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Across the country, post-secondary institutions design courses to meet the needs of students that are underprepared for their mainstream sequence of mathematics courses. Although these courses may have innovative methods of delivery, they continue to lack in teacher professional development and cognitively-demanding curriculum. This session will discuss an NSF-funded research project that facilitates students' mathematical development in a non-credit-bearing developmental mathematics course, in concert with providing prospective mathematics teachers an opportunity to learn to teach for mathematical proficiency. The project team developed a developmental mathematics curriculum that attends to conceptual development, strategic competence, and adaptive reasoning (Kilpatrick, Swafford, and Findell, 2001). Quantitative data from pre- and post- measures indicate the developmental math students initially started behind their peers in comparable sections of the course, but caught up by the end of the semester. More importantly, students in the intervention experienced more success than their peers in future mathematics courses. Qualitative data from interviews sheds light on features of the intervention that developmental math students found useful for their mathematical futures. (Received September 06, 2014)