

The Relationship Between Reasoning, And Emotional Intelligence In Social Interaction With Mathematics Achievement

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Abstract

The objectives of this research are to determine the relationship between reasoning, and emotional intelligence in social interaction with mathematics achievement. The survey was conducted at SLTP 5 Yogyakarta, Indonesia with 90 respondents selected by random sampling.

The study reveals that there are positive relationship between: (a) reasoning and mathematics achievement; (b) emotional intelligence in social interaction and mathematics achievement. Together, there is a positive relationship between reasoning, and emotional intelligence in the social interaction with mathematics achievement.

Key words : Emotional Intelligence, Mathematics Achievement

INTRODUCTION

School mathematics is mathematics, the subject taught in schools started from primary to secondary schools. The general objectives of giving mathematics in schools related to the content of curriculum (2006: 1) are: (1) to prepare students to be able to face the changeable condition in this life and in this dynamical world by taking action based on their thinking logically, rationally, critically, appropriately, truly, efficiently, and effectively; (2) to prepare students to be able to use mathematics and thinking pattern of mathematics in their daily life and to learn any various knowledge.

The result of Mathematics in National Examination (Ujian Negara) known from the gain score (NEM) in SLTP period, is not satisfied yet from year to years. From the annual report of National Education Department in 2005 to 2009, the average gain score of UN on Mathematics in SLTP level nationally has never reached 5. The gain score of NEM under 5 should be found its factors.

Mathematics mastery for Indonesian people is taught at schools formally. Mathematics materials taught to the students of primary and secondary schools are, developed continuing systematically so that the students are easy to learn it. The fact of all grades there are many students who see negatively to mathematics, the students see mathematics as the subject, which are too difficult and frighten to learn. And of course, the students' negative view on mathematics interferes with students' reasoning and style in learning mathematics. It is, therefore, supposed that the students' reasoning

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competencies low as an indicator, which causes the low of student's achievement on mathematics.

There are so many efforts taken by the teachers, schools, and also by the experts of mathematics education to reduce or to carry away the students' reasoning competencies low. Even, at recent, the experts of mathematics education give positive responses toward the effort in improving mathematics education through Realistic Mathematics' Education (RME). According to Suryanto, (2000: 1-2), the action refers to the fundamental view which claims mathematics should be relevant to reality, close to students' mind, and relevant to society for humanity value. Instead of students development phases that require attention from the teacher in planning and managing the learning process, they also require attention to the students emotional intelligence in social interaction as one expression of students' communication to the other in the classroom.

Based on the explanation above, it needs to conduct a research of reasoning, and emotional intelligence in social interaction and its correlation to the student's mathematics achievement.

THEORETICAL FRAMEWORK

Learning is a general concept of relative changing occurring on attitude caused by experience, the changing process in learning which is seen on their attitude (Heinich et al, 1982: 6) The statement is supported by learning is the relative-permanent changing of attitude occurred as the result of planed exercises (Hergenhahn, 1982: 3). The two statements above are supported by the statement that learning achievement using capability and hard working are done through visible attitude performance (Gagne et al., 1992: 43).

The information received by the brain is known as the object of learning in general, that is knowledge. Knowledge is classified into 4 categories that are: (1) facts, (2) procedures, (3) concepts, and (4) principles. The four categories are able to be grouped into the first group, *factual information*, contains facts and procedures, while the second group is *conceptual information* containing concepts and principles (Romiszowski, 1990: 242).

To ease the teacher in informing the relationship between the concept one another, for instance, theorem and concept or theorem and theorem in a certain topic needs to make diagram of concept network. The concept network diagram for each topic is different one another, depends on the concept and theorem learned by the students. Each concept network diagram contains the former concept network, which is called *prerequisite skill*, that is the concepts which have to be mastered firstly by the students, before following the learning process (Resnick and Ford, 1981: 42).

Reasoning is the organization that involves the suitable proportion to draw any conclusion (Atkinson et al., 1999: 559). Reasoning is a thinking activity that is not possible to run without language such as thinking language, oral language, or writing language (Hendrik Pappar, 1996: 16-17). The activity of thinking is a human activity, which is unobservable, while the observable is just the product of thinking (Semiawan et. al., 1999: 37).

Reasoning and problem solving are two topics related much each other which cause why people have to think. The focus of reasoning is how someone draws a conclusion and evaluates it valid or not. There are two kinds of reasoning, that is, deductive and inductive. Deductive reasoning is making conclusion based on the assumption that the statements known is right. (Ellis, 1993: 290-291).

Emotional intelligence is ability of anyone to self motivation and hold out for frustration, to control of motive and not make exaggerate happiness, can to manage atmosphere of heart and watch over of stress and not make incapacitate of think ability, emphatic and to pray (Goleman, 1996: 36). While Bahaudin (1999: 179) suggestion of emotional intelligence that is a capability or skill to self controled, possess of spirit and high diligence, able to self motivation to do something, and able to good interaction with all friends.

Social interaction is base process from two persons or more then to use of language and signal to influence of every thinking, expectation and behave person other. Interaction of individu can take place when effect, stimulus of individu have responses from other. Everyone must be of emotional intelligence to interaction to other (Goleman, 1996: 162), those are: a) The Empathy, b) Social skill, and c) Social Coordinations.

CONCEPTUAL FRAMEWORK

Mathematics achievement is received by students through hard and diligent works, their learning with control of good emotion can indicate by high intelligence and influential of anyone to think, the force them to use certain way of thinking, follow the principle refers to the certain rules that has basis in accordance with the reasoning ability. If the students use the right way in learning mathematics, they will get the high achievement of mathematics. Emotional intelligence in social interaction of students through of empathetic, and skill interaction with their friends, and coordination relationship of interaction in learning within following mathematics instructional process in classroom as the requirement for students to reach success in learning.

Student's mathematics achievement is seen as the form of student's success in emotional intelligence of social interaction, which will be better if the student have been high emotional intelligence in social interaction. It means that the better student's emotional intelligence in social interaction, then the better mathematics achievement and otherwise is the worse student's the lower emotional intelligence in social interaction, the lower mathematics achievement.

From the conceptual framework expounded above, it is known that there is correlation among the variables such as, reasoning, and student's emotional intelligence in social interaction and mathematics achievement. The two variables, therefore, are considered to have positive correlation simultaneously toward mathematics achievement. It means that the higher mathematics achievement while the worse attitude of students toward mathematics the worse reasoning, and the worse emotional intelligence in social interaction of students the lower mathematics achievement.

RESEARCH METHODOLOGY

In accordance with the researched problem and research objective wants to be reached out, the research verifies hypothesis using survey method with correlation and regression approach technique. Survey is the research, which took sample from certain population and used test or questionnaire as a means to collect the basic data. The method of survey can be used to examine hypothesis, which has correlation between dependent variable and independent variable. Therefore, the method chosen here is by conducting a survey.

As expounded before, the research involved 4 variables such as mathematics

achievement as the dependent variable and two other variables as the independent variables that are reasoning, and emotional intelligence in social interaction. The size of sample was 90 selected by random sampling.

The research have used 3 kind of instruments, those are: (1) a test to measure mathematics achievement, (2) a test to measure reasoning, and (3) questionnaire to measure emotional intelligence in social interaction. The research instrument is firstly arranged using theoretical and conceptual basis and then it's tried out to 40 respondents. Based on the valid items, the value of reliability of each instrument is as follows: (1) a test to measure mathematics achievement is 0.76, (2) a test to measure reasoning is 0.72, (3) questionnaire to measure emotional intelligence in social interaction is 0.80.

Research result AND DISCUSSION

First, there is positive correlation between reasoning (X_1) and mathematics achievement (Y) stated in regression equation $\hat{Y} = 11.69 + 0.57 X_1$. It means that every changing in one score of reasoning will cause the increase of the value \hat{Y} about 0.57 from the constanta standard of 11.69. The result of significant and linearity test toward regression equation used variant analysis. The simple correlation coefficient is $r_{y1} = 0.32$ was tested using T-test, and the result showed that $t_h = 4.06 > t_t = 2.39$ in the significant level of 0.01

Second, there is a positive correlation between emotional intelligence in social interaction (X_2) and mathematics achievement (Y) which was stated in regression equation $\hat{Y} = 5.67 + 0.26 X_2$. It means that every changing in one score of emotional intelligence in social interaction will cause the increasing value of \hat{Y} about 0.26 from the constanta standard of 5.67.

The result of significant and linearity test of regression equation used variant analysis. The simple Correlation Coefficient, $r_{y3} = 0.35$ was tested by using t-test, the result showed that $t_h = 4.33 > t_{table} = 2.39$ in the significant value of 0.01.

Third, there is positive correlation between reasoning (X_1), and emotional intelligence in social interaction (X_2) and mathematics achievement (Y) which stated in plural

regression equation: $\hat{Y} = 2.54 + 0.30 X_1 + 0.17 X_2$.

It means that every changing in one score of reasoning, and emotional intelligence in social interaction will cause the increasing value of \hat{Y} about $0.30 + 0.17 = 0.43$ from its constant standard of 2.54. Multiple correlation Coefficient, $R = R_{y.12} = 0.432$ was tested using F-test and the result showed that $F_{\text{absolute}} = 10.28 > t_{\text{table}} = 4.04$ in the significant value of 0.01. Shortly, the test result showed that the strong correlation between mathematics achievement (Y) and reasoning (X_1), and emotional intelligence in social interaction (X_2) simultaneously was very significant.

CONCLUSIONS AND SUGGESTIONS

A. Conclusion

Reasoning (X_1) has positive correlation to mathematics achievement (Y) although there was a control to the other independent variables, both individually and simultaneously. I showed that reasoning (X_1) consistently having direct correlation to mathematics achievement (Y). It means that the better reasoning of the students, the higher value of their mathematics achievement. Emotional intelligence in social interaction (X_2) has a positive correlation to mathematics achievement (Y) although there was a control to the other independent variables, both individually and simultaneously. I showed that emotional intelligence in social interaction (X_2) consistently having direct correlation to mathematics achievement. It means that the higher emotional intelligence in social interaction of the students, the higher value of their mathematics achievement.

Reasoning (X_1), emotional intelligence in social interaction (X_2) simultaneously having positive correlation with mathematics learning activity (Y). Based on the research findings can be concluded that mathematics achievement of the SLTP students can be improved by improving the students' reasoning, and improving emotional intelligence in social interaction, both individually and simultaneously. In ordinal, the contribution of independent variables to dependent variables from the biggest to the smallest was first, the variable of reasoning (X_1), and second is emotional intelligence in social interaction (X_2).

B. Suggestion

Based on the result of the correlation and regression research discussed, it can be formulated some implications. The result of the research stated that there was a positive correlation between independent variables and dependent variables both individually and simultaneously. It means that to improve the result of mathematics achievement needs the effort in improving reasoning (X_1), and emotional intelligence in social interaction (X_2).

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