TEXAS STATE UNIVERSITY

Department of Mathematics Colloquium

Fostering Productive Generalizing and Proving in Algebra

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3:30 - 4:30pm
DERR 329

Generalization and proof are two key aspects of doing mathematics, with policy makers recommending that they be a central component of instruction from elementary school through undergraduate mathematics. This recommendation poses serious challenges however, given students' difficulties in creating, expressing, and interpreting correct generalizations and justifications. I address these challenges by investigating how situating students' algebraic exploration within contexts emphasizing covarying quantities supports the development of productive generalizations and justifications. I will discuss task design principles and findings from two related projects in which students reasoned about quantitative situations in order to develop an understanding of linear, quadratic cubic, and exponential growth. Building on teaching experiment findings, my project members and I have developed activity sequences and related instructional recommendations for supporting secondary students' generalizing and proving activities. I will share our resulting insights and challenges in supporting instruction that fosters meaningful algebraic insights.