

Implications to Think About

The teacher's instructional decision making contributes greatly to students' success in their mathematics classes. Those students who approach learning mathematics in realistic contexts, who work as mathematicians do, and who are held to the performance criteria of mathematicians, demonstrate the best understanding of mathematical concepts.

Class scheduling is of major importance to both administrators and teachers. Administrators need to examine teacher schedules to facilitate common planning time—a professional collegial time in which teachers design appropriate contextual problem-solving experiences for their students and cooperatively examine student work samples as a means of informing instruction. Teachers must provide classroom time for the in-depth study of major concepts in mathematics. Short, segmented class periods do not support the time necessary to explore topics in-depth or from multiple perspectives and often prevent students from achieving the flow and continuity of thinking that is so critical in making sense of mathematics.

Teachers help construct scaffolding for key ideas from students' prior knowledge, anticipate misconceptions, and design learning experiences that build on student thinking and reflect mathematics content aligned with the NCTM *Principles and Standards for School Mathematics*. Students need to be active listeners and be able to restate in their own words what others contribute. Students who are encouraged to try out new ideas, think aloud, and get specific feedback from others are more apt to internalize the mathematical concepts they are exploring. Teachers learn from watching and listening to their students and students learn by articulating what they know.

Successful mathematics students have teachers who stay current in mathematics as well as mathematics education. Effective mathematics teachers

- Read and apply relevant research in mathematics pedagogy and education.
- Keep abreast of changes in mathematics content.
- Are active members of their professional mathematics education organization.

Resources for Learning More

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- Kilpatrick, W., Martin, G., & Shifter, D. (Eds.). (2003). A research companion to principles and standards for school mathematics.
- Meier, D. (1995). The power of their ideas.
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- National Mathematics Advisory Panel. (2008). Foundations for success.
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