1077-M1-33   **Eric David Weber*** (`ericweber@asu.edu`), 125 S Alma School Rd Apt 1065, Chandler, AZ 85224. *Students' Understanding of Two-Variable Functions and Rates of Change.*

In this presentation, I describe an approach to introducing the derivative function called the calculus triangle, which emphasizes the centrality of rate of change of quantities in thinking about the derivative. I describe the role of the calculus triangle in supporting students' ways of thinking about rate of change of one variable functions, and how they generalized this way of thinking to approach rates of change of two-variable functions in the context of a teaching experiment focused on the same. I present two important ways of thinking about functions, covariational reasoning and shape thinking, and how these two constructs help explain the understandings students developed about the calculus triangle as a representation of rate of change. I conclude by discussing the possible implications of covariational and quantitative reasoning for students' thinking about functions of three or more variables. (Received June 17, 2011)