Deep investments, by the NSF and other agencies, have resulted in a wealth of effective instructional strategies (National Research Council, 2012; Singer, Nielsen, & Schweingruber, 2012), but widespread implementation of these strategies remains elusive. This is due in large part to the lack of a practical model of educational transformation and faculty development that is sensitive to faculty needs, and can be adapted to different institutional contexts. To address this gap, we seek funding for a multi-university project to implement and study an adaptation of a successful model of STEM education reform, with the ultimate goal of improving student learning and educational outcomes. Our objective is to test a model of achieving widespread adoption of empirically-validated instructional methods, and promote changes in the culture of teaching and learning.

Our model is derived from research on institutional change and quality improvement, and builds on a course transformation initiative (the Science Education Initiative, or SEI) that has been successful at two of the partner institutions. ***The core of the approach involves supporting "embedded expertise" within departments, centered on course transformation, to catalyze changes in teaching practices and culture.*** In