

What factors contribute most strongly to students' success in learning mathematics?

One of the strongest predictors of students' success is the quality of their teacher.

Research and Ideas to Know About

One of the most important factors contributing to student success is active participation with mathematics. Students who engage in mathematical modeling, problem solving, and reasoning apply the mathematics they are learning. Supporting practices include providing ample time to perform investigations, emphasizing discourse among students and between students and teachers, asking students to reflect on their work, allotting time to revise work, and acknowledging student diversity. The instructional practice of covering many discrete topics does not help students develop deep understanding and useful performance skills.

Teachers who set up active learning tasks that engage students in purposeful work spend substantial time moving about the classroom working with individuals and small groups. They make note of individual student accomplishments and needs, redirect students to new tasks as necessary, and listen as students reason their way through a problem. Students who experience a range of activity from short whole-group instruction to extended periods when they are engaged in problem solving are more likely to enjoy learning. A positive student-teacher relationship improves learning. In fact, research indicates that "social and intellectual support from peers and teachers is associated with higher mathematics performance for all students, and that such support is especially important for many African-American and Hispanic students." (final report of the National Mathematics Advisory Panel, p. 32)

One of the strongest predictors of students' success is the quality of their teacher. Teachers who are highly qualified with both mathematics content knowledge and pedagogical skills are more effective teachers. Teachers who continue their education while teaching tend to develop a deeper understanding of content applications, content knowledge, effective instructional strategies, theoretical bases for instructional decisions, and confidence in decision making. In general, teachers who continue learning throughout their careers are more likely to become conscientious, competent, professional teachers.