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The Influence of Realia Media on Increasing Students' Logical Intelligence in Mathematics Learning at MI Muhammadiyah Ngadirejan

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ABSTRACT

This study aims to determine the influence of realia media in increasing students' logical intelligence in mathematics learning. The type of research used is descriptive quantitative. The sample used amounted to 40 students including grade III and IV students of MI Muhammadiyah Ngadirejan using purposive sample techniques. Some of the instruments used to collect data include questionnaires, observations, and documentation. Data analysis using prerequisite tests, simple linear regression tests, and t-tests. From the results of the study, the results of a simple linear regression test sig = 0.000 can be interpreted as a significant influence. The results of the analysis used the significance test t count (4.595) ≥ t table (1.685). Therefore, we can confirm that the use of Realia media plays an important role in the development of logical thinking of MI Muhammadiyah Ngadirejan III and IV grade students.

Keywords: Realia Media, Student Logical Intelligence

INTRODUCTION

Mathematics has a great influence on the development of engineering sciences and is closely related to everyday life. Learning mathematics is considered important to support the progress of individuals and the nation as a whole. Mathematical knowledge can be said to be one of the basic knowledge that everyone must master.

A common phenomenon today is the weak ability of students to learn mathematics, especially in interpreting and connecting mathematical concepts logically and systematically. According to researchers, the fact that teachers rarely use the educational environment in mathematics subjects is a problem that needs to be solved. Because the learning process affects student learning outcomes. So far, researchers only use the lecture method and teach the material orally.

The content presented is very boring for students and difficult to absorb the subject matter. One of the factors affecting the level of mathematical ability of students is the lack of use of mathematical intelligence and logic in solving mathematical problems. Student tend to choose easier solution alternatives without thinking about the end result received.

Based on Gardner's statement that logical intelligence is also mathematically consisting of the ability to analyze problems logically, perform mathematical operations, and study scientific problems. Students who can apply or use their mathematical logical intelligence can be said that they are students

who have a high level of intelligence because not all students can use their logical intelligence in thinking. (Gardner,2020)

Realia media is concrete media found in an area, realia itself means real. The application of realia media in mathematics learning is considered important because it can provide relevant and meaningful student learning outcomes. (Handayani and Subakti 2021) The effective and efficient use of realia media is expected to improve students' learning outcomes and mathematical logical thinking. The purpose behind the use of realia media is to increase the intelligence of one's the ability to solve a problem is to see how the truth depends on the learning experience and the environment.

In the context of classroom teaching, teachers can combine several types of media to complement their respective uses. This study aims to determine the influence of realia learning media on the logical intelligence of MI Muhammadiyah Ngadirejan students.

THEORETICAL FRAMEWORK

Realia Learning Media

Learning media is a tool to disseminate, convey and channel messages and ideas to arouse students' thoughts, feelings, actions, interests and attention so that the teaching and learning process takes place within themselves, tools, mediators, and connections. Learning that was previously considered monotonous and boring through lecture-based learning, can now be done through the use of media so that students can gain new insights in the process of teaching and learning activities.

Realia media is defined as real objects, both inanimate and living objects, as tools that support the learning process. The advantage of using Realia media is that in addition to being easier to understand the abstract material delivered by the teacher, but children themselves are also easier to understand the material because it interacts directly with reality. (Ibad, 2012)

Realia media are tangible objects that are used as aids in learning. Realia media is useful for showing students that an object is real or real, so that students can correctly understand the real object presented in the material. (Nurrita, 2018)

Therefore, the media and methods used in the learning process must be appropriate in the sense that they are in accordance with the teacher's ability to interpret the material using these media. The tools used aim to enable more real experiences, increase student motivation, and increase absorption and retention during learning. The active use of media in education by teachers has many benefits because overall the advantage of media in the learning process is that it can facilitate communication between teachers and students so that learning becomes more effective and efficient.

Logical Intelligence

Logical intelligence is intelligence related to mathematical and logical things. A person with high logical intelligence easily understands and solves any mathematical problems. You need to know that students have different levels of logical intelligence because each student basically has their own intelligence strength. Therefore, not all students can easily understand math lessons.

Intelligence is the ability to solve problems and make good decisions by evaluating facts and adapting to the environment based on one's learning experiences. Intelligence is the ability to solve problems or create valuable products in one or more cultural contexts. (Gardner,2020)

Mathematical-logical intelligence is intelligence related to mathematical and logical things. A person with high logical-mathematical intelligence can easily understand and solve any complex mathematical problem. You need to know that students have different levels of logical-mathematical intelligence because each student basically has their own intelligence strength.

Because not all students are able to utilize logical intelligence in their thinking, students who are able to apply or utilize mathematical and logical intelligence can be said to have a high level of intelligence.

METHOD

The research was conducted at MI Muhammaiyah Ngadirejan which is located at Rt.01 Rw.10 Dusun. Source: Ngadirejan Village, Pringkuku District, Pacitan District, East Java Province. The method used is quantitative descriptitive where data is obtained from questionnaires. Quantitative research is research based on the philosophy of postivism and is used to study certain populations or samples. Data collection was carried out using research instruments. Qualitative research is research based on positivist philosophy and used to study populations or samples. Data collection was carried out using survey instruments. This comprehensive research requires the use of a lot of data, from data collection to data interpretation and data presentation. (Sugiyono, 2017).

The population used in this study was MI Muhammadiyah Ngadirejan students, which was 167 students, while the sample of this study consisted of grade III and IV students totaling 40 students. The sampling method in this study is purposive sampling. The variables in this study are divided into independent variables (X), namely realia media and dependent variables (Y), namely students' logical intelligence. The data collection techniques used in this study were questionnaires, observations and documentation as supporting data. Questionnaires are used to collect data, a questionnaire that contains questions and alternative answers so that respondents just choose their own answers without imitating other students.

All questions asked by researchers and answered by respondents are guaranteed authenticity and honesty without any interference from others, especially teachers. The statement can be proven by the results of validity, reliability, and other statistical tests in accordance with the research procedure. The assumption tests used include normality tests, homogeneity tests, linearity tests, simple linear regression tests, significance tests using SPSS version 21.

RESULTS AND DISCUSSION

VALIDITY TEST

The instrument was tested on grade III and IV students of MI Muhammadiyah Ngadirejan. Since the number of respondents = 40, df = (N-2) = 38, and the significance level of the two-way test at the error level of 5% or 0.05 is the r value of the table = 0.3120.

Based on the results of instrument testing on each questionnaire, realia media influence questioner there are 10 questions and logical intelligence questioner there are 10 questions, with a total of 40 respondents. The r-table is found using a distribution (r-table) with *degrees of freedom* (df) = N-2 or 40 – 2 = 38 and $\alpha = 0.05$, and the t-table is 0.3120. Therefore, all questions are declared valid for experiments using this research instrument.

RELIABILITY TEST

The basis for taking Cronbach's Alpha reliability test value according to Wiratna Sujarweni (2014), is said to be reliable if the value of Cronbach's Alpha > 0.6. Here are the results of each variable's test.

Table 1 Results of reliability test of influence of realia media

Cronbach's Alpha	N of Items
,688	10

"N of Items" is the number of questions and is answered all without any blanks. While the result of Cronbach's Alpha 0.688 means that the results of this test > 0.600 thus the questionnaire is reliable or consistent, with a high level of reliability between 0.600 to 0.799.

Table 2 Logical intelligence reliability test results

Cronbach's Alpha	N of Items
,658	10

"N of Items" is the number of questions and is answered all without any blanks. While the result of Cronbach's Alpha 0.658 means that the result of this test > 0.600 thus the questionnaire is reliable or consistent, with a high level of reliability between 0.600 to 0.799.

NORMALITY TEST

Table 3 Normality test results with Kolmogorov-Smirnov Test

		Unstandardized Residual
N		40
Normal Parameters[a,b]	Mean	,0000000
	Std. Deviation	2,82970974
Most Extreme Differences	Absolute	,104
	Positive	,104
	Negative	-,087
Kolmogorov-Smirnov Z		,660
Asymp. Sig. (2-tailed)		,776

According to the normality test results, we can confirm that the normal residual value is given since it is known that the significance value is 0.776 > 0.05.

Linearity Test

Table 4 Linearity test results

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
VARIABEL_Y * VARIABEL_X	Between Groups	(Combined)	233,927	10	23,393	2,694	,018
		Linearity	173,492	1	173,492	19,977	,000
		Deviation from Linearity	60,435	9	6,715	,773	,642
	Within Groups		251,848	29	8,684		
	Total		485,775	39			

Based on the output of the significance of Deviation from Linearity Sig. is 0.642 > from 0.05, there is a linear relationship.

Homogeneity Test

Table 5 Homogeneity test results

Jumlah			
Levene statistic	df1	df2	Sig.
2,253	1	78	,137

Based on the results of these outputs, Sig. values of 0.137 > 0.05 can be obtained, so it can be concluded that the test results are homogeneous.

Simple Linear Regression Test

Table 6 Simple linear regression test results

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	173,492	1	173,492	21,111	,000[b]
	Residual	312,283	38	8,218		
	Total	485,775	39			

a. Dependent Variable: pengaruh kecerdasan logis

b. Predictors: (Constant), pengaruh media realia

The output shows that the value of the F calculation is = 21.111 with a significance level of 0.000 < 0.05. The regression model can then be used to reveal the response variables. That is, there is an influence of the realia media variable (X) on the logical intelligence variable (Y).

Uji Hipotesis

Table 7 Test Results t

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,472	6,187		,884	,382
	pengaruh media realia	,781	,170	,598	4,595	,000

a. Dependent Variable: pengaruh kecerdasan logis

In the part (coefficient) of the third hypothesis test, a constant value of 5.472 was obtained, while the value of the influence of realia media was 0.781. Hypothesis testing decisions made at the time of testing the influence of Media Realia on students' logical intelligence can reach the following conclusions:

1. Based on significance value: from the table of coefficients; significance values of 0.000 < 0.05 so variable X has an effect on variable Y.

2. According to the calculated t value, it is known that t t is calculated as 4.595 > t Table 1.68595 and therefore the Realia Media (X) variable affects the Logical Intelligence (Y) variable.

From these data, it can be concluded that in this study the variable of influence of Media Realia (X) affects the variable of Logical Intelligence (Y).

CONCLUSION

It is clear from the results of the research and discussion that has been described, researchers can conclude that the use of Realia media has a very significant influence on the development of logical intelligence of grade III and IV students of MI Muhammadiyah Ngadirejan, it can be proven by tests that have been carried out from research instruments.

The results of the research that has been done can be used as a consideration for teachers of Mathematics subjects, especially or homeroom teachers, Teachers can use various types of tools to help students participate more actively in the learning process in class, so that the learning process in class does not become monotonous, boring, or scary, for schools, it is hoped that it can add to some collections of books that support creative learning and can create things new for teachers so that there will be more references about learning media. And also facilitate teachers with the necessary teaching aids during learning.

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