Implicit Bias and Talent, Hard Work, & Grit: How They Affect Diversity in STEM fields

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Overview

- The Problem – Inequalities in STEM fields
- The Cause – Factors such as Implicit Bias
- The Solution – Overcoming bias and how Talent, Hard Work and Grit can help

- Implicit Bias and Talent, Hard Work, and Grit
  - What are they?
  - How are they related?

- How do these topics relate to the purpose of PEERs?
  - How do they affect the field of engineering?
  - Why should engineers care?
What’s the Problem?
Disparities in Race

National Demographic
(for 18-24 year olds in the U.S.)

- White: 57.21%
- Asian or Pacific Islander: 2.54%
- Black or African American: 14.26%
- Hispanic or Latino: 20.06%
- American Indian or Alaska Native: 5.07%
- Other races: 0.86%

Enrolled Graduate Students in Engineering (2010)

- White: 64.24%
- Asian or Pacific Islander: 12.69%
- Black or African American: 6.85%
- Hispanic or Latino: 5.08%
- American Indian or Alaska Native: 0.40%
- Other races: 10.73%

All data from http://www.nsf.gov/statistics/wmpd/tables.cfm - collected 12/10/12
Disparities in Gender

**National Demographic**
(for 18-24 year olds in the U.S.)

- Female: 51%
- Male: 49%

**Enrolled Graduate Students in Engineering (2010)**

- Female: 23%
- Male: 77%

All data from http://www.nsf.gov/statistics/wmpd/tables.cfm - collected 12/10/12
What’s Causing It?
The Death Penalty

- White defendants – Black victims = 3% were given the death penalty
- Black defendants – Black victims = 1% were given the death penalty
- White defendants – White victims = 8% were given the death penalty
- Black defendants – White victims = 21% were given the death penalty

The research also showed that the more ‘prototypically’ African American the defendant was, meaning they had darker skin or a broader nose, the more likely they were to be sentenced to death for their crime.

The chapter goes on to say: “Ask American’s if they discriminate by race and the vast majority will tell you [honestly and in good faith], no.”
Implicit Bias
an unconscious preconception of individuals in various groups
Examples of Implicit Bias

- When men and women were asked to evaluate resumes, both men and women favored male resumes even though they were otherwise identical.

- When a blind test was performed when hiring musicians, more women musicians were hired as a result.

All examples from research done by Dovidio and Gaertner.
Implicit Bias in the Classroom

- A 2002 study examined the influence of the instructor’s sexual orientation on perceptions of the instructor’s credibility.

“My partner Jennifer and I...”

“My partner Jason and I...”
Results

Comparison in the Number of Comments for Heterosexual vs. Gay Instructor

Number of Comments from Students

<table>
<thead>
<tr>
<th></th>
<th>Positive Comments</th>
<th>Critical Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual Instructor</td>
<td>412</td>
<td>52</td>
</tr>
<tr>
<td>Gay Instructor</td>
<td>339</td>
<td>205</td>
</tr>
</tbody>
</table>
Results cont.

- 93% of the students would hire the straight instructor vs. 30% said they “might” hire the gay instructor
- 8% of students said they would “definitely” hire the gay instructor
- “One explanation for this discrepancy is that students’ anti-gay predispositions may have overridden their ability to make an accurate and fair assessment of the gay teacher’s competence based solely on their displeasure with his character.” (Russ, Simonds, Hunt 2002)
Repercussions

- Student’s claim that they learn more with instructors they consider highly credible (Russ, Simonds, Hunt 2002)
- Occupational hazard for instructors to “come out”

Possible Solutions

- Raise awareness of implicit bias
- Need to recognize implicit bias
  
  “…Unconscious beliefs, once they are brought to the fore, can be changed if the holder of the belief so desires.”
  (American Association of University Women 2010)

Talent, Hard Work, & Grit

Determination and strength of character leads to success and talent
The children that did the best had a growth mindset, believing that putting in long hours of study time will enable them to be successful in spelling bees.
Is there such a thing as innate talent?
Wayne Gretzky
Stephen Hawking
Jimi Hendrix
10,000 Hour Rule
10,000 Hours of Practice

Those identified as most gifted were also most practiced

Cumulative Hours of Practice

Age of Violinists

- Best
- Good
- Teachers
Without hard work there would be no talent like we know it.

Ask a composer, a doctor, or a sculpture how long it took them to hone their craft.
How do these two topics relate?

Hard work and grit can help overcome the negative impact of implicit bias.
Questions?
Thanks!