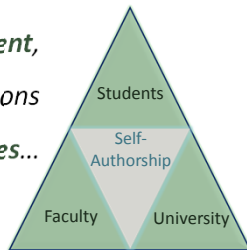


“STEM education will determine whether the United States will remain a leader among nations and whether we will be able to solve immense challenges in such areas as energy, health, environmental protection, and national security.”
 -- President’s Council of Advisors on Science and Technology, 2010

Goal: Increase STEM engagement by addressing critical junctures in higher education

Research and catalyze student, faculty and university transitions through critical junctures...



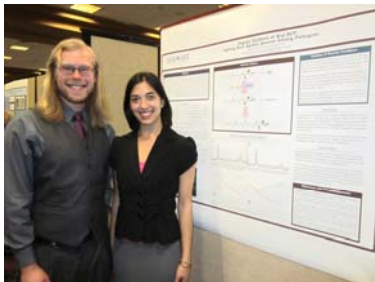
...utilizing the framework of self-authorship

Self-Authorship is a theoretical framework defined by Marcia Baxter-Magolda, Miami University

- The internal capacity to define one’s beliefs, identities and social relationships
- Learning Partnership Model
 1. Validate learners as knowers
 2. Situate learning in experiences
 3. Mutually construct meaning

Student Critical Junctures

How do I integrate learning & life?



Best Practices Implemented and/or Researched

- Learning Assistants in key STEM courses
- Enhanced undergraduate research programs
- One-stop-shop for STEM student support
- STEM specific orientation and visitation
- Integrated university-level foci on first-year retention and underrepresented students
- Extensive K-12 outreach and community links

Faculty Critical Junctures

How do I integrate teaching and research?

Best Practices Implemented and/or Researched

- STEM-specific teaching and learning symposia
- STEM Education Research Scholars and other faculty communities
- Pedagogy class for STEM grad students
- Support for STEM education research teams
- Service-Learning in STEM courses



University Critical Junctures

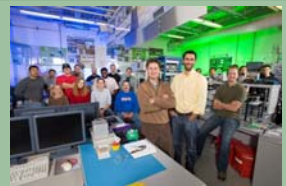
How do we maintain focus on undergraduate education while evolving as a research university?



Best Practices Implemented and/or Researched

- Tenure & Promotion and workload policies that value scholarly teaching and education research
- Research on STEM instructional practices, student engagement, self-authorship and institutional change
- STEM specific language in university strategic plan

STEM Station a catalyst, community and culture



STEM Station is a consortium of NSF STEM education initiatives and research in partnership with Student Affairs, Research and Economic Development, STEM colleges and departments, Center for Teaching and Learning, and others. NSF partner programs include:

- Course, Curriculum and Laboratory Improvement
- Experimental Program to Stimulate Competitive Research
- Geoscience Education
- Graduate STEM Fellows in K-12 Education
- Innovations in Engineering Education, Curriculum and Infrastructure (2 awards)
- Louis Stokes Alliance for Minority Participation
- Math Science Partnership – Start (MSP)
- Research Experiences for Undergraduates Sites (2 awards)
- Robert Noyce Teacher Scholarship Program
- Science Talent Expansion Program
- Scholarships in STEM
- Transforming Undergraduate Education in STEM

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