

Abstract

Maricopa County Education Service Agency proposes Engineering STEM Identity (ESI) for an i3 Development grant in response to Absolute Priority 3, subpart (a). ESI aims to increase student persistence and likelihood to choose STEM careers by developing student STEM identity. ESI will use the theoretical frames of STEM Identity for reengineering course content and a STEM Professional Growth model to support teachers in the implementation of redesigned course content and instructional practices. ESI will achieve the following goals in 10 rural and urban LEAs:

Goal 1. By 2016, increase 2300 students' achievement and engagement by redesigning course content to develop student STEM identity.

Goal 2. By 2016, increase 32 teachers' effectiveness and confidence in implementing redesigned course content and instructional practices.

Redesigned STEM courses will engage students in scientific inquiry and engineering design through the Modeling curriculum. Students will design STEM solutions in Challenge Cohorts. Teachers and students will be supported by partner STEM Pro professionals in implementing engineering design through the Leading Challenge Cohorts. Further support for school administrators will be offered in School Leader Cohorts. The program will utilize interactive video technology to provide professional development support to teachers and ensure that rural students have the same experience as their urban counterparts. Curriculum will utilize an online platform through the private sector partnership with Learning Mate Solutions Inc.

ESI develops a novel approach to address the national STEM professional shortage. The project will create a prototypical process for developing student STEM Identity that will add to the development and advancement of theory, knowledge, and practices for K-12 STEM education.