

Effectiveness of Jarimatika Method to Improve Students' Counting Ability in Kefamenanu, East Nusa Tenggara

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Abstract. One of the methods of learning that is suitable for counting specifically for multiplication operations is the method of Jarimatika. The method of the Jarimatika is the method of learning to use the fingers as an instrument of multiplication. The advantages of this method in addition to not requiring props, students are also not asked to memorize because calculations are done by utilizing the fingers. Students are emphasized to understand the concept so that the math learning is expected, especially the counting operation of multiplication can be more easily revisited, more enjoyable, fun, challenging and not to burden brain memory by memorization. What is more enjoyable is because it can be used even at the time of the exam because the tools are already available, the fingers of students themselves. This research was held at SDN Neonbat Kefamenanu One of the elementary schools in East Nusa Tenggara (NTT) with the subject of the overall research of 5th Class approximately 20 students. The activity of devotion not only stops by giving pre-test, explained techniques of Jarimatika and then give some exercise at the end of explanation but continued with the mentoring of students. This mentoring activity approximately one month and at the end of mentoring process, researchers give the post-test to know the counting ability of students. The mentoring process provides a positive impact on the results that students get. This can be seen from the average value in pre-test that is obtained 55.84 increased to 75 after being given a mentoring. From the test by using paired sample t test, it can be shown that the average of post test result is more than pre-test. The conclusion is Jarimatika method improve student's counting ability in Kefamenanu, East Nusa Tenggara.

Keywords: Jarimatika Method, Counting Ability, Multiplication, Enjoyable Method, Student's Counting Ability

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1. Introduction

In mathematics learning, in particular arithmetic is not uncommon to find many difficulties because there are not many who are interested in the calculation. It's no surprise anymore when mathematics is considered the hardest lesson because most of the materials require calculations. This is what makes students in schools unpassionate about mathematics. While like this, teachers are required to not only choose a method of learning that is appropriate to the current state of the students but also to choose a strategy so that learning mathematics becomes more interesting and not boring.

Mathematics learning especially in elementary school students is not an easy thing. So it is a challenge for teachers who teach because students are still in the concrete operational phase. It means that they will receive something they consider concrete or tangible. It is difficult for Elementary students to receive something abstract. But on the other hand it is known that mathematics is an abstract science where it is full of symbols. Therefore, again the teacher's job is to bridge the reality of the students with the mathematical abstracting that should be taught to the students.

One of the ways teachers can do is to apply learning that is appropriate to the students' characteristics such as the use of props. The props used can be a ligand, gravel or bead, making it easier for students to learn mathematics. But often teachers prefer methods of conventional methods which make mathematics uninteresting to learn. Students who do not have the ability to memorize well will be very distressed if given a task like this. Therefore teachers are expected to embed the concept of multiplication rather than asking students to memorize because the concept of multiplication is essentially the same number of repeated summation. Considering multiplication is a very important calculating operation so memorizing is not the recommended method. This is because in addition to the memory of each student is different, memorization can make students easily forget by memorizing it.

One of the methods of learning that is suitable for counting specifically for multiplication operations is the method of Jarimatika. The method of the Jarimatika is the method of learning to use the fingers as an instrument of calculating numbers. The advantages of this method besides unnecessary need of props that need to be provided, students are not asked to memorize because calculations are done by utilizing the fingers. Students are emphasized to understand the concept so that the math learning is expected, especially the counting operation of multiplication can be more easily revisited, more enjoyable, fun, challenging and do not burden brain memory by memorization. What is more enjoyable is because it can be used even during the test because the tools are already available, which are the fingers of students themselves.

According to education level, North Central Timor District (TTU), East Nusa Tenggara (NTT) has a kindergarten of 20, Elementary School as much as 267, Junior High School of 90, Senior High School of 29, Vocational high School as much as 18, and colleges/universities as much as 4. The same Data in TTU district also contained in 2015 [1]. Based on that data, although there have been many schools or colleges in the North central Timor district, but still very little even almost no students or students who can count quickly and precisely [2]. Other research results showed that Jarimatika's method is more influential in improving counting ability compared to the method of puffed [3]. In addition, counting learning with a Jarimatika can improve students' motivation to learn. Students who do not like to learn and do not like counting increasingly diminishing. Student motivation increased due to the students' reward after given a specific assignment [4]. This is in line with the beautiful research that suggests that students have an average better value after being given the multiplication method with Jarimatika [5].

Based on the explanation above the authors do research with the title of effectiveness of Jarimatika method to improve student's counting ability in NTT

2. Method

The research was conducted in August 2019 at the SDN Neonbat Kefamenanu. Instrument used in the form of pre-test, student worksheets and post-test. The counting operation is specific to the multiplication counting operation with up to 2 groups of numbers 11 to 20. This is because the rule of group 2 is quite complicated considering that the object of devotion is Elementary students.

The method of data analysis used is quantitative method by utilizing T test for two samples in pairs. Authors specifically analyze whether the results obtained by the students before being given the technique of counting with a lower jarimatika compared with the after given the calculation technique with a jarimatika. This will lead researchers to the conclusion that the provision of calculation techniques with a jarimatika can be used to improve the students' counting ability

Because the test of two samples in pairs is a parametric test so to use the necessary assumption test is the normality test, variant similarity test.

3. Result and Discussion

The pre-test and post-test results are as follows.

Table 1. Table of pre-test and post-test results

Name	Class	Pre test	Post est

Aurel Adu	VB	58	50
Helena Inri Mari	VC	67	100
Jelita F. Nepa Fay	VA	44	70
Jenice Lemos	VC	88	49
Jesika J. Muki	VC	79	76
⋮	⋮	⋮	⋮
Oktaviana Saijao	VC	94	84
Olivia Grasela Kuanaben	VC	60	100
Priska Mariati Lette	VA	0	84
Rafael Septianus Sanak	VC	44	69
Selfiana Selan	VA	58	100
Average		55. 84	75
Standard Deviation		24. 61	18.80 6

Based on the results on the posttest it appears that the average value of previous students 55.84 increased to 75. In addition, the previous standard deviation of 24.61 decreased to 18,806. The resulting standard deviation decreased despite not much. This indicates that the average class is increasing and the data is no longer dispersed like pretest.

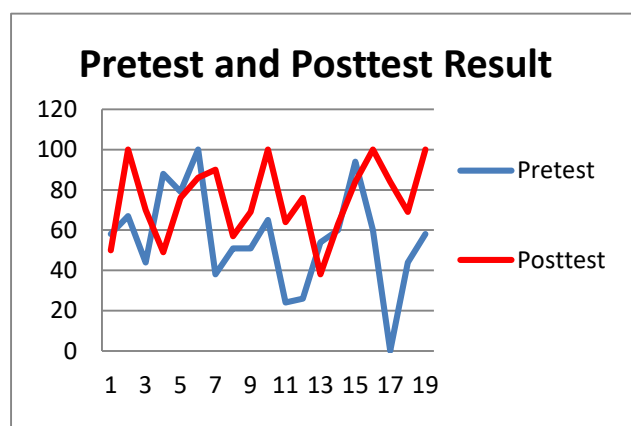


Figure 1. Figure of Pre-test and Post-test Result

Figure 1. show that follow-up activities have a positive impact on the increase of outcomes in students of SDN Neonbat Kefamenanu. This is evidenced by the average value originally around 55.84 increased to 75 with a shrinking data distribution that can be seen from the standard deviation of the resulting deviations. It can be show at Table 2.

Table 2. Table of Descriptive Statistics of Data

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAR00001	55.8421	19	24.60863	5.64561
	VAR00002	75.0000	19	18.80603	4.31440

Furthermore, before the data is analyzed by a pair of data testing methods, the normality test is first performed. This test is intended to view the validity of data whether or not the data is normal distribution. Because the data used is in pairs data so that the normality testing is done by first looking for the difference between the pre-test and post-test value data [6]. The Data is then tested whether it is a normal distribution or not. The testing procedure is as follows.

Hypothesis

H_0 : Data with Normal distribution

H_1 : Data with non Normal distribution

Signification rate: $\alpha = 0.05$

Area rejection: H_0 rejected when the value of *Asymp Sig (2 – tailed)* < 0.05

Result obtained is

Table 3. Table of normality test results

One-Sample Kolmogorov-Smirnov Test		
		b
N		19
Normal Parameters ^a	Mean	-19.1579
	Std. Deviation	3.0166E1
Most Extreme Differences	Absolute	.103
	Positive	.103
	Negative	-.090
Kolmogorov-Smirnov Z		.449
Asymp. Sig. (2-tailed)		.988

a. Test distribution is Normal.

The result in **Table 3** indicates that the data used is a normal distribution. Subsequent testing of similarity variances. Similarly to the normality testing, variance similarity testing is used to determine whether data has a homogeneous variance. The testing procedure is as follows [6]

Hipotesis

H_0 : Variance of Data is Homogen

H_1 : Variance of Data is Heterogen

Signification rate: $\alpha = 0.05$

Area rejection: H_0 rejected when the value of *Asymp Sig (2 – tailed)* < 0.05

Result obtained is

Table 4. Table of similarity Variance test Results

Test of Homogeneity of Variances

Nilai

Levene Statistic	df1	df2	Sig.
.344	1	36	.561

The result in **Table 4** shows the data has the same variance. After the assumption test is done, then conducted parametric test for data in pairs the hypothesis used is as follows [7].

Hypothesis

H_0 : Average of Pre-test value is not lower than Post-test

H_1 : Average of Pre-test value is lower than Post-test

Signification rate: $\alpha = 0.05$

Area rejection: H_0 rejected when the value of *Asymp Sig (2 – tailed)* < 0.05

The results obtained can be seen in **Table 5**.

Table 5. Table of Paired Sample t-test Result

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	VAR00001 - VAR00002	-1.915E1	30.16669	6.92071	-33.69777	-4.61802	-2.768	18	.013

This test is done by comparing the value of the Sig (2-tailed) with the specified value of the signification (P-Value). Based on the results in the table the value of GIS (2-tailed) obtained is 0.013 which is clearly smaller than the signification level so that it can be concluded that H_0 rejected or can be said that the Pre-test value is lower than the value Post-Test. This is also in line with the results on Pre-Test and Post-test results graphs that have shown a significant difference between the Post-Test and Pre-test values. Therefore, the results of the test also strengthened that the use of Jarimatika method effectively used to increase the ability of students in counting especially multiplication

4. Conclusion

This research was conducted at SDN Neonbat, one of the primary schools in Kefamenanu, TTU-NTT. The research begins with a pre-test for 30 minutes followed by the multiplication of the Finger (Jarimatika) Group of 6-10 and after students are given explanations and students practice, students are given LKS to be done then LKS discussed together.

The activities continued with a group of 11-15. Next, students are given an explanation and practice multiplication with fingers to group 16-20 and end with completion and discussion of LKS. At the end of this study students were given post-test to see how effective the awarding of the students increased their ability. A significant increase between the pre-test and post-test showed that students actually gained an increase in counting ability after being given a method of counting with Jarimatika..

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6. References

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