

RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND LOGICAL THINKING ABILITY TO PROBLEM SOLVING ABILITY MATHEMATICS STUDENT GRADE XI IPA SOUTH KOTABUMI DISTRICT, NORTH LAMPUNG

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Abstract

This study was conducted to find out: (1) the relationship between emotional intelligence and problem solving ability of Mathematics; (2) the relationship between logical thinking ability with problem solving ability of Mathematics; (3) the relationship between emotional intelligence and logical thinking with the ability to solve mathematical problems. This study used a quantitative approach with correlational associative techniques. The sample amounted to 89 students from SMA Negeri South Kotabumi Districts, North Lampung. Data collection techniques used questionnaires and test descriptions. The results of this research showed that (1) there was positive and significant emotional intelligence with Math problem solving ability, significance value= 0.20 and correlation coefficient $r = 0.246$ with the degree of correlation relationship is weak (2) there was positive correlation and significant logical thinking ability with math problem solving ability, significance value= 0.028 and correlation coefficient $r = 0.233\ 246$ with the degree of correlation relationship is weak, and (3) there was positive and significant correlation between emotional intelligence and logical thinking ability with Math problem solving ability, significance value= 0.016 and correlation coefficient $r=0.303$ with the degree of correlation is weak.

Keywords: *Emotional Intelligence, Logical Thinking Ability, Mathematical Problem Solving Abilities*

1 INTRODUCTION

Mathematics is one of the fundamental subjects in the world because mathematics is the main of all science. Mathematics is used to improve thinking ability and provide problem solving support in everyday life and the development of science and technology (Isgiyanto:2011). The ability to solve mathematics problems is the ability to achieve a goal, through procedural operations and systematically (Santrock: 2011, Wena: 2012).

Mathematics was made as a benchmark to see the education quality of a State. Based on TIMSS 2015 results published in December 2016 shows that Indonesian students in

Mathematics are ranked 46 out of 51 countries (Retnowati: 2014). These results indicate that students ability in problem solving is still very low. Many factors affect the problem solving ability of mathematics such as emotional intelligence and logical thinking ability.

Emotional intelligence is the ability to monitor and control their own feelings and others, and use those feelings to guide thoughts and actions (Goleman in Setyowati: 2010). Emotional intelligence is a set of abilities, competencies, and noncognitive skills that affect a person's ability to successfully address environmental demands and pressures (Uno, 2010: 69). Individuals who have

high emotional intelligence will be able to overcome various problems or challenges that appeared in their lives. While the logical intelligence of mathematics is a person's ability to think inductively and deductively, thinking according to the rules of logic understand and analyze patterns of numbers, and solve problems with the thinking ability (Uno and Masri: 2010). Logical thinking is a process of using reasoning consistently to take a conclusion, a situation involving logical thinking, expecting structure, the relationship between facts, and reasoning relationship that can be understood (Putri: 2012).

2 LITERATURE REVIEW

Several studies have been done related to this problem that it can be a literature review.

The first research, Afriyanti and Rahmawati (2008), Relationship between Emotional Intelligence with the Problem Solving Tendency of College Students. The analysis results show the magnitude of correlation coefficient (r) = 0.58; p = 0.00 (p < 0.01). This shows that there is a very significant positive relationship between emotional intelligence with the problem solving tendency of college students.

The second research, Lulu Endar Wati, Yumansyah, Ratna Widiastuti (2014), Relationship between Emotional Intelligence and Learning Achievement. The purpose of this research was to determine whether there was a relationship between emotional intelligence and academic achievement. This research method was correlation with data collection using emotional intelligence scale and documentation, the sample were thirty-eight students. Data analyzed technique is using the product moment. from the

hypotesis testing, the result of correlation of emotional intelligence and learning achievement with count $r = 0.839 > r_{table} = 0.320$. It is concluded that there was a significant relationship between emotional intelligence student achievement. The conclusion of this study was there was a relationship between emotional intelligence and academic achievement. Students who had high emotional intelligence scores had good learning performance.

The third research, Irham M'arifatullah (2016), Relationship between Emotional Intelligence and Employee Self Confidence to the Anxiety of the Issue of Employment Termination on the employees of PT. Pama Persada, Baya Hauling District, Samarinda Province. The research results, there is a significant relationship between emotional intelligence with anxiety employees of PT. Pama Persada, Baya Hauling District with correlation value (r) 0,389 and P equal to 0,001. Meanwhile, there is a significant relationship between confidence with anxiety employees PT. Pama Persada, Baya Hauling District with Coefficient of Determination (R^2) of 0.305 and contribution of 30.5 percent. There is a significant relationship between emotional intelligence and confidence in employee anxiety PT. Pama Persada, Baya Hauling District.

3 PURPOSE

The purpose of this study was conducted to find out:

- (1) The relationship between emotional intelligence and problem solving ability of Mathematics
- (2) The relationship between logical thinking ability with problem solving ability of Mathematics

- (3) The relationship between emotional intelligence and logical thinking with the ability to solve mathematical problems.

4 METHODOLOGY

This study used a quantitative approach, the type of statistics is inferential statistics with correlational associative techniques. Population in spatial research class XI IPA SMA Negeri South Kotabumi District, North Lampung requires 446 students. *The sample amounted to 89 students determined by stratified cluster random sampling technique. Data collection techniques used questionnaires (likert scale) and test descriptions.* Questionnaire and test description first tested the validity and reliability before being used in the field. After that, the normality and homogeneity are tested and then continued with the hypothesis testing by using the product moment using the help of SPSS 16.

5 FINDING AND DISCUSSION

The result of the instrument test on the emotional intelligence variable with 60 item statement, after analyzed using product moment with helped SPSS 16.0 program is obtained 36 statements, and 24 invalid statements. Of the 36 valid statements that are statements number 1, 3, 4, 6, 11, 14, 15, 19, 21, 22, 24, 25, 27, 28, 29, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 46, 47, 48, 49, 50, 52, 53, 55, 57, 58, and 59. While 24 invalid statements that are statements number 2, 5, 7, 8, 9, 10, 12, 13, 16, 17, 18, 20, 23, 26, 35, 41, 42, 43, 44, 45, 51, 54, 56, and 60. In this study invalid statements were not used for research, so only 36 statements were used in this study. Testing reliability in this instrument using the formula Cronbach Alpha obtained $r_{11} = 0.841$.

The result of the instrument test on the logical thinking ability variable with 5 items of description test, after analyzed using products moment correlation with helped SPSS 16.0 program, is obtained 4 valid items and 1 invalid item. In this study the invalid item is not used for research, the items used in this study taken from the valid items that are items number 2, 3, 4, and 5. Testing the reliability of this instrument using Cronbach Alpha formula obtained $r_{11} = 0.719$.

The result of instrument test on the problem solving ability variable with 5 items of description test, after analyzed using product moment with helped of SPSS 16.0 program is obtained 5 valid statement, that item number is 1, 2, 3, 4, and 5. Testing reliability in this instrument using Alpha Cronbach formula obtained $r_{11} = 0.394$.

Normality Test

Normality test aims to determine whether the residual value is normally distributed or not. These data were tested using the kolmogrove smirnov normality test. The criteria test:

- If the significance value $> 0,05$ then the data is normally distributed.
- If the significance value $< 0,05$ then the data is not normally distributed

Table 1. One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		89
Normal Parameters ^a	Mean	.0000000
	Std. Deviation	20.94639997
Most Extreme Differences	Absolute	.088
	Positive	.082
	Negative	-.088
Kolmogorov-Smirnov Z		.831
Asymp. Sig. (2-tailed)		.495

a. Test distribution is Normal.

Based on normality test results known value of significance of $0.495 > 0.05$ then it can be concluded that the residual values are normally distributed.

Homogeneity Test

Homogeneity test is a test of whether or not variance is the same. The criteria test:

- (a) If the value of significance > 0.05 then the data is homogeneous.

If the significance value < 0.05 then the data distribution is not homogeneous.

Table 2. Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Emotional Intelligence	2.065	2	86	.133
Logical Thinking Ability	.419	2	86	.659
Problem Solving Ability	1.230	2	86	.298

Based on the result of homogeneity test, the significance value of X1, X2 and Y is 0,133, 0,659, and 0,298 $> 0,05$ so it can be concluded that the data is homogeneous.

Hypothesis Testing

In this research, proposed hypothesis as follows:

- (1) Ha: There is a significant relationship between emotional intelligence and problem solving ability of mathematics class X1 science, South Kotabumi District, North Lampung lesson year 2017/2018.

- (2) Ha: There is a significant relationship between logical thinking ability with problem solving ability of mathematics class X1 science, South

Kotabumi District, North Lampung lesson year 2017/2018.

- (3) Ha: There is a significant relationship between emotional intelligence and logical thinking ability to problem solving ability of mathematics class X1 science, South Kotabumi District, North Lampung lesson year 2017/2018.

Hypothesis testing is used correlation test. Correlation test aims to determine the closeness of the relationship between variables expressed by correlation coefficient (r) or significance value. The basic decision making is:

- If the significance value $< 0,05$ then correlate
- If the value of significance > 0.05 then not correlate

To see the degree of relationship in the correlation we can use the degree of relationship (PCV: Person Correlation Value):

- PCV 0.00-0.20 = No Correlation
- PCV 0.21-0.40 = Weak
- PCV 0.41-0.60 = Medium
- PCV 0.61-0.80 = Strong
- PCV 0.81-1.00 = Perfect

Table 3. Correlations

		X1	X2	Y
X1	Pearson Correlation	1	.255*	.246*
	Sig. (2-tailed)		.016	.020
	N	89	89	89
X2	Pearson Correlation	.255*	1	.233*
	Sig. (2-tailed)	.016		.028
	N	89	89	89
Y	Pearson Correlation	.246*	.233*	1
	Sig. (2-tailed)	.020	.028	
	N	89	89	89

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.303 ^a	.092	.071	21.189	.092	4.343	2	86	.016

- a. Predictors: (Constant), X1, X2
- b. Dependent Variable: Y

6 CONCLUSION

Based on correlation value obtained through SPSS 16 assistance, it can be interpreted that:

- (1) There was positive and significant emotional intelligence with Math problem solving ability, significance value= 0.20 and correlation coefficient $r = 0.246$ with the degree of correlation relationship is weak.
- (2) There was positive correlation and significant logical thinking ability with math problem solving ability, significance value= 0.028 and correlation coefficient $r = 0.233$ 246 with the degree of correlation relationship is weak.
- (3) There was positive and significant correlation between emotional intelligence and logical thinking ability with Math problem solving ability, significance value= 0.016 and correlation coefficient $r=0.303$ with the degree of correlation is weak.

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