Workshop on Engineering Societies’ Activities in Promoting Diversity and Inclusion

June 4, 2018
National Academy of Engineering
University of Cincinnati
Teri Reed, Immediate Past President
WEPAN History

• Founded in 1990
• Incorporated in Washington, D.C. in 1991
• Brainchild of Jane Daniels, Susan Metz, and Suzanne Brainard
• Excellent reputation based on:
  – successful programs and initiatives
  – relevant knowledge base
  – widespread network of expertise

WEPAN’s STRATEGIC PLAN

Core Purpose:
To propel higher education to increase the number & advance the prominence of diverse communities of women in engineering

Envisioned Future:
50/50 by 2050

Core Values:
Knowledge ~ Collaboration
Diversity ~ Leadership
Culture eats strategy for breakfast.
- Peter Drucker
Change Model: Four Frames for Creating Inclusive Cultures

Frame 1: Equip the URG Member (Underrepresented Group)
Minimize differences in experience and knowledge so that students can compete as “equals.” Focus is on the individual.

Frame 2: Create Equal Opportunity
Focuses on eliminating barriers that are biased against URG member and impede advancement. Interventions tend to be policy-based.

Frame 3: Value Difference
Focuses on valuing difference rather than eliminating difference. Places equity within a broad diversity perspective. Diversity seen as an important contributor to innovation and performance.

Frame 4: Re-Vision Engineering Culture
Focuses on underlying systemic factors that lead to inequity. Interventions change the culture by addressing underlying assumptions, norms, and practices.

Source: Simmons Center for Gender in Organizations
Adapted to engineering in Holloway, 2014
In the spirit of the four frames, the following shorthand is offered as guides to the literature:

- **Equip** the student
  - Classroom Pedagogies
  - Research Experiences
- **Enforce** policy and law
  - Look Critically at Policy and Practice
- **Embrace** difference
  - Curriculum Re-design
  - Rethinking Faculty Hiring and Leadership
- **Evolve** the organizational culture
  - Not just Implicit Bias and Stereotype Threat
  - Whole campus change – Meyerhoff Fellows Program (UMBC)
  - Men as Advocates
Grants Contributing to Research Based Promising Practices

TECAID
Transforming Engineering Culture To Advance Inclusion And Diversity

WEPAN
Women in Engineering ProActive Network

Purdue Engineering

CORPS
NSF Innovation Corps

ASEE
American Society for Engineering Education

I-Corps™ for Learning

Engineering Inclusive Teaching
Faculty Professional Development
POWERED BY WEPAN

NSF engage
Engaging Students in Engineering

WEPAN
Women in Engineering ProActive Network
Build ME Department leadership capacity to advance inclusion

- Workshops
- Virtual Learning Community
- Subject Matter Expert Consults
- Department Projects

Confidence & knowledge in change-making
Creating & implementing plans to address D&I
Knowledge & comfort with D&I concepts

Individuals & Departments Take Action
=>> Culture & Climate Change
Engineering Culture Transformation at the Departmental Level.

- TECAID Model
- Webinars
- Case Studies
Collaborative Network for Engineering and Computing Diversity (CoNECD)

- April 2018, 2019, 2020
- Marriott Crystal City
- First-ever engineering-focused diversity conference
  - ASEE Women In Engineering Division
  - ASEE Minorities in Engineering Division
  - NAMEPA
  - WEPAN
Male Advocates and Allies

- This interactive workshop encourages and equips men to serve as effective allies for gender equity in STEM settings. Participants have opportunities to learn, ask questions, and practice skills through scenario-based exercises. The Men Allies for Gender Equity workshop utilizes a men-only format, which helps promote candid discussions and safe conversation spaces for the target male audience.

- This workshop will
  - highlight data on the recruitment, retention, and advancement of women as well as the importance of institutional climate;
  - provide an overview of recent literature that helps explain why and how gender inequity occurs; and
  - introduce and develop concepts, vocabulary, actions and practical skills to promote gender equity.
Sharing of Promising Practices and Artifacts
Interviewing Deans, Department Heads, etc.

Example Questions for Meetings with Head and Dean Candidates in Engineering to Discuss Recruitment, Retention and Climate for Women in Engineering.

Encourage candidate to give specific examples of what they have done to inform themselves, to address problems, and to be supportive of diversity initiatives especially as they relate to women. Have they been proactive? Will they do something in the future? Do they have the courage to address poor behavior and inequities? Are they capable or recognizing problems? Do they have the courage to implement diversity initiatives? Are they capable of creating a welcoming environment? Overall which would you pick: Is this person going to make the School/College a better place for women students, staff and faculty? (1) NO WAY (2) PROBABLY NOT (3) MAYBE (4) DEFINITELY YES

Kick Off Question (2 mins)

1. Identify the women that you interact with at work and describe their jobs. [How many are junior faculty, how many are senior faculty. Are junior faculty getting promoted? Retention? What about the demographics of the upper administration in your college and your university. Numbers of female vs. males students.]

Issues and Awareness (8 mins)

2. Describe what you think the climate is like for women and minorities in your school (faculty, staff, graduate students, undergraduate students). [Could mention the role of “micro-aggressions” in affecting the climate for women. See if they understand “death by 1000 cuts” and the lack of “micro-positives” to offset the effect of the “micro-negatives”.]

3. What do you think are the top three issues that women faculty in engineering have to deal with, that are different to issues faced by their male colleagues?

4. What do you perceive are the biggest problems impeding progress towards the goal of having an engineering faculty and student population that is as diverse as the general population?

5. What have you done to inform yourself of the potential impact of your own and other people’s biases (intentional and/or unintentional) on the information you are using to make decisions? [E.g., Gender bias in teaching evaluations which adversely affects women’s evaluations. Similarly in evaluations of qualifications of people pre-interviews and paper reviews.]

Recruitment and Retention (8 mins)

6. How do you think that your own experiences impact the way that you work with and evaluate your female colleagues?

7. What are the strategies at your current institution for hiring and recruiting people from under-represented groups and have the
Thank You!

WEPAN
2995 55th St. #20083
Boulder, CO 80308
info@wepan.org
(720) 943-4587

Teri Reed, WEPAN Immediate Past President
Teri.reed@uc.edu
**Goal:** Build mechanical engineering department leadership capacity to advance inclusion. Included:

1. Workshops
2. Monthly Virtual Learning Community
3. Interactions/Clinicing with Subject Matter Experts
4. Department Projects

- October 2014 – September 2018
- Supplement awarded 8/2016
  - Expand dissemination & promotion
  - Develop materials to scale project
- WEPAN’s ED has functioned as PI from 10/2014 – 01/2017.
- WEPAN CSO = PI; Co-Pis = D. Matt, G. Leibnitz, A. Lawrey (ASME), K. Kokini (Purdue)
  - WEPAN performs grant administration
**Goal:** Determine feasibility of a “National Center for Inclusion in Engineering Education” that would build upon the EIT Project. Activities included:

1. ~100 interviews with engineering educators
2. 2 in-person workshops and online learnings attended by 3 project personnel

- July 2016 – February 2017
- PI = D. Matt; Entrepreneurial Lead = G. Leibnitz; Mentor = J. Daniels
- Efforts performed through I-Corps L intended to inform WEPAN programs & initiatives
• **Goal:** Help engineering faculty learn/apply research-based, best practices for creating inclusive learning environments that support the persistence and success of all students, especially women and minority men.

  1. Live & on-demand webinars
  2. Action checklists and other resources

• NSF sponsored and NAPE partnership

• July 2012 – December 2016

• D. Matt = PI; Project Director & Co-PI: G. Leibnitz

• EIT resources being moved from wskc.org to wepan.org. All webinar recordings remain free but action checklists & other resources behind member wall
Improving Instruction and Mentoring to Retain Undergraduate Women

- **Goal:** Increase capacity of engineering schools to retain undergraduates by implementing 3 strategies:
  1. Use *Everyday Examples in Engineering*
  2. Improve *Spatial Visualization Skills*
  3. Increase effective *Faculty-Student Interaction*

- WEPAN = Subawardee
  PI = Stevens Institute of Technology
- April 2008 – March 2017
- Has been regular “sponsor” of WEPAN CLFs (~$1500/year). Secured through 2018.
1. SETTING THE STAGE

Unwelcoming and unmotivating culture is a factor in engineering education and workforce attrition, especially for underrepresented group members.

Engineering educators are:
- Critical learning-culture change agents;
- Rarely taught root causes of underrepresentation;
- Desire support in translating research-to-practice.

2. EIT GOAL

To provide engineering educators with evidence-based strategies to create inclusive learning environments.

3. EIT STRATEGIES

- Involve Dissemination Partners from 12 Academic Institutions
- Produce "Live" and "on-demand" webinars in which social scientists distill research-based best practices for creating inclusive learning environments and master engineering educators share advice on how to translate research-to-practice.
- Provide complementary downloadable resources

4. EIT RESULTS

- Engineering Teaching Tips for Inclusive Student Success
- Small Changes in Teaching Make Positive Impact
- 97% High-Quality Webinars
- 98% Applicable to Faculty Work
- 95% Interest in Topic Increased
- Knowledge Increased (p<.001)

33 Countries
Want to know the latest, research-based, inclusive teaching practices? Too busy to sift through information yourself?

The Engineering Inclusive Teaching (EIT): Faculty Professional Development program can help! EIT helps busy engineering educators engage ALL students, especially diverse women and underrepresented minority men!

Join us in live or recorded webinars to:

- Learn from social scientists the latest research, and
- Discuss with master engineering educators tips and tactics to translate research to practice for crafting best-practice, inclusive classrooms!

Read the EIT project overview and access our downloadable resources.

Check out the Engineering Inclusive Teaching (EIT) Webinar Series
Diversity, Equity & Inclusion (DEI)
TECAID Outcomes

Knowledge and Use of DEI Concepts

Knowledge and Confidence in Leading DEI Change

Planning and Taking DEI Action