



Using Quantitative Approaches to Better Understand the Teaching and Learning of Mathematics

Jessica Bishop, Texas State University

Abstract: In this presentation, I will lead a collaborative discussion to consider how quantitative methods can provide an important perspective on the teaching and learning of mathematics. In particular, I suggest there may be unrealized potential in combining the disparate methodological approaches of discourse analysis and statistics to answer questions not typically asked about teaching and learning using discourse analytic methods. Discourse analysis considers how language is used to communicate, act, interact, and learn and usually involves fine-grained, descriptive studies with small samples. Given that, one might wonder how this type of qualitative data lends itself to statistical analyses. Statistical discourse analysis is a relatively new methodological approach in the learning sciences (Chiu, 2008). It holds promise for combining theoretically-rigorous qualitative analyses of mathematics classroom discourse with trend analyses and other forms of quantitative analyses. In this session I will share some of my research on mathematics classroom discourse and get your ideas about the viability (or not) of various statistical methods that could be applied to this data set with a particular focus on measures of variation and temporal change.

Bio: Dr. Jessica Bishop is a mathematics educator in the Department of Mathematics at Texas State University. She is interested in mathematics classroom discourse and students' mathematical thinking. Her current work investigates the ways that teachers and students engage in the interactive, dynamic, and responsive activity of classroom life through the use of discourse. More specifically, Jessica considers how teachers and students use discourse to build on and respond to students' mathematical thinking, enact mathematical identities, negotiate different forms of mathematical authority, and how different features of discourse are related to student learning. She can use your help in thinking more about how statistical methods might be applied to mathematics classroom discourse.