February 22, 2018 (12:30-1:30pm ET)

Transforming Engineering Culture to Advance Inclusion and Diversity (TECAID):
An Evidence-Based Approach & Model

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Webinar Overview

• Why engage in DEI-focused engineering department culture change? (2:20)
• What are useful resources, and what is the evidence that using these resources can help engineers to lead DEI department culture change? (12:12)
• How does one go about DEI-focused engineering department culture change? (15:00)
• Who has engaged in this change process? (28:15)

WHY Engage in DEI-Focused Department Change?

ASME Perspective

Aisha Kenya Lawrey, M.P.A. (TECAID Co-PI)
Director, Engineering Education
American Society of Mechanical Engineers (ASME)

Thomas Perry, P.E. (TECAID Co-PI)
Director, Engineering Education (ret., 2017)
American Society of Mechanical Engineers (ASME)

Tom’s Personal Context

The Digital Mechanical Engineer

The Changing Student-Talent Supply-Chain
Changing US Demographic

Public Schools in the United States Projected to Be Majority-Minority in 2014

Source: National Center for Educational Statistics, US Department of Education

Aisha's Personal Context

Richer and more extensive practice-based engineering experience for students

New balance of faculty research/industry practice skills in ME programs

Greater cultivation of collaborative inclusion, diversity, creativity, and innovation among students and faculty

Development of students' professional and communication skills to higher standards

Increased flexibility in ME Programs

ASME Engineering Education: Strategies

ASME Engineering Education: Specifics

Convene & Collaborate

Communicate

Advocate

• ABET Accreditation

• ~400 ME/MET Degree Programs Globally

• ASME Department Heads Community & Leadership Summits/Workshops

• Vision 2030 Advocacy

• Collaborative Research/Programs

• Awards, Fellowships

Diversity drives innovation. When we limit who can contribute, we in turn limit what problems we can solve.
Principles: Diversity & Inclusion

Approved by Board of Directors (June 12, 2017):

1) Our global professions require creativity and innovation, which are best achieved when persons with varied perspectives, experiences, and talents work toward a common goal.

2) Understanding and experiencing diversity and inclusion in higher education are critical to competitiveness, innovation, and our social and economic futures.

3) Further, we expect our accredited programs to support this vision.

Engineering Education

Undergraduate ME Enrollment: 8 Years

- Overall: 62%
- Men: 55%
- Women: 119%

Department Culture

Easy to observe, measure
Numbers, systems, processes, physical space

Hard to observe, measure, affect
Values, Hidden Assumptions, Norms, Unwritten Rules

Culture is Paramount

“Culture Eats Strategy for Breakfast.”

ASME Engineering Education
Key “Take-Away(s)"

- Diverse perspectives are critical for addressing the multidisciplinary, global problems that we face.
- ME is the largest U/G engineering discipline
- Women’s enrollment is growing at a faster rate than men’s (although women are still only 13% undergrads)
- Capitalize on women’s enrollment growth
- Focus on culture change strategies to recruit and retain women and role model faculty
- Strive for the 30% “tipping point”
- Culture change strategies used to support women’s engagement will be beneficial to all URRMs.
WHY Engage in DEI-Focused Department Change?  
WEPAN Perspective

Amy Freeman, Ph.D. (TECAID Co-PI)
President, Women In Engineering ProActive Network (WEPAN)
Chief Diversity Officer and Associate Provost, Tufts University

“What girl wouldn’t want to do this?”

One’s lived experience informs perception...

“You think you’re over it– and then you get a letter...”

Why the TECAID Model?

It is possible to raise consciousness, and change behaviors in a way that will encourage the growth of a diverse and inclusive scholarly community.
• Welcoming Environments
• Student Participation
• Research-based strategies
• Systems-level improvements

TECAID Changes the Culture
We change the culture when we change the daily individual experience where perceptions are formed.

The TECAID Model provides practical, research-based solutions that engage all members of a department in long-term, systemic cultural change.

Women in Engineering ProActive Network (WEPAN)

Key “Take-Away(s)”

• We change the culture when we change the daily individual experience where perceptions are formed.

• The TECAID Model provides practical, research-based solutions that engage all members of a department in long-term, systemic cultural change.

HOW to Effect DEI-Focused Department Change?

Gretal Leibnitz, Ph.D. (TECAID PI)
Research & Grants Consultant
Women in Engineering ProActive Network (WEPAN)

Diana Kardia, Ph.D.
(TECAID Organizational Change Consultant)
Founder and Partner, Kardia Group, LLC

Resources: Website

www.wepan.org/mpage/TECAID

Evidence Based TECAID Outcomes

↑ Knowledge and Use of Diversity, Equity and Inclusion (DEI) Concepts

↑ Confidence in Leadership Skills

↑ DEI Action

http://www.wepan.org/mpage/TECAID_Outcomes

Example: Increased Knowledge of Diversity Concepts

“Micro-Inequities” Awareness

BEFORE 59%  AFTER 96%

Example: Increased Knowledge of Diversity Concepts

“Micro-Inequities” Awareness Informs Interactions

BEFORE 36%  AFTER 69%
### Example: Increased Confidence

**AFTER**

- **>90%**
  - How to engage in productive change processes
  - Leadership skills
  - How to create organizational change

### Example: DEI Action Taken

**Within Last 6 Months**

- **100%**
  - DEI action taken (Participants taking no action dropped from 37% to 0%)

### Resources:

**TECAID Model & Graphic**

- [TECAID Model, Leading Engineering Department Culture Change in Diversity, Equity, and Inclusion](#)

### Chat: What’s Your Vision?

- Why does having a diverse, equitable, and inclusive engineering department culture matter to you?
“What does TECAID Mean for YOUR Work?”

Key “Take Away(s)”

- Teams & Time
- Education & Engagement
- Commitment & Customization
- Adaptation & Assessment
- Iterative & Inimitable
- Dynamic & Daring

Who has Engaged in this change process?

William (Bill) Predebon, (TECAID Participant)
Department Chair & Professor, Mechanical Engineering-Engineering Mechanics
Michigan Technological University

Bill’s Personal Context
What did TECAID work mean to your department and Faculty?

Teaming Learning Outcomes in ME at Michigan Tech

Implementing in the ME Practice Courses and the Sr. Capstone Design sequence:
1. Full engagement in the team
2. Team roles
3. Productive conflict
4. Analyze evidence
5. Identify each student’s strengths

Key “Take-Away(s)”
- Start at the top – has to be important to the chair for change to happen.
- Get a critical mass of stakeholders who believe in the effort.
- Faculty are busy: Indirectly educate faculty by developing the tools for faculty to teach the students inclusive approaches.
- Implement in stages.
- It is a long term endeavor—keep at it and don’t give up.

Who has Engaged in this change process?
Klod Kokini, (Co-PI)
Professor, Mechanical Engineering
(Formerly Associate Dean, College of Engineering)
Purdue University

Klod’s Personal Context

How can the office of a Dean be leveraged in support of Department DEI Culture Change?
Purdue Departmental DEI Change

Key “Take-Away(s)”

• Culture is traditionally defined by majority. Education of all, including the majority on DEI is critical for real change
• Institutional support, through Provost, Dean, Head is key to change
• It is important to build a community for change (inclusion) AND to increase underrepresented group members (diversity)
• It is a journey, not a destination: persistence is key

Questions? Comments?

www.wepan.org/mpage/TECAID

Gretal Leibnitz, Leibnitz@wepan.org (General TECAID Questions)
Amy Freeman, Amy.Freeman@tufts.edu (WEPAN Questions)
Aisha Lawrey, LawreyA@asme.org (ASME Education Questions)
Bill Predebon, wwpredeb@mtu.edu (TECAID “Dept. Chair” Questions)
Klod Kokini, kokini@purdue.edu (TECAID “Dean/faculty” Questions)
Diana Kardia, diana@kardiagroup.com (TECAID DEI & Organizational Change Questions)

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