



Correlation Analysis of Anxiety and Mathematical Self-Efficacy on Problem Solving Ability Class XI IPA SMAN 2 Rumbiojaya

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Abstrak

Pemecahan masalah matematika merupakan hal yang penting dalam pembelajaran matematika. Kenyataannya, masih banyak siswa yang tidak menyukai matematika. Hal tersebut disebabkan antara lain karena kesulitan memahami matematika. Kesulitan tersebut berdampak pada hasil belajar siswa. Hasil belajar siswa dapat optimal apabila siswa yakin pada kemampuannya. Keyakinan yang kurang dimiliki siswa dapat menyebabkan timbulnya kecemasan. Kecemasan dianggap sebagai salah satu faktor penghambat dalam memecahkan masalah matematika. Hal inilah yang mendorong peneliti untuk mengadakan penelitian dengan judul "Analisis Kecemasan matematis dan efikasi diri matematis terhadap Kemampuan Pemecahan Masalah Matematis Siswa Kelas XI IPA SMAN 2 Rumbio Jaya. Penelitian ini bertujuan untuk mengetahui ada atau tidaknya pengaruh kecemasan matematis dan efikasi diri matematis siswa secara bersama-sama terhadap kemampuan pemecahan masalah. Manfaat penelitian bagi peneliti ialah sebagai latihan dalam melaksanakan penelitian ilmiah dan bagi guru ialah mengetahui hal-hal yang mempengaruhi kemampuan pemecahan masalah. Penelitian ini merupakan jenis penelitian deskriptif kuantitatif menggunakan teknik analisis distribusi frekuensi dan korelasi. Populasi dalam penelitian ialah siswa kelas XI IPA SMAN 2 Rumbio Jaya. Pemilihan sampel menggunakan teknik purposive sampling. Instrumen pengumpulan data menggunakan angket dan tes. Angket digunakan untuk memperoleh data tentang kecemasan matematis dan efikasi diri matematis siswa sedangkan tes digunakan untuk memperoleh data tentang kemampuan pemecahan masalah. Hasil penelitian menunjukkan bahwa kecemasan matematis dan efikasi matematis berpengaruh berhubungan terhadap kemampuan pemecahan masalah dengan nilai koefisien determinasi sebesar 0,078% dan 21,25%

Kata Kunci: Efikasi diri Matematis, Kecemasan Matematis, Kemampuan Pemecahan Masalah

Abstract

Solving math problems is important in learning mathematics. In fact, there are still many students who do not like mathematics. This is due, among other things, to the difficulty of understanding mathematics. These difficulties have an impact on student learning outcomes. Student learning outcomes can be optimal if students believe in their abilities. Confidence that students lack can cause anxiety. Anxiety is considered as one of the inhibiting factors in solving math problems. This is what prompted the researcher to conduct a study entitled "Analysis of Mathematical Anxiety and Mathematical Self-Efficacy on the Mathematical Problem Solving Ability of Class XI IPA Students of SMAN 2 Rumbio Jaya. This study aims to determine whether or not the influence of mathematical anxiety and mathematical self-efficacy of students together on problem-solving abilities. The benefit of research for researchers is as an exercise in carrying out scientific research and for teachers is knowing things that affect problem-solving abilities. This research is a type of quantitative descriptive

research using frequency distribution and correlation analysis techniques. The population in the study was students of class XI IPA SMAN 2 Rumbio Jaya. The sample selection used a purposive sampling technique. Data collection instruments use questionnaires and tests. Questionnaires were used to obtain data about students' mathematical anxiety and mathematical self-efficacy while tests were used to obtain data about problem solving abilities. The results of the study show that mathematical anxiety and mathematical efficacy are related to problem solving abilities with a coefficient of determination of 0.078% and 21.25%

Keywords: *Mathematical Anxiety, Mathematical self-efficacy, Problem Solving Ability.*

Introduction

Mathematics is used to solve problems faced by humans. Students need to be equipped with sufficient mathematical knowledge to be able to solve mathematical problems related to everyday life concepts. In accordance with its function, mathematics learning aims to calculate, measure and use mathematical formulas needed in everyday life (Astuti, 2018). Learning management is also one of the causes of not maximizing learning outcomes because learning has not optimally developed various realistic learning (using real objects) in learning activities, the learning sequences carried out by the teacher are introduction, explaining, giving exercises, checking exercises, and giving assignments. As a result, mathematics learning at school is only rote and does not train students' thinking patterns, so that learning outcomes are not optimal. Apart from that, it seems that learning in schools has not optimally used real and concrete approaches. Learning approach and motivation factors are the main factors that influence learning outcomes, especially for mathematics learning at school. This causes students to lack meaningfulness in their learning, resulting in learning seeming far from the life they encounter so that students are unable to apply their knowledge to everyday life (Putra, 2021).

The importance of mathematical ability is not in line with the reality of the

existing mathematics ability rankings in Indonesia. This is proven by the results of the Program for International Student Assessment (PISA) study in 2018, where Indonesia was ranked 67th out of 73 countries listed. Based on this report, it appears that Indonesia is experiencing a decline. In 2015 the average score obtained was 386, but in 2018 the average score obtained was 379 (Zulfah et al., 2020)

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Based on the results of observations with students carried out on March 10 2023 in Class XI IPA SMAN 2 Rumbio Jaya, it shows that there are several obstacles encountered in learning mathematics.

The aim to be achieved in this research is: "to analyze the relationship between mathematical anxiety and mathematical self-efficacy on the mathematical problem solving abilities of class XI IPA students at SMAN 2 Rumbio Jaya".

Method

This research is quantitative descriptive. Quantitative descriptive research is describing, researching and explaining what is being studied as it is,

and drawing conclusions from phenomena that can be observed using numbers. Quantitative descriptive research is research that only describes one or more variables in the research. Thus it can be seen that quantitative descriptive research is research that describes, examines and explains a phenomenon with data (numbers) as they are.

The sampling technique used in this research is purposive sampling technique. Kurniawan & Puspitaningtyas (2016) define purposive sampling as a sampling technique from population members based on certain criteria. Because the population is in classes, what will be considered is class. The next class selected was class XI Science.

The data collection procedure in this research is as follows.

1. Questionnaire or questionnaire
2. Observation
3. Interview
4. Documentation
5. Tes

Results and Discussion

The results obtained for each research variable.

1. Math Anxiety

The results of the questionnaire given to all respondents were then processed in the form of frequency distribution and descriptive statistics as presented in the following table.

Table 4.1 Frequency Distribution of Mathematics Anxiety

Class	Class Intervals	Frequency	Percentage
1	27-34	8	32%
2	35-41	7	28%
3	42-49	5	20%
4	50-56	2	8%
5	57-63	2	8%
6	64-70	1	4%

Table 4.2 Mathematics Anxiety Scoring

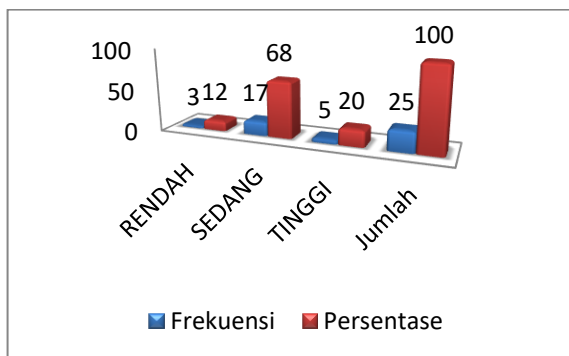
category	Score Interval	Frequency	Percentage
RENDAH	$X \leq 30,67$	3	12%
SEDANG	$30,67 \leq X < 51,97$	17	68%
TINGGI	$X > 51,97$	5	20%
amount		25	100%

Table 4.3 Descriptive statistics of Mathematics Anxiety

Statistics		
Mathematics Anxiety		
N	Valid	25
	Missing	0
Mean		41.32
Median		40.00
Std. Deviation		10.648
Variance		113.393
Range		38
Minimum		27
Maximum		65

In table 4.1 it is known that the mathematics anxiety score is divided into 6 classes with a class length of 7. From the presentation of this data it is known that the data is centered on the class interval 27-34 because it has the highest frequency of 8 with a percentage of 32%. Students' anxiety levels are in the medium category. Apart from that, in table 4.3, the average score for students' mathematics anxiety is 41.32.

From table 4.2, it can be seen that the students' mathematics anxiety level is in the medium category with a frequency of 17 students or 68%. Mathematics anxiety in the moderate category means that most students are quite good at managing anxiety during mathematics learning.



Picture 4.1 Graph of Mathematical Anxiety Categories

From Figure 4.1, it can be seen that the mathematical anxiety category is in the medium category with a percentage of 68%.

2. Mathematics Self-Efficacy

The results of the questionnaire given to all respondents were then processed in the form of frequency distribution and descriptive statistics as presented in the following table.

Table 4.4 Frequency Distribution of Mathematics Self-Efficacy

Class	Class Intervals	Frequency	Percentage
1	63-75	1	4%
2	76-88	7	28%
3	89-101	9	36%
4	102-114	4	16%
5	115-127	2	8%
6	128-140	2	8%

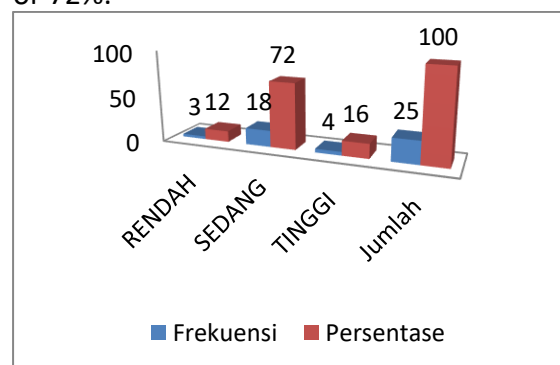
Table 4.5 Mathematics Self-Efficacy Scoring Category

Category	Score Interval	Frequency	Percentage
RENDAH	$X < 81,15$	3	12%
SEDANG	$81,15 \leq X < 113,89$	18	72%
TINGGI	$X > 113,89$	4	16%
Jumlah		25	100%

Table 4.6 Descriptive statistics for Mathematics Anxiety

Statistics		
Mathematics anxiety		
N	Valid	25
	Missing	0
Mean		97.52
Median		96.00
Std. Deviation		16.368
Variance		267.927
Range		73
Minimum		63
Maximum		136

In table 4.4, it is known that the self-efficacy score is divided into 6 classes with a class length of 13. From the data presentation, it is known that the data is centered on the interval 89-101 because it has the highest frequency of 9 with a percentage of 36%. Apart from that, in table 4.6, the average student self-efficacy value is 97.00, where the data shows that the average student self-efficacy is at a medium level with a low level of deviation. In table 4.5 it is known that the level of student self-efficacy is in the medium category with a frequency of 18 students or 72%.



Picture 4.2 Graph of Mathematical Self-Efficacy Categories

From Figure 4.2, it can be seen that the self-efficacy category is at a medium level with a percentage of 72%.

3. Problem solving skill

Problem Solving Ability is measured by giving a test in the form of 4 descriptive

questions according to indicators of problem solving ability. Scoring is based on guidelines modified from (Polya, 1957).

Table 4.7 Frequency Distribution of Mathematical Problem Solving Ability

Class	Class Intervals	Frequency	Percentage
1	40-50	4	16%
2	51-61	9	36%
3	62-72	3	12%
4	73-83	2	8%
5	84-94	4	16%
6	95-105	3	12%

Table 4.8 Scoring of Mathematical Problem Solving Ability

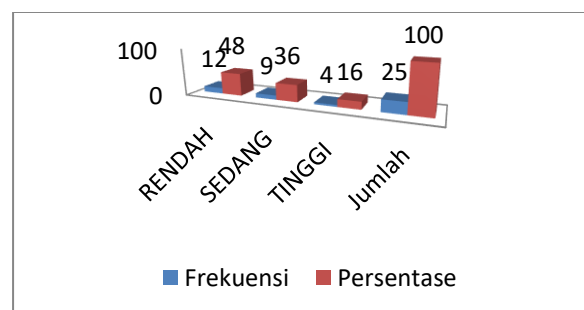
Category	Score Intervals	Frequency	Percentage
RENDAH	$X < 57,01$	12	48%
SEDANG	$57,01 \leq X < 90,59$	9	36%
TINGGI	$X > 90,59$	4	16%
amount		25	100%

Table 4.9 Descriptive statistics of Mathematical Problem Solving Ability

Statistics		
Problem Solving		
N	Valid	25
	Missing	0
Mean		73.80
Median		75.00
Std. Deviation		16.788
Variance		281.833
Range		60
Minimum		40
Maximum		100

In table 4.7 it is known that the self-efficacy score is divided into 6 classes with a class length of 11. From the presentation of the data it is known that the data is centered on the interval 51-56 because it has the highest frequency of 9 with a

percentage of 36%. Apart from that, in table 4.9, the average student self-efficacy value is 73.80, where the data shows that the average student's mathematical problem solving ability is at a low level with a low level of deviation. In table 4.8 the level of mathematical problem solving ability is then divided into three categories, namely high, medium and low. In table 4.8, it is known that the level of students' problem solving abilities is in the low category with a frequency of 9 students or 36%.



Picture 4.3 Graph of Mathematical Problem Solving Ability Categories

From Figure 4.3, it can be seen that the students' mathematical anxiety category is at a low level with a percentage of 48%.

Conclusion

Based on the research results and discussion above, it can be concluded that there is a significant relationship between mathematical anxiety and mathematical problem solving abilities. A negative Pearson Correlation indicates that the higher the student's mathematical anxiety, the lower the problem solving ability, and vice versa, the lower the student's mathematical anxiety, the higher the mathematical problem solving ability. Apart from that, there is also a significant relationship between mathematical self-efficacy and mathematical problem solving abilities. The positive Pearson Correlation shows that a person's self-efficacy can make a person never give up when in the

process of solving a problem. So if a person's self-efficacy is high, he will try hard when solving problems. Dari gambar 4.3 terlihat bahwa kategori kecemasan matematis siswa berada pada tingkat rendah dengan persentase sebesar 48%.

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