

Improving Understanding of Mathematical Concepts in Operations Counting Multiplication 6-10 With the Jarimatics Method

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Abstract

This study uses a quantitative approach through correlation techniques and survey methods. The population of this study was all fourth grade students of SD Negeri Gudang, Tigaraksa District, Tangerang Regency with a sample of 33 students obtained through random sampling and inferential analysis techniques. The data analyzed in this study is descriptive analysis, which describes the characteristics of the data on each variable consisting of the lowest, highest, mean, median, mode and standard deviation, while inferential analysis includes regression analysis, simple analysis and correlation coefficient. From the analysis, it was found that the portfolio learning model had a significant effect on student learning outcomes in Civics subjects with the subject matter of Indonesian Cultural Diversity for class IV SD Negeri Gudang. This is based on the results of the calculation of the t- test analysis, where there is a difference in the value of the value of tCount with tTable. Where $t_{\text{Count}} > t_{\text{Table}}$ value or $0,525 > 0,344$. With the calculated results, it is known that the coefficient of determination (R Square) is 0.276. R Square value of 0.276. The magnitude of the correlation coefficient is 0.276 or equal to 27.6%. This figure means that Variable X has an effect on Variable Y by 27.6%. Thus, it can be concluded that the contribution of the application of the Portfolio Learning Model to the Grade IV Civics Subject Values at SD Negeri Gudang is only 27.6% or has a low effect, while the rest ($100\% - 27.6\% = 72.4\%$) is influenced by other variables in outside Variables not examined.

Keywords: jarimatics method, mathematics, multiplication.

1 INTRODUCTION

Counting activities often occur in their daily lives without them knowing it. Yusuf in the book *Education for Children with Learning Problems* reveals that learning difficulties with arithmetic are the most common type of learning difficulty besides reading and writing. Students' numeracy comprehension is seen in the value of mathematics. If the student's numeracy comprehension score is low, it is certain that the student's math score is also low. Every child's understanding of counting is to increase and improve his abilities, the characteristics of his development start from the environment closest to him in line with developments that can bind to the stage of understanding numbers, namely addition and subtraction. Understanding here is the main goal of learning mathematics among other goals. Therefore every elementary mathematics teacher needs to interpret the meaning of understanding mathematical concepts. In addition, every teacher must train his skills in helping students to learn mathematics.

Based on *Pemerdiknas Number 22 of 2006 concerning Content Standards for Elementary Mathematics subjects* it is stated that the purpose of learning mathematics in Elementary Schools is to train ways of thinking and reasoning in drawing conclusions, developing creative activities involving imagination, intuition and invention, developing abilities, solving problems, developing abilities convey information or communicate ideas. It can be concluded that learning mathematics must emphasize understanding good and

correct concepts, one of the arithmetic operations that needs to be understood is multiplication. Understanding the concept of multiplication should be an important part that is considered by the teacher.

It can be said that all life activities require the ability and understanding of arithmetic. Counting activities often occur in their daily lives without them knowing it. Yusuf in the book *Education for Children with Learning Problems* reveals that learning difficulties with arithmetic are the most common type of learning difficulty besides reading and writing (Ariyanti & Muslimin, 2015)

Mathematics is one of the most widely taught subjects in schools, both from the elementary level, advanced level and even to college. This is because mathematics is one of the important things in human life. Therefore, it is important to study mathematics from basic education to put pressure on structuring reasoning and forming student attitudes so as to foster students' understanding and abilities which can later be transferred through mathematical activities. (Chasanah, 2020)

But in reality many teachers ignore it. As found in the author's observations, he observed that some class II B students at SDN Pekayon 18 Pagi got scores below the average when completing questions about understanding concepts in the form of simple story problems. Here it can be seen that students have difficulty learning multiplication because they do not understand the concept. So far, the multiplication learning that has been carried out is still memorizing only, which has an impact on the low understanding of the concept of multiplication arithmetic operations.

There are several things that must be mastered by students about multiplication arithmetic operations. As specified in competency standards, basic competencies and indicators. In the competency standards that must be mastered by students, namely using multiplication in solving problems, while in basic competencies students must understand the jarimatic method so that students are able to calculate multiplication between 5-10 seconds, by understanding the jarimatic method students will more easily calculate multiplication 6-10 quickly. By using the jarimatics method in multiplication arithmetic operations of 6-10 students will find it easier to understand and practice this method. If,

The indicators of the ability to understand mathematical concepts include: 1) Restate the concepts that have been learned, 2) Classify objects based on mathematical concepts, 3) Apply concepts in an algorithmic manner, 4) Give examples of concepts learned, 5) Present concepts in various representation, and 6) Linking various mathematical concepts internally or externally (Fahrudin et al., 2018)

From the description above, it is necessary to apply the grammar method to students. Therefore, through this research the authors conducted Classroom Action Research entitled "Application of the Jarimatics Method to Improve Understanding of Mathematical Concepts in Multiplication Count Operations (Class Action Research for Class II Students in the 2021/2022 Academic Year of SDN Pekayon 18 Pagi)".

2 RESEARCH METHODS

This research was conducted on class II B students at SDN Pekayon 18 Pagi which is located at Jalan Tipar No. 66, RT.2/RW.7, Pekayon, Kec.Ps. Rebo, City of East Jakarta. The subjects of this study were 32 grade II students consisting of 16 male students and 16 female students. This research was conducted in March and April. The type of action in this research is research on students' understanding in the application of the jarimatic method to multiplication arithmetic operations. The jarimatic method is an action given as an effort to improve understanding of the basic concepts of mathematics in multiplication arithmetic operations in grade II elementary school.

This Classroom Action Research (PTK) refers to the four main aspects of the Kemmis and Mc Taggart model consisting of (1) planning, (2) implementation, (3) observation, (4) reflection. Data collection techniques in this study are using observation techniques, interviews and tests. The test results are in the form of student learning achievement test

scores, followed by calculating the class average value and the percentage of classical completeness if the minimum learning results are achieved in the class.

$$\text{Average} = \frac{\text{juml} \text{ gulungh}}{\text{b} \text{ lol}}$$

$$\text{Percentage of Score (P)} = \frac{\text{skor yang diperoleh}}{\text{skor maksimum}} \times 100\%$$

Success in this research is success based on understanding using the fingerprint method. Understanding is said to be successful if each research cycle obtains a significant increase in understanding and there is an increase in the learning completion category and minimum completeness criteria.

3 RESULT AND DISCUSSION

The effectiveness of the jarimatics method in increasing understanding of the basic concepts of counting multiplication 6-10 can be seen from the comparison between the results of the post-test cycle 1 and the post-test cycle 2. The class average value and the number of students who achieved the completeness score and the speed in solving multiplication questions 6-10 shows an increase in understanding and speed in calculating multiplication.

Table 1. Learning Outcomes of Cycle 1

	Cycle 1
Very Successful	23%
Succeed	41%
Enough	36%

When described in the diagram as follows.

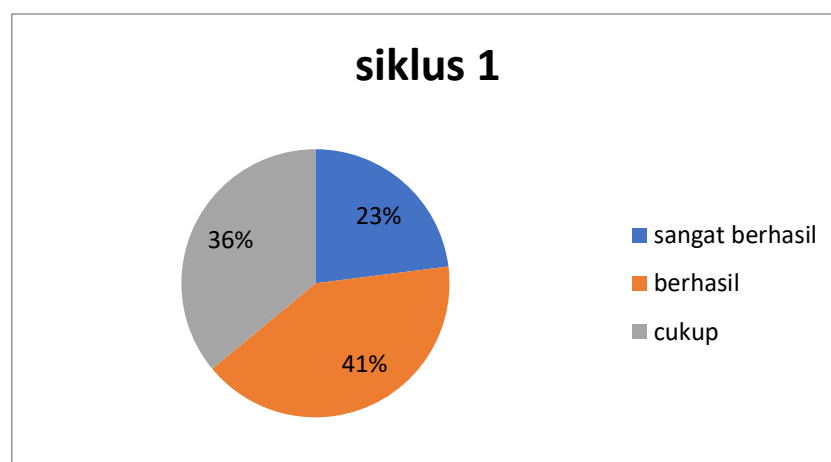


Figure 1. Figure 1 Cycle Learning Outcomes Diagram

The average value of the class before the action was 66. After learning with the fast counting method in cycle 1, the average value rose to 72.5 which was above the set KKM value of 70. At the end of cycle 2, the average value rose to 85. The highest scores achieved by students also continued to increase from 70 before the action to 80 in cycle 1 and increased again to 90 in cycle 2. The lowest student scores also showed improvement, from 55 before the action increased to 65 in cycle 1 and increased to 75 in cycle 2.

Table 2. Learning Outcomes of Cycle 2

	Cycle 2
Very Successful	100%
Succeed	0%
Enough	0%

When described in the diagram as follows.

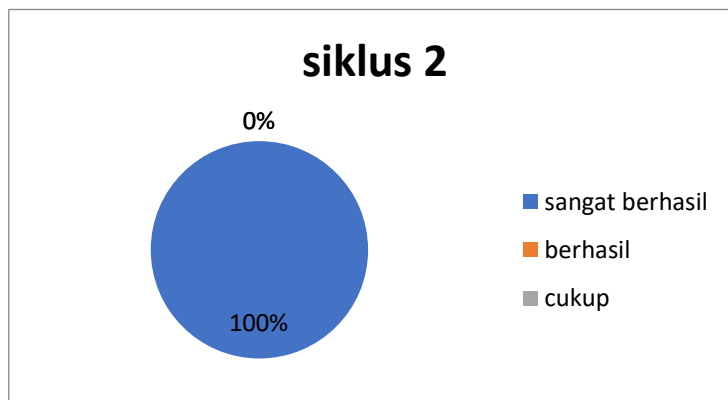


Figure 2. Figure 2 of Cycle 2 Learning Outcomes Diagram

The speed in solving multiplication problems also increases faster. before being introduced to the counting method, students completing 10 multiplication questions took an average of 20 minutes to work on one problem. At the end of cycle 1, students were able to complete 10 multiplication questions with an average time of 15 minutes. In cycle 2, students were able to complete the questions with an average time of 5 minutes. The achievement of the average score, the better the highest and lowest scores as well as the speed and accuracy in solving multiplication questions 6-10 proves that the fast counting method is effective for increasing the speed of calculating multiplication for class II B students.

Students were able to increase their counting speed after applying the fast counting method in cycle 1. The fastest time was 12 minutes to complete 10 multiplication 6-10 questions, the longest time was 20. Cycle 1 can be said to be the initial stage in learning fast counting intensively. At the end of cycle 2, students were able to increase their counting speed even faster after applying the fast counting method. The fastest time is 2 minutes or 120 seconds to solve the problem.

Table 3. Recapitulation of Counting Ability and Problem Solving

	Cycle I	Cycle II
Enough	36%	0
Success	41%	0
Very successful	23%	100%

When described in the diagram as follows.

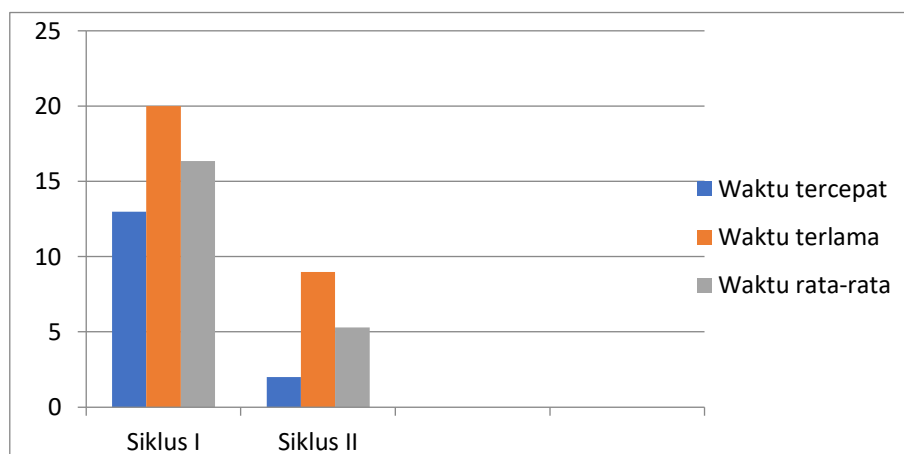


Figure 3. Graph of Computing Ability and Problem Solving

From the data above, it can be seen that this proves that the fast counting method makes it easier for students to calculate multiplication more quickly and makes it easier for students to remember multiplication numbers 6 - 10. The increased understanding of each student in cycles 1 and cycle 2 proves the power of the fast counting method.

The increased understanding of each student in cycle 1 and cycle 2 proves the strength of the fast counting method. According to Sheal's opinion (in Suherman, 2004:3) students will gain 50% understanding from hearing and seeing, while understanding 90% from what is said and done. This strengthens the argument that the fast counting method presents involvement and experience in the form of counting activities. The fast counting method also raises opportunities, namely the stronger the students' self-confidence in learning.

4 CONCLUSION

The results of the study proved that the fast counting method increased students' understanding of the basic concepts of multiplication arithmetic operations 6-10, assessed from the speed of solving multiplication problems and the speed of calculating multiplication 6-10 by applying the fast counting method. speed in solving problems and speed in calculating multiplication 6-10 showed an increase after using the fast counting method.

In cycle 1 the fastest time to do 10 multiplication questions is 12 minutes. The average time to complete practice questions is 16.34 minutes. And in cycle 1 there were 9 students whose grades were still below the KKM. In cycle II the fastest time to do 10 multiplication questions is 2 minutes. The average time to complete it is 5.3 minutes. In this cycle all students have achieved KKM scores with an average score of 85 above the minimum completeness criteria (KKM) of 70.

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