# Symposium: Afterschool Strategies to Strengthen the STEM Pipeline in Grades 4-12

*Organizer/chair: Andrea Beesley, SRI International, andrea.beesley@sri.com*
*Discussant: Gemma Lenowitz, Overdeck Family Foundation, glenowitz@overdeck.org*

Over the next decade, the science, technology, engineering, and math (STEM) fields are projected to contribute 9 million jobs to the U.S. economy, representing about 7% of total U.S. employment (Vilorio, 2014). However, just over 1/3 of 8th graders nationwide (34 percent) and fewer than 1/4 of 12th graders (22 percent) scored proficient in science (NCES, 2015). Further, according to the most recent Program for International Student Assessment findings, the U.S. lags behind many other nations in science (OECD, 2016).

To help tackle this issue, success in elementary and secondary STEM learning experiences is particularly important in addressing STEM persistence. This symposium includes three papers examining different strategies for strengthening the STEM pipeline in grades 4-12 by leveraging afterschool programs. Youth underrepresented in STEM are often well-represented in afterschool programs, so these programs represent an opportunity to reach youth and build STEM interest in a relaxed, low-stress setting.

The first paper describes an afterschool program that is intended to connect math to real-world applications and to build math identity. The second paper details an afterschool science curriculum involving design-based learning and collaboration between day-school and afterschool education. The third study discusses an afterschool program in which students build robots and enter them in competitions. The studies addressed both academic and affective outcomes.

Combining these three papers into a symposium offers the opportunity to examine and compare impact studies of afterschool programs, which remain rare. Across all of these papers, authors will share program features, research design, and outcomes. They will also address challenges common to afterschool research, including variable dosage, high attrition, and concerns about treatment-control contrast.

The discussant, Gemma Lenowitz from the Overdeck Family Foundation, will draw upon her expertise in STEM and afterschool learning to provide comments on each paper and the symposium as a whole.