needs of the lower and growth needs. Lower needs are physiological needs (food and shelter), the security needs, the need for a feeling of owned and lovable, as well as the need for self-esteem, while growing needs is the need to recognize and understand, aesthetic needs, as the need for self-actualization. Maslow, called the needs disposition theory, in which individuals are motivated to formulate the theory of motivation to act and exert energy to pursue three outcomes, of achievement, affiliation and influence. Teachers should manifest achievement motive when they try to provide good teaching and act as a competent professional, while the importance of affiliated motives are when students and teachers appreciate the support and friendship with each other, and motivation toward the influence itself can be seen in students who are trying to gain greater control over their own learning and the teachers are trying to have a greater voice in the school administration. While the concept of Flow Experience, Hudojo (2005, p. 46) concluded that the main obstacle to the students' learning comes from the way of structuring the school and from learning experiences that impede intrinsic motivation and turning experiences, instead of students' cognitive abilities.

The third perspective of the motivation theory is cognitive theory. Arends (2008, p. 147) said that Cognitive Theory is fostered by Bernard Weiner's theory of attribution which is one of the main cognitive theoreticians, attribution theory emphasizes the ways in which individuals perceive and interpret the causes of success and failure, not on the needs of specific congenital or previous experience. According to Tandiling (2012, p. 47) ability, effort, luck and difficult task learning are four causes related to student success and failure. Therefore, teachers also play an important role in helping students to recognize themselves and change the negative perception thereof.

The last perspectives of motivation theory are social learning theory. Arends (2008, p. 147) said that Bandura's social learning theory has in common with reinforcement theory and attribution theory; it's just that this perspective turned the individual expectations up about his chances to achieve certain goals and how much worthiness or satisfaction will bring up if individuals achieved the goals. A student will be highly motivated if it set with high expectations and high worthiness over depressing job, while students who have low expectations and reputed something worthless.

According to Hudojo (2005, p. 37) in the research on improving mathematics learning motivation, there are ten points of learning motivation indicator, which are (1) the students are interested in listening without being asked by the teacher, (2) the students record without being asked by the teacher, (3) students answer the questions

without designated by the teacher, (4) the students have serious chores without being asked by the teacher, (5) students who are dared to come forward, (6) students who are interested in listening to teaching lessons after being asked by teachers, (7) students noted lesson after being asked by the teacher, (8) students answered the questions after being asked, (9) students earnestly served tasks requested by the teacher, (10) students are dared to come forward after teachers' request in learning process.

2.3 Self-Concept

Self-concept is classified into positive self-concept and negative self-concept. Positive self-concept is when a person is able to have self-respect and see the positive things that can be done for success in the future. The basis of a positive self-concept is the existence of self-acceptance. Self-acceptance may include self-acceptance over the positive and negative information about him. While negative self-concept affects the emergence of negative emotions, such as grief, stress, depression, and others. Furthermore, this negative emotion often is a source of negative self-esteem. Negative self-esteem that is what will be the mastermind of emotional damage. Ubaydillah said that positive self-concept and negative self-concept shown by each several characteristics.

Hurlock (1990, p. 42) stated that there are some characteristics of children with self-concept: All concepts have emotional level, which is the aspect of "affective" of the concept. The level is increased when combined with new and old meanings. Generally subjective concepts relating to himself or objects, people and circumstances relating to him includes higher emotional level than objective concept.

1)   The concept often resistant against the change:

The greater emotional level of a concept, the stronger the resistant against the change. The reason is that the concept is satisfying children's emotional level, and fostered another concept which can offer the same satisfaction.

2)   The concept affects behavior:

All the concepts bringing the effect into personal and social adjustment whether postively or negatively.

Desmita (2011, p. 63) explained the concept is the overall self-image, which included person's perception about the self, feelings, beliefs, and values. Further Desmita (2011, p. 64) identified three forms of self-concept. First is body image, awareness of the body self, Second is the self-ideal, that is how the ideality and expectations. Third is the social, which is about the respect of others.

According to Istarani (2012, p. 64), self-concept is the relationship between attitudes and beliefs about ourselves. While Sanjaya (2010, p. 64) explained that the concept of an individual's sense of self will cover overall dimensions of physical, personal characteristics, motivations, weaknesses, advantages, or skill, failures, and so on.

Desmita (2011, p. 66) mentioned three main dimensions of self-concept, they are the cognitive dimension, the expectative dimension, and assessment dimension. Dimensions of cognitive of self-concept included everything which is self-considered. The second dimensional concept is futuristic aspiration. This expectation is a self-ideal or self-aspired. The third dimension of self-concept is self-assessment. Self-assessment is self-worthiness. Assessment will form the self-acceptance, as well as self-esteem. These three dimensions of self-concept as described above are integral and interconnected and mutually dependent on each other.

2.4 The Relevant Research

The relevant research had come under observation by Faculty of Mathematics and Science (FMIPA). From this research, there is a positive and significant relationship between self-concept and the Budget Cost Planning achievement, there is a positive and significant relationship between mathematical logic ability and the Budget Cost Planning achievement, and there is a positive and significant relationship between students' self-concept and mathematical logic ability are concurrently toward the Budget Cost Planning achievement. The higher value of X (independent variable), then higher the value of Y (dependent variable).

Other relevant research is the research by Asmin (2012). In this research, the higher the value of X (independent variable) resulted in the higher value of Y (dependent variable). Where the independent variable is learning motivation and the dependent variable is teacher's mathematical communicative ability.

2.5 Conceptual Framework

In order to be able to have the communication skills it's necessary to get mathematical maximum effort and demonstrate an enthusiastic attitude in learning objectives achievement.

Thus, it's assumed that there is susceptible positive relationship between student's learning motivation and

self-concept toward student's mathematical communication ability.
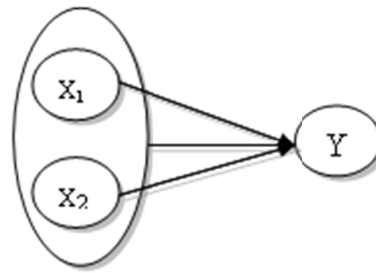

Figure 1. Relationship paradigm

Where:

X$_1$: Learning motivation

X$_2$: Self-concept

Y   : Mathematics Communicative Ability

→   : Direction of correlation

3. Research Methodology

3.1 Research Variable

Variable is a characteristic of the research unity that will be observed. This study uses three variables, included: learning motivation (X1), self-concept (X2), and mathematical communication ability (Y). Learning motivation (X1) and self-concept (X2) is independent variable, while mathematical communicative ability (Y) is dependent variable.

Independent variable is a characteristic that is manipulated to summarize the relationship with observed symptoms and can cause of another variable, or in other words is a symptom that can affect other symptoms. Dependent variable is a variable that is not manipulated and expected to occur as a result of the relationship or the influence of manipulated independent variables, or in other words, dependent variable is a variable that its existence is influenced by other variables.

3.2 Technique of Collecting Data

The data of learning motivation (X$_1$) and self-concept (X$_2$) is gathered by using questionnaire. Questionnaire is a written question that passed to respondents, and in that way to answer is also by overriding Arikunto (2010, p. 194). In this case is a folded questionnaire with likert scale, which is included with four optional answers with the score.

While the data of the ability of student's mathematical communication is conducted by employing a series of essay test contained with mathematical communicative indicators. There are three problems of mathematical communicative test included in the test.

4. Result and Discussion

The population of ground research took place on Junior High School students by analyzing the relation of Learning Motivation (X$_1$), Self-Concept (X$_2$) and Mathematical Communicative Ability (Y). The test for the topic given was three dimentional space and pyramid as the sub topic. The samples were taken from two parallel classes randomly.

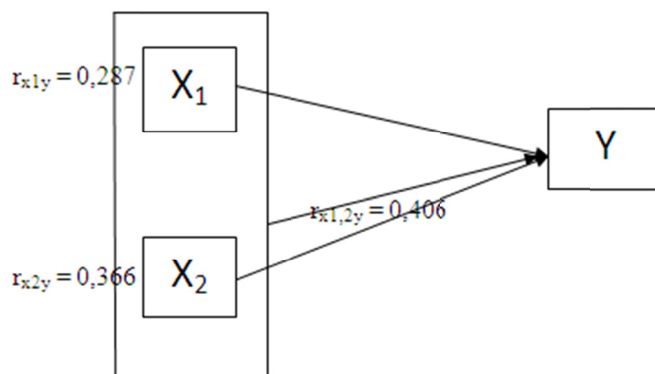From all of the tests, the paradigm of research result as a figure below:

Figure 2. Paradigm of research result

Note:

r_{x1y} = coefficient of partial correlative between X_1 and Y

r_{x2y} = coefficient of partial correlative between X_2 and Y

r_{x12y} = coefficient of total correlative between X_1 and X_2 to Y

The above paradigm, that correlative coefficient between X_1 and Y is 0.287, the correlative coefficient between X_2 and Y is 0.366, while the correlative coefficient between X_1 and X_2 concurrently toward Y is 0,406. The corrrelative between X_1 and Y meant is low, the corrrelation between X_2 and Y meant is low, but the correlation between X_1 and X_2 concurrently toward Y meant is moderate. The correlative coefficient between X_1 and X_2 along toward Y is greater than the correlative coefficient between X_1 and Y or the correlation coefficient between X_2 and Y.

From the results of hypothesis testing by using a simple regression on paired variable of learning motivation (X_1) with mathematical communicative ability (Y), it obtained a regression coefficient (b) of 0.43 and a constant value (a) 32.89. The regression equation is $Y = 32.89 + 0.43 X_1$. To determine the degree of simple regression equation performed on the F_{test} with the criteria if $F_{calculated} > F_{table}$ (0.05) is significant. Based on calculations, F_{cal} yield 25.46 while F_{table} is 6.78 which means significant. Linearity test is performed to determine whether the obtained regression equation is linear or not. The criteria used was, if $F_{calculated} < F_{table}$. $F_{calcualted}$ value is 1.272 while the F_{table} is 1.897, thus $F_{calculated} <_{table}$ showed linear regression equation. Based on these results we can conclude the regression equation of $Y = 32.89 + 0.43 X_1$ is significant and have linear relationship. This means that every increase of one unit on learning motivation will result in an increase of 0.43 units of mathematical communicative ability in the same direction with a constant of 32.89. With that, it can be used as a tool to describe and draw conclusions about the relationship between learning Motivation with mathematical communicative ability. And the same way that every increase of one unit self-concept will result in an increase of 0.44 units of mathematical communicative ability in the same direction with a constant 0f 32.68. So motivation learning and self-concept incorporating to increase mathematical communicative ability.

4.1 Research Discussion

In this research, we have three variables included by 2 (two) independent variables and one dependent variables. The independent variables that were included are Learning Motivation (X_1) and Self-Concept (X_2), and dependent variable is mathematical communicative ability (Y).

Learning motivation is a personal effort which can lead a person or entity that has the feeling to learn to achieve specific goals and satisfaction in learning, whereas the mathematics learning motivation emphasizes the provision of learning experiences directly in the learning of mathematics. The questionnaire provided in the research of learning motivation also included the intrinsic and extrinsic motivation parameter. From the questionnaire, students who have more intrinsic motivation tend to have more achievement in learning mathematics. It was indicated by the score of mathematical communicative ability. The results of the analysis form the description and after the tests were taken, it is found that Learning Motivation of Junior High School Students tendentiously moderate.

"The stronger the learning motivation is, the higher the student's effort to achieve a better learning achievement".

It was reconfirmed by correlation coefficient test between Learning Motivation (X_1) and Mathematical Communicative Ability (Y) was 2,203 and after consulted the t_{tabel} at ά = 0,05 was 1,68. Then the H_a is accepted and we can assume that the increase in Learning motivation (X_1), the higher mathematical communication ability (Y).

Self-concept is the notion of self that includes beliefs, views and assessments over his/him-self. Self-concept consists of how we see ourselves as a person, how we feel about ourselves, and how ourselves want as human being would expect. With a good self-concept/positive, someone will be optimistic. By providing the questionnaire of self-concept which was included by positive and negative self-concept. From the questionnaire, students who have positive self-concept tend to have more achievement in learning mathematics. It is also reflected by correlative coefficient test between Learning Motivation (X2) and Mathematical Communicative Ability (Y) is 2,894 and after consulted the table at ά = 0,05 was 1,68. Then the Ha was accepted and we can conclude that the higher Self-Concept (X1), the better mathematical communicative ability (Y).

It was also represented by analysis of multiple correlation. The multiple correlative coefficients were 0.406. The determination coefficient was 0,165, meant that 16,5 % score of Y could be described entirely by Learning Motivation (X_1) and Self-Concept (X_2). In other word, that Learning Motivation (X_1) and Self-Concept (X_2) contributed immediately to mathematical communicative ability (Y).

5. Conclusion and Suggestion

5.1 Conclusion

1) There is a positive relationship between student's learning motivation and mathematical communication ability.

2) There is a positive relationship between student's self-concept and mathematical communication ability.

3) There is a positive relationship between student's learning motivation and self-concept concurrently toward student's mathematical communicative ability.

5.2 Suggestion

1) Teachers are expected to accommodate the learning condition to support the student's learning motivation as the potential factor to drive and stimulate their action, higher encouragement in learning will lead to be more active and more interested in learning process.

2) Parents are expected to support the developmental process of self-image, self-assessment and self-control of students by leading a great interaction in daily activity, so they have a great relationship between attitudes and beliefs to themselves in learning process.

3) Teachers and parents are expected to work together through support and control the students' activity to develop the process of high learning motivation and positive self-concept, it implies the students will develop a set of good mind set and encouraged to pace the challenge such as failure as the learning process which will turn to be success.

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