

# **BOREDOM, ANXIETY OR EXPERIENCING FLOW: STUDENTS' EXPERIENCES WITH MATH PROBLEMS**

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The purpose of this study is to identify college freshmen's perception, beliefs, and attitudes during math problem solving activities in college algebra classes. Problem solving is an important foundation within the study of mathematics. Although pertinent research has been generated on problem solving in mathematics education, research addressing motivational dimensions of problem solving have been scarce. Motivation is affected by beliefs, perceptions and attitudes. Many college students fail mathematics at their first attempt or try to avoid taking math classes until their graduation year because of fear of mathematics-"math anxiety." Consequently, due to this anxiety, motivation is affected.

Csikszentmihalyi (1990, 2000) defines flow- "the state in which people are involved in an activity nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it." Thus relationships exists between flow and motivation. However, few students would recognize the idea that learning can be enjoyable, especially in a mathematics course.

For this study, students enrolled in a typical 3-credit Math For Liberal Arts II course attended two master lectures a week covering theory and aspects of problem solving. Students then attended a recitation class, once a week, in which assessments were done. While most students taking MGF1107 were not math or science majors, they still need reasoning and problem solving skills. Data was collected during the spring from students (n=55) through a survey administered multiple times. Critical cases were interviewed to gain additional insight (high anxiety, low anxiety, flow state, boredom). Students who experienced greater flow during the problem solving activities showed greater performance and persistence on the task. Other research questions addressing students' attitudes, beliefs, and perceptions towards problem solving activities; the conditions which creates fear of math; the utility value of solving math problems; and other results of the study will be discussed in detail.

## **References**

- M. Csikszentmihalyi (1990) *Flow=The Psychology of Optimal Experience*. New York: Harper and Row.
- M. Csikszentmihalyi (2000) *Beyond Boredom and Anxiety: Experiencing Flow in work and Play*.