TIES K-12: Teachers Integrating Engineering into Science K12

Abstract

TIES K-12: *Teachers Integrating Engineering into Science K12* is a phase II Maine Department of Education Math Science Partnership project.

Integrating the “new” discipline of engineering into high school science classrooms was the focus of the original SCITEC Network projects (SCITEC, SEDC, MMPET). This proposed Phase II TIES Project addresses the “missing link” in the previous projects; namely, the articulation of engineering and science practices in the K-12 system. For students to succeed in meeting the present Maine *Learning Results* and transition to the rigorous, soon-to-be-released common state standards in science that emphasize “science and engineering practices”, it is imperative that STEM learning begins in early grades and builds throughout the K-12 system.

To address this K-12 articulation need, the TIES project partners (Maine Mathematics and Science Alliance, University of Maine, Boston Museum of Science, and eight Maine schools districts (including two high need RSU 3 schools) have identified four major goals related to science and engineering practices in a STEM context: 1) increase K-12 teacher content knowledge, 2) improve K-12 teachers’ pedagogical content knowledge, 3) increase student achievement, and 4) increase teachers’ understanding of the connections between science and engineering within STEM disciplines. These goals will be met through a professional development and leadership approach that includes two major components: 1) development and support of STEM teacher leaders to initiate and sustain K-12 reform in their districts, and 2) implementation of an innovative professional development model in a K-12 “pilot district” using strategies that can be tested as a model for Maine’s Strategic Plan for STEM Education.