Transforming Undergraduate Education in Engineering
Phase III: Voices on Women's Participation and Retention

June 12-13, 2015 | The W Seattle Hotel, Seattle, WA

Breakout Session I: Empirical Description of the State of Affairs

Equity vs. Equality

- No focus #'s – make good life choice?
- 3 levels diversity:
    - Numerical
    - Meaningful interaction

Critical mass? 35%?

- Change throughout pipe line
- How to systematically implement HS prep similar male/female
- Societal forces strong discourage women stem
- Environment Forces
- What characteristics of disciplines with parity and can we learn from it?
- Not just talk about "women"
    - White,
    - Women of color
    - Income (socio-economic status)
    - 1st generation
- Subversive – engage in engineering without calling it engineering
- Do teachers know what engineering is? (Good at math?)
- "Contextual mitigation factors"
- Look at women (Stem) who are successful
    - "Resilient"
- Introduce
    - Stereotype theist
    - Racism
    - "Critical consciousness"
    - Resilient strategies
- Tough to scale/Frame
- Teach all kids about – isms and strategies to deal with.

- Not all cultures operate same way…
- Support mechanisms? And willingness to use instant access, no deals, gratifies and "helicopter" parents denying them "grit" experience
- Resilience
    - NCO liberalism view
    - Critical consciousness
- Women not supporting other women? (Elite status,
- Internalization of – stereotypes
- Is there a harder model for engineering?
- "A whole new engineer"
    - (Colin College/ university of Illinois)
- Just in time Engineering
    - "Joy of Engineering" / Trust
- Global Challenges…
- No Departments / No tenure
- Integrate engineering in K-12 or aspects of "prob. Solving"
- How to change engineering
- How to change culture (change attitudes, …
- Change attitude by #'s?
- Persistent, not resilient
- "Put Together"
- Workplace (paper weakness? Research weakness?)
- Do we teach failure? (should we)
- Diversity is not misaligned w/ own self-interest, diversity correlates well w/ performance/ success/…
- Amazon – age, um, gender
- Industry – Incentive since fail as team
- Don't educate in silos holistic engineers
- Teaching " Teaming"
- Rubrics and transparency of process.
- Tremendous growth in # of women enrolling (77% over last 10 years)
- Grills preparation in M&S equal (if not better)
- Huge disparities exist (e.g. workplace retention)
- Do we prepare women to be successful in the current system or work to transform the system?
- Frame1
    - Strong societal forces
    - Study of Success
        - "Critical consciousness"
        - Healthy "resistance strategies"
- Frame 4
    - What fosters cultural change?

- o Gurinetal
    - Diversity
    - Numerical
    - Classroom
    - Meaningful
    - Interactions
    - Mitigates
    - Implicit Bias
  - o Critical Consciousness for all
  - o Redefine the EE model " A whole New Engineer"
- Answer: Do both – Disaggregate
- Redefining the system
  - o Faculty focus
    - Team "teaching"
  - o Lessons from Industry
    - "Diversity is not misaligned with self interest
    - Correlation: Diversity & Performance

Frame 3: Celebrating Difference