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The Relationship Between Emotioal Intelligence and Mathematics Learning Outcomes Of 5th Grade Students Of Kalidawe State Elementary School Pucanglaban District Tulungagung Regency

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Abstract— This research was conducted because of the learning outcomes poor mathematics of 5th grade students at Kalidawe State Elementary Scool in the district Tulungagung, which is thought to be influenced by non-cognitive factors, especially emotional intelligence. Emotional intelligence encompasses motivation, self-awareness, empathy, and social skills, which are considered important factors in the learning process because they influence students' ability to manage emotions, motivate themselves, and collaborate. This study aims to examine the significant relationship between emotional intelligence and mathematics learning outcomes of fifth-grade student at Kalidawe State Elementary School in Tulungagung. This study uses a quantitative correlation approach. The population of this study consisted of all fifth-grade students, totaling 16 people and selected using random sampling. The measuring instruments used were tests and questionnaires. Both measuring instrument have been validated and tested for reliability (Cronbach's Alpha > 0.80). data normality was tested using the Shapiro-Wilk Multivariate normality test. Data analysis used a paired sample t-test to test hypothesis. The result showed that the data were normally distributed (p < 0.5). Analysis using paired sampel t-test showed a significant relationship between emotional intelligence and mathematics learning outcomes (p < 0.001) in both the test and questionnaire. In this study, there was a significant relationship between emotional intelligence and mathematics learning outcomes in a sample of 5th grade students at Kalidawe State Elementary School, Pucanglaban District, Tulungagung Regency. Increased emotional intelligence was positively correlated with improved mathematics learning uotcomes. These findings have important implications for teachers and school in improving mathematics education and considering the emotional needs of their students.

Keywords— Emotional Intelligence, Mathematics Learning Outcomes

I. INTRODUCTION

A. Background

Education is one of the most influential factor in human life. Education aims to increase intelligence, strengthen desires, and refine feelings. Because education is a continuous effort that progresses throught stages, its goals are gradual and tiered. Every individual prossessed unique talent and interests, which, if developed, have potential. Education plays a crucial role in bridging these intelligences [1]

There are three types of intelligence. Spiritual intelligence (SQ), emotional intelligence (EQ), and intelligence quotient (IQ). Emotional intelligence influences how students handle problems, control themselves, maintain enthusiasm, and persist. Motivate themselves. This can be seen from various points of view, such as the desire to learn intelligence, concentration, and the ability to integrate with their environment. Emotional intelligence is crucial for success because uncontrolled emotions can make individuals smart acting stupid. Lacking intelligence emotionally, people cannot utilize their brains optimally[2]

The result of the learning process are known as 'learning outcomes'. Arccoding to the big Indonesian Dictionary, 'result' are defined as something produced through effort. Learning is the process of acquiring knowledge or the ability to change actions or responses after experiencing an experience. Based on this understanding, it can be said that learning outcomes are the abilities that students have after they have learned, including cognitive,affective, and psychomotor skills that come from experience[3] .

There are two catagories that influence learning outcomes external and internal factors. Internal factors originate from the students themselves. Such as the teacher's learning environment and the model applied are other external factors. Meanwhile, internal factors originate from within the learner and include factors such as intelligence or intellect [4]. There are three types of factors that influence learning. Internal factor include the learner's physical and mental condition, including physical (e.g,

eyes and ears), as well as psychological aspects (e.g, intelligence, attitude, talent, interests, and motivation), and their environment. This includes the social and cultural environment. Learning approach factors are the effort made by students. These include high, medium, and low approaches.

Surveys show that the current generation tends to experience more emotional problems, loneliness, and sadness. Lack of respect for ethics, as well as increased anxiety, restlessness, and aggressiveness. Based on initial observations conducted at Kalidawe State Elementary School in Pucanglaban District, Tulungagung Regency, it was found that there was a problem with low mathematics learning outcomes were not only coused by cognitive ability factors, but were also influenced by non-cognitive factors, one of which was emotional intelligence. Students with good emotional intelligence were better able to manage their emotions. Motivate yourself, and build positive relationship with teachers and peers. This can have a positive impact on the learning process, and ultimately improve mathematics. Result study emotional intelligence includes the ability to recognize one's own emotions, and motivate oneself self-awareness, and building relationships. These skills are highly relevant to the mathematics learning process. They require focus and the are more persistent[5].

Based on the discussion above, the researcher is interested in conducting research entitled emotional intelligence and mathematics learning outcomes of 5th grade elementary school students Kalidawe Village in Pucanglaban District, Tulungagung Regency'.

B. *Problem Statement*

Based on the background description that has been explained above, the research questions is ehether there is a significant relationship between mathematics learning outcomes and emotional intelligence of 5th grade students at Kalidawe State Elementary School, Pucanglaban District, Tulungagung Regency?

C. *Research Objectives*

Based on the background above, the aim of this study is to determine whether there is a significant relationship between emotional intelligence and mathematics learning outcomes of 5th grade students at Kalidawe State Elementary School in Pucanglaban District, Tulungagung Regency.

D. *Research Benefits*

The benefits of this research are as follows.

1. This research is theoretically useful for:
   a. Regarding material reference scientific the influence of emotional intelligence on students learning outcomes.
   b. To determine the importance of emotional intelligence on students learning outcomes.
2. This research is practically useful for :
   a. Teacher
      It is hoped that the result of this study can help teachers motivate students to become more capable is a crucial factor in improving learning outcomes.
   b. School
      It is hoped that this research can provide informatin for schools to for considering the learning outcomes that students must achiever.
   c. Researchers
      As a source of inisight for researchers regarding the importance of emotional intelligence, it has a significant impct it is important to understand the importance of emotional intelligence.

II. RESEARCH METHODS

A. *Type and Design of Research*

This research uses a quantitative approach. Quantitative research is a research method based on the philosophy of positivism. This method is considered scientific because it meets scientific criteria in concrete or empirical terms, objectively, measurably, rationally, and systematically. This research uses a correlation analysis method. This study uses a correlation analysis method. The correlation method aims to investigate the relationship between variables the direction of the relationship. Correlation research is a research method that aims to measure the strength of the relationship between two variables through data collection. The goal is not to prove causation, but rather to determine whether the relationship exists and how strong it is.

B. *Research Variables*

The independent variable (X) is emotional intelligence, while the dependent variable (Y) is mathematics learning outcomes.

C. *Population and Sample*

The population in this study was all fifth-grade students at Kalidawe State Elementary School, totaling sixteen students. The sample taken for this study was all fifth-grade students at Kalidawe State Elementary School. The sample is representative of the population being studied. A good sample has characteristics representative of the population. An unrepresentative sample cannot be generalized to the population.

D. *Data Collection Techniques*

To obtain the necessary data and information, the tools used for data collection the data in this study are tests, questionnaires, and documentation.

1. Testing Techniques
   This research uses testing techniques. To measure the mathematics learning outcomes of fifth-grade students at Kalidawe State Elementary School. The test was administered to determine how well students understood the material on adding fractions. Students were given a pre-test before class began, and a post-test after class.
2. Questionnaire Technique

A questionnaire is a research instrument consisting of a series of statements to collect data. The questionnaire technique is used to measure the emotional intelligence of fifth-grade students at Kalidawe State Elementary School. The emotional intelligence of fifth-grade students at Kalidawe State Elementary School was evaluated using an initial questionnaire. This questionnaire was administered before class began, and the final questionnaire was administered after class ended. Which was completed after class ended.

3. Documentation Techniques
Documentation is the process of collecting data and images that can support research. In this study, data was collected through documentation techniques to obtain data directly from the research location in the form of data and photos of activities that could support the research conducted at Kalidawe State Elementary School.

E. Data Analysis Techniques

The data analysis techniques for testing the instruments in this study began eith validity and reliability tests, which were assessed using the Kaiser-Mayer-Olkin (KMO) and Cronbach's Alpha. In the prerequisite test, normality was measured Shapiro-using the Shapiro-Wilk test. Learning was measured using the Wilk test. Learning outcomes scores and emotional intelligence were assessed using descriptive statistics and hypotheses, hypotheses testing using Paired Sample T-test to determine the significant relationship between the two variables.

III. RESULTS AND DISCUSSION

A. Result

1. Validity and Reliability Test
Test the validity and reliability of test instruments and questionnaire used the Bartlett's Test of Spherincity and Kaiser-Mayer-Olkin Meausure of Sampling Adequacy (KMO MSA) for KMO MSA score must be above 0.001[6]. Stated that the instrument was valid so it can continued.

Table 1. Bartlett's Test of Sphericity

x^2	Df	P
684	5	.001

Based on table 1, Bartlett's Test of Sphericity show a p-value less than 0.001 indicates that the research instrument is valid.

Table 2. KMO Measure of Sampling Adequacy

	MSA
Overall	0.500
Initial test	0.500
Final tes	0.500

Based of table 2, the KMO Measure of Sampling Adequacy show a result of 0.500, thus the instrument is quite feasible.

Table 3. Scale Reliability Statistics

	Mean	Cronbach's α
Scale	0.725	0.842

Based on table 3, the Cronbach Alpha value of 0.842 indicates that the learning outcomes test instrument has very high reliability. This, it can be concluded that the learning outcome test instrument has a very high level of reliability.

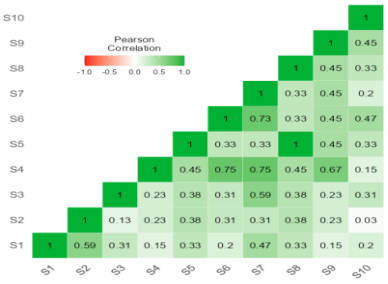

Figure 1. Correlation Heatmap

Based on figure 1, the Correlation Headmap result show a strong correlation between the measurement times of student learning outcomes. The dominance of dark green along the main diagonal and its surroundings in the Headmap indicates the stability and consistency of student learning outcomes. Those with high initial learning outcomes tend to maintain high learning outcomes, and vice versa. This demonstrates the reliability of the measurement instrument.

Table 4 Bartlett's Test of Sphericity

X^2	Df	P
84	5	< .001

Based on table 4, Beartlett's Test of Sphericity shows a significant value (p) of less than 0.001, a p-value of

less than 0.001 inditaces That the research instrument is declared valid.

Table 5. KMO Measure of Sampling Adequacy

	MSA
Overall	0.500
Initial questionnaire	0.500
Final questionnaire	0.500

Based on table 5, the KMO Measure of Sampling Adequacy shows a result of 0.500, indicating that the instrument is quite feasible.

Table 6. Scale Reliability Statistics

	Mean	Cronbach's α
Scale	3.58	0.824

Based on table 6, the Cronbach Alpha value of 0.824 show that the emotional intelligence questionnaire instrument has very high reliability.

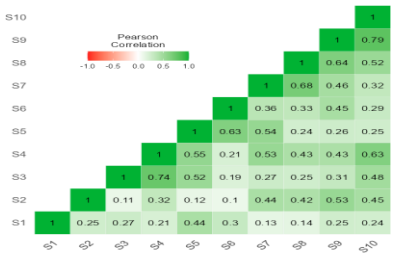

Figure 2. Correlation Heatmap

Based figure 2, the Correlation Heatmap result show a strong correlation between the times at which student's emotional intelligence was measured. The predominance of dark green along the main diagonal and its surroundings on the Heatmap indicates the stability and consistency of students' emotional intelligence. Students tend to maintain high emotional intelligence at the beginning, and on the contrary, this shows the reliability of the measurement instrument used.

2. Normality and Hypotesis Test

Table 7. Normality Test

		W	P
Initial test	Final Test	0.961	0.674

In table 7, it shows that the p-value for the initial test and the final test 0.674, the p-value if the value is less than 0.05 the data is condisidered to be normally distributed and the null hypothesis is accepted [7].

Table 8. Normality Test

		P	W
Initial question	Final question	0.964	0.743

In table 8, it shows that the p-value for the initial and final questionnaires is 0.743, the p-value is more than 0.05. so the data is normally distributed and the null hypothesis is accepted.

Table 9. Paired Sampel T-test

			Statistic	Df	P
Initial test	Final test	Student's t	-12.7	15.0	< .001

In table 9, it show the result of the Paired Sample T-test. The test results show a t-value of -12.7 with a degree of freedom (df) of 15.0 the p-value is less than 0.001. since the p-value is < .001 (much smaller than the general significance level, such as 0.05), the null hypothesis is rejected. There is a statistically significant difference between the initial test and final test. The direction of the difference is indicated by the negative t-value -12.7, which indicates that the average initial test score is lower than the average final test score. This interpretation is based on the assumption that the initial test and final test measure the same variable and the alternative hypothesis that there is a difference between the two test. It can be concluded that based on the result of the paired sample t-test, the alternative hypothesis is rejected. Is accepted. Initial test and final test are significantly different. In addition to the analysis, the QQ Plot Assessing Multivariate Normality diagram shows the distribution of points related to the data presented in the figure below.

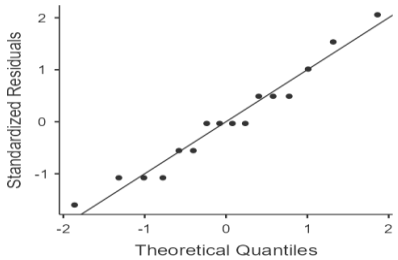

Figure 3. Correlation Heatmap

Figure 3, it is clear that the point is approaching parallel lines, which indicate normally distributed data.

Table 10. Paired Sample T-test

			Statistic	Df	P
Initia question	Final question	Student's t	-5.59	15.0	< .001

The results of the paired sample t-test. The t-value obtained was -5.59 with a degree of freedom (df) of 15.0 the p-value is much smaller than 0.05 (the general significance level), the null hypothesis is rejected. This indicates a statistically significant difference between the initial and final questionnaire. A negative t-value indicates that the average final questionnaire score is lower than the average score of the first questionnaire. It can be concluded that because the p-value < .001 is much smaller than 0.05, the alternative hypothesis is accepeted. There is a significant difference between the initial and final questionnaire scores. In addition to the analysis, the QQ Plot Assassinf Multivariate Normality diagram shows the distribution of points related to the data presented in the figure below.

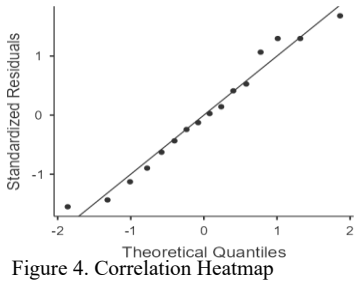

Figure 4. Correlation Heatmap

Figure 4, it is clear that the point is approaching parallel lines, which indicated normally distributed data

B. *Discussion*

The result of this study theory on emotional intelligence, which emphasizes the importance of emotional management, empathy, and self-motivation for successful learning [8]. The significant increase in students' emotional intelligence after the intervention, which coincided with improvements in mathematics learning, indicates that developing emotional intelligence is a key factor in improving result academic achievement. Regarding the importance of self-efficacy in the learning process, where emotional intelligence plays an important role in building students' self-confidance and motivation [9]. The results of the study show that the tool is very reliable in Cronbach's Alpha > 0.80 for data both tools shows the data collected through this study. This data strengthens the validity of the research which shows significant improvements in students' mathematics learnimg outcomes and emotional intelligence. The use of appropriate statistical test, such as paired sample t-tes, also ensures the accuracy of data analysis and interpretation of result significant improvement in students' mathematics learning outcomes after the implementation of the intervention (p <0.001). This improvement is supported by findings related to emotional intelligence. Students, which also showed significant changes (p < 0.001). These findings indicate that the implemented intervention was effective improving both students' academic abilities and emotional intelligence. These results have significant consequences for developing a better and more comprehensive learning approach, which considers both the cognitive and affective aspeets of students in a balanced manner. Although this study showed significant results, there are several limitations. The relatively small sample size of 16 students may limit the generalizability of the findings. The pretest and posttest design without a control group makes it difficult to confirm that the observed improvements were solely due to the intervention. Future research, such as experimental designs with control groups, is needed to strengthen the validity of the findings.

IV. CONCLUSION

Based on the research result, the discussion in the previous chapter, the result of this research show that there is a relevant relationship. Between mathematics learning outcomes and emotional intelligence. With values above 0.80 for each variable, the lessons used for measuring emotional intelligence based on mathematics learning outcomes showed good reliability. As shown by the results of the normality test, the research data also met the assumption of normality, for both variables, the p-value was greater than 0.05. The hypothesis shows that there is a significant relationship between emotional intelligence and mathematics learning outcomes. This finding supports the proposed alternative hypothesis, which state that there is a relationship between emotional intelligence and mathematics learning outcomes mathematics.

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