

What are features of effective instruction of number with respect to skill and conceptual understanding?

Two features of instruction are especially likely to help students develop conceptual understanding of the mathematics topic they are studying:

- Attending explicitly to connections among facts, procedures, and ideas
- Encouraging students to wrestle with the important ideas in an intentional and conscious way

In essence, if instruction aims to help students develop conceptual understanding, then it must make explicit the crucial relationships that lie at the heart of such understanding.

Research findings suggest the following: mathematics teaching that facilitates skill efficiency

- is rapidly paced;
- includes modeling by the teacher with many teacher-directed, product type of questions;
- displays a smooth transition from demonstration to substantial amounts of error-free practice.

The teacher plays a central role in organizing, pacing, and presenting information to meet well-defined learning goals.

Many of the studies that focused on conceptual development also reported that students' skills increased at a level equal to or greater than those of students in the control groups. **Students who mastered skills under conceptually supportive conditions acquired different competencies than those who were trained with a strict focus on developing skill—they were better able to adapt their skills to solve new kinds of tasks.**

Based on Effective Teaching for the Development of Skill and Conceptual Understanding of Number: What is Most Effective?

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