

## ABSTRACT

A Snapshot Look at Cooperative Learning and Traditional Format  
in the Recitation Component of a  
College Precalculus Course. (December 2001)

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This study investigated cooperative learning and traditional format in the recitation component of a college precalculus course at Texas A&M University. During the first week of class the students completed a mathematics skills survey, a mathematical attitudinal scale (Aiken (1974) Mathematics Attitudinal Survey - E Scale), and a questionnaire about temperament, gender, age, major, ethnicity, graphing calculator skills, and background. Based on the results other than their attitude towards mathematics, students in the cooperative-learning sections were assigned to groups of three to four in which they worked on weekly problem sets together for the entire semester. In the traditional recitation format, the students had their homework questions answered and were given weekly quizzes. At the end of the semester the students completed a confidential survey about their experiences in the mathematics course and again completed the mathematical attitudinal scale. Students, teaching assistants and instructors were interviewed.

Examination grades, course retention, attitude towards mathematics, and grade in a succeeding course were compared for students in the two types of recitations. In addition to t-tests and Wilcoxon Rank-Sum tests, linear mixed effects models fitted by maximum likelihood were used.

Research indicated that the cooperative learning treatment in the recitation component of precalculus had either the same effect as the traditional question/answer/quiz recitation or had a positive effect on the students' examination performance, though it was not a significant effect. However, for students with weak incoming mathematical knowledge, the cooperative-learning treatment significantly improved their grade on their final examination. Furthermore, it was predicted that a female who had a C, D, or F in precalculus and who was in the cooperative-learning treatment in precalculus earned a statistically significantly higher grade in her subsequent calculus I course than one who was in the traditional treatment in precalculus.

There was no difference in the students' attitude towards mathematics between treatments, neither at the beginning nor at the end of the course, but 62 percent of the students in the traditional question/answer/quiz recitation and 93 percent of the students in the cooperative-learning sections wanted to do group work in mathematics recitation in the future.