

Systemic Transformation of Education Through Evidence-Based Reforms (STEER)

STEER was funded through the National Science Foundation Improving Undergraduate STEM Education (NSF IUSE) for five years beginning in 2015. The project builds from extensive planning conducted over nearly two years, supported in part by an NSF WIDER grant (TSE@USF), which provided guidance and focused a vision on a systemic approach, changing the culture of STEM departments in a research-oriented university (Carnegie - RU/VH) to substantially increase the value assigned to use of effective, evidence-based teaching (EBT). The overall goal is to create a student-centered, encouraging, collaborative and supportive environment that responds to the specific needs of underrepresented groups enrolling at a research-oriented university (Carnegie – RU/VH) as freshmen and as students transferring from a community college.

The project bridges together a wide group of stakeholders in an effort of creating a new collaborative and interdisciplinary structure whose common denominator is improved STEM Education. It builds community links and promotes minority participation in STEM through a direct partnership with the Hillsborough Community College (HCC), a large Hispanic serving institution.

The efforts are led by a Transition Implementation Leadership Team (TILT) that is broadly representative of faculty, administrators, and staff. The expectation is increased retention and a greater number of graduates in the STEM fields that are well prepared for life, citizenship, and careers. Change strategies include:

- Creating a diverse Transition Implementation Leadership Team (TILT) to shepherd the project and partnering with HCC to improve STEM transfer student success
- Establishing interdisciplinary and departmental retreats that foster convergence in course design and adoption of EBT and support faculty development through ongoing activities
- Focusing on faculty teaching gateway courses but further expanding to all STEM faculty
- Revising and implementing university policies that enhance the value of teaching effectiveness
- Training of Graduate Teaching Assistants and Advisors to create a comprehensive student support program especially for underrepresented groups
- Establishing a cadre of peer advisors that bridge the university and the community college

The multi-pronged action plan is focused on implementing strategies that are STEM-student oriented and creating a culture of interdisciplinary collaboration that promotes the effective use of EBT and extracurricular support. Validation, testing, and efficiency assessment of change strategies will be performed as part of this endeavor. Some specific activities include:

- Faculty Learning Communities (FLCs)
- Workshops and events related to innovative and effective teaching and learning
- Individual consultations with faculty on enhancing classroom teaching and learning
- Interdisciplinary STEM faculty retreats to identify cross-curricular improvements and alignment
- Department retreats for faculty to adjust and align curriculum
- Graduate student institutes, lab training, and workshops
- STEM Hub, a website publicizing articles related to teaching in STEM
- STEM Institute, events and a website recognizing STEM scholars who excel in teaching

The results and outcomes of this project will be disseminated widely through free consulting services, appropriate professional journals and conference venues, regular university press releases, and websites. We will also analyze, interpret, and synthesize the results in formats understandable and useful for non-scientists to stimulate the policy formulation by local, state and federal agencies. We are confident that this program and the understanding of the key elements driving change it provides will become a context-adaptable model for other colleges and universities.