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Slavit, David

Three women's understandings of algebra in a precalculus course integrated with the graphing calculator.

J. Math. Behav. 17, No. 3, 355-372 (1998).

This study investigated the role of function in a precalculus classroom which incorporated the graphing calculator in the instructional process. Perspectives were taken from students, teachers, and textbooks. Emphasis was placed on choice of functional symbol system when thinking and problem solving, connections across symbol systems, the role of the instructor and the textbook in learning, affective components, and the effect of the graphing calculator. The study starts with a definition of the concept of structure as it relates to function. The account of a semester-long qualitative study on students' concept images of function and its role in problem solving follows. It was found that the students involved in the study entered the graph-intensive course with predominantly symbolic notions of algebra, in part due to prior instruction. The students also possessed highly procedural views of algebraic content. These preconceptions and expectations resulted in the students' inability to effectively coordinate graphic and symbolic notions of algebra, both in procedural and conceptual realms. Implications and curricular suggestions are provided.

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