STEM Student Enrollment and Engagement through Connections

SEEC – Years 1 & 2
Logic Model Planning, Partnerships, and Communications

Grant No. 0653236, July 2007–July 2012
Overall Grant Objectives

Increase College of Engineering graduates by approximately 120 per year. The percentage of women and minority graduates will approach 20% and 10%, respectively.
STEM Student Enrollment and Engagement through Connections

Logic Model Planning

01. Learning Village

Objectives:
To build a learning village that enhances student engagement and creates Iowa State connections for community college pre-engineering transfer students.

2009 Activities:
2. Enhance/expand Learning Community Model at DMACC and Iowa State.

02. Curriculum

Objectives:
To enhance first- and second-year learning experiences, with an emphasis on relevance, retention, rigor, student success and engagement, and classroom climate.

2009 Activities:
1. Review first-year curriculum and develop a pilot plan.
2. Update transfer programs of study with community colleges.
3. Identify distance education opportunities of interest to community college partners.
4. Introduce new “Engineer of 2020” student development modules through learning communities.

03. Advising

Objectives:
To develop and enhance academic advising and mentoring programs for pre-college, community college, and university students.

2009 Activities:
1. Develop a data system which informs program development toward pathways of success in engineering.
2. Develop and implement communications and transfer advising materials for community college audiences.
3. Provide professional development to community college pre-engineering advisors and faculty.
4. Develop and implement a mentoring and transfer intervention program.

04. Networking

Objectives:
To establish a recruiting and outreach network across Iowa and with alumni using ISU Extension, DMACC, and involving parents and teachers; to tap into diverse communities of students; and to improve the awareness and understanding of engineering among those who influence student choices.

2009 Activities:
1. Conduct needs assessment and asset mapping related to 9–14 educational and recruitment materials, develop materials based on Changing the Conversation recommendations, and disseminate broadly.
2. Develop and implement the Engineering Talent in Every County (E-TEC) Initiative with ISU Extension.
3. Develop outreach and recruitment plans for community college students, advisors, faculty, and parents.

05. Evaluation*

Objectives:
To evaluate project effectiveness and improve project activities.

2009 Activities:
1. Conduct project progress interviews with all PI’s and key personnel for year-end evaluation report.
2. Continue to develop and conduct assessment and evaluation activities for each objective team as identified in their logic models.
3. Create a SEEC database to track retention and enrollment of College of Engineering students with a focus on DMACC transfers and new freshmen.

* Led by Iowa State University Research Institute for Studies in Education (RISE)
Partnerships

Connecting organizations and people leverages knowledge and resources and promotes strategic, sustainable approaches to meet recruitment and retention goals.
STEM Student Enrollment and Engagement through Connections

- Community Colleges
  - OCCRP
  - Community College Summit
- ISU Extension
  - E-TEC
  - E-SET
  - 4-H
- University Outreach
  - IT Adventures
  - Science Bound
  - Upward Bound
- ISU Academic and Student Affairs
  - Project Lead The Way
  - IMSEP
  - APP
  - E-APP
  - PWSE
  - Learning Communities
  - Conferences
  - Iowa Math and Science Education Partnership
  - Engineering Admissions Partnership Program
  - Program for Women in Science and Engineering
  - Role Model Program

STEM Talent Expansion Program (STEP)
Partnerships

- 4 joint SEEC workshops sponsored between Iowa State and DMACC
- 140 community college students attended the Iowa State Engineering Career Fair
- 5 SEEC transfer peer mentors hired by E-APP Program
- Transfer Student Social Network developed
- 55 DMACC students took EGR100
- 70 new E-TEC scholarships available annually
- 24 new E2020 scholarships available annually
- 2 E-TEC Summits conducted including over 100 Extension staff
- 3 recruitment lunches hosted for female STEM students
- 85% participation by incoming students in engineering learning communities
Communications

Sharing information and engaging stakeholders through various mediums paves the way for effective partnering and advancement of project goals.
STEM Student Enrollment and Engagement through Connections
Communications

- E-APP brochure
- E2020 Scholars Program with scholarship
- E-TEC Program with scholarship
- Facebook presence
- Advisory Board newsletter
- Recruitment brochure
- College of Engineering alumni newsletter
- College of Engineering newsletter

- Conference presentations and workshops
  - ASEE
  - NASPA
  - Iowa State’s PWSE Taking the Road Less Traveled Career Conference
  - E-TEC Summit
  - Iowa Community College Summit
  - 4-H Leadership Conference
- Reports mentioning SEEC
  - IMSEP
  - Iowa Board of Regents Annual Report on Student Retention and Graduation
Voices of the Project

“The Admissions Partnership Program was a really good experience. It helped make my transfer from DMACC to ISU a success. My advisors from both schools were a big help. They guided me to take only classes that would transfer, so I wasn’t wasting my time. I also took ENG 160 and ENG 170 through the dual-enrollment program, which was also a big help.”

Andrew Smith—Junior, Agricultural and Biosystems Engineering, DMACC Transfer, Peer Mentor for EGR 100
Voices of the Project

“Peer mentors help with the peer connection because they are examples of successful transfer students. They understand the struggles transfer students have and serve as another ‘bridge’ between ISU and DMACC. Peer mentors are a big key in making student connections. Each peer mentor is assigned several transfer students and they are required to interact weekly—usually this happens electronically. Being a peer mentor is a good leadership opportunity.”

Jacquelyn Baughman—Graduate Assistant and Doctoral Student, Agricultural and Biosystems Engineering, EGR 100 Instructor
Voices of the Project

“The E-APP program is a great idea for community college students who want to be engineers. It makes them think longer-term and gets them prepared to transfer to ISU. It gives the students an opportunity to have advisors on both campuses who can guide the students to take the ‘right’ classes so they don’t waste time or money. Additionally, the cross-enrollment program allows students to get their feet on the ISU campus and interact with ISU professors and students.”

Sue Ziegenbusch—Academic Advisor, Agricultural and Biosystems Engineering
Voices of the Project

“I speak to students in EGR 100 about the E-APP program, Career Fair, course sequence and other services that are available to pre-engineering students. I help students schedule appointments with ISU advisors on the DMACC campus so they can better plan their transfer sequence. In general, I work with faculty and staff at both DMACC and ISU to help better connect DMACC pre-engineering students to ISU.”

Ahmed Onwona-Agyeman—SEEC Advising Contact, DMACC
# SEEC Team

## Principal Investigators
- Diane Rover
- Harry McMaken

## Co-principal Investigators
- Monica Bruning
- Frankie Santos Laanan
- Steven Mickelson
- Mack Shelley

## Senior Personnel
- R.M. Cooper
- Mary Darrow
- Mary Goodwin
- Mani Mina
- Derrick Rollins
- Loren Zachary
- Karen Zunkel

## Team Members
- Ahmed Agyeman
- Doug Beck
- Paul Castleberry
- Lora Leigh Chrystal
- Laura Doering
- Randy Gabriel
- Jennifer Garrett
- Doug Gruenewald
- Carol Heaverlo
- Ann Howsare
- Randall Jedele
- Michael Lentsch
- Randy Mead
- Ted Millen
- Les Pearey

## Other Personnel
- Sokish Sands
- Kevin Saunders
- Randy Smith
- Jay Staker
- Vicky Thorland-Oster
- Gloria Hill
### SEEC Advisory Boards

#### ISU Institutional Advisory Board
**Chair:** Elizabeth Hoffman  
Sandra Gahn  
Doug Gruenewald  
Connie Hargrave  
Thomas Hill  
Mary Holz-Clause  
Gary Mirka

#### DMACC Institutional Advisory Board
**Chair:** Robert Denson  
Kim Linduska  
Randy Mead  
Mark Steffen  
James Stick  
Frank Trumpey  
David VanderLinden  
Laurie Wolf

#### External Advisory Board
**Chair:** James Melsa  
Kimberly Douglas-Mankin  
Robert Driggs  
Ken Maguire  
Leigh Hagensn Thompson
For more information, visit

www.eng.iastate.edu/seec
Common Goals: SEEC and ISU Extension
• 70% Engr workforce in Iowa retiring
Networking & Extension & E-TEC

- Grass roots, collaborative effort
- Builds on and enhances what’s working
- Facilitates connections, professional development, and resource sharing

1. Pathways – 4-H, E-SET to STEM post-secondary
2. E-TEC – Awareness & Recruitment
3. Scholarships – “First generation” engineer and others
Step One: Needs Analysis

Acquire Information? Adobe Connects (86%)

Most helpful information?
- Role Models/Alumni connections (44%)
- Career Awareness, Info for parents, campus visits, FA & Scholarships (30%)

Challenges?
- Not equip to lead in engineering awareness 78%
- Staff support (61%); scheduling (56%); Distance 44%
About the E-TEC Scholarship

Iowa State University Extension and the College of Engineering sponsor a new scholarship program.

The E-TEC scholarship is a one-time $500 scholarship to be used at Iowa State University College of Engineering. Approximately 70 high school seniors and transfer students from across Iowa will receive the award each year. Ideally, recipients will represent all counties and community colleges in Iowa.

The E-TEC (Engineering Talent in Every County) Scholarship Program at Iowa State University focuses on improving engineering career awareness statewide by leveraging existing networks and programs to increase the number of rural, urban, and underrepresented (ethnic minority and female) students who study and graduate in engineering at Iowa State. The National Science Foundation-sponsored E-TEC scholarship and career exploration initiative is a partnership between Iowa State’s College of Engineering and alumni ISU Extension network, and those who work with youth and community college students daily. The $500 one-time scholarship is offered to first-year and transfer students from Iowa who have demonstrated academic potential. Students who aspire to be the first-generation engineer in their family are encouraged to apply.
Discover Engineering

Grades 9–14 Resources

At Iowa State

- Engineering Programs Offered at Iowa State
- Iowa State Programs for Youth
- ISU Extension's Science, Engineering, and Technology (E-SET)
- ISU Extension's I SPY... Iowa State Programs and Activities for Youth Pre K-12
- IT Adventures
- Minds of Tomorrow
- Program for Women in Science and Engineering (PWSE)
- Project Lead the Way

Engineering Activities

- Discovery Channel has interesting shows with engineering themes.
- Design Squad
- Engineering for Artists uses mostly light engineering and programming light shows to make surreal patterns and images.
- Junior Engineering Technical Society (JETS)
- Cath's Corner: Brain teasers. This is a page of fun brain teasers to get your mind working; you might have seen some of these before. Enjoy!

Thinking About Your Future

- ASCE Bookstore
- Discover Engineering
- Engineers Week (Meet the Engineers)