

ABSTRACT

Our proposed i3 project, *INSPIRE, Infusing Innovative STEM Practices Into Rigorous Education*, is a development grant under ***Absolute Priority 3: Improving STEM Education: Subpart (a)***. This project addresses the national need to develop an integrated K-12 STEM pipeline serving as a model for STEM course content and instructional redesign. Using problem-based learning (PBL) as the core of the curriculum redesign, project activities include objectives focused on: 1) Developing rigorous PBL curriculum units to support STEM course content connected across all subjects; 2) Designing STEM instructional practices that connect PBL course content to tech-enabled personalized learning strategies; 3) Creating a high-quality teacher development and support process to sustain innovative STEM course content and instructional practices; and 4) Amalgamating real-world student tethers with STEM course content and instructional practices. Expected outcomes include: increased student engagement and achievement in STEM, maintained pipeline participation, reduced achievement gaps, increased aspirations and preparedness in STEM careers, and improved educator skills to support STEM development. The model will be tested in Cabarrus County Schools, NC. Through quasi-experimental and randomized control trials, we will examine the effects of an integrated STEM pipeline tested over four years through a target population of 2,200 students at four schools. *INSPIRE* is unique as it provides early, continuous engagement starting in Kindergarten and channels students into integrated STEM magnet programs at both middle and high school levels and reduces selection bias and student interest factors by automatically placing low-income, minority students in elementary STEM magnet schools located in their neighborhood. Key partners include: NC Research Campus, UNC Charlotte, NASA, VIF International Education, World View, Howard Lee Institute, and NC STEM Learning Network.