

**Meeting:** 1003, Atlanta, Georgia, MAA CP V1, MAA Session on Research on the Teaching and Learning of Undergraduate Mathematics, I

1003-V1-1630      **Jennifer Christian Smith\*** (jenn.smith@mail.utexas.edu), 1 University Station D5705, Math and Science Education, Austin, TX 78726. *The Development of a Community Concept of Proof.*

There is a general consensus in the mathematics education community that students must actively construct their own mathematical knowledge, and that participation in a learning community is a vital part of this process. Research has demonstrated that students at all levels respond positively to opportunities to participate in discourse about mathematics, and as a result construct more mature and robust mathematical knowledge. In a video study of an undergraduate number theory course being taught using the "modified Moore method", we observed the development of students' concepts of proof. The video data revealed a complex process of negotiation of the definition, form, and role of mathematical proof. The students' ideas drove the discussions, and the instructor facilitated the development of these conceptions in conscious and unconscious ways. The result was that the students' conceptions of proof at the end of the course were more mature than those typically reported for students in a first proof course. In particular, students valued spending long amounts of time on proofs, understanding and exploring statements to be proved prior to constructing an argument, using and generalizing from examples, and communicating formal proofs clearly and precisely. (Received October 05, 2004)