Jurnal Ilmu Pendidikan (JIP) STKIP Kusuma Negara p-ISSN 2085-7411
https://doi.org/10.37640/jip.v16i2.2176 e-ISSN 2623-0380

Implementation of the Jarimatika Method in Grade V Mathematics Learning at Binangun State Elementary School

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Abstract

Mathematics is vital for technological and knowledge development but is often perceived as difficult and boring, reducing students' interest in learning. The objectives of this research are 1) Describe the application of jarimatika method in mathematics learning in class V of Binangun State Elementary School; 2) Knowing the average increase in student numeracy test results. This research uses a quantitative descriptive method—data collected using several stages, namely interviews, observations, tests, and documentation. The data analysis used is data reduction, data collection, and conclusion. The results of this study show that the application of the jarimatika method is beneficial for students in doing math problems, especially in multiplication so that students do not need a long time to solve the problems given by the teacher. The jarimatika method also improves the ability to count quickly but it is also seen from the increase in pre-test to post-test scores. The average score of fast counting ability of grade V elementary school students in the pre-test was 30.5% and increased to 49.4% in the post-test. The Jarimatika method is highly recommended to help students count and break the atmosphere when boredom comes into the learning process.

Keywords: Math, Jarimatika Method, Basic Multiplication.

Received: November 16, 2014 Revised: December 12, 2024 Accepted: January 13, 2025

Article Identity:

Pusporini, I, H, Y., Pangestika, R, R., & Ngazizah, N. (2025). Implementation of the Jarimatika Method in Grade V Mathematics Learning at Binangun State Elementary School. *Jurnal Ilmu Pendidikan (JIP) STKIP Kusuma Negara*, 16(2), 282-291.

INTRODUCTION

Education is a learning activity that must be carried out and becomes a fundamental main activity. The progress of science and technology of a nation is certainly inseparable from the success of the learning process in institutions and institutions of higher education in that country (Pangestika et al., 2023). In Indonesia, education has a very important role, starting from the primary level to higher education (Febriyani et al., 2021). The function and purpose of education is to achieve maturity from within students in improving the quality of life, both individual and group life in society. To achieve this goal, education must be carried out properly, effectively, and efficiently. One of the lessons that must be developed and understood by students is Mathematics. Mathematics is a branch of science that studies numbers, symbols, quantities, space, structures, and changes Mathematics is a subject that must be studied at all levels of education starting from kindergarten,

elementary school, to college (Wulansari et al., 2022). Mathematics is a basic science that has a crucial role in the advancement of science and technology. Learning mathematics can help students develop a structured mindset (Megawati et al., 2023). Mathematics is something that is studied from basic education to higher education (Murti et al., 2022). Mathematics is also related to thinking patterns that are directed to train the brain's ability to analyze and solve problems (Novianti et al., 2024). However, many children do not understand and have difficulty learning mathematics, especially in basic mathematics such as counting operations which include addition, multiplication, division, and subtraction. Even though this is one of the keys to learning math. To overcome various kinds of problems as well as the many difficulties in learning, boredom, and boredom of students in counting, good learning must be unique, and learning must be personalized. Therefore, to help eliminate the existing problems, a learning media is needed that can overcome them. In addition, the material is only based on textbooks presented at school and is still the main guide for teachers to teach (Mulia, 2024). This is a problem so that student's interest in learning and results are still relatively low. To improve the ability to count quickly in students, researchers took the title of the implementation of the jarimatika method in learning mathematics in grade V students at Binangun State Elementary School to increase motivation and also interest in carrying out mathematics learning.

Ideally learning with teacher creativity so as not to look bored and active students in the learning process, besides that the teacher is more creative in packaging the material to be conveyed so that students easily accept the material conveyed (Ngazizah & Fadhillah, 2023). This learning must develop various ways that can meet all these problems, one of which is by using the jarimatika method. According to Murti Jarimatika is an effective method in improving counting skills and can be used as a reference (Murti et al., 2022). According to research conducted by Alma, the jarimatika method is applied in several elementary schools and has been proven to increase participation and motivate students to learn math. This study shows the use of the jarimatika method can improve counting skills and student interest in learning math (Alma et al., 2023). The third study, with the title Analysis of the use of jarimatika learning media in mathematics subjects in elementary schools, based on the results of data analysis that have been done by researchers shows that by using jarimatika learning media students can more easily calculate addition, subtraction, multiplication, and division (Hamidah et al., 2022).

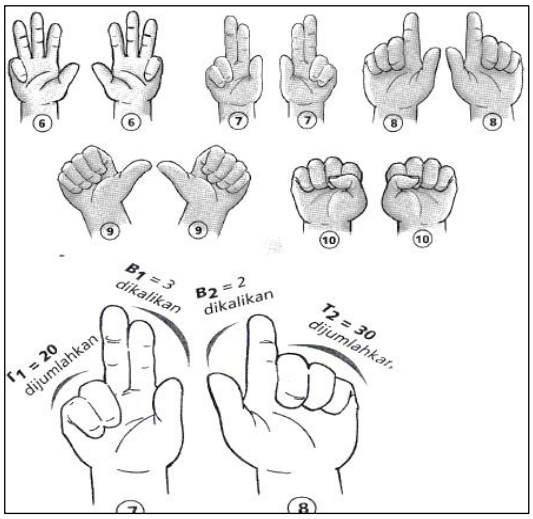
Application of Jarimatika Method in the Classroom

The application of the jarimatika method on multiplication material in mathematics subjects in the classroom includes introducing number concepts using fingers, simulating arithmetic operations such as multiplication and division with the help of fingers, and conducting quizzes and learning evaluations orally and in writing using fingers as media. Teachers also need to pay attention to the stage of cognitive development of students so that jarimatika is in accordance with their developmental characteristics, for example, the number 6 is shown with a finger, as well as the number 7, and so on up to the number 10. The purpose of using the jarimatika method is so that students can perform calculations using their fingers.

The application of the jarimatika method to grade V students is done by practicing multiplication and addition according to the numbers given by the

teacher. The teacher in grade V students is to practice multiplication and addition according to the numbers assigned. For example, to solve the multiplication problem 7 x 8, the steps are as follows: 1) On the left hand, form the number 7 by opening the ring and little fingers, 2) On the right hand, form the number 8 by opening the middle, ring, and little fingers, 3) Count the open fingers as tens and add them up, 4) Count the closed fingers as units, then multiply, 5) Sum the results (Aprianti et al., 2023). The formula for 7 x 8 is (P+P) plus (S×S), so (20+30) + (3×2) = 50 + 6 = 56.

The calculation formula using fingers is as follows: The index finger is worth 1, the middle finger is worth 2, the ring finger is worth 3, and the little finger is worth 4. The combined thumb and index finger is worth 6, thumb + index + middle finger is worth 7, thumb + index + middle + ring finger is worth 8, and so on. In this method, the open finger expresses the value of tens, while the closed finger expresses the value of units that are multiplied and then summed. In addition, using jarimatika, the index finger states the number 1, while the thumb states the number 56 (Dwi Rahmayanti, 2023).



Picture 1. Format of Jarimatika Multiplication 6-10

Advantages and Disadvantages of the Jarimatika Method

The jarimatika method has the advantage of providing concrete visualization in the calculation process which is useful for children when learning basic mathematical concepts because they can see and feel how numbers and mathematical operations work directly. By using fingers as a tool, the learning process becomes more interactive and fun and can reduce the anxiety that often arises when learning math. The jarimatika method also offers additional benefits, such as improved eye-hand coordination and fine motor skills. In addition, the method can be adapted to a variety of learning styles and individual needs, making it a flexible tool for teaching math. The results of this study make a positive contribution to efforts to improve the quality of mathematics education at the primary school level and provide inspiration for the development of more innovative and efficient mathematics learning methods in the future (Damayanti et al., 2024).

The weaknesses of the jarimatika method if applied in learning math include students must master or memorize the basic multiplication table of numbers 1, 2, 3, 4, and 5. Because this jarimatika method is a combination of the brain and also the eyes, then students need quite high concentration when learning it. Perseverance in practicing is needed in learning and also students must memorize many formulas to facilitate the application of the jarimatika method. Memorize many formulas to facilitate the application of this jarimatika method (Aryani, 2020). To minimize the shortcomings in the application of the jarimatika method method, students can avoid using a calculator in calculating multiplication tables. While working and practicing. In addition, repetition in practicing the addition can also help make learning jarimatika easier.

RESEARCH METHOD (13pt)

This research method is a quantitative descriptive method. Descriptive research according to (Nasir, 2018) is research that seeks to describe an event or event that occurs directly and is real, realistic, and actual. Events or events that occur directly and are real, realistic, or actual. The purpose of descriptive research is to make statements, and descriptions, systematically, accurately, and based on facts. The purpose of descriptive research is to make statements and descriptions, systematically, accurately, and based on facts, relating to facts, and characteristics, This research uses a quantitative approach. Quantitative approach. According to (Sugiyono, 2020) Quantitative research methods can be interpreted as a philosophical research method used to study certain populations or samples, and data collection using an insurer. Certain samples, data collection using research instruments, and analyzing quantitative/statistical data.

This research was conducted in class V of Binangun State Elementary School which is located in Binangun Village, Butuh Subdistrict. The data collection techniques used in this study were student interviews, observation, pre-test, post-test, and documentation as support. The first stage of this research began with interviews. The researcher interviewed 17 students, including 10 female students and 7 male students. The results of the interviews explained that the majority of grade V students still had difficulty in calculating the basic multiplication of tens or units. So that it takes a long time to calculate and researchers find these problems as the focus of research. After the interview, the second stage is to make observations and get the results that the curriculum used is the independent curriculum which in learning provides time to learn independently so that the teacher is only a facilitator. Not only that, the supporting media used are quite adequate such as audio and visual. To strengthen the data, researchers added documentation of activities as supporting evidence. In addition, there are pre-tests and post-tests that aim to see how far the material is absorbed so that researchers hope that there is an increase in learning outcomes and ability to calculate multiplication. Based on the research methods taken, researchers use descriptive statistical data analysis to describe or summarize data in a simpler form, so that it is easy to understand. These techniques include the average score obtained and also the percentage of improvement in student test results.

Researchers get the average value of pre-test and post-test results using the formula:

$$\mu = \frac{\sum_{i=1}^{N} x_i}{N} \quad \text{atau} \quad \bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

Description:
μ: population mean
$\bar{x}$: sample mean
N: total population
n : number of samples
Xi: i-th data

RESULTS AND DISCUSSION

Implementation of Jarimatika Method in Mathematics Learning

The implementation of the jarimatika method is carried out when learning math in the classroom. This activity originated from carrying out a teaching campus work program at Binangun State Elementary School on numeracy where students were given multiplication problems 6-10 and used smart finger learning media made of flannel. Students are enthusiastic about these activities when appointed to apply the jarimatika method directly. Students went straight to the front of their friends without hesitation. Students immediately practiced using their fingers. In addition to students, the students themselves also always observe the development of each student every time there is learning in the class together.

Picture 2. Teaching Campus Program 6 (Jarimatika Method)

In addition to using multiplication problems 6-10 using smart fingers, every day students hold a quick count or mencongak. Those who can answer first are allowed to go home. This method applies in every class after learning. This has become a habit in every class. Not only that, if one day does not carry out mencongak, then students are given the task of memorizing multiplication 6-10 alternately every day. For example, on Monday, memorizing multiplication 6 then on Tuesday, the next student is given the task of memorizing multiplication 7, and so on.

Picture 3. Calculating tens multiplication

Math learning is conducted in the classroom by the fifth-grade teacher with the material of calculating the multiplication of tens with units. After the teacher wrote the problem on the board, together the teacher and students calculated the multiplication using the jarimatika method. Simultaneously, students voiced and answered the questions correctly and confidently. The application of this method is not only in class V, but all classes use it to facilitate students in calculating multiplication.

Improvement of Numeracy Test Results

The application of the jarimatika method in learning mathematics is done with various models not only with the multiplication of units but with the multiplication of tens. The teacher's strategy in applying this method is to write the problem on the blackboard then practice using fingers and imitated by all students together. Students' enthusiasm for learning multiplication with the teacher is very high. This can be seen from the comparison of pre-test and post-test results of fifth-grade students of Binangun State Elementary School. Before using the jarimatika method on grade V students, a level 2 counting pre-test was held to test students' ability to understand the multiplication counting operation material. Two months later, a level 2 numeracy post-test was conducted for class V. This activity has the aim of evaluating the results of the implementation of jarimatika in learning basic multiplication math material. The summarized results of the pre-test and post-test scores can be seen in Table 1.

Table 1. Summary of Student Scores

No	Description	Pre-test Score	Post-test Score
1.	Average	30,58	49,41
2.	Highest	65	75
3.	Lowest	15	25
4.	Number of students	17	17
5.	Percentage of student completeness	0 %	0,05%

Based on the data in the table, it can be seen that this shows that mastery of counting at Binangun State Elementary School is still relatively low. Based on this data, the researcher concluded that there was an increase of 0.05% between the pre-test and post-test results. The application of the jarimatika method in class V class of Binangun State Elementary School found several obstacles, namely: (1) lack of concentration and low enthusiasm of students in participating in learning, (2) students' difficulty in understanding and remembering jarimatika symbols, and (3) the teacher did not provide enough practice in counting multiplication using the jarimatika method in the class. The class teacher provided an understanding of the use of the jarimatika method, including the function of symbols and the benefits of numbers, to train students' thinking skills and improve students' skills in calculating multiplication and improve students' skills in calculating basic multiplication tables that are useful in life (Sisca et al., 2020).

Discussion

The application of the jarimatika method can not only increase motivation and enthusiasm for learning but can also improve students' ability to count basic multiplication without having to use a long way so that it does not take a long time to do the problems given by the teacher during the learning process. Research conducted by Dwi Rahmayanti proved the effectiveness of the method. Based on the results of the study, there was an increase in learning outcomes from cycle I to cycle II (Dwi Rahmayanti, 2023).

The jarimatika method if practiced by students does not require costs because it uses the fingers of the hands that each student has. So it is effective for elementary school age children as evidenced by research conducted by Dewi showing that the results of the SPSS test obtained the use of Jarimatika method is effective in improving students' multiplication skills (Dewi et al., 2020).

The increase in student achievement after the application of the Jarimatika method occurs because this method is easy to use and helps students focus more when counting. This is due to the involvement of coordination between the brain and hands in each movement. Research conducted by Hamidah, the results of data analysis show that the use of jarimatika learning media makes it easier for students to understand arithmetic operations such as addition, subtraction, multiplication, and division. Thus, learning outcomes and student achievement increased, which can be seen from the average classical completeness in math learning (Hamidah et al., 2022).

CONCLUSION

Based on the results of the research, regarding the implementation of the jarimatika method on grade V students at Binangun State Elementary School, the researcher concludes that the use of the jarimatika method is proven to be helpful in improving the ability to count multiplication in grade V students at Binangun State Elementary School. Both in terms of process and results, this method makes a significant contribution to learning mathematics at the elementary school level. The comparison of average scores before and after applying the Jarimatika method shows a significant increase. Jarimatika is also seen in improving students'

understanding of basic multiplication material as well as increasing students' interest and motivation.

ACKNOWLEDGMENT

Thank you to Allah SWT who has given me the blessing of health and the opportunity to continue to explore knowledge. Thank you to Dr. Teguh Wibowo, M.Pd as the Rector of Muhammadiyah Purworejo University who has given permission to write this article. Thank you to Dr. Riawan Yudi Purwoko, S.Si., M.Pd the Dean of the Faculty of Teacher Training and Education, Muhammadiyah Purworejo University who has given permission and support in writing this article. In addition to the 1st and 2nd Supervisor lecturers, namely Mrs. Rintis Rizkia Pangestika, M.Pd and also Mrs. Nur Ngazizah, S.Si, M.Pd who have guided me during the writing of this article until the end. Do not forget to parents, friends, teachers, and the Binangun State Elementary School who have given their blessings during the process of writing the article so that it runs smoothly provide.

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