

IMPORTANCE OF TEACHING MATHEMATICAL CONCEPTS, NOT JUST PROCEDURES

by:

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In the past, teaching procedural skills – where learners are instructed to use step-by-step methods to solve problems – has been prioritized in mathematics education. Procedural knowledge is important, but it's just as important to teach the mathematical ideas that underpin those methods. Students who have a conceptual understanding of mathematics are better able to understand the "why" underlying mathematical processes, developing a more profound and meaningful connection to the subject. According to Nahdil and Jatisunda (2019), a set of steps that must be taken in order to answer mathematical problems is known as procedural knowledge. This expertise comprises an understanding of algorithmic approaches, skills, and techniques. Understanding the criteria used to choose which processes to utilize when is also part of procedural knowledge.

It is essential to teach mathematical ideas since they foster a thorough comprehension of the subject. Students build a conceptual framework that connects diverse concepts and operations when they are first exposed to mathematical ideas. They can reason, draw connections, and apply their understanding to novel and unfamiliar situations thanks to their conceptual knowledge. By grasping the core ideas, learners develop into problem solvers rather than merely procedural followers, prepared to take on challenging and challenging real-world mathematics problems.

Additionally, conceptual comprehension improves long-term learning and retention. Students are more likely to retain and use their knowledge outside of the confines of the classroom when they absorb mathematical concepts. However, depending

simply on processes without comprehending the underlying principles can result in a superficial understanding of the material and make it difficult to apply the knowledge to fresh situations.

Teaching mathematical concepts encourages metacognition and critical thinking. When students interact with mathematical ideas, they are motivated to ponder, investigate, and reason about the material. They can examine their thought processes, spot knowledge gaps, and connect various mathematical concepts thanks to this metacognitive awareness. Students who engage in such cognitive activity become more independent and self-assured learners who are prepared to take on new challenges in mathematics and beyond.

Teachers foster a more diverse learning environment by giving conceptual learning priority. Learning styles and strengths vary among learners. While some people may be excellent at following instructions, others could find it difficult to remember steps without understanding the guiding concepts. All children may access and appreciate the beauty of mathematics because educators accommodate varied learning requirements by placing an emphasis on conceptual understanding.

Promoting inquiry-based learning and problem-solving also helps conceptual understanding. Teachers can encourage learners to think critically and connect ideas by posing open-ended situations and letting them try out different approaches. Students have the chance to apply their conceptual knowledge in practical situations through problem-solving exercises, which increases the knowledge's relevance and usefulness.

References:

Nahdil, D. and Jatisunda, M. (2019). Conceptual Understanding And Procedural Knowledge: A Case Study on Learning Mathematics of Fractional Material in Elementary School. <https://iopscience.iop.org/article/10.1088/1742-6596/1477/4/042037/pdf>