

# RELATIONSHIP BETWEEN MATHEMATICAL DISPOSITION AND MATHEMATICAL PROBLEM SOLVING ABILITIES

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## Abstract

This study aims to analyze the relationship between mathematical dispositions (MD) and mathematical problem solving abilities (MPSA). The design of this study is a survey with correlation techniques. The research instrument used in this study is a test of MPSA and the attitude scale of students' MD. The instruments used are 5 questions about the ability of mathematical problem solving and 28 statements regarding MD. The population in this study were all students of one of High Schools in Cimahi city with a sample of this study were 72 class VII students as many as two classes selected by cluster random sampling. Quantitative data analysis was carried out on mathematical problem solving ability data and mathematical disposition attitude scale. in statistical calculations using SPSS 20, the results of the study showed that students' MD influence students' MPSA.

**Keywords:** mathematical disposition, mathematical problem solving ability.

## Abstrak

Penelitian ini bertujuan untuk menganalisis hubungan antara disposisi matematik dengan kemampuan pemecahan masalah matematik. Desain penelitian ini adalah survey dengan teknik korelasi. Instrumen penelitian yang digunakan dalam penelitian ini berupa tes kemampuan pemecahan masalah matematik dan skala sikap disposisi matematik siswa. Intrumen yang digunakan yaitu 5 soal kemampaan pemecahan masalah matematik dan 28 pernyataan mengenai disposisi matematik. Populasi dalam penelitian ini adalah seluruh siswa di salah satu SMP di kota Cimahi dengan sampel penelitian ini adalah 72 siswa kelas VII sebanyak dua kelas yang dipilih secara *cluster random sampling*. Analisis data dilakukan secara kuantitatif yang dilakukan terhadap data kemampuan pemecahan masalah matematik dan skala sikap disposisi matematik. dalam perhitungan statistik menggunakan SPSS 20, hasil penelitian menunjukkan bahwa disposisi matematik siswa mempengaruhi kemampuan pemecahan masalah matematik siswa.

**Kata kunci :** disposisi matematik, kemampuan pemecahan masalah matematik.

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## INTRODUCTION

Mathematics has various types of abilities that students must possess, one of which is MPSA. MPSA is very important in mathematics, but also for those who will apply it in other fields of study and in everyday life (Russefendi, 2005). According to (I.G.A.K, 2005) stating problem solving is the process of tracing the knowledge that has been obtained previously into a new, known situation. Whereas according to NCTM (2000) stating that problems solving means finding ways or ways to achieve goals or solutions that are not by being real. From some of

these expert opinions, problem solving is a skill of students to have ability in using mathematical activities to find the solutions in mathematics, problems in other sciences and problems in life.

In addition to problem solving abilities, students must be also able to have mathematical disposition in learning mathematics. According to NCTM (2000) MD include the ability to take risks and explore diverse problem solutions, persistence to solve challenging problems. According to Sumarmo (2012) MD are characterized by 1) asking clearly and reasoned 2) trying to understand well 3) looking for various alternatives 4) being open.

**METHOD**

The design of this study is a survey using correlation techniques, where the authors took two classes as research samples. The research was carried out at SMP Negeri 3 Cimahi. The development of students' self-efficacy variables about mathematics begins with the preparation of 28 items of statements which are complete with 4 choices. The scale used is the Likert scale. With the choice of answers SS (strongly agree), S (agree), TS (disagree), and STS (strongly disagree). For the determination of calculations using the scores SS = 4, S = 3, TS = 2, and STS = 1 for favorable (positive) statements, the opposite scores SS = 1, S = 2, TS = 3, and STS = 4 for unfavorable statements (negative) (Rahmi, Nadia, Hasibah, & Hidayat, 2017)

**RESULTS AND DISCUSSION**

**Results**

To see how strong the relationship between MD and MPSA, the correlation test was done with  $\alpha = 0.05$  and the hypothesis was

H0:  $\rho = 0$ ; there is no relationship between MD and MPSA

H1:  $\rho \neq 0$ ; there is a relationship between MD and MPSA

With criteria,

If sig > 0.05 then H0 is received

If sig < 0.05 then H0 is rejected

**Table 1.** Correlation test results of MD with MPSA

		Correlations	
		Mathematical Disposition	Posttest
Pearson Correlation	Mathematical Disposition	1,000	,325
	Posttest	,325	1,000
Sig. (1-tailed)	Mathematical Disposition	.	,000
	Posttest	,000	.
N	Mathematical Disposition	72	72
	Posttest	72	72

From table 2, the results of the correlation between MD and students' MPSA are 0.325 and a significance value (sig) of 0.000. The correlation value (r) obtained is 0.325 which means it is quite strong. Because the significance value of 0,000 is smaller than  $\alpha = 0.05$ , H0 is rejected, meaning that there is a relationship between MD of mathematics and MPSA.

To determine the magnitude of the influence between MD and MPSA, the regression coefficients were tested using linear regression analysis. This analysis is carried out to see the direct influence of students 'MD on students' MPSA. The hypothesis tested is:

$H_0$  : students 'MD of mathematics do not affect students' MPSA

$H_1$  : students 'MD of mathematics influence students' MPSA

With criteria,

If sig > 0.05 then  $H_0$  is received

If sig < 0.05 then  $H_0$  is rejected

The results of the analysis can be seen in table 2

**Tabel 2.** Regression Analysis Results MD with MPSA

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized	T	Sig.
		B	Std. Error	Coefficients		
				Beta		
1	(Constant)	63,987	2,935		24,832	,000
	postes	,150	,049	,424	3,865	,000

a. Dependent Variable: self efficacy

From table 2, we can know the regression equation  $Y = 63,987 + 0,150x$  which means that the greater the students 'mathematical disposition value, the greater the students' mathematical problem solving ability, and vice versa. Because the significance value of 0,000 is smaller than  $\alpha = 0.05$ , it can be concluded that under  $H_0$  is rejected, it means that significantly the mathematical disposition of students towards mathematics influences students' MPSA.

### Discussion

From the results of data analysis to test the hypothesis, the conclusion of the findings obtained that the mathematical position of students towards mathematics generally influences students' MPSA. Mathematically positioned influences MPSA because the higher a person's level of confidence in mathematics, the higher the MPSA.

### CONCLUSION

Based on the findings of the research, it can be concluded:

1. There is a relationship between mathematical dispositions and mathematical problem solving abilities
2. Mathematical disposition significantly affects mathematical problem solving abilities.

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