Increasing Participation of Women and Underrepresented Minorities in Engineering

One-Page Introduction

- Despite progress since 1982, we still have a long way to go!
- Did you know?
- Why Should This Data Alarm Us?
- What is the Foundation Coalition Doing?
- Success Stories
  - Improved Retention of Women and Underrepresented Minorities at Texas A&M University
  - Improved Retention of Women and Underrepresented Minorities at Arizona State University

Workshops

- Inclusive Learning Communities: Lessons from Foundation Coalition Experiences
- Retention of Undergraduate Students in Engineering

Related Links

American Indian Science & Engineering Society, http://www.aises.org/

National Society of Black Engineers, http://www.nsbe.org/

Society of Hispanic Professional Engineers, http://www.shpe.org/

Society of Women Engineers, http://www.swe.org/

Women in Engineering Program Advocates Network, http://wepan.engr.washington.edu/

Research Foundations for Improving the Representation of Women in the Information Technology Workforce: NSF sponsored a virtual workshop that explored research issues underlying the underrepresentation of women in Information Technology.

Achieving Gender Equity in Science Classrooms: A Guide for Faculty : In this handbook we describe the aspects of culture that researchers believe contribute to attrition from SME majors, and we give concrete suggestions for addressing each of these issues. If implemented, these changes may prevent very capable students from leaving the sciences and may also attract students initially uninvolved in the sciences. We hope that this handbook will help faculty members become more aware of the issues that affect women in science and will provide them with ideas on how to address these issues in their own classrooms.

Integrated Gender Equity and Reform (InGEAR): This is a compilation of curriculum materials that promote excellence and equity in mathematics, science, and engineering instruction. This web site is being developed as part of a multiuniversity project titled Integrating Gender Equity and Reform (InGEAR). To learn more about In GEAR, visit the In GEAR Home Page.

Goal

Increase the diversity of the engineering education learning environment by attracting a larger percentage of women and underrepresented ethnic minorities into the study of engineering and retaining them through graduation.

Introduction

A diverse student body can be defined as one that shows variety in its gender and racial or ethnic composition and resembles the population as a whole. One result of having a more representative student body is a better sense of community and hence a better learning environment for students.

Experience in a diverse student community makes available to students a wider variety of experiences as they interact with students whose gender and culture differ from their own. Seeing different ways to identify, define, assess, and solve problems provides a useful learning environment for students as they progress through the engineering curriculum. If a larger number and greater variety of perspectives are brought to bear in discovering, defining, and solving problems, solutions are more creative. Successfully addressing team maintenance and process problems in groups with diverse members helps students gain useful abilities on conflict resolution, abilities increasingly sought by industry. Today's graduates will be working in a fiercely competitive world market that is multicultural and globally oriented. Providing experiences in gender, cultural, or ethnic diversity will directly benefit our students, who are and will continue to be living in a diverse environment.

There are close relationships between this key component (link to key components page) and others. For example, pre college girls prefer cooperative learning strategies and the role of pedagogy in retention, especially as it relates to women and minorities, has been documented.

Foundation Coalition Publications

Shawna Fletcher, Dana C. Newell, Leyla D. Newton and Mary R. Anderson-Rowland
Women in Applied Science and Engineering Program

Mary McCartney and Mary Anderson-Rowland
Building a Pipeline of Future College Engineering Students

Maria A. Reyes, Mary R. Anderson-Rowland, and Mary Ann McCartney
Freshman Introductory Engineering Seminar Course: Coupled with Bridge Program Equals Academic Success and Retention

Shawna Fletcher, Mary R. Anderson-Rowland, and Stephanie Blaisdell
Industry Involvement in the Women in Applied Science and Engineering (WISE) Recruiting and Retention Programs
Karan Watson and Mary R. Anderson-Rowland
Interfaces Between the Foundation Coalition Integrated Curriculum and Programs for Honors, Minority, Women, and Transfer Students

Mary McCartney, Maria Reyes, Mary Anderson-Rowland
Internal and External Challenges for Minority Engineering Programs

Mary Anderson-Rowland, Maria Reyes, Mary Ann McCartney
MEP Summer Bridge Program: Mathematics Assessment Strategies

Stephanie Blaisdell, Angela Middleton, and Mary Anderson-Rowland
Re-engineering Engineering Education to Retain Women

Mary Aleta White, Stephanie Blaisdell, and Mary R. Anderson-Rowland
Recruiting Women into Engineering Graduate Programs

Stephanie L. Blaisdell, Rebecca J. Dozier, and Mary R. Anderson-Rowland
Teaching and Learning in an Era of Equality: An Engineering Program for Middle School Girls

Mary White, Stephanie Blaisdell, Mary Anderson-Rowland
Women in Engineering Scholars Program

Stephanie Blaisdell, Russell Jones, and Constantine Andreyev
An Interactive CD ROM to Sensitize Engineering Students to Diversity Issues

Stephanie Blaisdell
Predictors of Women's Entry into Engineering: Why Academic Preparation is Not Sufficient

Stephanie L. Blaisdell, Rebecca J. Dozier, and Mary R. Anderson-Rowland
Teaching and Learning in an Era of Equality: An Engineering Program for Middle School Girls

Mary White, Stephanie Blaisdell, Mary Anderson-Rowland
Women in Engineering Scholars Program

James M. Graham, Rita Caso and Jeanne Rierson
The Effect of the Texas A&M University System AMP on the Success of Minority Undergraduates in Engineering: A Multiple-Outcome Analysis

Karen Frair, Karen Watson
The NSF Foundation Coalition: Curriculum Change and Underrepresented Groups Antonio Garcia, Gary Keller, Albert McHenry, Fred Begay
Enhancing Underrepresented Student Opportunities Through Faculty Mentoring and Peer Interactions

References for Further Information

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5. Conner, Daryl R., Managing at the Speed of Change: How Resilient Managers Succeed and Prosper Where Others Fail, New York: Villard Books, 1995.

6. Hamel, Gary and C.K. Prahalad, Competing for the Future: Breakthrough Strategies for Seizing Control of Your Industry and Creating the Markets of Tomorrow, Boston, Massachusetts: Harvard Business School Press, 1994.

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