1137-97-252 **Zackery K. Reed*** (reedzac@oregonstate.edu). *Student Generalizations in Real Analysis.*

Real analysis is a core field of study which all mathematics students encounter. At the undergraduate level, students often struggle to learn advanced calculus concepts while also learning to engage in proof and to think formally. Further, learning graduate-level real analysis may involve substantial cognitive abstractions depending on the content that undergraduate analysis courses cover. In an effort to study how students learn core ideas in real analysis from their understandings of advanced calculus, I conducted a paired teaching experiment in which students reinvented the definition of a general metric. Starting with exposure only to the absolute value metric, the students generalized notions of distance and convergence into more abstract spaces such as vector, sequence and function spaces. In these spaces, the students engaged in a variety of generalizing activities as understandings of general distance were built up from the structure of the absolute value metric on $\mathbb{R}$, as well as the Euclidean metric on $\mathbb{R}^2$. I will discuss the students' generalizing activity in various spaces, as well as the nuances of characterizing generalization from understandings that are formal in nature. (Received February 05, 2018)