

Seven Pointers for Teaching Mathematics

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Mathematics has its roots deep in the soil of everyday life, and it is basic to our highest technological achievements. Even though almost everything of a concrete character is mathematics, it is the most abstract and the most hypothetical of the sciences. In fact, mathematics is a human science. It is the numerical and calculation part of a person's life and knowledge. It helps provide exact interpretation of ideas and conclusions. It deals with quantitative facts and relationships, as well as with problems involving space and form. It also deals with relationships between magnitudes. Mathematics has always held a key position in the school curriculum, because it has been held to be indispensable to the educated (Savithiri 2006).

Since mathematics is a vital academic discipline, the teacher must study and analyze difficulties faced by students in mathematics. The problem areas must be remedied using the best methods of teaching possible. In an exact field of endeavour, it is important to emphasize accuracy.

Having supervised student teachers for 30 years, I have identified seven major problem areas related to student achievement and progress in learning mathematics.

1. *Students do not understand what is taught.*

For example, students fail to attach meaning to reducing fractions to lowest terms. With teacher assistance, the student may show concretely that two-thirds is equal to six-ninths by placing a large congruent circle divided into thirds over a circle divided into ninths. Thus, the learner comes to understand that when we multiply the numerator and denominator by the same number, the value of the fraction does not change.

2. *Students fail to read story problems correctly.*

If students are not able to read story problem content correctly, there are several ways to help, including

- reading the problem aloud with those who are experiencing difficulty (students should follow the printed text during the read-aloud),
- assisting the student with phonetic analysis and context clues in order to identify unknown words, and
- pronouncing individual words as needed for students as they are reading silently.

3. *Students copy numerals incorrectly from the textbook when engaged in addition, subtraction,*

multiplication or division, as well as when solving a story problem.

This miscopying may include making reversals, as in the case of dyslectic children. Teacher assistance and peer teaching, in an atmosphere of respect, should gradually help learners achieve more optimally.

4. *Students hurry to complete an assignment, thus making various kinds of errors.*

Here, students need help with proofreading their completed work. Peer editing or help from a teacher's aide is beneficial.

5. *Students fail to reflect on the kinds of errors made.*

Students must analyze why they are having difficulty. This emphasis on *why* helps them refrain from making the same errors. If a concept is not meaningful to students, it should be retaught. Concepts form generalizations, and generalizations must be meaningful in order to be useful in problem solving. Students, upon reflecting and with teacher guidance, might well determine effective approaches for doing accurate work in mathematics.

6. *Students do not use logical thinking.*

Correct reasoning must be emphasized. Reasoning allows for quality sequencing in doing mathematics. There is order, then, in pursuing answers when using the commutative and associative properties of addition and multiplication, or the distributive property of multiplication over addition. Logical thinking is inherent, here, and in the solving of problems involving in-depth thinking. Logical thinking should be emphasized from kindergarten, such as with *greater than*, *lesser than* and *equal to*. With this foundation, more complex ideas should accrue sequentially in succeeding grade levels.

7. *Students must experience challenge in ongoing lessons and units of study, yet feel successful in mathematics.*

Wholesome attitudes toward mathematics are developed under these circumstances. Optimal progress should be a result.

Reference

Savithiri, V. 2006. "Impact of Metacognitive Strategies in Enhancing Perceptual Skills Among High School Students on Learning Geometry." PhD diss. Alagappa University.