TWO USES OF COORDINATE SYSTEMS: A CONCEPTUAL ANALYSIS WITH PEDAGOGICAL IMPLICATIONS

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Abstract: Conventional coordinate systems are often considered representational tools for reasoning about mathematical concepts. However, researchers have shown that students experience persistent difficulties as they engage in graphing activity. Using examples from research and textbooks, we present a framework based on a conceptual analysis of the use of coordinate systems. We discuss the implications of the framework for student learning, curriculum design, and teaching.

Dr. Lee received her Ph.D. in mathematics education from the University of Georgia and is an assistant professor in the Department of Mathematics at Texas State University. Her main research interest is in building conceptual models of how students think mathematically—specifically, in the areas of spatial and quantitative reasoning—and in learning how teachers can facilitate and support their students’ mathematical thinking.

Dr. Hardison received his Ph.D. in mathematics education from the University of Georgia and is a lecturer in the Department of Mathematics at Texas State University. His primary research interests lie in investigating students’ mathematical thinking. His current research focuses on modeling students’ constructions of quantities (e.g., angularity), how these constructions change over time, and how they vary across contexts.

Next Friday: No seminar- Graduate Open House