

# Post-Pandemic Covid-19 Analysis: The Effect of Distance Learning Toward Learning Loss in Primary School

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## ABSTRACT

The spread of the Corona Virus Pandemic virus Disease 19 (COVID-19) resulted in the learning process in their respective homes. This impacts students' psychology and reduces the quality of students' skills, which is then suspected of learning loss. This research aimed to analyze the relationship between distance learning methods and the numeracy learning loss of elementary school students in high grades. This quantitative research uses a simple correlation method toward 150 elementary school students. Determination of the sample using a purposive sampling technique. The independent variable in this study is the distance learning method (X), and the dependent variable is the loss of learning numeracy (Y). Data were analysed by correlation test (Pearson Correlation), determination of the correlation coefficient with the R square model and t-test. Pre-analysis test includes a normality test using Kolmogorov Smirnov. The instrument in this research is a questionnaire with a Likert scale. The research analysis results show a positive relationship between the independent variable (distance learning method) and the dependent variable (learning loss of numeration). Based on the coefficient of determination, the effect size is 46.2%, while the other 54.8% is affected by other factors besides the learning method.

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## 1. INTRODUCTION

The world has undergone many changes due to the global pandemic Corona Virus Disease 19 (COVID-19), which causes an increasing number of deaths, so this incident has had an impact on aspects of people's lives in Indonesia, one of which is the field of education. Responding to the spread

of the virus that has spread for quite a long time, the Government of Indonesia, through the Minister of Education and Culture, issued a policy regarding the learning process during the COVID-19 pandemic, as stated in the Circular Letter of the Ministry of Education and Culture Number 4 of 2020 concerning Implementation of Educational Policies in the Emergency Period for the spread of the virus, which is reinforced by the Secretary General's Circular Number 15 of 2020. The implementation of the distance learning method is learning that is followed by students from home at hours determined by the agency and at hours outside to do assignments (Locke & Patarapichayatham, 2021).

The implementation of distance learning at all levels of education in West Java Province is effective starting April 13, 2020. So that the implementation of the distance learning study period continues to be extended until conditions improve and can change according to the need for emergency handling of the spread of COVID-19 (BBC News, 2022). The pattern of learning during distance learning has changed, which is carried out online or face-to-face is limited. The impact that occurs with learning from home is the difficulty of directly monitoring students' development (Mayers, 2021). Learning methods will affect the psychological and social aspects of teachers, students, and even parents. Students feel mental pressure due to the heavy task, and parents who also have to accompany the learning process find it difficult. Likewise, teachers have an increased burden because they have to prepare better learning tools, such as making video tutorials, online absences, and even online assessments (Oktaviani & Hudah, 2021).

This distance learning method impacts students' psychology, reduces the quality of student's skills, and results in a loss of learning. Learning loss is losing optimal learning opportunities and time due to the implementation of the learning process that is not normal as usual and can reduce knowledge and skills academically (Hevia, Vergara-Lope, Velásquez-Durán, & Calderón, 2022). The learning process is not optimal, making the information and learning outcomes obtained by students also not optimal (Pratiwi, 2021). Learning loss is dangerous if it occurs continuously and is prolonged. Therefore obstacles in learning must be identified immediately to develop a follow-up plan to overcome this. Learning loss shows that students tend to forget the concept of knowledge based only on rote knowledge (Conto, Akseer, & Dreesen, 2020).

One advantage of online learning is that it can expand access to education for the general public due to the flexible scheduling structure. Although it has been supported by various technologies while undergoing the distance learning method, there are still gaps that cause learning at home to be less effective (Assiddiqi & Soeryanto, 2021). One of the efforts teachers can make is to convey exciting learning methods during the distance learning method. This needs to be done considering that in learning in the pandemic era, many students have lost learning opportunities for various reasons (Andriani, Subandowo, Karyono, & Gunawan, 2021). Through learning methods adapted to circumstances, it is expected to know the profile of students' abilities, knowledge, and learning skills when studying from home so that teachers can formulate corrective efforts (Warsiyah, 2021). Moreover, implementing the Minimum Competency Assessment (AKM) will make the field of numeracy important for students to master because one of the aspects tested in the AKM is basic numeracy skills. (Perdana & Suswandari, 2021). Numeration is the ability to think by using concepts so that each student can solve everyday problems in a focused way (Rohim, Rahmawati, & Ganestri, 2021). As for the results of observations in schools and interviews with the principal and all teachers, online learning through the distance learning method during the pandemic was the beginning of the occurrence of student learning loss which is taken from the report card value of 1.78 with criteria below the minimum competence in November 2021.

Based on this background description, researchers are interested in analyzing more about the relationship between the distance learning method and learning loss in students' numeracy skills toward elementary school students. This study aims to analyze how closely high-grade students experience learning loss in numeracy skills during implementing distance learning.

## 2. METHODS

This research is quantitative research using a simple correlation method. The study was conducted on 150 elementary school students. Determination of the sample using purposive sampling technique to students in grades 4, 5 and 6 of elementary school. The independent variable in this study is the distance learning method, and the dependent variable is the loss of learning numeracy of elementary school students.

The research was conducted in Bogor City, West Java Province, Indonesia. The research was conducted over a period of four months, starting from March to June 2022. Data collection techniques in this study used questionnaires. Questionnaires were given to 150 elementary school students. The research instrument in the form of a questionnaire with a Likert scale is given with the following indicators: Indicators of the distance learning method (X) are as follows: a). Infrastructure readiness; b). The ability of teachers to use learning technology; c). Planning and learning during a pandemic; d). Student readiness; e). The role of school principals, teachers and parents in learning; f). Main Constraints. While the indicators of the learning loss numeration (Y) are as follows; a). Content; b). Context; c). cognitive processes.

Instrument validation was carried out constructively and empirically. Construct validation was carried out with experts in the field of elementary school learning. Empirical validation uses Karl Pearson product-moment correlation and instrument reliability uses Cronbach's alpha analysis technique. The results of the validation show that the instrument is valid and reliable with a reliability score of 0.83. Data from the questionnaire was first transformed from ordinal to interval data using Massive Successive Interval (MSI) method.

Data were analysed by correlation test (Pearson Correlation), determination of the correlation coefficient with the R square model and t-test. Pre-analysis test includes normality test using Kolmogorov Smirnov. T-test is used to determine the magnitude of the influence exerted by variable X on variable Y.

## 3. FINDINGS AND DISCUSSION

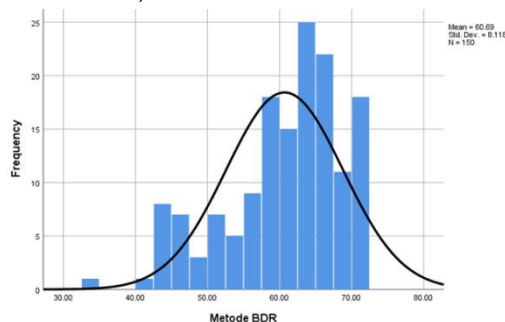
This research is a simple correlation study that uses two variables: distance learning method as the independent variable (X) and learning loss numeration as the dependent variable (Y). This research involved elementary school students in high grades (grades 4, 5, 6) who used the distance learning method in learning during the COVID-19 Pandemic. The results of the study were then analysed and described statistically (descriptive statistics) by finding the average value (mean), the mean (median), the most frequently occurring value (mode), standard deviation, maximum value, minimum value, sample variance, range, and total score (Siregar, 2018). The following table shows the descriptive analysis of raw data.

**Table 1.** Descriptive Analysis

Statistical		Method	Learning Loss Numeration
N	Valid	150	150
	Missing	0	0
Mean		60.69	51.24
Median		62.62	50.00
Mode		72	50
Std. Deviation		8,118	12,399
Variance		65,899	153,727
Range		38	63
Minimum		33	20
Maximum		72	83
Sum		9103	7686

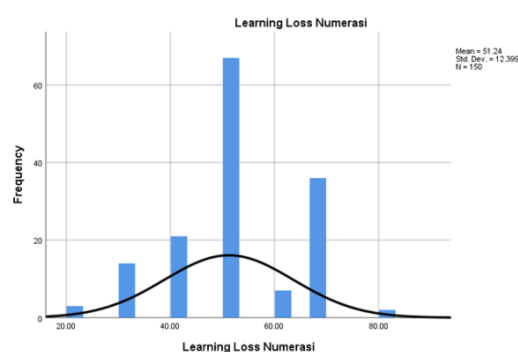
In Table 1 above, a description or description of the data can be given, namely:

1. The number of samples used by researchers at the elementary school was 150.
2. The independent variable of the study, namely the Distance Learning Method (X), has a minimum value of 33 and a maximum value of 72, with an average value of 60.69, mode 72, with a median of 62.62, with a standard deviation of 8.118, and variance of 65.899.
3. The independent variable of the study, namely Learning Loss Numeration (Y), has a minimum value of 20 and a maximum value of 83, with an average value of 51.24, mode 50, with a median of 50.00, with a standard deviation of 12399, and variance of 153.727.



**Figure 1.** Variable Score-Category Diagram for distance learning

The normality test of the data can be seen in Figure 1 above, with a mean value of 60.69 in the distance learning method variable and a standard deviation of 8.118 with a total of 150 respondents. For the distance learning method variable, none is less than the value of 30.00, and none is more than 70.00. As for the distribution of data, the more variable data for the distance learning method is centred in the middle, and the line from left to right tends to be symmetrically centred in the middle. So the value of the distance learning method variable can be interpreted because it is in the middle, and the data distribution is normal.



**Figure 2.** Category Diagram of Student Numerical Variable Scores

The data normality test can be seen in Figure 2 above, with a mean value of 51.24 in the learning loss enumeration variable. The standard deviation is 12,399, with a total of 150 respondents. For the numeric learning loss variable, there is nothing less than a value of 20.00 and nothing more than a value of 80.00. As for the data distribution, the more numeric learning loss variable data is centred in the middle, and the line from left to right tends to be symmetrically centred in the middle. So that the value of the numeric learning loss variable can be interpreted because it is in the middle and the data distribution is normal.

### 3.1 Pre-Data Analysis

The normality test using the Kolmogorov-Smirnov test technique obtained the following results:

**Table 2.** Normality Test Results of the distance learning Method with Learning Loss Numerical Students

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		150
Normal Parameters,b	Mean	.0000000
	Std. Deviation	10.56886909
Most Extreme Differences	Absolute	.061
	Positive	.061
	Negative	-.049
Test Statistic		.061
Asymp. Sig. (2-tailed)		.200c,d

- Test distribution is Normal.
- Calculated from data.
- Lilliefors Significance Correction.
- This is a lower bound of the true significance.

Based on table 2 above, the normality test results have a significant value of  $0.200 > 0.05$ , so it can be concluded that the residual value is usually distributed.

### 3.2 Hypothesis Testing

#### 3.2.1 Determining Correlation Equations

The results of simple correlation equations in this study are as follows:

**Table 3.** Results of Correlation Coefficient Equation Analysis

distance learning			
		Learning	Loss Numeration
Method distance learning	Pearson Correlation	1.523	**
	Sig. (2-tailed)		.000
	N	150	150
Learning Loss Numeration	Pearson Correlation	.523**	1
	Sig. (2-tailed)	.000	
	N	150	150
**. Correlation is significant at the 0.01 level (2-tailed).			

Based on table 3 above, the Pearson Correlation value is 0.523. The significance value is 0.000. It can be concluded that the distance learning method variable (X) correlates or has a relationship with numeracy learning loss (Y). Moreover, the form of the relationship between the two variables has a relationship with the degree of relationship because 0.52 is included in the criteria 0.41 - 0.60 in the moderate correlation criteria.

### 3.2.2 Determining the Coefficient of Determination

**Table 4.** Results of the Analysis of the Coefficient of Determination

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.680 <sup>a</sup>	.462	.459	8,763

a. Predictors: (Constant), distance learning Method

b. Dependent Variable: Learning Loss Numeration

Based on table 4 above explains the magnitude of the R-value, which is 0.680, and the coefficient of determination (R Square) is 0.462, which means that there is a relationship between the independent variable (learning method from home) and the dependent variable (learning loss numeration). As for the calculation of the percentage of the relationship between learning methods from home and learning loss numeracy of students, as follows:

$$R = r^2 \times 100\%$$

$$R = 0.680^2 \times 100\%$$

$$0.4624 \times 100\% = 46.2\%$$

Based on the above calculation results, it can be concluded that the positive relationship of the independent variable (learning method from home) to the dependent variable (learning loss numeracy) is 46.2%. The other 54.8% is influenced by other factors not examined in this study.

### 3.2.3 Significance Test

**Table 5.** Significance Test Results

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.775	6.552		.424	.673
	Method distance learning	.799	.107	.523	7.462	.000

a. Dependent Variable: Learning Loss Numeration

Based on table 5 above, the calculation in the t-test above is  $7.462 > 1.976$ , which means  $t_{\text{count}} > t_{\text{table}}$  with a significance value of  $0.000 < 0.05$ , which means that there is a significant relationship between the variables of home learning methods (X) to the learning loss numeration variable (Y). Based on the significance test results in table above, it can be concluded that  $H_0$  is rejected. In other words, there is a positive relationship between distance learning and learning loss numeracy.

Each indicator of the method variable from home must be embedded in the students themselves, so the success rate of learning can increase. However, students experienced a decline in learning abilities in applying subject concepts, especially numeracy. Teachers find it difficult to assist the development of students directly. Students remember rote not only by understanding the contents of

the reading text. This follows research results on indicators of infrastructure readiness where students are limited in using school facilities during COVID-19. The teacher only uses the WhatsApp application to learn from home.

On the indicator of the teacher's ability to utilize learning technology, the teacher is limited in the teaching and learning process because online interactions between teachers and students are carried out in one direction, and the communication of many children is late in responding. Indicators of planning and learning in the pandemic period where many students have problems with not having quotas and gadgets that are used with their parents. Indicators of student readiness are related because students experience mental stress due to the weight of the task felt by students, and parents must participate in mentoring the learning process at home.

Based on interviews with the students' teachers, not all students and parents quickly applied the learning method from home. However, because of the consistency of teachers familiarizing various methods during the pandemic, students became accustomed and could familiarize themselves with the method—a study from home only. However, one of the obstacles is that students tend to lack understanding of the learning material, experience boredom, and decrease grades from daily assignments. The opinion is in line with the opinion of the teacher. This research shows the relevance result with similar research (Rakhmawati & Mustadi, 2022), that there are differences between children's and adults' learning readiness. Children tend to be demanded by academic and biological factors, especially two-way communication. In contrast, adults are said to be ready to learn because of their existence and age as parents, workers, or organizational leaders. So the learning process requires subject matter that has been determined and adapted to the needs following its social role.

The results of this research are following research conducted by (Asrilia Kurniasari, Fitroh Setyo Putro Pribowo, & Deni Adi Putra, 2020) entitled "Analysis of the Effectiveness of the Implementation of Learning From Home (distance learning) During the Covid-19 Pandemic" that the implementation of distance learning is running quite effectively because students are already familiar with gadgets so that in accessing learning students does not have a significant problem, it is just that access to online learning is not too high because on average students in Surabaya do not hold their gadgets but use parental gadgets so that access to learning is done with assistance from parents. This follows the situation at this current research.

Research conducted by (Maullyda, Erfan, & Hidayati, 2021) entitled "Analysis of Learning Situations During the Covid-19 Pandemic at SDN Senurus: The Possibility of Learning Loss". This study discusses the occurrence of learning loss in learning situations and the difficulties faced by SDN Senurus teachers during the pandemic. The difference is that researchers focus on knowing the relationship between the distance learning method and learning loss. Meanwhile, the research focuses on analyzing the learning situation during the pandemic.

This is taken based on the results of calculations on the correlation coefficient analysis with the Pearson Correlation value of 0.523 and significance value of 0.000. It can be concluded that the distance learning method variable (X) correlates or has a relationship with numeracy learning loss (Y). Moreover, the form of the relationship between the two variables has a relationship with the degree of relationship because 0.52 is included in the criteria 0.41 - 0.60 in the moderate correlation criteria.

#### 4. CONCLUSION

Based on the analysis of this research, it can be concluded that there is a relationship between the distance learning method and the numeracy learning loss of elementary school students. This can be seen from the results of the significance test with a significance value obtained of  $0.000 < 0.05$ , it can be concluded that the learning method from home has a positive relationship to the numeracy learning

loss of the students. Distance learning affects numerical learning loss of 46.2%, while the other 54.8% is influenced by other factors not analysed in this research.

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