The Role of Teacher Preconceptions on Professional Development

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Abstract: Our preconceptions regarding the way the world works play a significant role in determining how we experience it. This is manifested in the classroom, where students’ preconceptions about school, mathematics, and the way mathematics is done in school play a significant role in determining their personal experiences. When formulating teacher professional development, however, teacher preconceptions are frequently deemphasized or ignored entirely. We will discuss one research study that highlights the important role that teacher preconceptions about the nature of mathematics and the way it is learned play in determining their experience in a professional development program. The study took place with in-service secondary teachers participating in an intensive summer professional development program that focused on mathematical content, practices and developing mathematical habits of mind. The data shows that teachers described their own learning experience in ways that varied according to their existing preconceptions about the mathematics learning process. Thus, the conceptions teachers already held about mathematical learning were important determinants of those aspects of the program that they identified as valuable, important, or useful. We will discuss implications of this result for the design and implementation of professional development programs.

Dr. Todd Abel is an Assistant Professor of Mathematics Education in the Department of Mathematical Sciences at Appalachian State University in Boone, NC. His research concerns teacher professional development and teacher learning. He is particularly interested in the ways teachers’ own learning experiences shape their expectations and beliefs about student learning and in helping teachers incorporate problem-solving and mathematical modeling into their classrooms. He loves helping students and teachers understand mathematics in new ways, and is currently learning about child development of numerosity and ordinal relationships as he teaches his one year old son how to count.