
The influence of Peer Tutoring On Self Confidence and Mathematical Communication of Students on the Material Function

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Abstract

This study aims to Determine (1) whether Peer Tutoring directly affect the Self Confidence of the students of SMA N I Rantau Selamat (2) whether Peer Tutoring has a direct effect on the Ability of Mathematical Communication Students of SMA N I Rantau Selamat (3) what is the Self Confidence a direct effect on the Ability of Mathematical Communication Students of SMA N I Rantau Selamat (4) what is Peer Tutoring influence on Mathematical Communication Skills of Students through Self Confidence (as an intervening) in students of SMA N I Rantau Selamat. This research is a quantitative research using the instrument test to get the value of mathematical communication of students and instruments in the form of a questionnaire to obtain data of peer tutoring and self confidence. The population in this research is students of class X SMA N I Rantau Selamat and sample in this research as many as 19 people with sampling through purposive sampling. Tool of data analysis in this research using the help of IBM SPSS 20. The method of analysis used is descriptive analysis, classical assumption test (normality test and heteroscedasticity test), and path analysis. Based on the analysis of the research, it can be concluded (1) the learning model of peer tutoring has a positive effect but not significant to the self confidence of students (2) learning model of peer tutoring has a positive effect and significant impact on mathematical communication (3) self-confidence has a positive effect but not significant to the mathematical communication (4) Self Confidence can not mediate the effect of Peer Tutoring on Mathematical Communication.

Keywords: *Peer Tutoring, Self Confidence, Mathematical Communication*

INTRODUCTION

According to the National Council of Teacher of Mathematics (NCTM) suggested learning objectives of mathematics which is to develop mathematical communication skills (communication), mathematical reasoning (reasoning), mathematical problem solving (problem solving), the connection mathematically (connections), and re-presentation of students' mathematical (representation), Jumalia (2008). One of the goals of learning mathematics according to the NCTM, namely the ability of mathematical communication. Mathematical Communication skills is the ability to organize the mathematical mind, communicate mathematical ideas logically and clearly to others, to analyze and evaluate the mathematical mind and the strategy used by other people, and use the language of mathematics to express ideas precisely. From the definition above, it is seen that there is a relationship between self-confident students with the mathematical communication skills of students. Students who believe themselves to be easy to communicate mathematical ideas in a logical and clear to others, so that others can understand easily and get a proper explanation. In addition, students are expected to have self-confidence and tenacious in solving the problems about the ability of mathematical communication.

Communication in mathematics include a communication in writing and orally. Written communication can be in the form of words, images, tables, and so on, which illustrates the thinking process of the students. While oral communication can be either the description of solving a problem or proving the mathematics that describes the ability of students to organize a variety of concepts to solve problems, Mahmudi (2006). The process of communication can help the students in building their understanding of mathematical ideas and make it become easy to understand. When students are challenged to think about mathematics and communicate it to the people/students of the other orally and in writing, they indirectly are required to make mathematical ideas it is terstruktur and convincing. According to Bernard in Niasih, et al revealed that communication skills are very important to be owned by the students so they can understand the problems of mathematics are given and the student is able to express ideas as well as ideas in solving mathematical problems as well as creating the students to think critically, logically, creatively and independently. Niasih, et al (2019). See the Importance of confident students as well as the ability of mathematical communication, then need a method to improve both of those things. A suitable method is the method of peer tutoring. Peer tutoring is a learning method where students are smart serve as tutors to their peers. See the problem happens, that the students do not dare to ask to the teacher, and chose to ask friends when subjected to constraints, then the method of peer tutoring is very suitable to be applied. If seen, peer tutoring is not a method of learning that new, but rather a method of learning that has been applied from the first, but its use is not effective because the old learning centered on the teacher (Teacher Centered). The method of peer tutoring is efficiently applied now, due to learning is student-centered (Student Centered).

Peer tutoring can be either students who have the intelligence is, that the student has understood the material compared to the other students. In addition, peer tutoring can be in the form of students who previously were given the responsibility by the teacher to find information about specific material, and delivered to the other friends. So, all students can become peer tutoring, when the students have more ability than the other students. By doing so, all students can have the opportunity to show her skills in front of the other students. In addition, peer tutoring is also often used after the learning process of the class progresses, there will be many students who ask to the student who is smart about the material that he did not know. The most important thing of peer tutoring is to train students to be able to teach other students and improve confidence. Based on the problems above, the researcher interested to conduct a research with the title “the Effect of Peer Tutoring On Self Confidence and Mathematical Communication of Students on the Material Functions in SMA N I Rantau Selamat.

RESEARCH METHODS

Type Of Research

This research is a quantitative research, namely the type of research that aims to outlines or describes the properties (characteristics) of a state or the object of research conducted through the collection and analysis of quantitative data as well as statistical tests, Gilber Churchill(202).

Research Variables

The following is a variable that will be tested, researchers, namely:

1. Exogenous variables

Exogenous variables are variables that variability is determined by the causes that are outside the model, Sudaryono(2002). Exogenous variable is a variable that affects other

variables or there is also a call the independent variable. The exogenous variables in this research that Peer Tutoring (X).

2. Variable Intervening

An intervening variable is a variable that theoretically affect the relationship between the exogenous variables to endogenous become a relationship that is not directly and there can be observed and measured. This variable is a variable interrupters or between which lies between exogenous variables and endogenous, so that the exogenous variables do not directly affect the change or the emergence of endogenous variables. As an intervening variable in this Study is Self Confidence (Y).

3. Endogenous Variables

Endogenous variables are variables whose variation can be explained by the exogenous variables and endogenous within the system. Endogenous variable is a variable that gets the influence of other variables or there is also a call the dependent variable. Endogenous variables in this Research that the Ability of Mathematical Communication (Z).

Data Collection techniques and Research Instruments

Data Collection Techniques

The data collection technique is used by researchers in conducting a research, Widodo,(2018). Data Collection techniques in this research is a Questionnaire used to Determine the response of students towards learning through peer tutoring and the level of Self Confidence of the students .In addition to the Questionnaire, data collection techniques in this study also use the Test in the form of a description of the material Functions. The test is used to determine the level of mathematical communication skills of students. The test is given twice, before the material given to the students, to determine the ability of beginning students are then given a pretest and after all the material presented given the post-test.

Research Instruments

The instruments used in this research were questionnaires and Tests.

Questionnaire

According to Sudaryono questionnaire or a questionnaire is a technique or way of collecting data is done indirectly (researchers did not directly ask-answered by respondents). The questionnaire in this study is intended to measure the Self Confidence or the confidence of students. questions in the questionnaire form of the question of the positive and negative questions. Answers on each item questions using the Likert scale. Likert scale contains four alternative answer options namely Strongly Agree (SS), Agree (S), Disagree (TS), and Strongly Disagree (STS). The use of a Likert Scale with the alternative of four answers can meminilisir respondents choose answers middle ages, Syahrums and Salim (2014).

Data Analysis Techniques

Data analysis is the Process of arranging the order of the data, organized into a pattern, category and descriptions of the basic unit. Meanwhile, according to Suprayogo in Tamzesh data analysis is a series of study activities, grouping, systematization, interpretation and verification of data so that a phenomenon has the value of social, academic, and scientific, Ahmad Tamzesh(2011).

Descriptive Analysis

According to Ghozali Analytic descriptive Statistics has the purpose to describe the data from each variable in the selection. Decryption can be seen from the average value (the mean), the standard deviation, a variant of the maximum, minimum, sum, range, kurtois, as well as the skewness (kemencengan distribution).

The Classical Assumption Test

a. Normality Test

Normality test is used to determine the distribution of the residuals, where a good model has a residual normal distribution, Widodo (2018). In this research will be used to test One-Sample Kolmogorov-Smirnov using a significance level of 0.05. Data are expressed normal distribution if the significance is greater than 0.05.

b. Heteroscedasticity Test

According to Ghozali heteroscedasticity test is used to test whether a regression dissimilarity variant of the residual of an observation to another observation. The prerequisites that must be met in a regression model is the absence of symptoms of heteroscedasticity. This research will be conducted heteroscedasticity test using the test glesjer that correlate the absolute value of the residuals with each variable. The results of the test glejser showed no heteroscedasticity if the calculation of SPSS probability value is the significance of the above a confidence level of 5%, Imam Ghozali (2018).

Path analysis

Path Analysis is an analysis technique used to analyze the causal relationship inherent between variables which are prepared based on the sequence temporarily by using path coefficient as the amount of value in determining the magnitude of the influence of independent variables exogeneous to the dependent variable endogeneous, Jonathan Sarwono (2011). According to Imam Ghozali path analysis is an extension of multiple linear regression analysis or path analysis is the use of regression analysis to assess the relationship of causality between the variables (model casual) that have been previously established based on the theory, Imam Ghozali (2018). To search for the path coefficient in this research using SPSS Statistic 20

RESULTS AND DISCUSSION

Discussion

1. The influence of the Peer Tutoring for Self Confidence

The results of the regression test showed the Value of path coefficient Peer Tutoring (X) of Self Confidence (Y) directly 0,058 is positive , this means that there is the influence of peer tutoring on self confidence and results the results of the statistical test Ttes (partial test) showed a significance value of 0.813 where the value is greater than 0.05, which means that the influence of peer tutoring on self confidence is not significant. This indicates that there is a positive influence but not significant of learning using a model of peer tutoring on self confidence in students. The results of the regression test showed the Value of path coefficient peer tutoring (X) the mathematical communication (Z) directly, i.e. by 0,442 is positive , this means that there is the influence of peer tutoring on mathematical communication and the results of the statistical test Ttes (partial test) showed a significance value of 0,044 where the value is smaller than 0.05, which means a significant influence of peer tutoring on

mathematical communication. This indicates that there is a positive and significant influence of learning model using peer tutoring to mathematical communication.

2. The influence of the Peer Tutoring for Mathematical Communication.

The results of the regression test showed the Value of the coefficient path of self confidence (Y) on the communication of mathematical (Z) directly, i.e. by 0,369 is positive , it means that there is positive influence of self confidence to mathematical communication and the results of the statistical test Ttes (partial test) showed a significance value of 0,086 where the value is greater than 0.05, which means that the influence of peer self confidence to mathematical communication is not significant. This indicates that there is a positive influence but not significant from self confidence to mathematical communication.

3. The influence of Peer Tutoring on Mathematical Communication through Self Confidence

The results of the regression test showed the value of path coefficient Peer Tutoring (X) the Mathematical Communication (Z) directly, i.e. by 0,442. While the value of the coefficient of the indirect effect of Peer Tutoring (X) the Mathematical Communication (Z) through the Self Confidence (Y) is 0,021. Based on the results of the calculations it is known that the value of the direct influence of 0,442 and indirect influence 0,021 which means that the value of the direct influence is large compared with the value of the indirect effect. This indicates that Self Confidence can not mediate the effect of Peer Tutoring on Mathematical Communication.

Self Confidence can not mediate the effect of Peer Tutoring on Mathematical Communication caused by low self confidence of the students. The average self confidence of the students that 61,53, while the average mathematical communication skills of students which 71,89.

CONCLUSION

Based on the analysis and discussion of the results of testing the hypothesis that the researcher has done asked some important conclusions which is the core of the results penelitian this is as follows.

1. Based on the results of testing the first hypothesis it was found that the learning model of peer tutoring has a positive effect but not significant to the self confidence of the students.
2. Based on the results of testing the second hypothesis it was found that the learning model of peer tutoring has a positive effect and significant impact on mathematical communication.
3. Based on the results of testing the third hypothesis it was found that self confidence positive effect but not significant to the mathematical communication.
4. Based on the results of testing the fourth hypothesis was found that Self Confidence can not mediate the effect of Peer Tutoring on Mathematical Communication.

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