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Examining the role of prior experience in the learning of algebra.

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Summary: Widespread emphasis on developing students' algorithmic competency and symbol manipulation has resulted in students failing to think analytically and critically. If students are not encouraged to think flexibly about arithmetic and algebra in school, then this needs to be addressed by developmental courses and tasks designed to change the procedural orientation and superficial, fragmented knowledge of too many of our undergraduate students. Those who teach mathematics at the postsecondary level often dismiss the increasing number of students enrolled in precollege mathematics courses as "not my problem," not realizing that "just algebra" is the downfall for many college students. Learning "just algebra" is a much more complex task than it appears. In this chapter, prior knowledge will be shown to have become problematic for many students, and we provide evidence of the need to improve the effectiveness of our own teaching and that of our future teachers in ways that help students develop deeper understanding of mathematics and promote mathematical thinking.

Classification: C35 H25 H35 C45 E45

Keywords: flexible thinking; prior knowledge; problematic met-befores; remedial mathematics; developmental algebra; function machine; minus sign

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