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Learning Environment as Correlate of the Mathematical-Logical Intelligence

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Abstract
This study aims to determine the relationship between the atmosphere of the learning environment and the mathematical-logical intelligence of the fifthgrade students in SD N 1 Tersobo. The approach used is a quantitative approach and the type of research is correlational. The population of this research is the fifthgrade students of SD N 1 Tersobo. The sampling technique used is saturated sampling. Data was collected by means of interviews, distributing questionnaires and tests. Data analysis by means of: analysis prerequisite test includes normality test and linearity test and followed by hypothesis testing with correlation test. The results is a positive and significant relationship between the atmosphere of the learning environment and mathematical-logical intelligence students with an r value of 0.392. This shows that there is a positive and significant relationship between the atmosphere of the learning environment and Mathematical-Logical intelligence.

INTRODUCTION

Education is a systematic system that develops the potential for intelligence, emotional intelligence and spiritual intelligence through guidance, learning or training activities carried out at school and outside school. According to Tirtaraharja & Sulo (2018:82), education is something global and runs continuously. Amin (2018:107) argues that education is a way that is carried out consciously and directed, carried out with a system to develop the potential to achieve all goals. Based on the Law of the Republic of Indonesia, the purpose of education is to educate the Indonesian people. Education will be achieved in accordance with what is expected if it is carefully prepared through good and systematic planning.

Learning is an increase in knowledge that can be done at any time. Learning requires a comfortable learning environment. According to Nedawati (2020:2), the atmosphere of the learning environment will affect students when studying, a good learning environment will make students more ready to learn. Damanik (2019: 47) explains that the atmosphere of the learning environment will be realized if a person can overcome and control himself while in his learning environment. According to Novianti et al. (2019:3), the learning environment is very important to support the learning process effectively and efficiently. Anggraini et al., (2017:1651) say that the learning environment is one source of learning that affects the learning process. According to Achdiyat & Andriyani (2016: 246), the success of the teaching and learning process will be realized if a conducive learning atmosphere can be developed, so that students have competence, self-control, intelligence and skills.

According to (Hidayati, 2016) the environment that affects education is divided into three categories, namely the family environment, school environment, and community environment. These three environments are very necessary for children because they have a great influence on the development of

students' intelligence. The development of children's intelligence increases if the three educational environments are good.

Several previous studies have been conducted related to the atmosphere of the learning environment. From this study, it was found that a conducive learning environment can increase interest in learning (Giovando et al, 2018), is closely related to learning motivation (Febriyanti et al, 2014; Rahmadani & Shuraini, 2021), optimizes multiple intelligences in children (Mariyana & Setiasih, 2018), is a determining factor in increasing student interest in the learning process (Giovando et al, 2018), and making students more concentrated in learning (Tambunan et al, 2020). This study tries to see the relationship between the atmosphere of the learning environment and logical-mathematical intelligence.

Intelligence is a person's ability to solve a problem by observing the ideal state of truth based on learning experiences and environmental adjustments (Setyaningrum et al., 2016: 213). Intelligence develops continuously as a person ages (Azwar, 2017). The development of intelligence is influenced by maturity as stated by Ahmadi & Supriyono (2013) that the factors that influence intelligence are maturity (maturity), innateness, training (formation) and interest. Gardner divides intelligence into nine kinds, namely Linguistic-Verbal, Mathematical-logical, Visual-Spatial, Kinesthetic, Rhythm-Musical, Interpersonal, Intrapersonal, Naturalist, and Existential bits of intelligence. Mathematical logic intelligence is the ability to master operational basics, perform systematic calculations and think logically to analyze problems (Sholeh et al., 2016).

Based on the background of the problems above, the purpose of this study is to determine whether there is a positive and significant relationship between the atmosphere of the learning environment and mathematical-logical intelligence.

METHODS

This type of research is correlational. This research involves two variables, namely the independent variable and the dependent variable. The independent variable in this study is the atmosphere of the learning environment and the dependent variable in this study is Mathematical-Logical intelligence. This research was conducted at SD Negeri 1 Tersobo which is located at Jalan Slamet Riyadi No. 43 Prembun, Kebumen. The population is 27 students and the sampling technique is saturated sampling or census, which is a sampling technique in which all members of the population are used as samples (Sugiono, 2016). The research instruments were questionnaires and tests. The data analysis technique is the analysis prerequisite test including the normality test and linearity test and hypothesis testing using the person correlation test.

RESULTS AND DISCUSSION

This research is a correlational study that aims to examine the relationship between two or more variables. The hypothesis test used in this study is the person correlation test. Pearson correlation test is used to determine whether there is a relationship between the atmosphere of the learning environment with Mathematical-Logical intelligence. Prior to the person correlation test, a prerequisite test for data analysis will be carried out which includes a normality test and a linearity test.

The normality test was conducted to determine whether the data were normally distributed or not. Testing the normality of the data in this study used the Kolmogorov-Smirnov statistical test. The standard for testing this normality test is that if the significance value is > 0.05, then the data is normally distributed and if the significance value is < 0.05, then the data is not normally distributed. Based on the calculation results, the significance value of the data on the learning environment is 0.344 and the significance value of the Mathematical-Logical intelligence data is 0.313. It can be concluded that the data on the learning environment atmosphere and Mathematical-Logical intelligence is normally distributed.

The linearity test is used to determine whether two variables have a linear relationship or not. The linearity test was carried out using deviation from linearity. The standard for testing this linearity test is that if the significance value is > 0.05, then the two variables are said to have a linear relationship. Based on the calculation results, the significance value of the learning environment atmosphere data with Mathematical-Logical intelligence is 0.301. It can be concluded that the two variables in this study are linearly related.

The researcher's hypothesis testing uses the person correlation test. This analysis is used to determine whether there is a relationship between the atmosphere of the learning environment with Mathematical-Logical intelligence. To find out whether there is a significant relationship or not, a significance test is carried out. The test uses a two-sided test with a significance level of 5%. The test criteria are if the significance > 0.05 then H0 is accepted and if the significance value is <0.05 then H0 is rejected. The results of the correlation test that have been calculated using SPSS can be seen in table 1.

Table 1. Correlation Test

		Learning Environment Suasana	Mathematical-Logical Intelligence
Learning Environment Suasana	Pearson Correlation	1	.392*
	Sig. (2-tailed)		.043
	N	27	27
Mathematical-Logical Intelligence	Pearson Correlation	.392*	1
	Sig. (2-tailed)	.043	
	N	27	27

Based on table 1, it can be seen that the correlation value between the variables of the learning environment and mathematical-logical intelligence is 0.392. This correlation value is in the range of 0.20-0.399, so it can be said that the relationship between the two variables in this study is low with a positive relationship. Furthermore, it is also known that the calculated r-value is 0.392 and the significance value is 0.043 which is smaller than the significance level of 0.05 (0.043 <0.05). Thus, it can be concluded that H0 is rejected and Ha is accepted, meaning that there is a positive and significant relationship between the atmosphere of the learning environment and the Mathematical-Logical intelligence of the fifth-grade students of SD Negeri 1 Tersobo.

Learning Environment Atmosphere

The results of the research on the learning environment variables for fifth-grade students of SD Negeri 1 Tersobo showed mixed results. Based on descriptive analysis, obtained a maximum value of 16; minimum value 3; mean 12.41; median 14; mode 16 and a standard deviation of 3816. The distribution of the frequency scores of the learning environment atmosphere will be presented in table 2.

Tabel 2. Frequency Distribution of Scores in the Learning Environment

No.	Interval	Frequency
1	3-5	2
2	6-8	3
3	9-11	3
4	12-14	8
5	15-17	11
	Total	27

The distribution of scores for the learning environment in table 2 shows that the group with the highest frequency is in the 15-17 interval, while the lowest frequency is in the 3-5 interval. Based on the calculation results, it can be seen that the level of the learning environment for the fifth-grade students of SD Negeri 1 Tersobo in the high category is 26%, the medium category is 55.5% and the low category is 18.5%. The frequency distribution of the atmosphere level of the student learning environment can be seen in table 3. The data in table 3 shows the level of the learning environment for the fifth grade students of SD Negeri 1

Tersobo, namely in the low category of 18.5% (5 students), the medium category of 55.5% (15 students) and the high category of 26.5%. (7 students).

Table 3. Frequency Distribution of Learning Environment Levels

Score	Frequency	Percentage	Criteria
>15,2	7	26 %	High
8,5-15,2	15	55,5 %	Medium
<8,5	5	18,5 %	Low

Based on the results of the study, the learning environment for the fifth grade students of SD Negeri 1 Tersobo in the high category was 26.5% due to many factors. These factors include the location of the school close to the highway and incomplete facilities so that the atmosphere during learning is not comfortable.

Mathematical-Logical Intelligence

The results of the research on the variable of Mathematical-Logical intelligence of fifth grade students of SD Negeri 1 Tersobo showed mixed results. Based on descriptive analysis, obtained a maximum value of 10; minimum value 1; mean 7.41; median 8; mode 10 and standard deviation 2531. The frequency distribution of Mathematical-Logical intelligence scores will be presented in Table 4.

Table 4. Frequency Distribution of Mathematical-Logical Intelligence Score

No.	Interval	Frequency
1.	1-2	1
2.	3-4	4
3.	5-6	2
4.	7-8	11
5.	9-10	9
	Total	27

The distribution of Logical-Mathematical intelligence scores in table 4 shows that the group that has the highest frequency is in the 7-8 interval, while the lowest frequency is in the 1-2 interval. The results of calculating the level of Mathematical-Logical intelligence for fifth-grade students of SD Negeri 1 Tersobo can be seen in table 5.

Table 5 Frequency Distribution of Mathematical-Logical Intelligence

Score	Frequency	Percentage	Criteria
> 9,9	8	29,6 %	High
4,8 – 9,9	14	51,9 %	Medium
< 4,8	5	18,5 %	Low

Table 5 shows the level of Mathematical-Logical intelligence of the fifth-grade students of SD Negeri 1 Tersobo, namely in the low category of 18.5% (5 students), the medium category of 51.9% (14 students) and the high category of 29.6% (8 students). Based on the results of the study, the Mathematical-Logical Intelligence of fifth-grade students of SD Negeri 1 Tersobo was in the high category of 29.6% due to many factors. These factors include a less comfortable learning environment and incomplete facilities.

The Relationship between Learning Environment Atmosphere and Mathematical-Logical Intelligence

The results showed that there was a positive and significant relationship between the atmosphere of the learning environment and the mathematical-logical intelligence of the fifth-grade students of SD Negeri 1 Tersobo. This is shown from the results of the analysis using SPSS, which obtained data in the form of an r count of 0.392 and a significance value of 0.043 at a significance level of 5%. The relationship between the atmosphere of the learning environment with Mathematical-Logical intelligence is because the atmosphere of

the learning environment is one of the supporting factors for learning success. A conducive learning environment makes it easier for students to concentrate on learning so they can understand what they are learning. As stated by (Achdiyat & Andriyani, 2016) that if the learning atmosphere is conducive then the success of the teaching and learning process will be achieved so that the potential that exists in students can be developed so that they have the ability of intelligence and skills . This shows that a good learning environment can develop Mathematical-Logical intelligence. As stated by Ahmadi & Supriyono (2013) that there are 4 factors that influence intelligence, namely innate, maturity, formation and interest. This shows that Mathematical-Logical intelligence can be developed, namely through maturity and formation in the learning process.

CONCLUSION

The results showed that the calculated r value was 0.392, so it can be concluded that there is a positive and significant relationship between the atmosphere of the learning environment and the mathematical-logical intelligence of the fifth grade students of SD Negeri 1 Tersobo.

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