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Learning Mathematics of KPK Material using Student Assignment Method Grade IV

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ABSTRACT

Objective: *The main objective of this study is to Improve the process of learning mathematics, especially in the main material of KPK Using the Assignment Method for Grade IV Elementary School Students.* ***Method:*** *In teaching mathematics to students, the material should not be delivered abstractly and formally but using the assignment method. In teaching mathematics to students, the material should not be delivered abstractly and formally but using concrete objects around the students.* ***Results:*** *The use of the Assignment Method can be applied to improve the learning of mathematics with the subject matter of KPK through the assignment method for Grade IV elementary school students, this is proven by the students' learning outcomes who have been able to complete the tasks given by the teacher well, students have mastered mathematics learning about the least common multiple, the learning given by the teacher can be digested and understood by the students, students conduct question and answer sessions with the teacher without any burden.* ***Novelty:*** *One way that teachers do in teaching mathematics to students is to teach by paying attention to the level of students' thinking. In learning mathematics, what teachers should do in teaching mathematics to students is to teach by paying attention to the level of students' thinking.*

INTRODUCTION

Mathematics learning is a reciprocal interaction between students and teachers, as well as among students themselves, involving various components to achieve the goals of mathematics education [1], [2], [3], [4]. Efforts to improve mathematics learning in schools are continuously made to enhance the quality of student academic achievement [5], [6], [7], [8]. Various strategies have been employed, one of which is by synergizing the components involved in the learning process. These components include objectives, learning materials, learning activities, methods, tools and resources, and evaluation.

One approach that teachers often use in teaching mathematics is delivering instruction based on students' cognitive levels [9], [10], [11], [12], [13]. When teaching mathematics to students, the material should not be presented in an abstract and formal manner but rather through concrete objects available in the students' environment. In this context, students are treated as active participants in the learning process and are given opportunities to develop their abilities. All of this requires appropriate teaching methods, as a method is essentially a set of procedures used to achieve specific objectives. The methods used by teachers to facilitate the teaching and learning process vary. One such method is the assignment method, utilizing student worksheets (LKS). The use of the assignment method is expected to help students better understand the subject matter and also serve as a tool to measure their level of comprehension. The current variety of assignments has raised concerns among education researchers. In using the assignment

method, students hold a dominant role. The teacher acts as a guide for students who face difficulties in solving problems. Completed tasks are then discussed, focusing on problems students found difficult and reinforcing students' learning outcomes.

The assignment method has been widely adopted in almost every school, from elementary to senior high schools. However, there are differences in how teachers implement this method. For example, student worksheets are distributed but not followed up with discussions on the results. Ideally, classroom learning conducted by teachers should be in accordance with established procedures, including reviewing students' completed assignments. On the other hand, the assignment method can generate various perceptions among students, both positive and negative. Despite the negative aspects, the teaching and learning process can run effectively if appropriate media are available, as media serve as intermediaries for the interaction of instructional components. A simple example of such media is the student worksheet (LKS). The use of the assignment method can reduce student passivity because it allows students to actively practice solving problems, guiding them to seek facts, discover facts, and understand concepts.

Research on the Least Common Multiple (LCM) topic using the assignment method—particularly studies examining the effect of the assignment method on students' mathematics achievement—has not been conducted. Considering the importance of this method, the researcher deems it necessary to investigate its application, especially in relation to mathematics learning. Consciously or not, academic performance can influence a student's behavior. This is important to understand in order to better assess student responses to assignments, so that the use of this method can be made more effective.

RESEARCH METHOD

Linguistically (*lughowi*), the word "Mathematics" is derived from the Greek language, namely "Mathema" or possibly "Mathematikos," which means things that are studied. Mathematics is a tool for developing ways of thinking [14], [15], [16].

Mathematics is generally defined as a field of science that studies patterns of structure, change, and space. Informally, it can also be called the science of numbers and figures. In the formalist view, mathematics is the study of abstract structures defined axiomatically using symbolic logic and notation. Another perspective states that mathematics is a fundamental science that underlies other scientific disciplines.

According to W.W. Sawyer, mathematics is the classification study of all possible patterns. The term "pattern" here is broadly interpreted, encompassing almost all kinds of regularities that our minds can comprehend. Every mathematical theory must take into account the power of mathematics, which lies in its application to other major sciences and the beauty of mathematics itself. It is evident here that mathematics is not a science for its own sake, but rather a discipline that benefits many other fields of knowledge.

According to Suherman, mathematics grows and develops through the process of thinking; therefore, logic is the foundation for the formation of mathematics.

From the above explanation, mathematics is a pattern that grows and evolves in life, created from the process of thinking which produces regular patterns and organized structures, beginning from undefined elements, to axioms or postulates, and ultimately to theorems.

Mathematics is the study of patterns and relationships, a way of thinking through strategies of organization, analysis and synthesis, an art, a language, and a tool for solving both abstract and practical problems. Mathematics learning is a teaching and learning process that involves two inseparable activities: learning and teaching. These two aspects represent an interaction between teachers and students, among students, and between students and their environment during the mathematics learning process. Susanto states that mathematics learning is a teaching and learning process constructed by the teacher to develop students' creative thinking, which can enhance their thinking abilities and improve their capacity to construct new knowledge as an effort to gain better mastery of mathematics content.

Mathematics is one of the disciplines that enhances reasoning and argumentative abilities, contributes to solving daily problems in the workplace, and supports the development of science and technology.

Meanwhile, according to Soviawati, mathematics learning is a conscious effort by the teacher to shape students' character, civilization, and quality of life, as well as to help them learn mathematics in a way that creates effective mathematical communication, making it easier and more engaging to learn.

RESULTS AND DISCUSSION

In mathematics lessons, the topic of LCM (Least Common Multiple) is first introduced to 4th-grade elementary school students. Generally, the definition of LCM is the smallest positive integer that is exactly divisible by certain given numbers. This means that the LCM of two numbers is the smallest number that can be exactly divided by both, and the LCM of three numbers is the smallest number divisible by all three, and so on. For example, if someone asks what the LCM of 24 and 30 is, then the number being sought is the smallest number divisible by both 24 and 30. Or, if asked about the LCM of three numbers: 6, 8, and 10, then we must find the smallest integer divisible by 6, 8, and 10.

One commonly used method to find the LCM of large or non-simple numbers is by using a factor tree. Most formulas for LCM and GCD utilize common factors derived from the factor (prime) tree.

The following is a formula for finding the Least Common Multiple:

1. First step: Create a factor tree for each number
2. Second step: Write a list of the prime factorization with exponents
3. Third step: Calculate the LCM by multiplying each factor raised to the highest exponent

How to Determine the LCM

1. To better understand and master LCM calculations, you should frequently practice solving LCM math problems
2. For word problems involving LCM, first understand the intent and question in the problem. Your reasoning will become more trained with more problems practiced

Solving LCM Problems

To find the LCM, two or more numbers are needed. Among the multiples of these numbers, the smallest one is known as the Least Common Multiple (LCM).

Example 1:

Determine the LCM of 6 and 8.

Answer: Multiples of 6 are 6, 12, 18, 24,...

Multiples of 8 are 8, 16, 24,...

So the LCM of 6 and 8 is 24. The number 24 is the smallest number divisible by both 6 and 8.

Based on the example above, the LCM of two or more numbers can be found using the following steps:

a. Determine the multiples of each number
b. Identify the common multiples
c. Select the smallest common multiple. This number is the LCM of the given numbers.

The LCM (Least Common Multiple) of two or more numbers is the smallest number divisible by all of them.

Another technique to determine the LCM of two or more numbers is through prime factorization. Prime factorization refers to the multiplication of prime numbers.

To determine the LCM using this method:

1. Factor each number into its prime factors
2. Take all the distinct factors
3. If a factor appears in more than one number with different exponents, take the one with the highest exponent.

According to Mulyana and Johan Permana H, the assignment method is defined as a form of teaching-learning interaction characterized by the presence of a task from the teacher that is completed by students either at school or at home, individually or in groups. The recitation method is not the same as regular homework but is broader. It stimulates students to actively study individually or in groups. Assignments can be completed at home, at school, in libraries, or elsewhere. The assignment method emphasizes the teacher giving students a task to develop certain competencies or skills. The results of these assignments are then accounted for to the teacher. In practice, students can complete the tasks not only at home but also in libraries, laboratories, or practice rooms. The recitation or assignment method not only stimulates active learning but also instills responsibility. Therefore, assignments can be given individually or in groups. In biology learning, the recitation method is commonly used for topics related to knowledge, affective, and psychomotor aspects.

Each method implemented by the teacher has a purpose to make students more active. Similarly, the assignment method aims to:

1. Stimulate students to learn more, both in and outside the classroom.
2. Develop students' independence needed for future life.
3. Reinforce and deepen what is learned from the teacher, enriching or expanding understanding.
4. Cultivate students' habits in seeking and processing information and communication independently.
5. Make learning more exciting through various activities so that it is not monotonous (Sudirman et al., 2018:142).

Steps in the Assignment Method

Mulyasa explains that for the structured assignment method to be effective, the teacher must consider the following steps:

1. Tasks must be clearly and systematically planned, especially regarding their objectives and how they should be completed
2. Students must understand the task, when to complete it, how to complete it, how long it should take, and whether it should be done individually or in groups
3. For group assignments, ensure that all members are actively involved in the process, especially when done outside the classroom
4. Teachers should supervise the task completion process. For tasks done outside the class, this can be done through student consultations. Therefore, students should be asked to report on their task progress

Provide proportional assessment of the tasks. Assessment should not only focus on the final product but also consider the process. It should be given immediately after task completion to foster student interest and avoid task accumulation.

Strengths and Weaknesses of the Assignment Method

In brief, the strengths of the assignment method include:

1. Learning outcomes are more enduring and memorable.
2. Students learn to develop initiative and independence.
3. Encourages discipline and enthusiasm for learning.
4. Allows practical application of theoretical knowledge.
5. Deepens student knowledge in specific areas.

The weaknesses include:

1. Students may cheat (e.g., get help or copy others' work)
2. Excessive assignments may cause burnout and inner distress
3. Difficult to assign tasks that accommodate individual differences and interests
4. Assignments require significant time, energy, and resources.

CONCLUSION

Fundamental Finding : Based on the results of research that has been conducted in class IV, the researcher concludes that: The use of the Assignment Method can be applied to improve Mathematics learning with KPK material through the assignment method for

Grade IV Elementary School Students, this is evidenced by the learning outcomes of students who have been able to complete the tasks given by the teacher well, students have mastered math learning about multiples. The learning provided by the teacher can be digested and listened to by students, students do questions and answers with the teacher without any burden. **Implication :** Based on the results of the above research, the following suggestions can be made: It is expected that elementary school teachers in the Mathematics learning process always use the assignment method in delivering learning material about the Smallest Common Multiple. In using the assignment method, it should be optimized and always observe what students are doing. Teachers must be able to create an interesting and fun learning atmosphere. **Limitation :** The research is conducted in class IV only, and the effectiveness of the assignment method has not been tested in different grade levels or with different mathematical materials. Additionally, there is no comparison with other instructional strategies, which limits the generalizability of the findings. **Future Research :** In the learning process teachers are required to be creative, innovative in developing learning strategies and methods. In the learning process students must be involved and given more opportunities to practice. The results of this study should be used as a reflection for teachers, principals, and parents.

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