engage
Engaging Students in Engineering

Retention of Undergraduate Engineering Students: Extending Research Into Practice

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Funded by a grant from the National Science Foundation. Any opinions, findings, conclusions or recommendations expressed are those of the authors and do not necessarily reflect the views of the National Science Foundation.

What is ENGAGE?

- NSF GSE Extension Service Project
  - Modeled after the Cooperative Extension Services of Land Grant Universities.
  - Extending a successful product or strategy to a community who will benefit from the strategy.
- Opportunity to identify what research suggests improves retention of undergraduate engineering students, take it off the shelf and put it into action.
- 30 engineering schools in five years.

2010 ENGAGE Schools

- Kettering University
- Purdue University
- Rose-Hulman
- Stevens
- The University of Texas at Austin
- The Ohio State University
- University of Louisville
- University of Maryland
- University of South Carolina
- Virginia Tech

What is the goal of ENGAGE?

- The overarching goal of ENGAGE is to increase the capacity of engineering schools to retain undergraduate students by facilitating the implementation of three research-based strategies to improve student day-to-day classroom and educational experience.
- Focus: Improve retention of 1st and 2nd year engineering students, particularly women.
- ENGAGE strategies improve retention for ALL students.

How are ENGAGE teams supported?

- Strategy Implementation Workshop
- Mini-grants ($12,000)
- Technical Assistance (ENGAGE staff & consultants)
- www.EngageEngineering.org
- Evaluation

Creating a Culture for Scholarly and Systematic Innovation in Engineering Education (ASEE 2009)

Studies show it is neither the students' capabilities nor their potential for performing as an engineer that determines persistence. The most effective way to improve persistence is to ***improve the quality of the engineering learning experience.***

A primary culprit in the attrition of students from engineering is students' perception of a learning environment that is often ***unmotivating and unwelcoming.*** *The environment created by faculty affects students' performance and persistence.*

What strategies is ENGAGE extending?

- Improve Spatial Visualization Skills (among 1st year students with weak skills)
- Integrate Everyday Examples (in 1st and 2nd year engineering courses)
- Improve and increase level of Faculty-Student Interaction (among 1st & 2nd year engineering students)

PACE Supports and Informs ENGAGE Research-Based Strategies

Recommendations

Increase and improve faculty-student interaction

- Develop formal faculty-student mentoring programs (17 schools)
- Encourage students to ask for help – faculty approachability (11)
- Facilitate increased student engagement (through student-faculty interaction),particularly in the first two years (10)

Improve Curriculum

- Integrate everyday examples/relevant applications in the curriculum (14)

Discussion Question

How do you improve faculty-student interaction in an engineering school?

- Drivers?
- Challenges?
- Incentives?
- Solutions?

Discussion Question

How do you compel faculty to integrate everyday examples/relevant applications to teach engineering concepts?

- Drivers?
- Challenges?
- Incentives?
- Solutions?