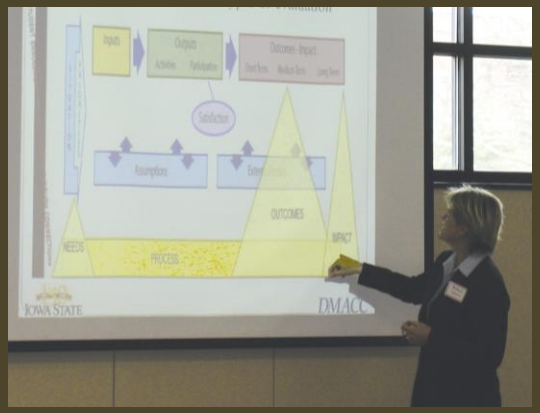
IOWA STATE UNIVERSITY

DMACC
DES MOINES AREA COMMUNITY COLLEGE

NATIONAL SCIENCE FOUNDATION
STEM Talent Expansion Program (STEP)

STEM Student Enrollment and Engagement through Connections



ISU-DMACC External Advisory Board

December 16, 2009

Grant No. 0653236, July 2007–July 2012

Agenda

Project, team and board introductions

Overview of the project

- Project objectives and logic model planning
- Enrollment data
- Project accomplishments and highlights

Board perspectives, expertise and input in relation to project areas

- Questions
- Discussion
- Feedback and recommendations

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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 Trumpy
David VanderLinden
Laurie Wolf

External Advisory Board
Chair: James Melsa
Kimberly Douglas-Mankin
Robert Driggs
Leigh Hagenson Thompson

SEEC Team

Principal Investigators
Diane Rover
Harry McMaken

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

Senior Personnel
Robyn Cooper
Mary Darrow
Mary Goodwin
Mani Mina
Derrick Rollins
Loren Zachary
Karen Zunkel

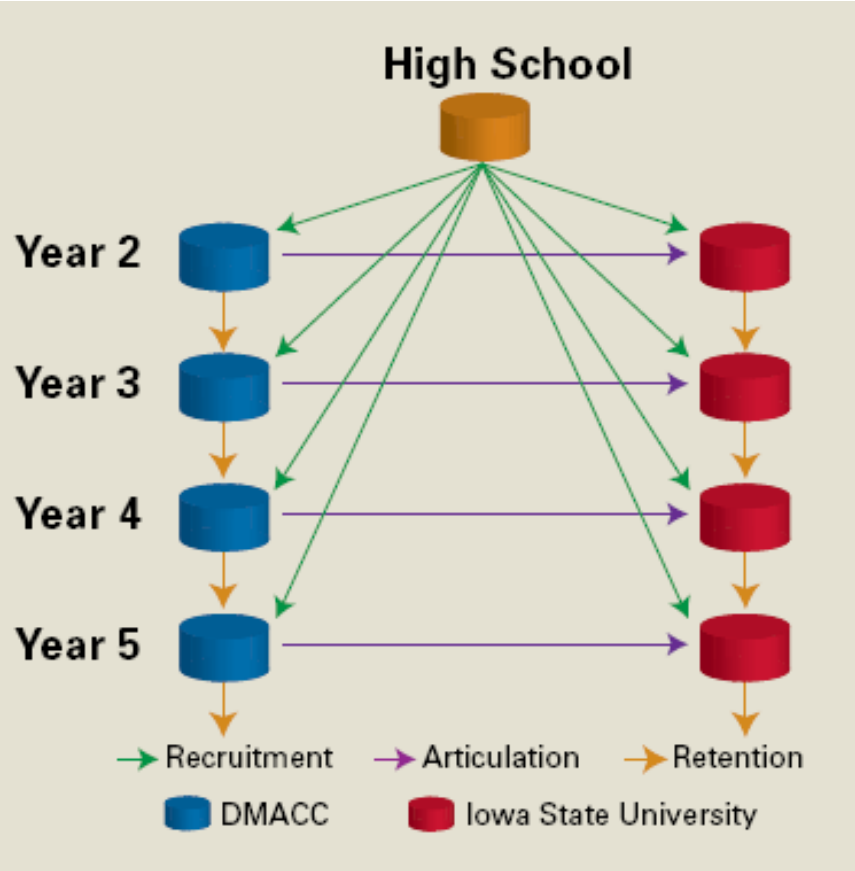
Team Members
Ahmed Agyeman
Doug Beck
Paul Castleberry
Lora Leigh Chrystal
Laura Doering
Randy Gabriel
Jennifer Garrett
Doug Gruenewald
Carol Heaverlo
Ann Howsare
Randall Jedele
Joel Johnson
Michael Lentsch
Randy Mead
Ted Millen
Les Pearey
Sokish Sands
Kevin Saunders
Randy Smith
Jay Staker
Vicky Thorland-Oster

Other Personnel
Gloria Hill

Overall Grant Objectives

Increase College of Engineering graduates to 900, by approximately 100 per year. The percentage of women and minority graduates will approach 20% and 10%, respectively.

Recruitment and Retention



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Logic Models and Planning

- Pictorial representation of the steps needed to think through an evaluation.
  - Provides a process for linking activities to outcomes (and in turn evaluation)
  - Focus on and be accountable for what matters – OUTCOMES
  - Provides common language
  - Promotes communications
- Guide to purposeful activity planning for each of the grant objectives.
- Becoming more prevalent in grant proposal submissions and grant evaluations.

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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:
1. Build Admissions Partnership Program (APP)-Engineering Foundation (E-APP).
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)*

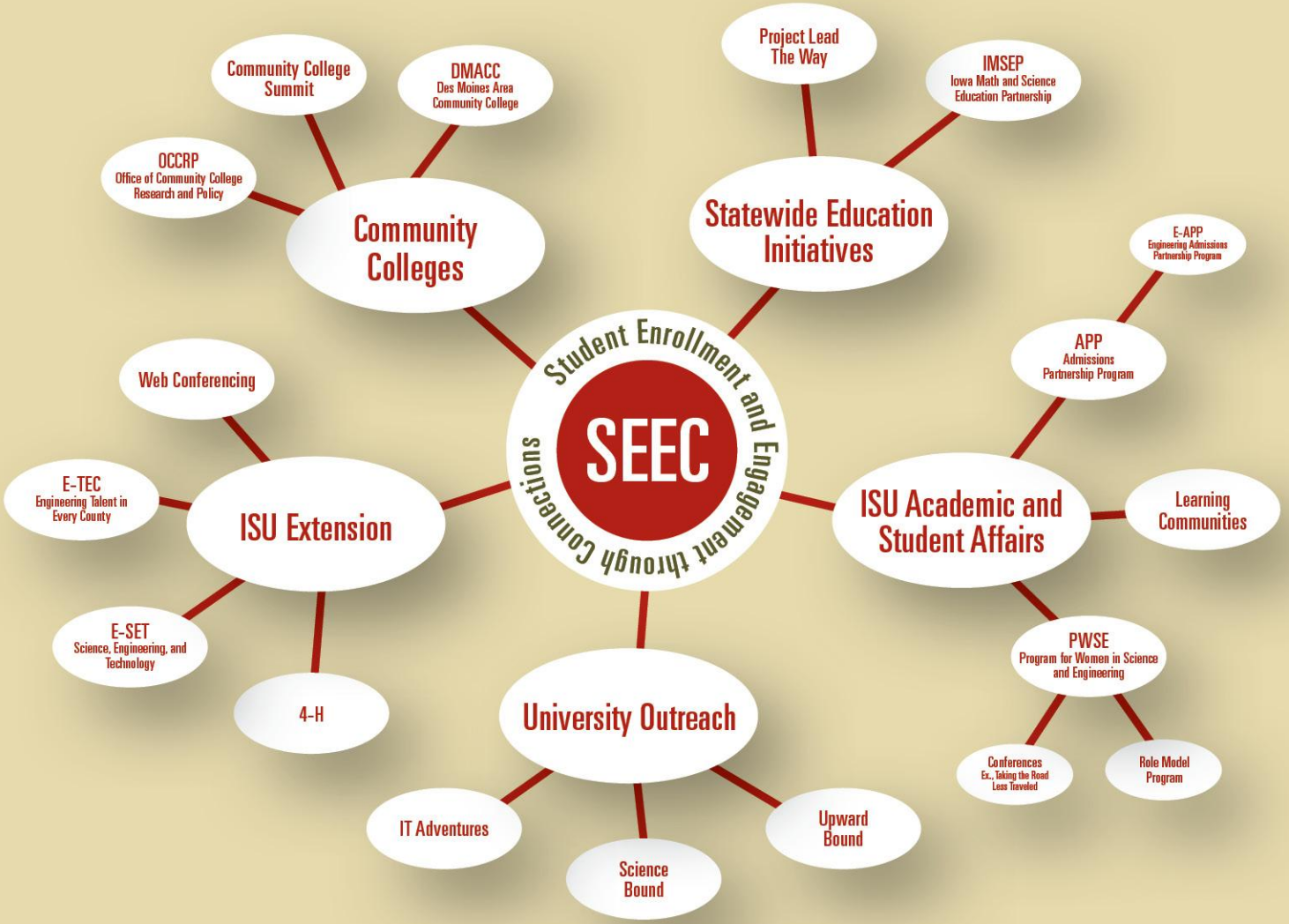
Data Summary

- Enrollment trends
  - Increasing new student enrollment, including transfer students
  - Highest enrollment in 25 years
  - Increasing enrollment in engineering from DMACC
- Slightly higher percentages of underrepresented students
- 85% participation in learning communities
  - Highest retention across ISU colleges from fall 2008 to 2009 of 88.5%, with 76.4% remaining in COE
  - Opportunity to improve retention rates for first, second and third years in college and in departments
  - Need to improve retention rates for transfer students

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



Partnerships

- 5 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.

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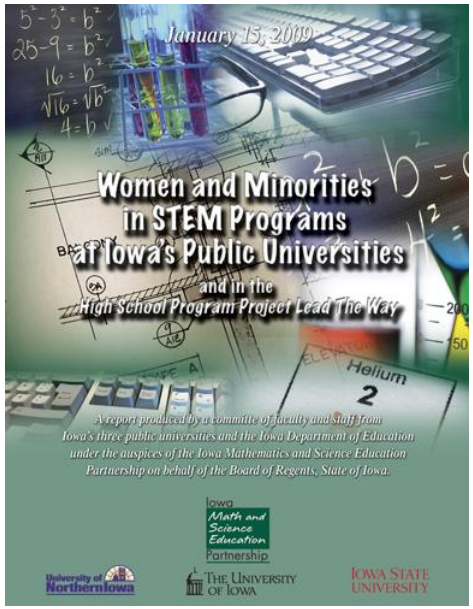

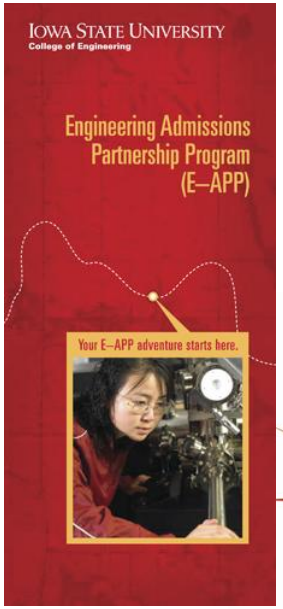

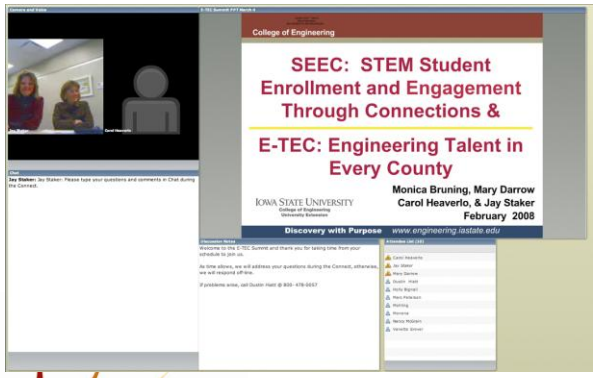

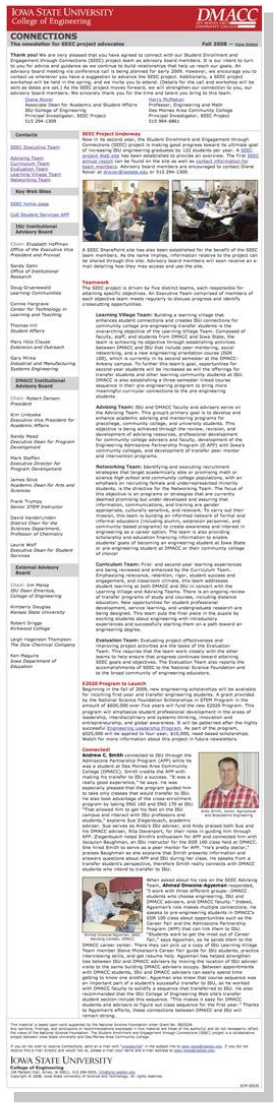

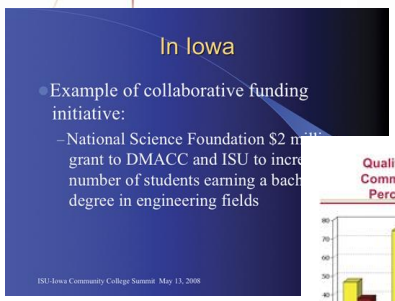

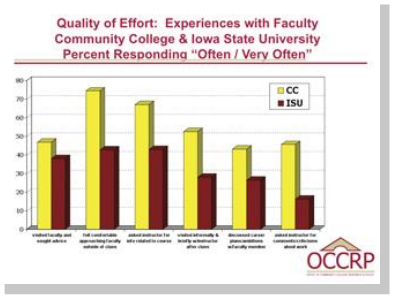

Communications

- 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

Diversity

Broadening participation in and promoting a broader understanding of engineering are necessary to achieve project outcomes.

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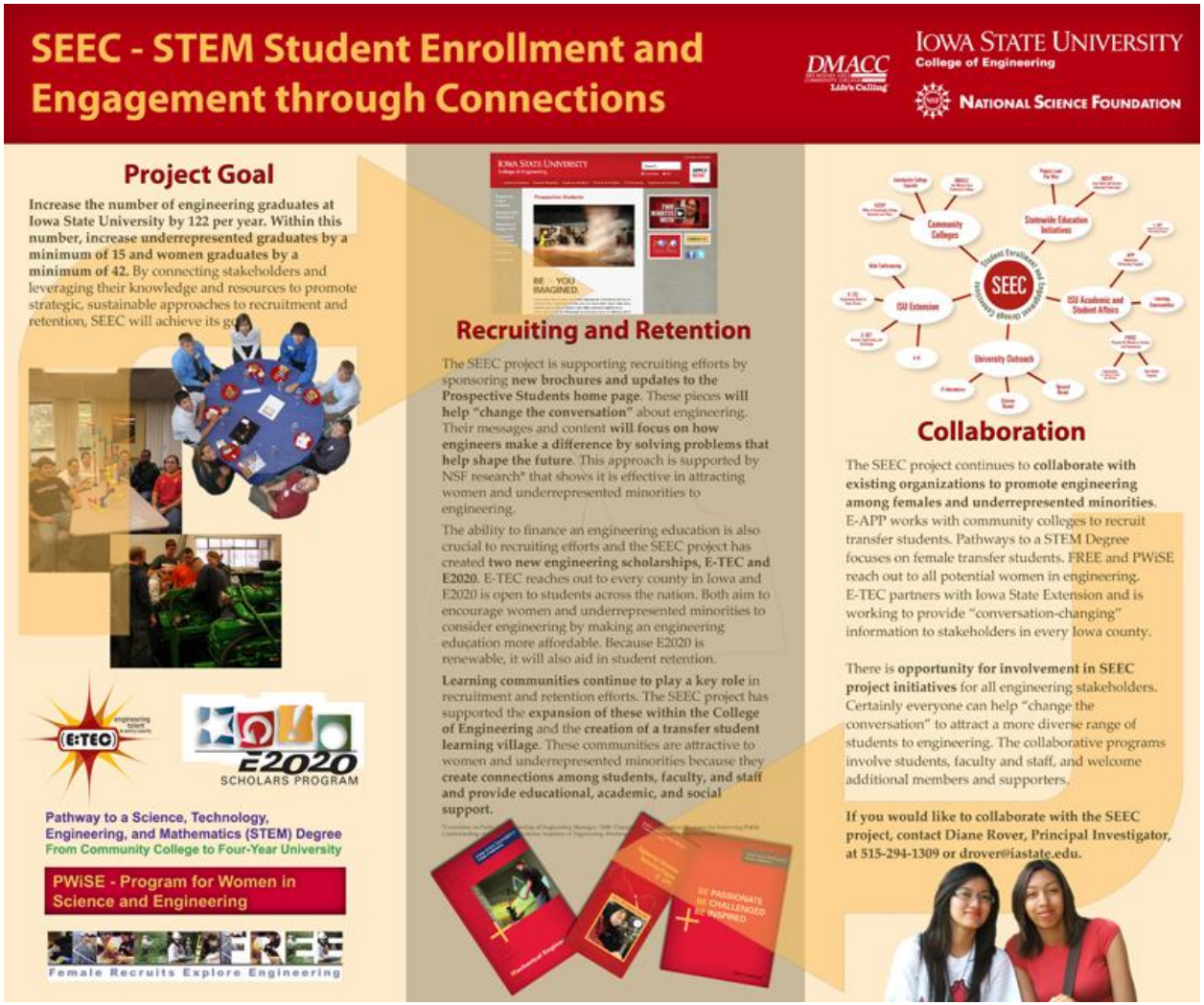
Diversity



SEEC - STEM Student Enrollment and Engagement through Connections

DMACC Life's Calling
IOWA STATE UNIVERSITY College of Engineering
NATIONAL SCIENCE FOUNDATION

Project Goal

Increase the number of engineering graduates at Iowa State University by 122 per year. Within this number, increase underrepresented graduates by a minimum of 15 and women graduates by a minimum of 42. By connecting stakeholders and leveraging their knowledge and resources to promote strategic, sustainable approaches to recruitment and retention, SEEC will achieve its go

E-TEC

E2020 SCHOLARS PROGRAM

Pathway to a Science, Technology, Engineering, and Mathematics (STEM) Degree
From Community College to Four-Year University

PWiSE - Program for Women in Science and Engineering

FREE
Female Recruits Explore Engineering

Recruiting and Retention

The SEEC project is supporting recruiting efforts by sponsoring **new brochures and updates to the Prospective Students home page**. These pieces **will help "change the conversation"** about engineering. Their messages and content **will focus on how engineers make a difference by solving problems that help shape the future**. This approach is supported by NSF research* that shows it is effective in attracting women and underrepresented minorities to engineering.

The ability to finance an engineering education is also crucial to recruiting efforts and the SEEC project has created **two new engineering scholarships, E-TEC and E2020**. E-TEC reaches out to every county in Iowa and E2020 is open to students across the nation. Both aim to encourage women and underrepresented minorities to consider engineering by making an engineering education more affordable. Because E2020 is renewable, it will also aid in student retention.

Learning communities continue to play a key role in recruitment and retention efforts. The SEEC project has supported the **expansion of these within the College of Engineering** and the **creation of a transfer student learning village**. These communities are attractive to women and underrepresented minorities because they **create connections among students, faculty, and staff and provide educational, academic, and social support.**

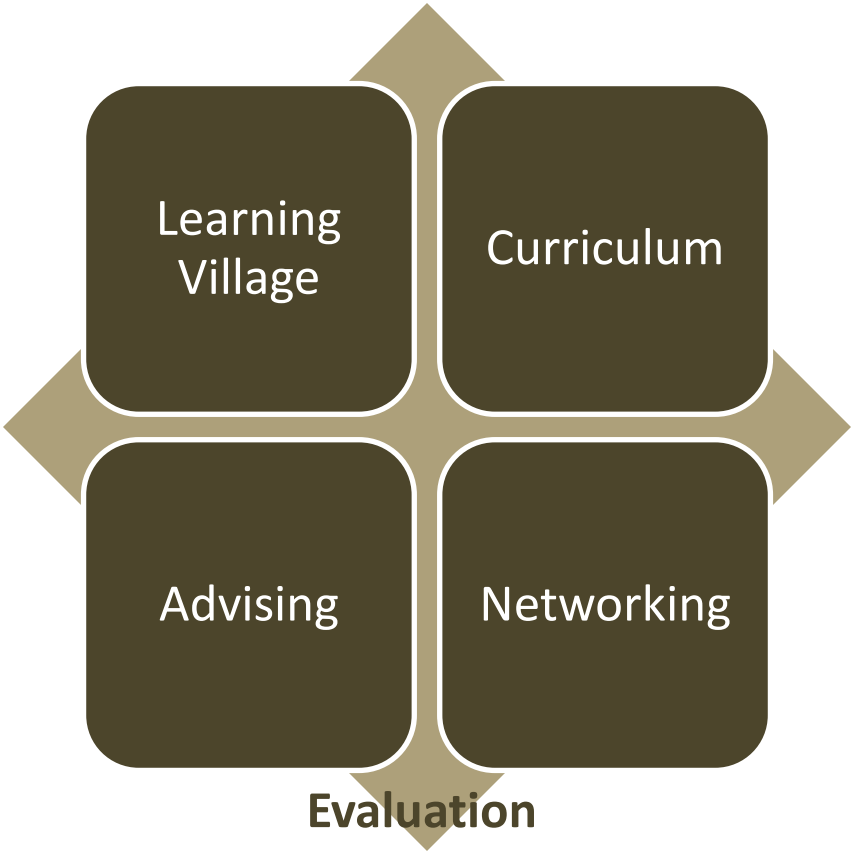
Collaboration

The SEEC project continues to **collaborate with existing organizations to promote engineering among females and underrepresented minorities.** E-APP works with community colleges to recruit transfer students. Pathways to a STEM Degree focuses on female transfer students. FREE and PWiSE reach out to all potential women in engineering. E-TEC partners with Iowa State Extension and is working to provide "conversation-changing" information to stakeholders in every Iowa county.

There is **opportunity for involvement in SEEC project initiatives** for all engineering stakeholders. Certainly everyone can help "change the conversation" to attract a more diverse range of students to engineering. The collaborative programs involve students, faculty and staff, and welcome additional members and supporters.

If you would like to collaborate with the SEEC project, contact Diane Rover, Principal Investigator, at 515-294-1309 or drover@iastate.edu.

Accomplishments & Highlights



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Questions (1-6)

1. How do our program activities, methods, and interventions compare with successful recruitment and retention programs you know of or have been involved with?
2. How might we work more closely with industry to improve our recruitment, retention, and graduation efforts?
3. What advice would you give our team on how to more successfully recruit and retain underrepresented (minority and women) students into pre-engineering at community colleges in the state of Iowa and, from there, to Iowa State? Your perspective may not be exclusive to the state of Iowa.
4. What are the biggest barriers, real or perceived, to preparing transfer students for engineering study and careers?
5. In your opinion, are SEEC project activities transferrable to other 2-year and 4-year institutions?
6. What do you envision as the future of engineering education in relation to partnerships between community colleges and universities? How is this affected by workforce needs?

Questions (7-10)

7. As the project title states, we are making and leveraging “connections” to achieve our goals. While the college has a long-time partnership with ISU Extension, we are specifically using the Extension network to introduce students and influential-others to engineering study. Are there other “networks” – community-based, professional, educational, corporate, or otherwise – that are natural “connectors”?
8. Central to many SEEC project activities are recent national studies by the NAE and others on “changing the conversation” and the public understanding of engineering. Also influential are effective resources such as the Engineer Your Life website and ASEE’s new eGFI website. Are you aware of other major studies or resources that would inform the project?
9. Based on what you have read and understood about our NSF SEEC project, what suggestions would you have on making the program even more successful?
10. Based on what you have read and understood about our NSF SEEC project, which outcomes might be the most challenging to achieve and sustain?

Next Steps

- NSF Third Year Review
- Advisory Board interaction

Thanks!