



THE IMPORTANCE OF MASTERING MATHEMATICAL CONCEPTS IN SOLVING MATHEMATICAL PROBLEMS IN ELEMENTARY SCHOOLS

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Article info	ABSTRACT
<p>Corresponding Author:</p> <p>Fina Taskiya fintaz@gmail.com UNISKA Kediri</p>	<p>Teachers realize that mathematics is often considered a subject that is less desirable, feared, and avoided by most students. Various alternatives are used by teachers in learning mathematics, both the mathematical approach and the methods used so that students can master mathematical concepts and can solve problem solving problems. The purpose of this article is to describe the importance of mastering mathematical concepts in solving elementary math problems. Mastery of mathematical concepts is the basis for being able to solve mathematical problems with higher order thinking. In basic education students are directed to have cognitive abilities, namely analyzing (C4), evaluating (C5) and even creating (C6). These abilities are closely related to many of the questions that lead to solving mathematical problems. So that the teacher trains students to be able to solve mathematical problems, where students must have the ability to master mathematical concepts.</p> <p>Keywords: <i>Matematic, concept, abilities</i></p>
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INTRODUCTION

Education is basically a process to help humans develop themselves so that they are able to deal with any changes that occur. In the context of the development of the whole human being, development in the field of education is an excellent means and vehicle for fostering human resources. Therefore, the education sector needs intensive attention, handling, and priority by the government, families, and education administrators in particular.

The progress of a nation is determined by the quality of the nation itself. To expedite the educational process, a container or institution called a school is needed. Schools have systematically planned various environments, namely educational environments that provide various opportunities for students to carry out various learning activities so that

students gain educational experience. Schools can encourage growth and development towards a goal that is aspired to in education.

Learning is an activity for everyone. One's knowledge and skills are acquired through learning (Hudojo, 1988). The success of learning processes and outcomes is influenced by two factors, namely external factors and internal factors within the individual. External factors, namely factors that come from outside the child/individual, consisting of the environment and instrumental. Mathematics is a universal science that underlies the development of modern technology. Mathematics has a very important role in various disciplines and advances human thought. The rapid development in the field of information and communication technology today is based on developments in mathematics in the fields of numbers, algebra, analysis and probability theory. To be able to master and create technology in the future requires strong mastery of mathematics from an early age. Mathematics subjects are given to all students starting from elementary school to equip students with the ability to think logically, analytically, systematically, critically, creatively, and the ability to work together. These competencies are needed so that students have the ability to acquire, manage, and utilize information to survive in conditions that are always changing, uncertain, and competitive in the future (entering the era of globalization).

Mathematics has a very large role in future life, but today mathematics is still a phobia for most students. So it is necessary to provide learning models that can attract students to be able to understand, master mathematical concepts correctly. Other efforts that can be made should not only focus on efforts to increase cognitive achievement, but also efforts that can increase students' affective factors. In the process of teaching and learning activities, an expertise or classroom management skill is needed that must be owned by a teacher in conveying subject matter because each student has different abilities and levels of reasoning. For this reason, a teacher should have the right approach and learning method so that students are able to understand the subject matter being taught.

The current educational methodology paradigm is realized to have experienced a shift from behaviorism to constructivism which requires teachers in the field to have the requirements and competencies to be able to make a change in carrying out the learning process in the classroom. Teachers are required to be more creative, innovative, not as a teacher center, placing students not only as learning objects but also as learning subjects and in the end yes it leads to a fun, happy and democratic learning process that respects every opinion so that in the end the substance of learning is truly internalized.

To create the expected situation in the statement above, the teacher must have what conditions are needed in teaching and building student learning so that it is effective in class, working together in learning so as to create a pleasant and mutually respectful atmosphere. We believe that currently there are many teachers who have implemented constructivism theory in classroom learning but the volume is still limited, because in reality we still find many teachers who in teaching still seem to be only carrying out their obligations. He does not need a strategy, a method of teaching, what is important for him is how a learning event can take place.

Teachers realize that mathematics is often considered a subject that is less desirable, feared, and avoided by most students. Students should be aware that the ability to think logically, reason rationally, and be careful is the main characteristic of mathematics. Reasoning is a thought process in order to draw conclusions. Students who have high reasoning abilities will not have difficulty understanding mathematics subject matter, whereas students who have low reasoning abilities may have difficulty understanding mathematics subject matter. Various alternatives are used in learning mathematics, both the mathematical approach used or the method used so that students can master mathematical concepts and can solve problem solving problems.

DISCUSSION

Mastery of Mathematical Concepts

Mathematics is a scientific discipline that has specificity compared to other disciplines which must pay attention to the nature of mathematics and students' abilities in learning. Without paying attention to these factors the purpose of learning activities will not succeed. A person is said to learn if it can be assumed that in that person there is a process of activity that results in a change in behavior. These changes in behavior can be observed and last for a relatively long time accompanied by the effort made so that the person from being unable to do something becomes able to do it (Hudojo, 1988).

In the process of learning mathematics, learning principles must first be selected, so that when studying mathematics can proceed smoothly, for example learning concept B which is based on concept A, one needs to first understand concept A. Without understanding concept A, it is impossible for that person to understand concept A. B. This means learning mathematics must be gradual and sequential and based on past learning experiences (Hudojo, 1988).

In explaining new concepts or making connections between material that students have mastered and the material presented in teaching mathematics, it will make students mentally ready to enter into the issues that will be discussed and can also increase student interest and achievement in mathematics subject matter. In connection with the above, discontinuous mathematics teaching and learning activities can disrupt the teaching and learning process. This means that the teaching and learning process will occur smoothly if the learning itself is carried out continuously (Hudojo, 1998).

From the explanation above, it can be concluded that it will be easier for someone to learn something if learning is based on what is previously known because in learning new mathematical material, previous experience will affect the smooth process of learning mathematics. Learning has interrelated variables, namely between conditions, strategies and learning outcomes. In developing students' creativity and competence as learning outcomes variables, teachers should be able to present effective and efficient learning as learning strategy variables, in accordance with the curriculum and students' mindsets as learning condition variables. (Hamzah Uno, 2007: 112). Grade IV children are already able to play math games with rules based on very advanced mathematics.

However, they have not been able to formally state mathematically what they are doing, although they are actually able to act according to the mathematical rules. A very important emphasis in teaching basic concepts is to help students gradually move from thinking concretely to thinking conceptually. (Nasution, 2008:8).

Concepts in the SD/MI mathematics curriculum can be divided into three major groups, namely instilling basic concepts (planting concepts), understanding concepts, and developing skills. The following is a presentation of learning that emphasizes mathematical concepts (Heruman, 2007.2-3):

1. Planting Basic Concepts (Concept Planting), namely learning a new mathematical concept, when students have never studied the concept. Learning to plant basic concepts is a bridge that must be able to connect students' concrete cognitive abilities with new abstract mathematical concepts.
2. Concept understanding, namely advanced learning from instilling concepts, which aims to make students better understand a mathematical concept. Understanding of the concept consists of
3. First, it is a continuation of concept learning in one meeting. Meanwhile, second, learning to understand the concept is carried out on different meetings, but still a continuation of understanding the concept.
4. Skills Development, namely advanced learning from instilling concepts and understanding concepts. Learning skills development aims to students are more skilled in using various mathematical concepts. According to Nasution (2008:12) this point is called a heuristic procedure, namely find answers in a non-strict way. For example, encouraging students to find answers to difficult problems by thinking about problems that have simpler similarities, or think analogously, based on symmetry, or by illustrating or making diagrams. This procedure produces a reinstatement of intellectual skills, namely the ability to use past learning outcomes in different situations new knowledge is not limited to knowing or recalling "recall of verbal information". (Nasution, 2008: 143).

In this case students are able to do inductive reasoning, because in learning by solving mathematical problems, students are directed to carry out inductive reasoning processes. Through practice problem solving questions are gradually trained to be able to conclude a general characteristic of the presentation of mathematics that is specific. As according to Stephen Krulik (1995) reasoning includes basic, critical and creative thinking. In critical thinking, Krulik describes students as being able to analyze, associate information so that they are able to determine the logic of an answer and draw valid conclusions.

Solving Mathematical Problems

Learning to solve mathematical problems starts from a problem in mathematics. Krulik and Rudnik (1995: 4) defines the problem in terms of as follows:

"A problem is a situation, quantitative or otherwise, that confronts an individual or group of individuals, that requires a resolution, and for which the individual sees no apparent or obvious means or path to obtaining a solution."

This definition explains that a problem is a situation faced by a person or group that requires a solution, but the individual or group does not have a direct way to determine the solution. This also means that the problem situation (problem) can be found a solution by using a thinking strategy called problem solving.

From this definition problem solving is an individual effort to use knowledge, skills and understanding to find a solution to a problem.

To be skilled in solving problems requires various abilities that exist in us, as a result of learning, namely various knowledge, attitudes and psychomotor. The various knowledge referred to are: memory, understanding, application, analysis, synthesis, and evaluation (often called Bloom's taxonomy). Thus it is not easy to solve a problem, because it involves our various reasoning/thinking abilities from low to high levels (low levels are memory, understanding and application, while high levels are analysis, synthesis and evaluation). For example, if we want to measure the area of land, what knowledge should we have and how to use it? To be able to determine the area of land, we must have knowledge of geometric shapes and their characteristics, units of length, formulas for finding area, and arithmetic operations formed by these formulas. Holmes (1995:35) states that in essence there are two groups of problems in learning mathematics, namely routine problems and non-routine problems. The stages or steps for solving math problems are as follows: The stages in solving math problems are very important, because these stages really help students solve math problem solving problems. Therefore, we ourselves (teachers) should know and understand the important stages of problem solving. In the process of solving a problem, these steps can be carried out sequentially, but sometimes steps are taken that do not have to be sequential, especially for solving difficult problems. The stages are as follows:

Understanding the Problem

This step determines the success of obtaining a solution to the problem. Step this involves deepening the problem situation, sorting out the facts, determining the relationships between the facts and formulating questions problem. Every written problem, even the easiest one should be read repeatedly and the information contained in the problem studied carefully. Usually students have to restate the problem in their own language. Visualizing the problem situation in mind is also very helpful for understanding the structure of the problem.

Create a problem solving plan

This step needs to be done with confidence when the problem has been found understood. The solution plan is built by considering the structure of the problem and the questions to be answered. If the problem is a routine problem with the task of writing open-ended mathematical sentences, it needs to be done translating the problem into mathematical language.

Implement the problem solving plan

To find the right solution, the plan that was made in step 2 is a must carried out with care. To begin with, sometimes we need to estimate the solution. Diagrams, tables or sequences are constructed carefully so that the solver problem will not be confused. Labels are used if necessary. If a solution requires computing, most individuals will use calculators to calculate rather than calculating with paper and pencil and reduce the worry that often occurs in problem solving. If inconsistencies emerge when carrying out the plan, the process should be reviewed to find the source of the difficulty.

Looking (checking) backwards

During this step, problem solutions must be considered. Calculation must check again. Doing a backward check would involve determining the accuracy of the calculation by recomputing it. If we make an estimate or estimate, then compare it with the results. The solution results must still match the root of the problem even if it looks unreasonable. An important part of this step is to expand the problem which involves finding alternative solutions to the problem.

Students are expected to be able to make, develop and evaluate conjectures and arguments, so that students are directed to be able to make conjectures on students' mathematical problems as well as prove whether their conjectures are wrong or correct based on the concepts that have been obtained and also through the process of manipulating concrete objects. And students must be able to understand and apply various types of reasoning in learning, especially mastery of concepts in elementary mathematics problem solving.

CONCLUSION/SIMPULAN

Mastery of concepts in mathematics needs to be emphasized in learning mathematics so that when students find problem solving questions they can complete it according to the skills in mastering mathematical concepts that students must have, namely planting basic concepts, understanding the concept of learning concepts as well as skills development which includes planting and understanding concepts from concept mastery it is expected that students can solve mathematical problem solving with

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