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THE INFLUENCE OF MATHEMATICAL DISPOSITION AND MATHEMATICAL RESILIENCE ON GRADE VI MATHEMATICS LEARNING OUTCOMES AT SDN REGION I PENJARINGAN DISTRICT

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Abstract

In the regulations for implementing education, compulsory subjects are given because they are very important, one of which is mathematics. Mathematics equips students with problem-solving skills in everyday life. Mathematics learning outcomes from surveys in the field still need to be higher and are feared to affect the quality of national education. Therefore, it is necessary to research the truth of factors affecting the results of learning mathematics, including mathematical disposition and resilience. The research objectives are as follows: (1) Analyzing the influence of Mathematical Disposition on Mathematics Learning Outcomes. (2) Analyze the effect of Mathematical Resilience on Mathematics Learning Outcomes. (3). Analyze the effect of Mathematical Disposition and Mathematical Resilience simultaneously on Mathematics Learning Outcomes. The research method used is quantitative, with procedures for collecting data on mathematical disposition and resilience through the Likert Scale model questionnaire and mathematics learning outcomes through tests tested for validity and reliability. The study subjects were grade VI students at SDN Region I Penjaringan District. Samples were taken using *simple random sampling techniques* and Yamane's formula of 247 people. The results of data analysis showed that (1) The Mathematical Disposition of Class VI Students of State Elementary Schools in Region I of Penjaringan District influenced Mathematics Learning Outcomes by 8.6%. (2) The Mathematical Resilience of Class VI Students of State Elementary Schools in Region I of Penjaringan District has an influence on Mathematics Learning Outcomes by 13.5%. Mathematical Disposition and Mathematical Resilience simultaneously positively affect Mathematics Learning Outcomes. The effect of mathematical disposition and mathematical resilience is 51.9%, and the remaining 48.1% is influenced by factors other than mathematical disposition and mathematical resilience.

Keywords: Mathematical Disposition, Mathematical Resilience, Mathematics Learning Outcomes.

INTRODUCTION

Education is a tool to advance a country and improve the quality of human resources. If the quality of education in the country is low, then the quality of human resources will also be low. If the country's education quality is good, then the quality of human resources will also be good. Therefore, education is important for a country (Yusutria, 2017).

Education is so important in determining a country's progress that the government needs to issue regulations regarding it. These regulations are needed so that education can be implemented regularly. Law Number 20 of 2003 concerning the National Education System

contains several regulations for implementing education in Indonesia.

Through the Ministry of Education and Culture, the government regulates the overall education implementation in Indonesia through Law No. 20 of 2003 concerning the National Education System. In Law No. 20 of 2003 also, the Ministry of Education and Culture (2003: 6) explains the purpose of implementing education in Indonesia

contained in article 3 and reads, "... namely developing the potential of students to become human beings who believe and fear God Almighty, have noble character, healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens." To achieve these educational goals, the government requires all Indonesian citizens to attend basic education for 9 years, and the government provides financial assistance to citizens who need to attend basic education. The basic education level consists of 6 levels in elementary school and 3 levels in junior high school. Then to achieve these educational goals, the government has also set compulsory subjects given in elementary and junior high schools. This is in accordance with Law of the Republic of Indonesia Number 20 of 2003 concerning National Education System Article 37 that the primary and secondary education curriculum must contain religious education, civic education, language, mathematics, natural sciences, social sciences, arts and culture, physical education and sports, skills/vocational, and local content. (Kementerian Pendidikan dan Kebudayaan, 2003)

Mathematics is one of several compulsory subjects in primary education, including primary school. It has been taught to students since elementary school because it can help them solve problems related to mathematics in everyday life. This can happen because students are accustomed to thinking logically, critically, analytically, creatively, and systematically and can work together with others. From this explanation, mathematics is important for students in elementary school. (Kenedi, Hendri, Ladiva, & Nelliarti, 2018)

Mathematics learning in elementary schools is so important that it must be implemented effectively. The implementation of effective mathematics learning can be measured from students' mathematics learning outcomes. This is in accordance with the statements of Wotruba and Wright (in Anwar, 2017) regarding 7 signs of effective learning, namely good material management, effective communication, students mastering and enthusiasm for the subject matter, positive attitudes of students, fairness in giving values, flexible learning approaches, and students achieving good learning outcomes.

According to Sudjana (in Nuritta, 2018), learning outcomes are certain competencies or abilities students obtain after learning. Then Suprijono (in Surya, 2017) states that learning outcomes can be in actions, value planting, understanding concepts, habituating attitudes, forms of appreciation and skills. From this statement, the results of learning mathematics students include information about the abilities that students from mathematics subjects have mastered and these abilities can be measured.

The math ability scores of students in Indonesia are very low. Based on the Programme for International Student Assessment (PISA) survey, Indonesia's PISA score in 2022 is 369, ranking 69th out of 81 countries (OECD, 2023). Indonesia's results have remained low since first taking the PISA test in 2000. The PISA 2022 test involved 14,340 students aged 15 years from 413 schools/madrasahs (46% SMP/MTs and 54% SMA/SMK/MA). Indonesia's PISA score has decreased in all aspects, although its ranking has increased compared to the 2018 PISA report (Ministry of Education, Culture, Research, and Technology, 2023).

Previously, a study was conducted by the *Research on Improvement of System Education* (RISE) Indonesia team on mathematics skills in elementary school students throughout Indonesia. The findings of RISE Indonesia found that between 2000 and 2014, the average mathematics ability of students in Indonesia decreased.

Given the phenomenon of mathematics learning outcomes in students in Indonesia tends to be low, it is important to continue to conduct research to determine the cause of the low mathematical ability of these students.

Based on the results of a preliminary study on the mathematics learning outcomes of grade VI students of SD Negeri in Penjaringan District, North Jakarta Administration City, information was found that the results of learning grade VI mathematics during the 2023 School Examination at SDN Region I, Penjaringan 01 District have decreased.

Then researchers tried to trace back by observing the implementation of mathematics learning in these schools. Researchers found that mathematics learning only focuses on teacher lectures, memorization of students, and participants doing practice questions. Then teachers in learning mathematics at the school also do not really consider the mathematical disposition and mathematical resilience of students.

Mathematics learning outcomes can be influenced by student factors, namely mathematical disposition. According to Hendriana, Rohaeti, &; Sumarmo (2018) stated that mathematical disposition is a person's positive view of mathematics. Sumarmo (2013) explained that mathematical disposition is a positive thought and action towards mathematics because students have high desire, awareness, and devotion. The results of previous research from Nurhayati, Nurfalah, &; Zanthy (2020) stated that disposition has a contribution to students' mathematics learning outcomes. The study explained that mathematical disposition had a positive influence on students' mathematics learning outcomes by 13.8%.

Researchers are interested in examining the impact of mathematical disposition and mathematical resilience on mathematics learning outcomes among grade VI students at SDN Region I Penjaringan District. This study builds on previous research that focused on mathematics learning outcomes but introduces the novelty of analyzing two independent variables—mathematical disposition and mathematical resilience—simultaneously, along with utilizing multiple linear regression data analysis techniques.

The research aims to address the following questions: (1) Does mathematical disposition affect mathematics learning outcomes? (2) Does mathematical resilience affect mathematics learning outcomes? (3) Do mathematical disposition and mathematical resilience simultaneously positively affect mathematics learning outcomes? Accordingly, the study's objectives are to analyze the influence of mathematical disposition on learning outcomes, the effect of mathematical resilience on learning outcomes, and the combined effect of both variables on mathematics learning outcomes. The study is titled "The Effect of Mathematical Disposition and Mathematical Resilience on Class VI Mathematics Learning Outcomes at SDN Region I Penjaringan District."

The theoretical use of research is that it can add to the academic literature on how to improve mathematics learning outcomes by paying attention to aspects of mathematical disposition and mathematical resilience. The results of this study can also be a comparison for future researchers.

The practical usefulness of research is for educational implementers at various levels, regarding factors that affect mathematics learning outcomes, in this case mathematical disposition and mathematical resilience.

The hypotheses that can be formulated in research are as follows:

H1: Mathematical Disposition Positively Affects Mathematics Learning Outcomes

H2: Mathematical Resilience has a positive effect on Mathematics Learning Outcomes

H3: Mathematical Disposition and Mathematical Resilience simultaneously positively affect Mathematics Learning Outcomes.

RESEARCH METHODS

Types of Research

This research is a study with causal questions to test whether a variable causes other variables to change or not**.** This study used an explanatory causal design. The design is considered suitable for this study, which wants to examine the influence of independent variables in this study, namely mathematical disposition and mathematical resilience to the dependent variable, namely mathematical learning outcomes.

Resources

This study's source of information is grade 6 students in public elementary schools area 1, Penjaringan District, North Jakarta Administration City. The population in this study is all grade 6 students in public elementary schools area 1, Penjaringan District, North Jakarta Administration City.

The sampling technique uses a *simple random sampling* technique. Based on this understanding, researchers use the sampling technique because the sampling technique has the same probability and is independent to be taken into a sample. The technique was also chosen in order to reduce bias and guarantee a representative sample.

Table 1: Proportion of Research Sample

No	School Name	Population	Number of Samples	Rounding
1.	SDN Penjaringan 01	58	247/645 x 58 = 22.21	22
2.	SDN Penjaringan 03	218	247/645 x 218 = 83.5	84
3.	SDN Penjaringan 06	246	247/645 x 246 = 94.21	94
4.	SDN Penjaringan 08	63	247/645 x 63 = 24.13	24
5.	SDN Penjaringan 10	60	247/645 x 60 = 22.98	23
Total		**645**		**247**

Research Instruments

The instruments of this study are questionnaires and tests. The questionnaire measures mathematical disposition and resilience using the Likert scale, breaking down variables into indicators.

The test measures math learning outcomes in grade 6 elementary school. Validity tests are carried out through construct tests with experts and trials to non-sample learners.

The results of the validity and reliability tests of disposition variable instruments, mathematical resilience, and learning outcomes were obtained as follows.

1. In the mathematical disposition instrument, as many as 30 items out of 32 items are declared valid and the invalid items are points number 25 and 32. However, when tested for reliability, all items are declared reliable. Therefore, all items except numbers 25 and 32 will be used as instruments for collecting data on mathematical disposition variables.
2. In the mathematical resilience instrument, 36 out of 40 items were declared valid, and the invalid items were points 12, 18, 37 and 40. However, when tested for reliability, all items are declared reliable. Therefore, all items except numbers 12, 18, 37 and 40 will be used as instruments for collecting mathematical resilience variable data.
3. In the mathematics learning outcome instrument, as many as 10 items out of 11 are declared valid, and point number 5 is declared invalid. However, when tested for reliability, all items are declared reliable. Therefore, all items except number 5 will be used as instruments for collecting variable data on mathematics learning outcomes.

Data Collection Procedure

The source of this research data is grade 6 students of State Elementary Schools in Area 1 of Penjaringan District, North Jakarta Administration City, for the 2023/2024 academic year. This research was carried out at State Elementary Schools in Region 1 of Penjaringan District, North Jakarta Administration City, for the 2023/2024 academic year, namely SDN Penjaringan 01, 03, 06, 08, and 10. The time for research is carried out in the even semester of the 2023/2024 academic year for three months. The first month is used for instrument trials and instrument data processing. Then, the next two months will be data collection in the field and research data analysis. This study will be carried out from February to Arpil 2024.

The research method used in this study is the survey method. Statements are carefully selected and asked of each participant appropriately. The survey method was chosen because a number of selected statements can produce the necessary information, and if done through observation, it will require more time and effort.

Data Analysis Methods

This research data analysis method consists of classical assumption tests, descriptive analysis, and multiple linear regression analysis.

1. Test Classical Assumptions

The classical assumption test is used as a condition in multiple linear regression analysis with the *ordinary least square* (OLS) method. This test includes four classic problems, namely normality, heteroscedasticity, multicholinerarity, and linearity.

2. Descriptive Analysis

The characteristics of the sample, both respondent and variable demographic data, are described using descriptive statistical analysis. Descriptive statistics provide and show an overview or description of data seen from the number of samples (N), average value (*mean*), maximum value, minimum value, and standard deviation (Ghozali, 2018).

3. Multiple Linear Regression Analysis

The data analysis technique in this study used multiple linear regression analysis with the help of SPSS software. The stages of multiple linear analysis are the Termination Coefficient Analysis and Hypothesis Test.

RESULT

Description of the Object of Study

The following are the results of the descriptive statistical analysis of the research variables

Table 2: Results of Descriptive Statistical Analysis

Descriptive Statistical Analysis	Mathematical Disposition (X_1)	Mathematical Resilience (X_2)	Mathematics Learning Outcomes (Y)
n	247	247	247
Mean	89,373	105,777	6,032
Median	88,172	105,5	5,867
Modus	85	105	50
Standard Deviation	8,597	10,488	2,601
Variant	73,901	110,003	6,763
Range	55	67	10
Minimum	59	71	0
Maximum	114	138	10
Sum	22075	26127	1490
Number of Interval Classes	8	8	8
Class Range	7	9	12

Mathematical Disposition Variable Data (X1)

The statistical data in Table 2 provides information based on the scores of mathematical disposition variables as follows: most miniature score (*minimum*) of 59, most significant score (*maximum*) of 114, *range* of 55, *mean* (average score) of 89.373, median (middle score) of 88.172, mode (score most often appears) of 85, and *standard deviation (standard deviation*) of 8.597.

The almost identical mean, median, and mode scores can indicate that the data scores of mathematical disposition variables are normally distributed. The score of the mathematical disposition variable can be calculated from the frequency distribution table, histogram graph, and data classification table.

Table 3: Frequency Distribution of Mathematical Disposition Scores (X_1)

No	Class Interval	Frequency (fi)	Relative Frequency (%)	Cumulative Frequency (%)
1	59-65	2	0,81%	0,81%
2	66-72	4	1,62%	2,43%
3	73-79	13	5,26%	7,69%
4	80-86	77	31,17%	38,87%
5	87-93	87	35,22%	74,09%
6	94-100	37	14,98%	89,07%
7	101-107	19	7,69%	96,76%
8	108-114	8	3,24%	100,00%
Sum		247	100%	

Table 3 shows that the frequency distribution of variable mathematical disposition of grade VI students in SDN Region I Penjaringan District was dominant in the interval

of grades 87-93, as much as 35.22%, followed by the interval of grades 80-86 as much as 31.17%, 94-100 as much as 14.98%, 101-107 as much as 7.69%, 73-79 as much as 5.26%, 108-114 as much as 3.24%, 66-72 as much as 1.62%, and 59-65 as much as 0.81%.

Data from table 4.2 provides information that the mathematical disposition score value of grade VI students at SDN Region I Penjaringan District with the most respondent frequency is between 87-93 (interval class 5). Based on these data, the position of the distribution of mathematical disposition data of students (X1) can also be known as the following histogram.

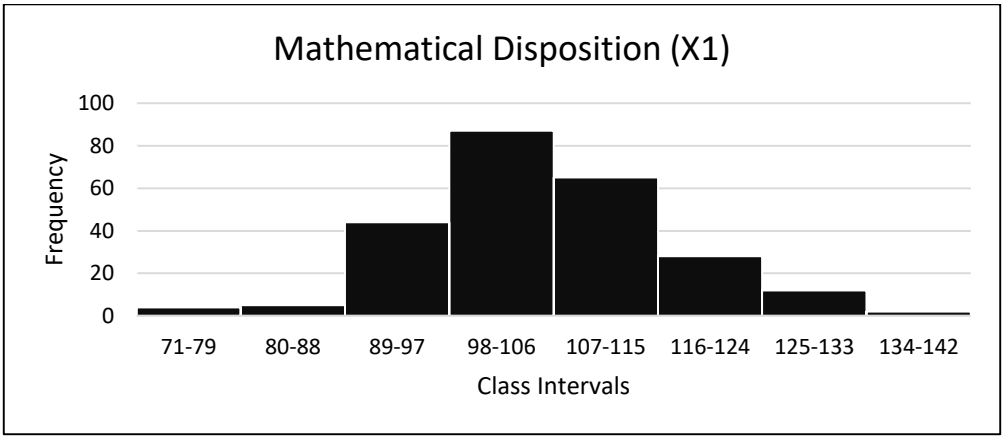

Figure 1: Histogram of Learners' Mathematical Disposition Scores (X_1)

The score of each indicator on the mathematical disposition variable can be seen in the following table.

Table 4: Learners' Mathematical Disposition Indicator Scores (X_1)

No	Indicator	Score Ideal	Average Score	Achievement Level
1	Confidence in solving math problems	12	7,915	66%
2	Active during maths learning	12	8,360	70%
3	Trying to find knowledge about mathematical material	12	9,377	78%
4	Learn maths on a scheduled basis	12	9,537	79%
5	Strive to learn mathematics independently and disciplined	12	9,182	77%
6	The spirit of learning mathematics comes from within oneself.	20	15,279	76%
7	Solve math problems in a variety of ways	8	6,397	80%
8	Passion for finding other ways to solve math problems	12	8,182	68%
9	Relearn the mathematical material that has been given.	12	9,385	78%
10	Make improvements to the work on math problems that need to be corrected.	8	6,413	80%

Based on Table 4, the highest achievement of students' mathematical disposition is found in the indicator of improving the work on mathematics problems that are not correct, with an achievement of 80%. The second highest achievement is the indicator of solving math problems in various ways. The third achievement is the indicator of learning mathematics on a scheduled basis. The fourth achievement is found in the indicator of relearning the mathematical material that has been given. The lowest achievement is found in the confidence indicator of solving mathematical problems.

Table 5: Categories of Learners' Mathematical Disposition Scores (X_1)

Category	Score		Frequency	Percentage
Tall	> 98	Greater than Mean+Sd	35	14%
Keep	98-81	Mean-Sd s/d Mean +Sd	183	74%
Low	< 81	Smaller than Mean-Sd	29	12%
Total			247	100%

Based on Table 4.4, the mathematical disposition scores of students consist of the high category of 35 people or 14%, the medium category of 183 people or 74%, and the low category of 29 people or 12%.

Mathematical Resilience Variable Data (X_2)

The statistical data in Table 4.1 also provides information based on the scores of mathematical resilience variables: smallest score (*minimum*) of 71, largest score (*maximum*) of 138, *range* of 67, *mean* (average score) of 105.777, median (middle score) of 105.5, mode (score most often appears) of 105, and standard *deviation (standard deviation*) of 10.488.

Information about the score of the mathematical resilience variable can be presented in a frequency distribution table, histogram graph, and data classification table as follows.

Table 6: Frequency Distribution of Mathematical Resilience Score (X_2)

No	Class Interval	Frequency (fi)	Relative Frequency (%)	Cumulative Frequency (%)
1	71-79	4	1,62%	1,62%
2	80-88	5	2,02%	3,64%
3	89-97	44	17,81%	21,46%
4	98-106	87	35,22%	56,68%
5	107-115	65	26,32%	83,00%
6	116-124	28	11,34%	94,33%
7	125-133	12	4,86%	99,19%
8	134-142	2	0,81%	100,00%
Sum		247	100%	

Table 6 provides information that the frequency distribution of mathematical resilience variables of grade VI students in SDN Region I Penjaringan District is mainly found in the interval of grades 98-106, which is 35.22%, followed by the interval of grades 107-115 as much as 26.32%, 89-97 as much as 17.81%, 116-124 as much as 11.34%, 125-133 as much as 4.86%, 80-88 as much as 2.02%, 71-79 as much as 1.62%, and 134-142 as much as 0.81%.

Table 4.5 shows that the mathematical resilience score value of grade VI students at SDN Region I Penjaringan District with the highest Frequency of respondents is between 98 and 106 (interval class 4). From these data, the position of the distribution of students' mathematical resilience data (X2) can also be described as the following histogram.

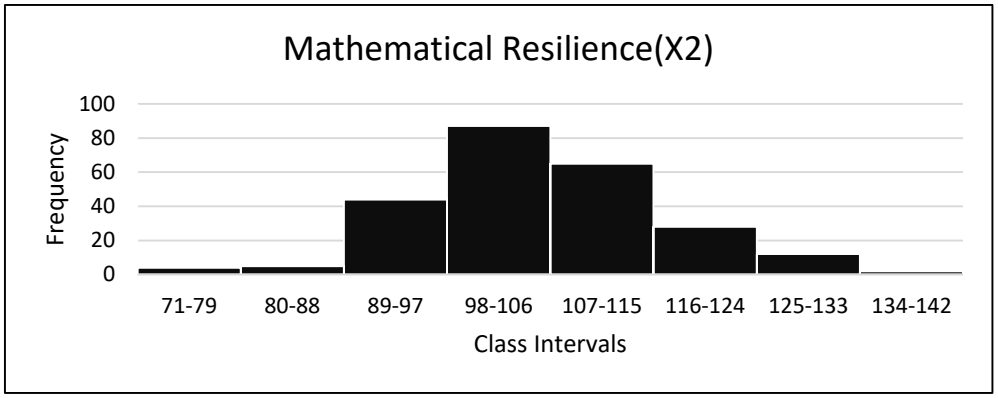

Figure 2: Histogram of Learners' Mathematical Resilience Score (X_2)

The score of each indicator in the mathematical resilience variable can be seen in the following table.

Table 7: Learners' Mathematical Resilience Indicator Scores (X_2)

No	Indicator	Score Ideal	Average Score	Achievement Level
1	Confidence can solve math problems	16	11,939	75%
2	Work hard in solving math problems	20	14,899	74%
3	Socialize in solving math problems	12	8,445	70%
4	Adapt to your surroundings when learning maths	8	5,810	73%
5	Come up with new ideas or ways of solving math problems	8	5,632	70%
6	Finding creative solutions to challenges when solving math problems	12	8,235	69%
7	Using the experience of failure in mathematics to build self-motivation	24	18,206	76%
8	Control yourself and your feelings when solving math problems	20	14,275	71%
9	Utilize a variety of resources to learn maths	16	12,211	76%
10	Researching the given mathematical material	8	6,126	77%

Table 7 showsthe highest achievement of students' mathematical resilience is in the indicator of examining the material provided, with an achievement of 77%. The second highest achievement was found in the indicator of using the experience of failure in mathematics to build self-motivation and utilize various sources to learn mathematics, with a score of 76%. The third highest achievement, 75%, is found in the indicator of confidence in solving mathematical problems. The fourth achievement is the indicator of working hard in solving mathematical problems by 74%. The fifth achievement is the indicator of adapting to the surrounding environment when learning mathematics by 73%. The lowest achievement, 69%, is found in finding creative solutions to challenges when solving mathematical problems.

Table 8: Categories of Learners' Mathematical Resilience Scores (X_2)

Category	Score		Frequency	Percentage
Tall	>116	Greater than Mean+Sd	35	14%
Keep	95-116	Mean-Sd s/d Mean +Sd	182	74%
Low	< 95	Smaller than Mean-Sd	30	12%
Total			247	100%

Table 8 shows that the mathematical resilience scores of students consist of the high category, which is 35 people or 14%, the medium category, which is 182 people or 74%, and the low category, which is 30 people or 12%.

Variable Data on Mathematics Learning Outcomes (Y)

Table 2 shows the score data from the variables of Mathematics learning outcomes as follows: the smallest (*minimum*) score of 0, the largest score (*maximum*) of 10, the range of 10, *the mean* (average score) of 6.0324, the median (middle score) of 5.867, the mode (the most frequently appearing score) of 5, and the *standard deviation (standard deviation*) of 2.601.

The results of these data show that the mean, median, and mode scores on the variables of mathematics learning outcomes are not too different, which can be a sign that the data scores of mathematics learning outcome variables have a normal distribution. Data regarding the score of the Mathematics result variable can be made into a frequency distribution table, histogram graph, and data classification table as follows.

Table 9: Frequency Distribution of Math Learning Outcomes Scores (Y)

No	Class Interval	Frequency (fi)	Relative Frequency (%)	Cumulative Frequency (%)
1	0-1.2	8	3,24%	3,24%
2	1.3-2.5	17	6,88%	10,12%
3	2.6-3.8	23	9,31%	19,43%
4	3.9-5.1	65	26,32%	45,75%
5	5.2-6.4	31	12,55%	58,30%
6	6.5-7.7	21	8,50%	66,80%
7	7.8-9.0	51	20,65%	87,45%
8	9.1-10	31	12,55%	100,00%
Total		247	100%	

Table 9 provides information that the distribution of variable Frequency of Mathematics learning outcomes of grade VI students at SDN Region I Penjaringan District is mostly found in the interval of grades 3.9-5.1, which is 26.32%, followed by the interval of classes 7.8-9.0 of 20.65%, 9.1-10.0 and 5.2-6.4 of 12.55%, 2.6-3.8 of 9.31%, 6.5-7.7 of 8.50%, 1.3-2.5 of 6.88%, and 0-1.2 of 3.24%.

Table 9 provides information that the score of Mathematics learning outcomes of grade VI students at SDN Region I Penjaringan District with the most is 3.9-5.1 (grade interval 4). This data can also be made in the position of the distribution of data on student mathematics learning outcomes (Y) as the following histogram.

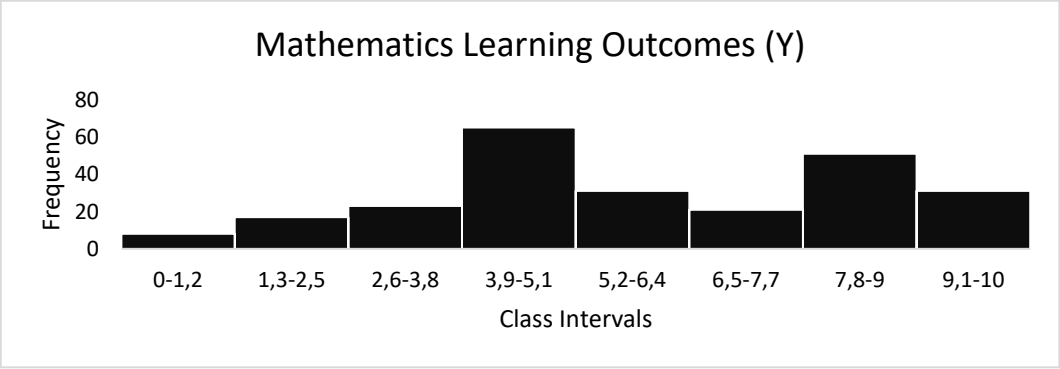

Figure 3: Histogram of Learners' Mathematics Learning Outcomes (Y)

The score of each indicator in the variable of Mathematics learning outcomes can be seen in the following table.

Table 10: Learner Mathematics Learning Outcome Indicator Scores (Y)

No	Indicator	Score Ideal	Average Score	Achievement Level
1	Presented with a set of data, learners can determine the average of the data.	1	0,312	31%
2	When a group of data is presented in the form of a table, learners can determine the average of the data.	1	0,425	43%
3	Presented groups of bar chart data, learners can determine the average of the data.	1	0,563	56%
4	Presented with groups of line chart data, learners can determine the average of the data.	1	0,502	50%
5	When a group of data is presented in the form of a table, learners can determine the median of the data.	1	0,530	53%
6	Presented with a set of data, students can determine the mode of the data	1	0,879	88%
7	When presented with a group of data in the form of a table, learners can determine the mode of such data.	1	0,790	79%
8	Presented groups of bar chart data, learners can specify the mode of such data.	1	0,802	80%
9	Presented groups of line chart data, learners can determine the mode of such data.	1	0,652	65%
10	Presented pie chart data groups, learners can determine the mode of such data.	1	0,579	58%

Table 10 showsthe highest achievement of student Mathematics learning outcomes is in the student indicator, which can determine the mode of the data presented with 88% achievement. The second highest achievement, 80%, is found in the indicator, where students can determine the mode of data from the presentation of data in the form of a bar chart.

The third achievement is in the indicator, students can determine the data mode after being presented with a table form data group. by 79%. The fourth achievement is the indicator that students can determine the data mode. After being presented the line chart data group of 65%. The lowest achievement of 31% is found in the indicator that students can determine the average of the data after being presented with a set of data.

Table 11: Categories of Math Learning Outcomes Scores (Y)

Category	Score		Frequency	Percentage
Excellent	>9,9333	X > Mi + 1,5 SDi	31	13%
Good	7,3327<x<9,9333	Mi + 0,5 SDi < x < Mi + 1,5 SDi	51	21%
Good enough	4,7321<x<7,3327	Mi - 0,5 SDi < x < Mi + 0,5 Sdi	96	39%
Not Good	2,1315<x<4,7321	Mi - 1.5 SDi < x < Mi - 0.5 SDi	44	18%
Bad	<2,1315	X < Mi - 1.5 SDi	25	10%
Total			247	100%

In Table 11, it can be seen that the students' Mathematics learning outcomes scores consist of very good categories of 31 people or 13%, good categories of 51 people or 21%, good enough categories of 96 people or 39%, poor categories of 44 people or 18%, and bad categories of 25 people or 10%.

Data obtained from research results are then analyzed through statistical calculations. The first analysis was classical assumption tests, which included four types of tests:

normality, heteroscedasticity, multicollinearity, and linearity. After the classical assumption test is performed, multiple linear regression analysis is performed.

1. Classical Assumption Test

a. Normality Test

Table 12 below presents the normality test results using *the Kolmogorov-Smirnov* test in this study.

Table 12: Kolmogorov Smirnov Test *Normality Test Results*

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		247
Normal Parameters[a,b]	*Mean*	0.0000000
	Std, Deviation	1.79603143
Most Extreme Differences	*Absolute*	0.032
	Positive	0.024
	Negative	-0.032
Test Statistic		0,032
Asymp. Sig. (2-tailed)		0,200
a. Test distribution is Normal.		
b. Calculated from data.		

Based on the output of *the One-Sample Kolmogorov-Smirnov Test* in the table, the *Asymp. Sig. (2-tailed)* value in the *Unstandardized Residual* column is 0.200, which is greater than 0.05 (0.200 > 0.05). Thus, the tested data is normally distributed, fulfilling the normality assumption in this study's regression model.

b. Linearity Test

The following are the results of the linearity test based on research data.

Table 13: Linearity Test Results

ANOVA Table							
			Sum of Squares	***df***	***Mean Square***	***F***	***Sig.***
Mathematics Learning Outcomes (Y) * Mathematical Disposition (X1)	*Between Groups*	*Deviation from Linearity*	246,926	40	6,173	1,367	0,085
Mathematics Learning Outcomes (Y) * Mathematical Resilience (X2)	*Between Groups*	*Deviation from Linearity*	176,443	46	3,836	1,060	0,382

Based on the results of the linearity test in the table, it can be seen that the signification value (Sig.) *Deviation from Linearity* Y*X1 is 0.085 (> 0.05), meaning a linear relationship exists between Mathematics Learning Outcomes and Mathematical Disposition—sig value. *Deviation from Linearity* Y*X2 is 0.382 (> 0.05), meaning a linear relationship exists between Mathematics Learning Outcomes and Mathematical Resilience. Thus the assumption of linearity in the research regression model is fulfilled.

c. Heteroscedasticity Test

The heteroscedasticity test results are presented with the following Table 14.

Table 14: Heteroscedasticity Test Results (*Glejser Test*)

ANOVA						
Model		***Sum of Squares***	**df**	***Mean Square***	**F**	**Sig.**
1	*Regression*	4,837	2	2,419	2,170	0,116b
	Residual	271,967	244	1,115		
	Total	276,804	246			
a. Dependent Variable: ABSRES						
b. Predictors: (Constant), Resiliensi Matematis (X2), Disposisi Matematis (X1)						

Based on the heteroscedasticity test using the *Glejser* test in Table 14, a signification value of 0.116 (> 0.05) was obtained, so it can be concluded that heteroscedasticity does not occur in the regression model of this study, so it is feasible to do further testing.

d. Multicollinearity Test

The results of the multicollinearity test in this study are presented in Table 15:

Table 15: Multicollinearity Test Results

Model		***Collinearity Statistics***	
		Tolerance	***BRIGHT***
	Mathematical Disposition (X1)	0,772	1,296
	Mathematical Resilience (X2)	0,772	1,296

Based on Table 15, it can be stated that the independent variable or independent variable, namely Mathematical Disposition (X1) has a VIF value of 1.296 < 10 and a *tolerance value* of 0.772 > 0.1, and the Mathematical Resilience variable (X2) has a VIF value of 1.296 < 10 and a tolerance value of 0.772 > 0.1. All independent variables have a VIF value of less than 10 and a *tolerance value* of more than 0.1. Thus, it can be concluded that the independent variable in the regression model in this study does not show any symptoms of multicollinearity so the assumption is fulfilled, and further analysis can be carried out.

2. Multiple Regression Analysis

a. Regression Model Structure Equation

Here are the results of the analysis.

Table 16: Results of Multiple Linear Regression Analysis

Coefficientsa						
Model		***Unstandardized Coefficients***		***Standardized Coefficients***	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	*(Constant)*	-15,889	1,375		-11,555	0,000
	Mathematical Disposition (X1)	0,086	0,015	0,284	5,634	0,000
	Mathematical Resilience (X2)	0,135	0,012	0,544	10,801	0,000
a. Dependent Variable: Mathematics Learning Outcomes (Y)						

Based on the results of multiple linear regression analysis in Table 16, the regression model structure equation is obtained, namely:

Y = -15,889 + 0,086X1 + 0,135X2 e

From the regression model equation can be explained as follows:

1) The regression coefficient of Mathematics Learning Outcomes (Y) is -15.889. This means that if Mathematical Disposition and Mathematical Resilience are equal to 0, then the value of Mathematical Learning Outcomes is -15,889 points.
2) The Mathematical Disposition Coefficient (X1) is 0.086. This means that increasing the Mathematical Disposition variable by one point will increase the Mathematical Learning Outcomes variable by 0.086 times, assuming the Mathematical Resilience variable is fixed.
3) The coefficient of Mathematical Resilience (X2) is 0.135. This means that increasing the Mathematical Resilience value variable by one point will increase the Mathematical Learning Outcomes variable by 0.086 times, assuming the Mathematical Disposition variable is fixed.

b. Value of Coefficient of Determination

The value of the coefficient of determination is presented in the following table.

Table 17: Results Coefficient of Determination

Model Summary[b]				
Model	**R**	***R Square***	***Adjusted R Square***	***Std. Error of the Estimate***
1	0,723a	0,523	0,519	1,80338
a. *Predictors: (Constant),* Resiliensi Matematis (X2), Disposisi Matematis (X1)				
b. *Dependent Variable*: Mathematics Learning Outcomes (Y)				

The table shows that the coefficient of determination or *adjusted r square value* is 0.519. This shows that the independent variables, namely Mathematical Disposition and Mathematical Resilience, are able to explain the dependent variable, namely Mathematics Learning Outcomes by 51.9%, while the remaining 48.1% is explained by other variables that are not contained in this study.

c. Uji Hypothesis

1) Test t (Partial Test)

The results of the partial test or t test in this study can be seen in Table 18 below.

Table 18: Test Results t (Partial)

Coefficientsa						
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	Mathematical Disposition (X1)	0,086	0,015	0,284	5,634	0,000
	Mathematical Resilience (X2)	0,135	0,012	0,544	10,801	0,000
a. Dependent Variable: Mathematics Learning Outcomes (Y)						

The Mathematical Disposition Variable (X1) can be known to have a positive coefficient value of 0.086 with a calculated t of 5.634 > a table of 1.970 and a significance (Sig.) of 0.000 < 0.05. Thus, Mathematical Disposition positively and significantly affects Mathematics Learning Outcomes. So that, the first hypothesis (H1) in this study that suspects "Mathematical Disposition has a positive effect on Mathematics Learning Outcomes" is accepted or the data supports the hypothesis.

The variable Mathematical Resilience (X2) can be known to have a positive coefficient value of 0.135 with a calculated t of 10.801 > a table of 1.970 and a significance (Sig.)

of 0.000 < 0.05. Thus, it can be concluded that Mathematical Resilience positively and significantly affects Mathematics Learning Outcomes. So that the second hypothesis (H2) in this study that suspects "Mathematical Resilience has a positive effect on Mathematics Learning Outcomes" is accepted or the data supports the hypothesis.

2) F Test (Simultaneous Test)

The decision criteria in the F test using a 5% significant test is if F counts > F table or the signification value (Sig.) < 0.05 then H_0 is rejected and H1 is accepted, which means that the independent variable simultaneously has a significant effect on the dependent variable. Conversely, if F counts ≤ F of the table or the signification value (Sig.) ≥ 0.05 then H0 is accepted and H1 is rejected, which means that the independent variable simultaneously has no significant effect on the dependent variable. The F table in this study using 247 respondents at a signification level of 5% is 3,033. The results of the simultaneous test or F test in this study can be seen in Table 19 below.

Table 19: F Test Results (Simultaneous)

ANOVA						
Model		***Sum of Squares***	***df***	***Mean Square***	***F***	***Sig,***
1	*Regression*	870,212	2	435,106	133,789	0,000b
	Residual	793,529	244	3,252		
	Total	1663,741	246			
a, Dependent Variable: Mathematics Learning Outcomes (Y)						
b, Predictors: (Constant), Resiliensi Matematis (X2), Disposisi Matematis (X1)						

The value of Fcalculate in this equation is 133.789, while for the value of Ftable is 3.033, then Fcalculate is 133.789 > Ftable (3.033). In addition, the signification value (Sig.) obtained is 0.000 < 0.05. Thus, it can be concluded that Mathematical Disposition and Mathematical Resilience simultaneously positively affect Mathematics Learning Outcomes. Thus the third hypothesis (H3) is accepted or the data support the hypothesis.

DISCUSSION

The Effect of Mathematical Disposition on Mathematics Learning Outcomes

Based on the analysis results in the study, it can be concluded that mathematical disposition variables positively influence the learning outcomes of mathematics students. The effect is 8.6%, namely an increase in the Mathematical Disposition variable by one point will increase the Mathematics Learning Outcomes variable by 0.086. Or in other words, the results of learning Mathematics students can be determined by a mathematical disposition of 8.6%. This shows that the better the mathematical disposition, the better the mathematics learning outcomes.

The study's results are in accordance with research by Nurhayati, Nurfalah, and Zanthy (2020) on mathematical disposition and learning outcomes. The study showed that disposition influences learning outcomes, contributing 13.8% to students' learning outcomes.

The mathematical disposition of SD Negeri grade VI students in Region I of Penjaringan District based on the results of the description of the data obtained from the field shows that the majority are in the medium category, which is 74%. The highest indicator of the mathematical disposition of grade VI students of SD Negeri in Region

I of Penjaringan District that was achieved was to make improvements to work on mathematics problems that were not correct. The indicator of making improvements to the work on mathematical problems that are not correct is included in the dimension of mathematical disposition, which is reflective. It deserves to be maintained and improved. Then the lowest indicator of the mathematical disposition of grade VI students of SD Negeri in Region I of Penjaringan District that was achieved was the confidence in solving mathematical problems. The indicator of confidence in solving mathematical problems is contained in the dimension of mathematical disposition, namely confidence. That is, efforts need to be made to increase students' confidence in solving mathematical problems. Some strategies that can be applied to increase student confidence in solving math problems are building student confidence such as giving praise and appreciation for all student achievements no matter how small it is, avoiding giving negative labels to students such as stupid or not good at mathematics, focusing on the learning process not just the final result. The strategy requires effort and collaboration between teachers, parents, and students.

The Effect of Mathematical Resilience on Mathematics Learning Outcomes

Based on the results of the study's analysis, the mathematical resilience variable positively influences mathematics students' learning outcomes. The effect is 13.5%, namely an increase in the Mathematical Resilience variable by one point will increase the Mathematics Learning Outcomes variable by 0.135. In other words, the results of learning Mathematics students can be determined by a mathematical resilience of 13.5%. This shows that the better the mathematical resilience, the better the mathematics learning outcomes.

The results of the study are in accordance with research by Iman and Firmansyah (2020) on mathematical resilience and mathematics learning outcomes. The results of the study show that there is an influence of mathematical resilience on mathematics learning outcomes. The mathematical resilience has a contribution to the mathematics learning outcomes of students by 22.3%.

The mathematical resilience of grade VI students of SD Negeri in Region I of Penjaringan District based on the results of the description of the data obtained from the field shows that the majority are in the medium category, which is 74%. The highest indicator of mathematical resilience of grade VI students of SD Negeri in Region I of Penjaringan District was achieved by examining the mathematics material provided. The indicator of examining the given Mathematics material is covered in the dimension of mathematical resilience, namely commitment. It deserves to be maintained and improved. Then the lowest indicator of mathematical resilience of grade VI students of SD Negeri in Region I of Penjaringan District that was achieved was finding creative solutions to challenges when solving mathematical problems. The indicator of finding creative solutions to challenges when solving mathematical problems is contained in the dimension of mathematical resilience, namely calmness. That is, efforts need to be made to increase the search for creative solutions to challenges when solving mathematical problems. Some strategies that can be applied to increase the search for creative solutions to challenges when solving math problems are encouraging learners to think creatively and innovatively such as allowing learners to explore various approaches to solving Mathematics problems, encouraging learners to ask questions and rewarding learners for their creative and innovative ideas. Increasing the search for creative solutions to challenges when solving mathematical problems

for these students requires effort and commitment from various related parties such as schools, teachers, parents, and these students.

The Effect of Mathematical Disposition & Mathematical Resilience on Mathematics Learning Outcomes

Based on the study's analysis results, it can be concluded that the independent variables, namely Mathematical Disposition and Mathematical Resilience, affect the dependent variable, namely the Mathematics Learning Outcomes of Class VI Students of SD Negeri Region I Penjaringan District. The percentage of influence was 51.9%, while the remaining 48.1% was explained by other variables not contained in this study. This shows that the better the mathematical disposition and mathematical resilience are, the better the students' mathematics learning outcomes will be.

Judging from the regression equation obtained, namely Y = -15.889 + 0.086X1 + 0.135X2 e, the regression coefficient of Mathematics Learning Outcomes (Y) is -15.889. This means that if Mathematical Disposition and Mathematical Resilience are equal to 0, then the value of Mathematical Learning Outcomes is -15,889 points. Then the Mathematical Disposition coefficient (X1) is 0.086. This shows that increasing the Mathematical Disposition variable by one point will increase the Mathematical Learning Outcomes variable by 0.086 times, assuming the Mathematical Resilience variable is fixed. The coefficient of Mathematical Resilience (X2) is 0.135. This shows that increasing the Mathematical Resilience value variable by one point will increase the Mathematical Learning Outcomes variable by 0.086 times, assuming the Mathematical Disposition variable is fixed.

The results of the study are in accordance with research by Mukhlisin & Ibrahim (2021) researching mathematical resilience and mathematical disposition on Mathematics learning outcomes. Based on this research, information was obtained that mathematical resilience and mathematical disposition have a simultaneous influence on mathematics learning outcomes. The influence of mathematical resilience variables and mathematical disposition on mathematics learning outcomes of 35.28% and 64.72% was influenced by other factors not found in the study.

The results of learning Mathematics students in this study are influenced by mathematical disposition factors and mathematical resilience of students This shows that the results achieved by students in learning activities, one of which is cognitive can be influenced by internal factors of students. These internal factors include the psychological factors of students. These mathematical disposition factors and mathematical resilience factors are part of these psychological factors. Mathematical disposition factors and mathematical resilience in grade VI students of SD Negeri in Penjaringan District Area must be paid more attention. This is because these two factors affect the learning outcomes of Mathematics, which is a subject that is able to develop one's intellectual and the progress of science and technology. Intellectual development and science and technology can help humans solve daily life problems, especially those related to numbers.

The mathematical disposition of students can be considered through several dimensions, namely self-confidence, curiosity, perseverance, flexibility in learning, and reflective nature in learning mathematics. Strategies to improve this mathematical disposition include building students' confidence by giving praise and reward for effort and achievement, creating a safe and supportive learning environment, and avoiding

comparisons with other learners. A focus on individual progress is expected to improve learners' views, attitudes, and positive habits towards mathematics.

The mathematical resilience of students must also pay more attention to several dimensions of mathematical resilience of students. The dimension of mathematical resilience includes self-confidence, control when learning, calmness in learning, and commitment of students in learning Mathematics. Some strategies that can be done to increase the mathematical resilience of learners are creating a positive and supportive learning environment, using learner-centered learning strategies, and teaching effective problem-solving strategies. This is done with the hope that students can overcome Mathematics problems, control themselves when facing Mathematics problems, have a level of perseverance that matches the level of difficulty in solving Mathematics problems, and can enrich experience when solving Mathematics problems. There are three that can be used as capital in increasing the mathematical resilience of students, namely social support owned, strengths in students, and the abilities of these students. Increasing mathematical resilience in students is expected to increase the resilience of students when facing difficulties and challenges in the field of mathematics.

CONCLUSION

Based on the results of the analysis in Chapter IV, the following conclusions can be drawn: The Mathematical Disposition of Class VI Students of State Elementary Schools in Region I of Penjaringan District influences Mathematics Learning Outcomes by 8.6%. This means that an increase in the Mathematical Disposition variable by one point will increase the Mathematics Learning Outcomes variable by 0.086 times, illustrating that better mathematical disposition leads to improved mathematics learning outcomes. The data analysis shows that the mathematical disposition of grade VI students is mostly in the medium category. The highest indicator of mathematical disposition is making improvements to incorrect mathematics problems, found in the reflective dimension, which needs to be maintained and improved. The lowest indicator is confidence in solving mathematical problems, in the confidence dimension, indicating a need to boost students' confidence in solving mathematical problems.

Similarly, the Mathematical Resilience of Class VI Students influences Mathematics Learning Outcomes by 13.5%. An increase in the Mathematical Resilience variable by one point will increase the Mathematics Learning Outcomes variable by 0.135 times, showing that better mathematical resilience leads to improved mathematics learning outcomes. The mathematical resilience of grade VI students is also in the medium category. The highest indicator of mathematical resilience is examining the provided Mathematics material, in the commitment dimension, which needs to be maintained and improved. The lowest indicator is finding creative solutions to challenges in mathematical problems, in the calmness dimension, indicating a need to enhance students' confidence in finding creative solutions. Furthermore, Mathematical Disposition and Mathematical Resilience together positively affect Mathematics Learning Outcomes by 51.9%, with the remaining 48.1% influenced by other factors. This highlights the importance of focusing on mathematical disposition and resilience to improve Mathematics learning outcomes, essential for intellectual development and the advancement of science and technology, helping to solve everyday life problems involving numbers.

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