

# **THE VOICE OF THE STUDENT: ELEMENTARY STUDENTS' BELIEFS AND SELF-EFFICACY ABOUT MATHEMATICS**

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Research on teacher change in response to reform in the United States is prevalent as is research on teacher beliefs and their impact on teaching. Missing is the voice of young students as they experience classrooms where reform is being implemented.

The research for this presentation is grounded in the work of Bandura (1986) on academic self-efficacy within social cognitive theory. Bandura suggests that beliefs help determine what individuals do with the knowledge and skills they have, and. According to Pajares & Miller (1994) may be a better predictor of successful performance than ability. Changing student beliefs and self-efficacy may contribute to academic perseverance and success.

During the 2002-2003 school year 136 second, third and fourth grade students of teachers involved in a teacher development project supporting reform recommendations from the National Council of Teachers of Mathematics in the United States completed a 12-item Likert scale pre-and post-questionnaire about their beliefs about mathematics (e.g., math should be done quickly); their beliefs about teaching mathematics (e.g., a good math teacher shows you all the steps); and their self-efficacy (e.g., I am good at math).

An item analysis was done to examine pre- and post-responses from the questionnaire by grade, race and gender and was clustered by the categories mentioned above. An example from the results follows.

Item#1 (I am good at math) from the cluster on self-efficacy suggests that students' confidence about their mathematical ability. While remaining in the positive range, decreased by grade and decreased slightly at each grade over the period of the school year. With a lower score representing higher self-efficacy, second graders moved from 1.38 to 1.45 and fourth graders moved from 1.67 to 1.74. When analyzed by gender, young girls gained confidence slightly during the school year (1.76 to 1.56) while boys decreased in confidence from 1.33 to 1.63. When race was considered Caucasian student confidence remained about the same (1.40 to 1.42), black students decreased in confidence from 1.44 to 1.63 and students from other ethnic groups became more confident (1.90 to 1.80). Full results will be presented at the conference.

## **REFERENCES**

- Bandura, A. (1986). *Social foundation of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Pajares F. & Miller M. D. (1994). Role of self-efficacy and self-concept beliefs in mathematical solving: A path analysis. *Journal of Educational Psychology*