RESEARCH PROGRAM
Engaging elementary students in scientific practices: Understanding design principles, curriculum needs, and teacher supports

My research is driven by Jerome Bruner’s hypothesis that “any subject can be taught effectively in some intellectually honest form to any child at any stage of development.” This translates into three central commitments of my work: elementary students can explore complex content; they should be engaged in participating in practices for generating knowledge in the discipline; finally, understandings and practices must be meaningful for students in their current activity, rather than at a distant future point. I seek to understand new opportunities for elementary student learning, develop design principles for learning environments, and support change in teacher and district practices. I draw on a diverse range of research perspectives and methods, including those from the Learning Sciences, sociocultural studies of human activity, and studies of practicing scientists.

In one strand of research, I explore how building productive uncertainty into elementary science instruction allows students to engage more powerfully in the scientific practices that are the focus of recent research and policy efforts (e.g., the Next Generation Science Standards). The first of these studies was a multi-year design study that engaged third grade students in argumentation, modeling, and experimentation as they developed ecological understandings. Most recently, I worked with a district science director and a team of second grade teachers to analyze their science curriculum materials and test adaptations to the materials to increase uncertainty for students and seed new practices. In future work, I seek to understand how to develop elementary curriculum materials that use planned uncertainty provoke predictable, fruitful variability in student thinking and to prepare teachers to leverage this variability to guide the development of disciplinary practices and powerful content understandings.

A second strand of research concerns how to support teachers and schools to integrate content literacy and critical thinking skills into primary (K-2) instruction. Increasingly, science, social studies, and opportunities to develop skills such as collaboration or writing for an audience are squeezed out of the primary curriculum, particularly in schools that are under pressure to improve test scores. With colleagues at the University of Michigan and Michigan State University, and funding from the Lucas Education Research Foundation, I am examining the feasibility of developing a comprehensive first grade curriculum that integrates Common Core ELA/Literacy and Mathematics standards with science, social studies, and social emotional learning in project-based units and also makes explicit connections to skills that are addressed outside of projects. This work involves understanding existing project-based learning programs in first grade and negotiating problems of practice and feasible approaches with district and school-level stakeholders.
Biographical Sketch
Dr. Eve Manz is an Assistant Professor in Science Education at Boston University's School of Education. Her research focuses on supporting the development of disciplinary practices in elementary classrooms, particularly within science instruction. She has published in journals such as *The Journal of Research in Science Education, Review of Educational Research*, and *Cognition and Instruction*. Her writing on scientific practices has received several recent awards, including the Best Paper Award at the 2014 International Conference of the Learning Sciences and the 2016 AERA Review of Research Award. Her work is informed by her six years of experience as an elementary teacher and as director of curriculum at a Science and Engineering Museum. Publications related to her work can be solicited directly from Dr. Manz at eimanz@bu.edu.