Why (other) mathematicians disagree with your definition of proof.

Dr. Jennifer Czocher

Abstract:

Because proving is regarded as central to mathematicians’ practice, there is a consensus among mathematics educators that proving should play a central role in all mathematics classrooms (Stylianides, Bieda, & Morselli, 2016). Instruction on proof should also be informed by mathematicians’ practice. To design and improve such instruction, educators require a definition of proof that is faithful to mathematical practice and relevant to pedagogical situations. Even though mathematics educators agree on these points, they surprisingly disagree about what criteria a justification needs to satisfy to be called a proof (Balacheff, 2008; Cirillo et al., 2015; Reid & Knipping, 2010). Perhaps more surprisingly, so do mathematicians! In this talk, I’ll discuss the results of two studies, one empirical and one theoretical, that explain why it is so difficult to define mathematical proof in a precise way that is both consistent with how mathematicians use it and able to be operationalized by educators who research and teach proving. I might even resolve the issue.

Dr. Jennifer Czocher received her Ph.D. from The Ohio State University in Mathematics Education in 2013. Her research interests include students’ mathematical thinking and cognition, research in undergraduate mathematics education (RUME), the impact of mathematical modeling tasks on students’ mathematical thinking, and how mathematical reasoning supports STEM education. She is currently studying how individuals learn to use mathematics as a representational system and the role teacher questioning may have in helping individuals coordinate their mathematical and non-mathematical knowledge.

Next Friday, January 26: Graduate Student Presentations