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TEACHING, LEARNING, AND
CURRICULUM STUDIES

STUDENTS' ATTITUDES TOWARD MATHEMATICS IN A SPREADSHEET-
BASED LEARNING ENVIRONMENT (347 pp.)

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This mixed methods study sought to determine the effect of a spreadsheet-based learning environment on college students' attitudes toward mathematics. How students might use this technology to develop their conceptual understandings of specific mathematical concepts was also explored.

Participants were comprised of students enrolled in an undergraduate *Mathematics with Applications* course at a small, private, liberal arts university in Northeast Ohio. Three frameworks were used to collect and analyze data: (1) the *Attitudes Toward Mathematics Inventory (ATMI)* was utilized at the beginning and end of the study to measure an initial 36 participants' attitudes toward mathematics; (2) the *Master, Student, Partner, Extension-of-Self Framework (MSPE)* was employed to assess a smaller sample of six students' ways of interacting with technology; and (3) the *Structure of the Observed Learning Outcomes Taxonomy (SOLO)* was used to measure the understandings and sense makings of mathematical concepts for the same six students.

Although there were no significant changes in students' attitudes based on the quantitative findings, qualitative results suggest that students' value of mathematics

increased. In addition, for most students, the use of spreadsheet technology to interact with mathematics increased over the duration of the study.

Limitations of the *ATMI* are discussed with suggestions for the development of a new instrument that incorporates the use of technology. Implications for the use of spreadsheets in post-secondary mathematics courses are proposed and recommendations for future research based on unanticipated findings regarding the dynamics of student pairs are suggested.