THE CONTRIBUTION OF READING COMPREHENSION SKILL TO MATHEMATICS PROBLEM SOLVING STUDENTS OF 11th GRADE HIGH SCHOOLMTA SURAKARTA IN LINEAR PROGRAM MATERIAL

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Abstract

This study aims to determine the contribution of reading comprehension skill of students to their mathematics learning outcomes in problem solving linear program material for XI SMA MTA Surakarta academic year 2016/2017. In this study, the ability to understand the reading () serves as the independent variable and the results of students' mathematics learning () as the dependent variable. The population in this study were all students of class XI SMA MTA Surakarta academic year 2016/2017 and the obtained sample were 200 students. Based on descriptive analysis, it is obtained an average score of reading comprehension skill is 62.5142, and for mathematics learning outcomes is 46.5075. Based on the results obtained by analysis of linear regression, it is obtained the alleged regression model obtained means or can be used to predict the results of students' mathematics learning. From the regression equation estimators obtained, a regression coefficient of 0.706 states that any change in the reading comprehension skill by 1 unit will improve mathematics achievement of 0.706 units. Therefore, it can be concluded that there are significant ability to understand the reading of the results of learning mathematics in solving linear program material positively.

Keywords: Mathematics Problem Solving, Reading Comprehension Skill

Introduction

Problem solving is the core of mathematics learning in which students are exposed to the use of mathematics in solving everyday problems. In solving math problems, students cannot just rely on computation skills and understanding of the concept. The ability to understand the reading (linguistic knowledge) also plays an important role in determining the success of students in solving problems, especially in the form of word problems. Gooding (2009) in her study suggests that one of the difficulties of students in solving word problem due to a lack of understanding of the students about the word problem given. The same phenomenon has been investigated by Cruz and Lapinid (2014) at the lower levels of education that suggested a link between reading comprehension ability and ability to solve word problems.

Word problem is considered to have a higher degree of difficulty than math problems displaying mathematical models directly. In word problem, the students are expected to find problems that must be solved in such a matter. Without good ability to understand the reading, it would be very difficult for students to find the answer to that question. Word problem is also the issue of the most representative case to

demonstrate the usefulness of mathematics in everyday life because it is usually associated with the problems that exist in real life. In addition, an increasing number of word problems began to appear significantly in national examinations and SBMPTN so that strategies to work on the problems became important.

One school with an average value of low national exam is SMA MTA Surakarta in the amount of 45.69 for science majors and 49.09 for social majors. This figure is still below the standard rate of graduation which is 55.00. In addition, the MTA students' mathematics achievement showed a low value. Based on researcher' observations of SMA MTA Surakarta, the data showed that average value of daily test in one of the classes in the linear program material was at 58.00. This showed that student achievement in the classroom on a linear program material remained under KKM. The low achievement might be caused by the difficulty of students in solving problems related to linear program.

Lower achievement is one evidence of the difficulties experienced by students in solving mathematical problems. Based on the observations of researchers, students seemed indifferent when given an explanation of the material. When students are given assignments in the learning process, they are lazy to read the questions given. This is justified by one of the teachers of mathematics courses at the school. She believes that most students do not have a great willingness in terms of reading matter in order to understand the purpose of the questions. Though such questions requires skills in understanding the meanings contained in the text reading or known by the ability to understand the reading. Students will be able to solve mathematical problems when they understood the issues contained in the matter means that students are able to distinguish between what is known and what is being asked of the problems, and students are able to translate problems into mathematical models. To be able to understand the issues contained in the matter, it needs a good vocabulary and reading comprehension. Therefore, students' reading comprehension should be increased to match the language used .

Reading comprehension itself means a situation where the student should be able to read written text and then interpret and understand its meaning (Ahmadi, *et al.*: 2013). This definition is also supported by Pardo (2004), which states that in the process of reading comprehension are no transactions between the reader and what he read. Readers should bring a lot of previous information in order to understand what will he read because each text had special features both in presentation and content. The previous study (Gooding: 2009; Priest, *et al.*: 2012) have examined the child's difficulties in solving mathematical problems which then corresponds to their abilities in reading comprehension, math word problems which the text. The results showed that the error in solving mathematical problems by the study respondents due to the lack of their reading comprehension of the math word problems given to them.

In line with these opinions, Cockcraft (in Kaur: 1997) tried to explain the meaning of problem solving as the ability to apply mathematics in particular and appropriate situation. According to Schoenfeld (in Kaur: 1997), for some students math problems is a task in which they are interested and hope the settlement and for those who do not have the math skills would seek the completion of the math problems.

In terms of identifying the students difficulties, Yeo (2009) conducted a study in Singapore about the difficulties experienced by the eighth grade students in solving mathematical problems. Through this research, Yeo (2009) mentions that the difficulties experienced by students when solved mathematical problems related to the ability to understand the reading that is the difficulty in understanding the given

problem, the difficulty in determining the right strategy, the difficulty in making a mathematical model, and the difficulty in doing correct mathematical procedures.

Snow, Burns & Griffin (Imam, *et al.*: 2013) adds that reading, especially in the early years of school defined a way to get a good performance in other aspects such as mathematics. Reading is considered as an integral part of mathematics and mathematical knowledge. Learning to love and understand the language of mathematics requires a good foundation in reading. Fuentes (Imam, et *al.*: 2013) states that math and reading go hand in which the increase math achievement certainly requires increased student achievement in reading.

Based on the above, the researchers are interested in conducting research that aims to identify major contribution of reading comprehension to the learning achievement of students in problem solving linear program material in class XI SMA MTA Surakarta academic year 2016/2017. By knowing the contribution of reading comprehension abilities to the learning outcomes of students in problem solving linear program materials, teachers can help students to face of difficulty when solving the material problems of linear program or using model more attractive strategy so that students easily understood the material.

Finding and Discussion

This study used quantitative method to the design of ex post facto. In this research there were two variables, reading comprehension skill as independent variable and mathematics learning outcomes in problem solving linear program material as dependent variable. The research was conducted in the first semester of the school year 2016/2017 in high school MTA Surakarta. The population in this study was all students of class XI in high school the first semester MTA Surakarta 2016/2017 academic year consisting of 12 classes with a total of 300 students. The sampling technique was used purposive sampling. Thus, samples of this study were 200 students. To obtain the data in this study, the authors used data collection techniques in the form of tests. The test is used to obtain data on the ability of reading comprehension and mathematics learning outcomes in problem solving linear program material. For data analysis technique was used simple linear regression analysis.

Based on the analysis using SPSS 21.0 provides the results of to regression analysis presented in Table 1 below.

Table 1. Simple Regression Analysis of to

Variabel	Koefisien Regresi	t_{hit}	Sig.
Konstanta	8.054	6.854	0.000
X	0.706	3.974	0.000
R	0.272		
R^2	0.074		
Probabilitas	0.000		
F_{hit}	15.794		

Regression model allegations in this study is . Based on calculations using SPSS 21.0, obtained coefficient , where is the coefficient of the variable , so it can be arranged in the alleged regression equation is: . To test the truth of the alleged regression model has been obtained using the F test count, the hypothesis is formulated as follows:

H_0: Regression does not mean

H_1: Regression means

Criteria if F count > F table or for by db is k and n - k - 1 it can be concluded that meaningful regression (H_0 is rejected). Based on the analysis by using SPSS 21.0, obtained F count = 15.794 with probability value 0,000. This means , then H_0 is rejected. Meaning it can be concluded that the allegations derived regression model is meaningful or equation model used was appropriate. To view a measure of how precise linear regression model can explain allegations of the linear relationship between the variables and can be seen from the coefficient of determination and based on the results of the analysis using SPSS 21.0, coefficient of determination (R^2) of 0.074, which means that 7.4% of variation the value of the dependent variable can be explained by the regression model allegations obtained, while 92.6% are not explained by the regression model allegations.

To determine the significance of the influence of the independent variables on the dependent variable that needs to be tested significance of regression coefficients. To test the effect of reading comprehension ability of the learning outcomes of mathematics in solving linear programming materials used t test hypotheses as follows:

Criteria test is H_0 if the . Based on the analysis using SPSS 21.0, the value of the probability of social interaction coefficient is 0.000. Because then H_0 is rejected. It can be concluded that there are significant ability to understand the reading of the results of learning mathematics in solving linear program material. Then for regression coefficients ability to understand the readings obtained for 0.706 which states that any increase of reading comprehension ability by 1 unit will increase the yield of 0.706 units of learning mathematics.

Based on the analysis it is concluded that there is significant ability to understand the reading of the results of learning mathematics in solving problems in a positive linear program material. This is according to research conducted by Gooding (2009) indicates that the error in solving mathematical problems by the study respondents due to their lack of understanding of the mathematical problems in the form of a story. The same is expressed by Imam, *et al.* (2012) found a significant correlation between the ability to understand the readings with the results of mathematics learning in children who attend public schools in the Philippines even though the same thing does not happen in private schools, where there is no correlation significantly between the ability to understand the readings with mathematics learning outcomes. Additionally, in this study stated 6 indicator of the ability of reading comprehension, vocabulary that is understood in the context, identifying the main idea, looking for detail, summarize, predict outcomes, and make inferences. In line with these opinions, Ramos, *et al.* (2015) conducted a study on the high school in the Philippines, which seeks to identify existing problems behind the low math scores of students in the Philippines. One of its findings is a significant correlation between the ability to understand the reading with the students' ability to solve mathematical problems.

Conclusions

Based on the results of research and discussion, it can be concluded that there are significant ability to understand the reading of the results of learning mathematics in solving linear program material in class XI SMA MTA Surakarta academic year 2016/2017. The higher the students' ability to understand the reading, the higher the mathematics learning outcomes obtained with a large contribution of 0.706.

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