MATHEMATICS EDUCATION SEMINAR

TEXAS STATE UNIVERSITY

The rising STAR *of Texas*

1:00 pm in DERR 338
October 12, 2019

Investigating teachers' mathematical meanings for trigonometric functions: toward assessment grounded in teaching practice

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Recent research in secondary mathematics teaching and learning has investigated teachers' *mathematical meanings* for fundamental concepts such as function, proportionality, and covariation. Project Aspire (Arizona State University) has developed an instrument for assessing secondary teachers' meanings for these concepts; this instrument has been used as an evaluation tool for teacher professional development programs in Arizona and beyond. Following some of the design principles behind this instrument, we have developed a preliminary version of an assessment of teachers' mathematical meanings for trigonometric functions and related concepts. In designing this assessment, we aimed to include several items that are explicitly grounded in tasks of teaching, such as selecting definitions and addressing student conceptions.

In this presentation, I will share some preliminary results from the use of this assessment, discuss what these results might suggest about teachers' meanings for trigonometric functions, and share some lessons we have learned about designing assessments that connect to teaching practice. I'll also say a bit about the implications of these lessons for a new project in which we will investigate middle and high school teachers' algebraic reasoning and discourse.

Dr. Patterson earned his B.S. and M.S. in Mathematics at Texas A&M University, and completed his Ph.D. in Mathematics at the University of Texas at Austin in 2010. He has served as the director of the University of Arizona's Center for Recruitment and Retention of Mathematics Teachers, which provides coaching and professional development for K-12 teachers of mathematics in the Tucson area, and as the chair of the Question Writing Committee for MATHCOUNTS, a national mathematics competition for middle school students. His current research investigates secondary teachers' mathematical meanings for concepts and procedures in algebra and precalculus and the language that they use to convey mathematical ideas to students.

Next Friday, October 19: Hamilton Hardison, Funky Protractors and Prospective Elementary Teachers' Strategies for Evaluating Them