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Analysis of the Use of Jarimatics Learning Method in Multiplication Material for Grade 3 Fatmawati Elementary School UPI Laboratory Campus in Cibiru

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Abstract
This study aims to analyze the effectiveness of the jarimatika method in improving the ability to solve mathematical problems in elementary school students. The Jarimatics method is a mathematical approach that uses the basic principles of addition, subtraction, multiplication and division to solve mathematical problems in a way that is more intuitive and easily understood by students. This research was conducted by means of a literature review. The data collection technique used in this study was to use research results obtained from various journals, then further analyzed by researchers. So that it can be found the effectiveness of using the jarimatic method in learning mathematics. The results of this study indicate that the Jarimatika method also provides an interesting and fun alternative in learning mathematics, which can motivate students who are less interested in mathematics to be more active and involved in the learning process.
Keywords: Learning Methods, Jarimatika, Operations Calculating Multiplication

INTRODUCTION

Education is a basic need for every human being. Education is expected to give birth to future generations who are intelligent and can advance the nation. Education is also expected to be a means for each individual in developing potential, personality, intelligence, and skills that can be useful in the future. This cannot be separated from the role of a teacher in a lesson. In accordance with Permendikbud No. 6 of 2018 article 1 Regarding Assignment of Teachers as School Principals, explains the main task of a teacher namely, the teacher is someone who has the main task of guiding and educating students, directing and training students, as well as assessing and evaluating students' abilities in do learning.

In taking formal education, elementary school is the initial level that students go through. During elementary school, students will be taught material that contains learning to support students' learning abilities. Starting from learning Indonesian, English, PPKn, SBdP, Mathematics, and other lessons. Learning mathematics is one of the lessons that is often encountered and needed in everyday life. Therefore, Mathematics is very important to be introduced to students from the first grade of elementary school. Yudha (in Hamidah 2022: 116) argues that mathematics is a science that enables humans to think based on logic. So it can be concluded that mathematics is a value in the form of numbers that can be reduced or increased. Meanwhile Ebbutt and Straker (Septiyawili, 2016) provide a definition of school mathematics, hereinafter referred to as mathematics as follows: (a) mathematics is an activity of tracing patterns and relationships, (b) mathematics is creativity that requires imagination, intuition, and discovery, (c) mathematics as a problem solving activity, (d) mathematics as a communication tool. From the two opinions above, it can be concluded that mathematics is a science that enables humans to think with imagination, intuition, and invention in solving problems in everyday life.

Mathematics is one of the lessons that is taught starting from the advanced elementary school level, even up to tertiary institutions. That's because Mathematics is an important thing in human life. Especially in solving problems in everyday life. Often requires Mathematics in solving problems in everyday life. However, learning Mathematics is often regarded as learning that is "scary", "boring". Thus, learning mathematics is learning that is less desirable both at the elementary and even tertiary levels. This is due to students' difficulties in learning mathematical arithmetic concepts, especially in multiplication arithmetic operations, which can come from internal factors as well as external factors. The internal factor itself is a factor that comes from within the student himself. For example, students' interest in learning multiplication is lacking, then there are also students who do not understand the concept of multiplication. Students are less skilled and less careful in memorizing multiplication. While the external factor is the lack of motivation from teachers or parents to students in learning and memorizing multiplication. Sometimes teachers also still use learning media that are less attractive to students in learning multiplication arithmetic operations. Teachers or parents also do not familiarize students with memorizing multiplication.

The solution to students' learning difficulties in understanding and memorizing multiplication arithmetic operations is that teachers and parents must be able to provide motivation for students to be interested in learning multiplication arithmetic operations. This can be started by providing the inculcation of the basic concept of the multiplication arithmetic operation itself by using concrete examples related to everyday life. Then secondly, the teacher must choose a varied method in learning multiplication arithmetic operations. Most teachers still use the lecture method, even though there are many methods that can be used and can attract students' interest in learning multiplication operations. In addition to methods, learning media also play an important role in attracting students' interest in learning. In learning multiplication arithmetic operations, teachers can also use a variety of learning media so that they are able to attract students' interest in understanding and memorizing multiplication.

One method that can be used is the Jarimatika method. This research aims to find out the effect of the ijarimatics technique on students' multiplication counting skills in third grade students at SD Labschool UPI Campus Cibiru. It is hoped that the analysis carried out by researchers can realize the values of success.

RESEARCH METHODS

This research was conducted at SD Labschool UPI Campus Cibiru in class III Semester 2 students of the 2022/2023 academic year. The population of this research is class III Fatmawati students. The research method used is a literature study research method. This research method is a method that is carried out by searching for data or references from journals or books that are relevant to the research topic. According to (Melfianora 2017) in a literature study the researcher collected data by collecting data in the library, by reading, recording and processing these sources as research material with a strategy in the form of a methodology. So, it can be concluded that the research method of literature review is a method that summarizes a topic or information from several research journals, books, and other documents.

Relevant Research

Table 1. Relevant Research

No.	Title	Name	Conclusion
1.	Analysis of the Use of Jarimatics Learning Media in	Fitri Hamidah, Andas Nidaa'an Khofiyya, Aurellia	The results of this study concluded that the jarimatics method is effectively used to improve students' ability in mathematics learning difficulties. With this jarimatics

	Mathematics Subjects in Elementary Schools	Faradita Putri (Hamidah, Nidaa'an Khofiyya, Faradita Putri, 2022)	method, students can use their fingers to solve the operations of counts of addition, subtraction, multiplication and division easily, quickly and precisely.
2.	The use of the Jarimatics method in increasing the speed of counting multiplication of numbers 6 to 10 for grade 3 elementary students at SD Blunyahan I Bantul, Yogyakarta	Beny Yonas Septiyawili (Yonas Septiyawili, 2016)	The results of this study can be concluded that the use of the jarimatics method can be an effort to increase the speed of calculating multiplication 6-10. Besides being fast, students can also calculate multiplication correctly and can achieve an average score above the Minimum Completeness Criteria (KKM). This jarimatics method can also make it easier for students to memorize outside the head of multiplication of numbers 6-10.
3.	The Effect of Jarimatics Technique on Multiplication Calculation Skills of Grade IV Students of Sdn Jogorogo 1 Jogorogo District, Ngawi Regency.	Sharah Rizky Rahayu, Djoko Hari Supriyanto, Sofyan Susanto (Rizky Rahayu, Hari Supriyanto, Susanto, 2022)	The result of the analysis of this study is that the jarimatics method has a significant influence on students' multiplication calculation skills. And in the implementation of the mathematics method, it shows high enthusiasm from students towards learning mathematics.

It can be seen from some of the conclusions drawn from relevant research that this jarimatic method has almost even caused a significant increase. Whether it's in improving students' ability to count multiplication, improving learning outcomes, to increasing students' enthusiasm in learning multiplication calculations.

RESEARCH RESULTS AND DISCUSSION

Multiplication Computing Operations

Judging from the general understanding of multiplication, multiplication is addition that is done repeatedly. According to Sri Subarinah, (in Yonas Septiyawili, 2016) the multiplication operation on whole numbers is defined as repeated addition. So that children can be given an understanding of multiplication a x b which is defined as the number b added up a times. Example: a x b = b + b + b + ……. + b. In multiplication arithmetic operations also, there are properties. The following are some of the properties of the multiplication arithmetic operation:

1. Commutative Property: Multiplication is a commutative operation, which means that the order of its operands can be changed without changing the result. In multiplication, a × b = b × a. For example, 2 × 3 = 3 × 2.
2. Associative Property: Multiplication also has an associative property, which means that the order in which the operands are grouped can be changed without changing the overall multiplication result. In multiplication, (a × b) × c = a × (b × c). For example, (2 × 3) × 4 = 2 × (3 × 4).
3. Distributive Property: Multiplication has a distributive property to the operations of addition and subtraction. This means when we multiply a number by the amount or difference of another number, we can divide the multiplication into smaller parts and then add or subtract them. For example, a × (b + c) = (a × b) + (a × c).
4. Property of Identity: There is an identity element in multiplication which is called the "multiplicative identity" or "number one" (1). If a number is multiplied by 1, then the result will be equal to that number. For example, a × 1 = a.
5. Property of Zero: There is a special element in multiplication called the "zero element" (0). If a number is multiplied by 0, the result will always be 0. For example, a × 0 = 0.

6. Cancellation Property: If a number is multiplied by another number and the product equals zero, then at least one of the numbers must be 0. In multiplication, if a × b = 0, then a = 0 or b = 0.

Those are some of the properties of multiplication arithmetic operations that are commonly encountered. These properties help us understand and apply the multiplication operation more effectively.

Learning Methods

The term method comes from the Greek word "method" and consists of two words, namely "metha" and "hodos" which means way or way. Whereas in the Big Indonesian Dictionary the method is an organized and well-thought way to achieve the intended purpose, so that it is used to present learning material in order to achieve teaching objectives. Learning methods refer to approaches or strategies used to teach or facilitate the learning process. Various learning methods are used in educational contexts to facilitate student understanding, skill development, and problem solving. The learning method is the way the teacher or an educator conveys learning during the lesson.

It is important to note that each learning method has certain advantages and disadvantages. The choice of the right method must consider the learning context, learning objectives, student characteristics, and the material being studied. A combination of various learning methods can also provide a more holistic and effective learning experience. The method chosen must be a method that is considered appropriate and a method that does not conflict with the learning objectives to be achieved. According to Charris Asyifa (2020), the use of one or several methods has the following requirements that must be considered:

1. The teaching method used must be able to arouse students' motives, interest or passion for learning.
2. The method used must be able to guarantee the development of student personality activities.
3. The teaching method used must be able to provide opportunities for students and make them works
4. The method used must be able to stimulate students' desire to learn further, explore and innovate.
5. The teaching method used must be able to educate students in self-study techniques and how to acquire knowledge through personal effort.
6. The teaching method used must be able to eliminate presentations that are verbal in nature and replace them with real and purposeful experiences or situations.
7. The teaching method used must be able to instill and develop the main values and attitudes that are expected in good work habits in everyday life.

Thus, the learning method is expected to function well in conveying subject matter and achieving predetermined learning objectives.

Jarimatika Method

As the times progress, more and more interactive learning methods and also more creative. This is due to the increasing demand for learning objectives as well as the level of achievement. The learning method is expected to facilitate the delivery of material to students. The same is true in learning mathematics. According to students, learning that is considered difficult, scary, and boring requires learning methods that can increase student enthusiasm during learning.

One method that has been considered to increase enthusiasm and increase students' understanding of multiplication arithmetic operations is the jarimatics method. This method is an abbreviation of the words "finger" and "arithmetic". According to Septi Peni Wulandari (in Marliyani, 2020) argues that Jarimatika is a way of counting (times-divide-plus-less operations) using the fingers. Jarimatika is a simple and fun way to teach basic arithmetic to children according to the rules: Starting with a correct understanding of the concept of numbers, number symbols, and basic arithmetic operations, then teaching how to count with your fingers. The process begins, is carried out, and ends happily. According to Trivia Astuti, said that jarimatika is a way of calculating mathematics that is easy and fun using our own fingers. Compared to other methods, jarimatics places more emphasis on mastering the concept first then the fast method, so that children master the knowledge in a mature way. In addition, this method is conveyed in a fun way so that children will feel happy and easy to accept it.

From some of the definitions above, it can be concluded that the Jarimatika method is a simple arithmetic method that is used to multiply, divide, add, or subtract by using the fingers to count. This jarimatics method is a method that has several advantages. Such as: (1) This method is easy to learn and fun for students. (2) This jarimatics method does not burden the students' brains. This is because the use of the jarimatics method is able to balance the work of the right and left brain. (3) The use of this method is considered more practical and efficient. Because the media or what is used is our fingers, no other media is needed. (4) The use of the jarimatics method is considered to be able to make students understand the concept of calculating multiplication in a mature way. Because students are more emphasized on mastering the concept first and then taught how to quickly operate the arithmetic. So, if it is general concluded, this jarimatics method can provide a visualization of the process of counting through the fingers and can attract students' interest so that this method does not burden students' brain memory.

However, behind the convenience or advantages provided by the jarimatika method, there are also disadvantages. One example of the shortcomings, this method can only be used in certain operations. For example in multiplication arithmetic operations, it can only be used in multiplication arithmetic operations 6-10 only. The following is an example of using the jarimatic method in the 6-10 multiplication arithmetic operation:

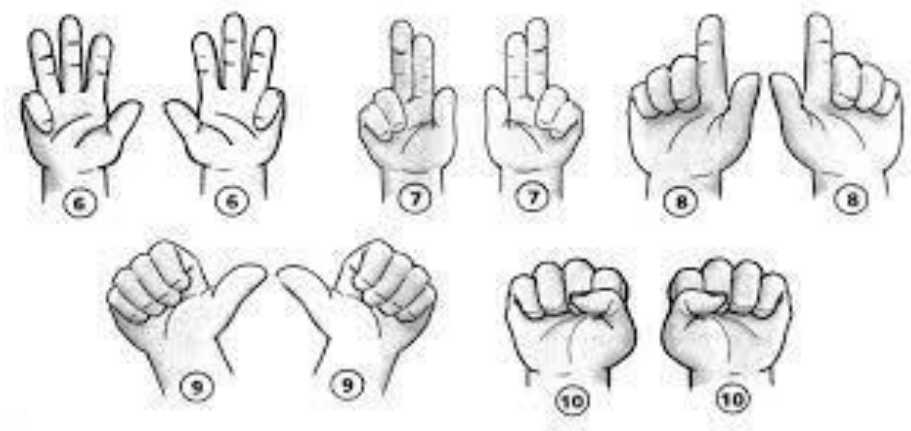

Figure 1. Introduction to Fingerprint 6-10

Formula: (A + A) + (B X B)

Information:

A: The number of fingers pointing up (open) is worth tens of counting operations added

B: The number of fingers pointing up (open) is multiplied by the unit of arithmetic operation

Example:

1. 8 X 8 = 64

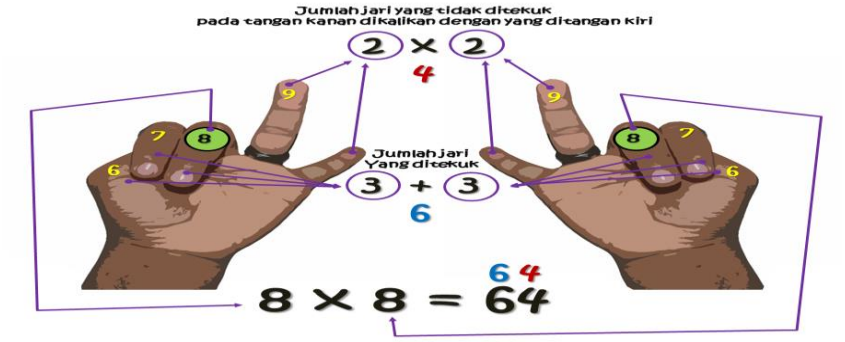

Figure 2. How to operate Jarimatika.

2. 9 X 6 = 54

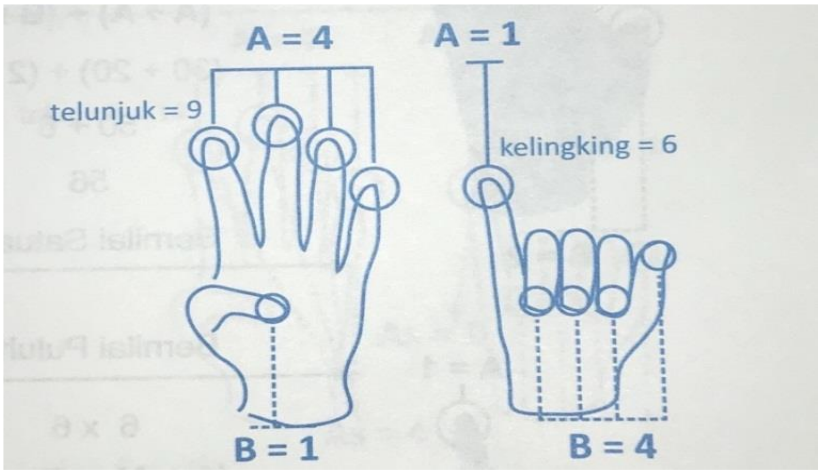

Figure 3. How to operate Jarimatika

Standing fingers: - Right : 1 finger = 10 - Left : 4 fingers = 40 10 + 40 = 50
Fingers that bend : - Right : 4 fingers = 4 - Left 1 finger= 1 4 x 1 = 4
So, 50 + 4 = 54. So 9 x 6 = 54

Implementation of Learning Using the Jarimatics Method in Class III Fatmawati

Judging from the difficulties experienced by class III Fatmawati every time they completed a math problem in the form of a multiplication arithmetic operation, the researchers tried to apply the jarimatics method in multiplication arithmetic operations in class III Fatmawati. At the beginning of learning, it is explained in advance about the concept of calculating multiplication itself. Researchers use animated video learning media to increase students' enthusiasm in listening to explanations.

Figure 4. Video Explaining the Concept of Calculating Multiplication.

After students understand the concept of calculating multiplication, then students are introduced to the jarimatics method. Researchers used video learning media and conventional learning media in the form of multiplication smart boards to introduce the concept of the jarimatics method.

Figure 5. Video explaining the concept of Jarimatika

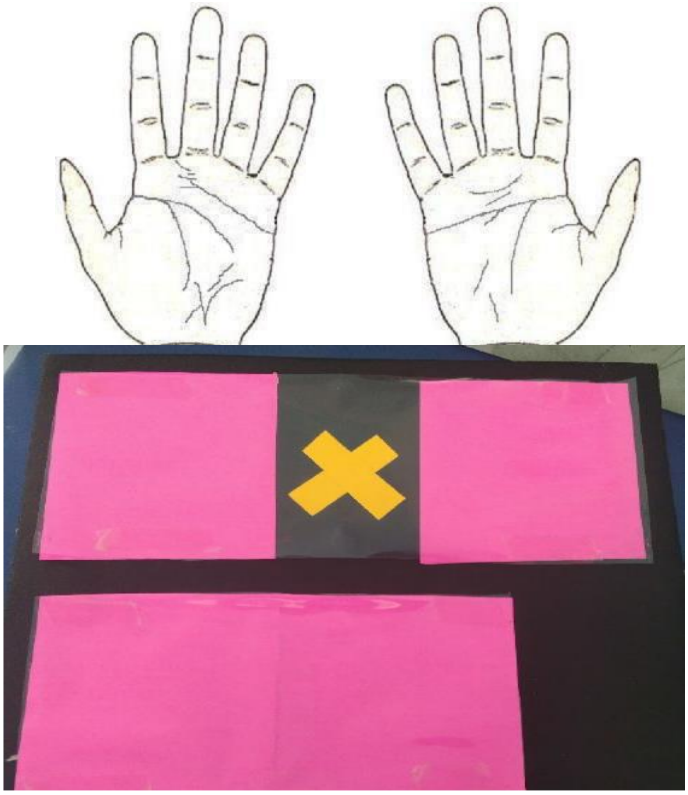

Figure 6. Media Explanation of the Concept of Jarimatika

After students understand the explanation of this jarimatika concept, students are given the opportunity to try to calculate multiplication 6-10 using jarimatika. As long as given the opportunity, students look very enthusiastic to try with their friends. After being able to operate multiplication, students are given examples of questions that are packaged in the game "Octopus Hunt". The researcher prepared 3 octopus printouts and prepared rolls of paper as the tentacles. In each reel there are multiplication problems with different levels of difficulty and each has its own points. Each student who gets the highest points and can solve multiplication problems using the jarimatics method, will get a reward.

Figure 7. Media for Giving Practice Questions

From learning using this method and media, it can be seen that students are very enthusiastic in participating in learning. And students also become more focused and easy to understand the material presented.

CONCLUSION

From the results of this study, it can be concluded that the use of the jarimatics method in learning mathematics can make it easier for students to understand the concept of calculating multiplication, and can make it easier for students to solve problems related to mathematical arithmetic operations. This jarimatics method also shows an increase in students' learning motivation towards multiplication counting. And there is also a positive and very significant effect on students' multiplication arithmetic learning achievement when applying the jarimatic arithmetic method. This can be seen from the comparison when class III Fatmawati students worked on multiplication practice questions using the usual counting method with the ability of students to work on practice questions using the jarimatics method. By using the jarimatics method students seem to enjoy more in working on and calculating the questions given

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