

Welcome to the Webinar on Engaging Girls in STEM Careers

3:00-4:00pm ET/12:00-1:00pm PT

Please check that this slide displays correctly in your browser (IE recommended).

If listening over the phone:

Dial 888-394-8197, passcode 737492#

You will be muted.

Ask the panelists questions using the Chat at the lower left.

Need help? Ask in the Chat window.

If listening over the computer:

Ask the panelists questions using the Chat at the lower left.

Need help? Ask in the Chat window.

Agenda

Mimi Lufkin

Chief Executive Officer

National Alliance for Partnerships in Equity

mimilufkin@napequity.org

Jessica Bullock

Recruitment Manager

Francis Tuttle Technology Center

jbullock@francistuttle.edu

Engaging Girls in STEM Careers

Mimi Lufkin, CEO

National Alliance for Partnerships
in Equity

Why Do We Need to Encourage Students to Study Science & Engineering?

- In the last 50 years, more than half of America's sustained economic growth was fueled by engineers, scientists and advanced-degree technologists, a mere 5% of America's 132 million-person workforce. (1)
- Aging STEM workforce- DOD, NASA and NIH STEM workers eligible to retire will more than double by 2012(1)
- By the year 2050, 85% of the entrants into the workforce will be people of color and women. (2) In 2003, women were 26.1% of all STEM occupations. In 2004, African Americans and Hispanics were 6.2% and 5.3% of all STEM occupations respectively. (3)
- The National Bureau of Labor Statistics projects that our greatest needs will be in computer-related fields that propel innovation across the economy. (1) Female bachelors degree recipients dropped from 37% in 1985 to 27% in 2003. (2)





Why Do We Care if Women and Minorities Become Engineers and Scientists?

- As a consequence of a lack of diversity we pay an opportunity cost, a cost in designs not thought of, in solutions not produced.

Source: Dr. Bill Wulf, Past President, National Academy of Engineering

- If we do not engage women and minorities in the engineering enterprise, we are ignoring more than 50% of America's intellectual talent.

Source: Bostonworks.com

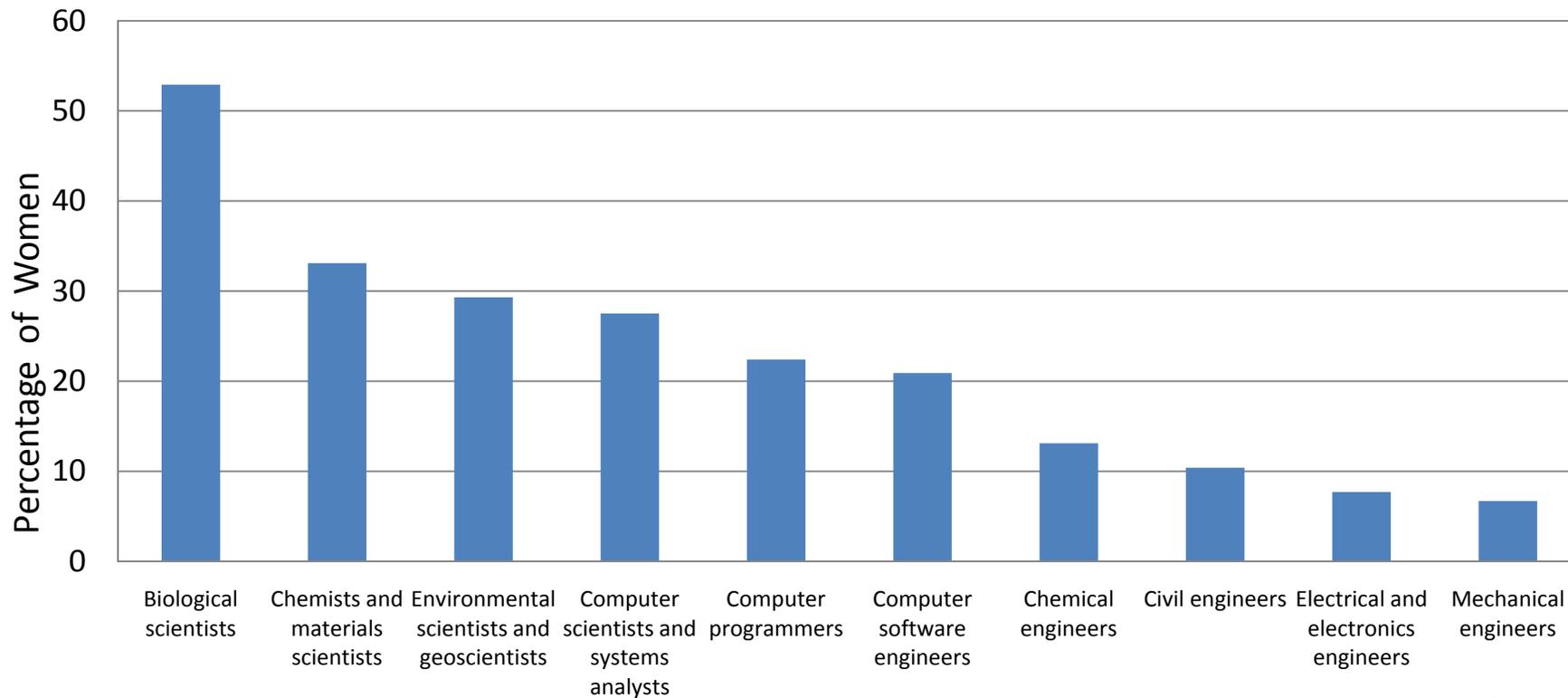


The Perkins Connection

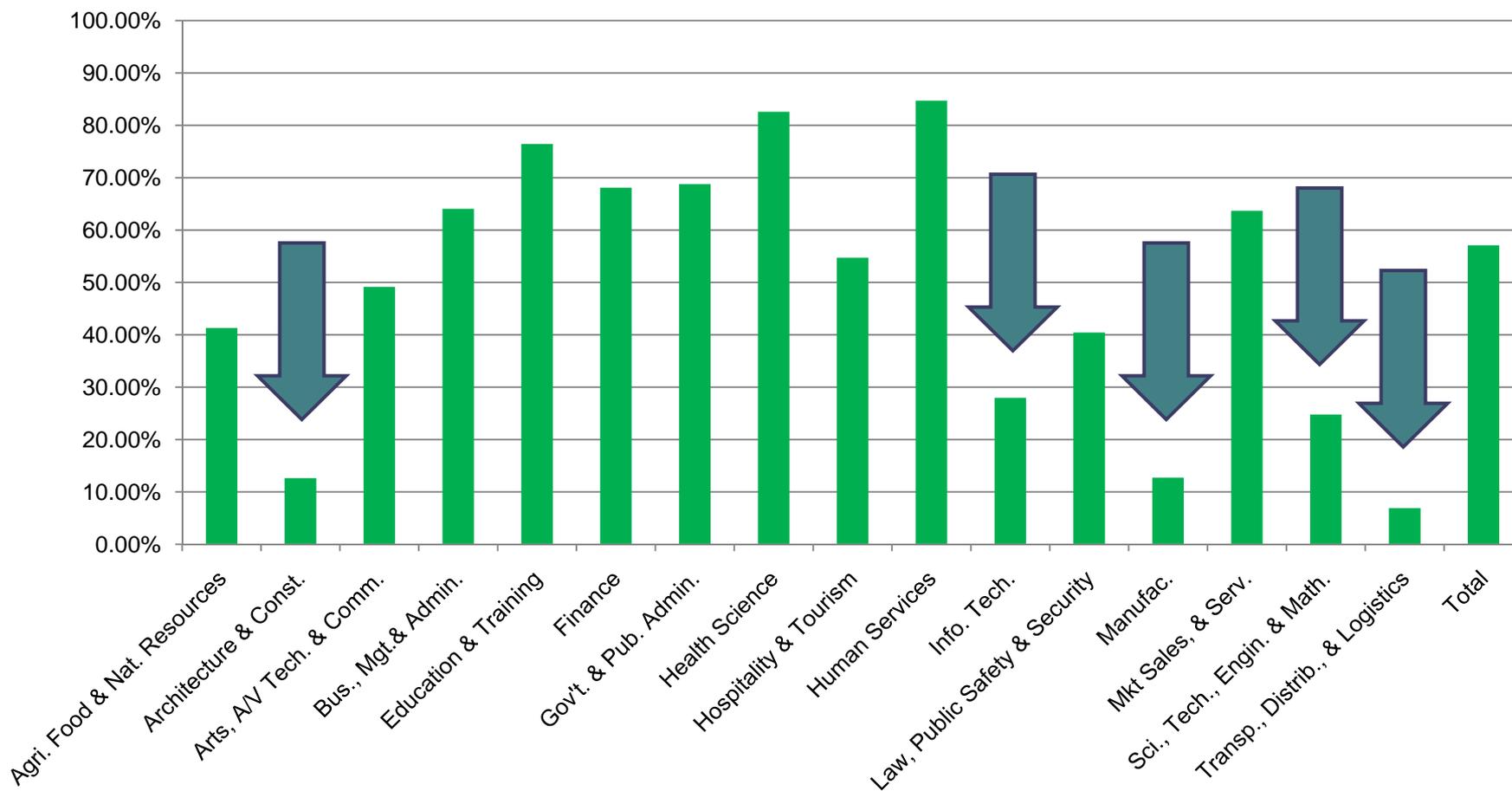
- Nontraditional
 - Occupations or fields of work, including careers in computer science, technology, and other current and emerging high skill occupations, for which individuals from one gender comprise less than 25 percent of the individuals employed in each such occupation or field of work.



Nontraditional STEM Careers



National Female Concentrators in CTE 2008-09



Nontraditional Crosswalk

- Nontraditional programs identified by 6 digit CIP code
- Available at
 - National Alliance for Partnerships in Equity
 - www.napequity.org
 - Peer Collaborative Resource Network
 - cte.ed.gov



Perkins Accountability Measures

Core indicator

- Participation in CTE programs preparing students for nontraditional fields
- Completion of CTE programs preparing students for nontraditional fields

What Can You Do?

Strategies for Engaging Girls in
STEM CTE Programs of Study

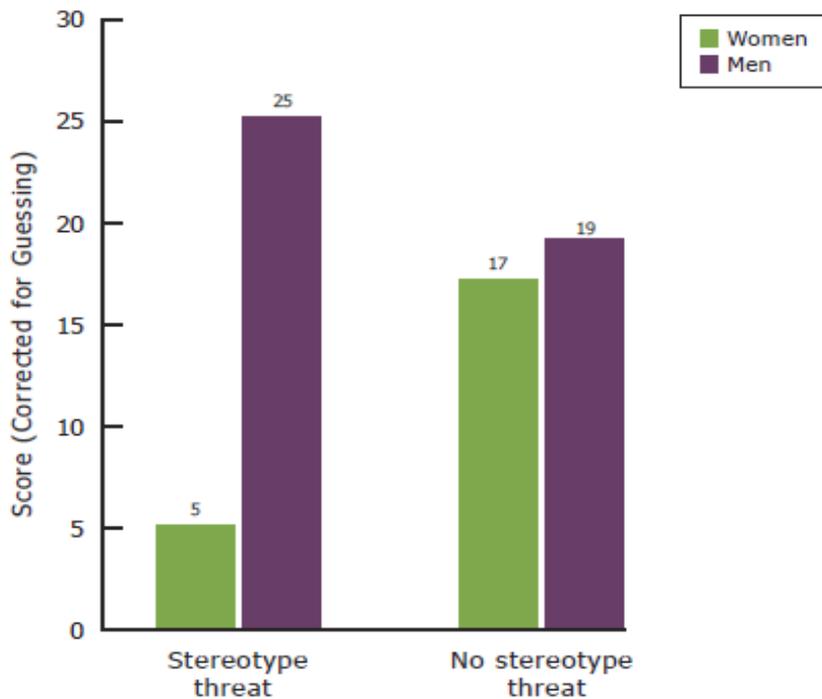


Girls' achievements and interests in math and science are shaped by the environment around them.



Negative stereotypes about girls' and women's abilities in math and science adversely affect their performance in these fields.

Performance on a Challenging Math Test,
by Stereotype Threat Condition and Gender



- Expose girls to successful female role models in math and science.
- Teach students about stereotype threat.

Source: Spencer, S. J., Steele, C. M., & Quim, D. M., 1999, "Stereotype threat and women's math performance," *Journal of Experimental Social Psychology*, 35(1), p. 13.

Source: AAUW, 2010 Why So Few? Women in STEM





In math and science, a growth mindset benefits girls.

Fixed Mindset	Growth Mindset
Intelligence is static.	Intelligence can be developed.
Leads to a desire to <i>look smart</i> and therefore a tendency to	Leads to a desire to <i>learn</i> and therefore a tendency to
<ul style="list-style-type: none">• avoid challenges	<ul style="list-style-type: none">• embrace challenges
<ul style="list-style-type: none">• give up easily due to obstacles	<ul style="list-style-type: none">• persist despite obstacles
<ul style="list-style-type: none">• see effort as fruitless	<ul style="list-style-type: none">• see effort as path to mastery
<ul style="list-style-type: none">• ignore useful feedback	<ul style="list-style-type: none">• learn from criticism
<ul style="list-style-type: none">• be threatened by others' success	<ul style="list-style-type: none">• be inspired by others' success

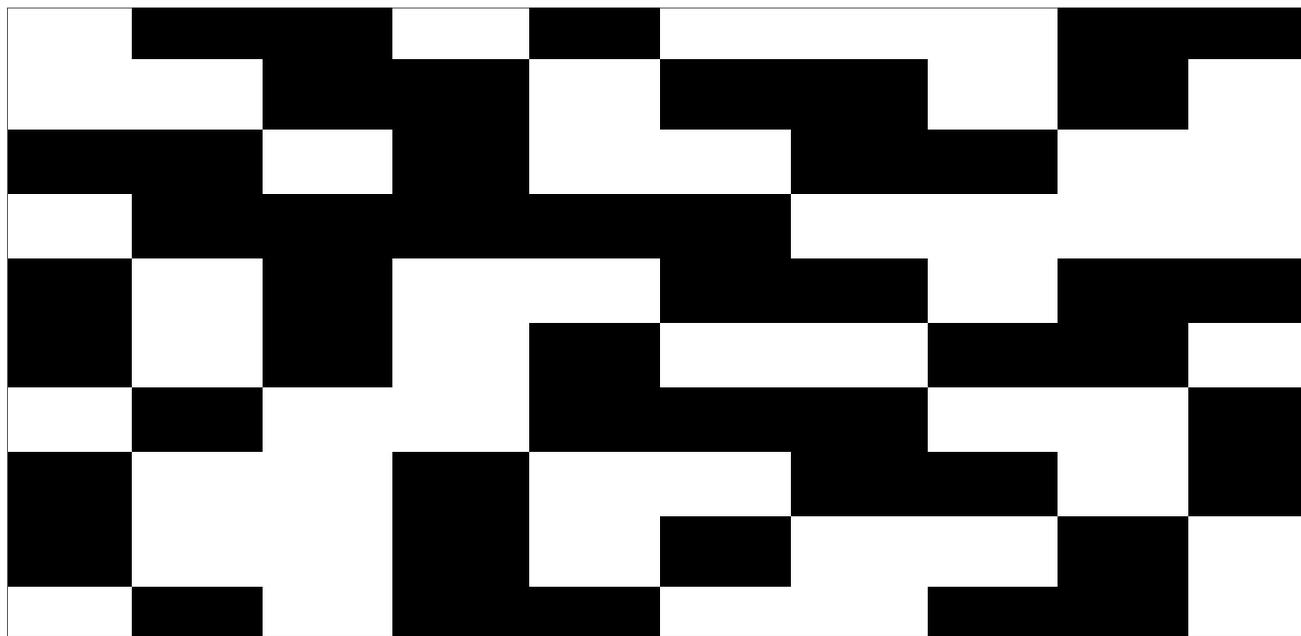
- Teach students that intellectual skills can be acquired.
- Praise students for effort.
- Highlight the struggle.
- Gifted and talented programs should send the message that they value growth and learning.

Source: AAUW, 2010 Why So Few? Women in STEM





Women are “harder on themselves” in terms of assessing their abilities in math and science fields.



Does this rectangle have more black or more white?

Source: AAUW, 2010 Why So Few? Women in STEM



Figure 16. Self-Assessment of Ability, by Gender

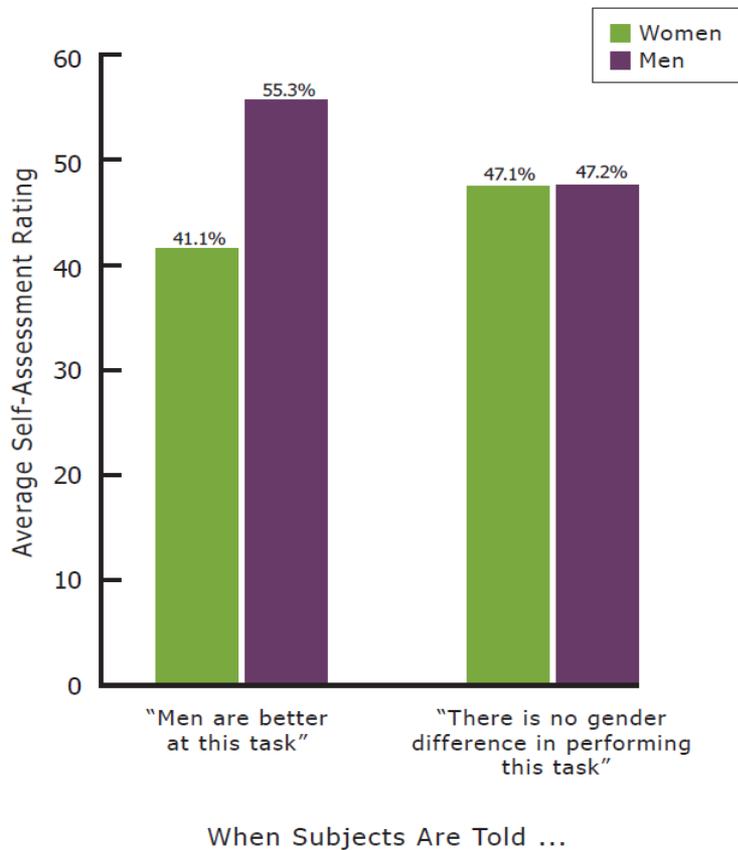
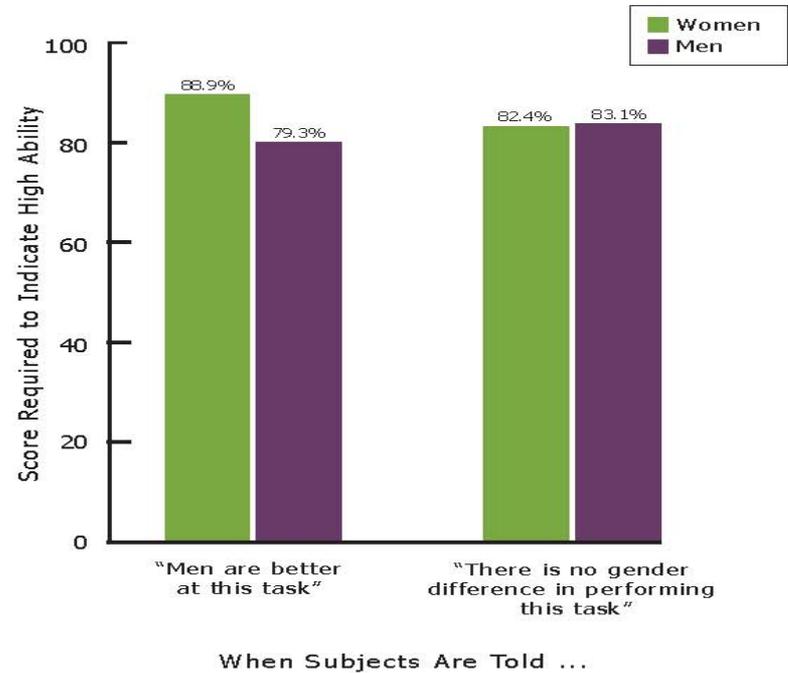


Figure 17. Students' Standards for Their Own Performance, by Gender



Note: Respondents were asked, "How high would you have to score to be convinced that you have high ability at this task?"
Source: Correll, S. J., 2004, "Constraints into preferences: Gender, status, and emerging career aspirations," *American Sociological Review*, 69, p. 106, Table 2.

- Set clear performance standards
- Help girls recognize their career-relevant skills

Actively Recruit Girls

- Make it personal – invite girls
- Create opportunities for informal experiences to create interest
- Extracurricular activities –
 - clubs, camps, competitions



Classroom Climate

- Schedule students in cohorts
- Zero tolerance for teasing, bullying or harassment
- Make projects relevant to girls interests
- Questioning level and wait time
- Student/teacher interaction and feedback
- Cooperative learning design



**Bias, often unconscious,
limits women's progress in
scientific and engineering fields.**





Implicit Bias

Most people associate science and math fields with “male” and humanities and arts fields with “female.”

- Take a test to learn about your unconscious bias at <https://implicit.harvard.edu>.
- Take steps to address your biases.





Bias against Women in Nontraditional Fields

- Women in “male” jobs are viewed as less competent than their male peers.
- When women are clearly competent, they are often considered less “likable.”

Source: AAUW, 2010 Why So Few? Women in STEM



Watch this video at your leisure:

Why We Have Too Few Women Leaders
Sheryl Sandberg, COO of Yahoo

http://www.ted.com/talks/sheryl_sandberg_why_we_have_too_few_women_leaders.html



As the COO at the helm of Facebook, Sheryl Sandberg juggles the tasks of monetizing the world's largest social networking site while keeping its users happy and engaged.



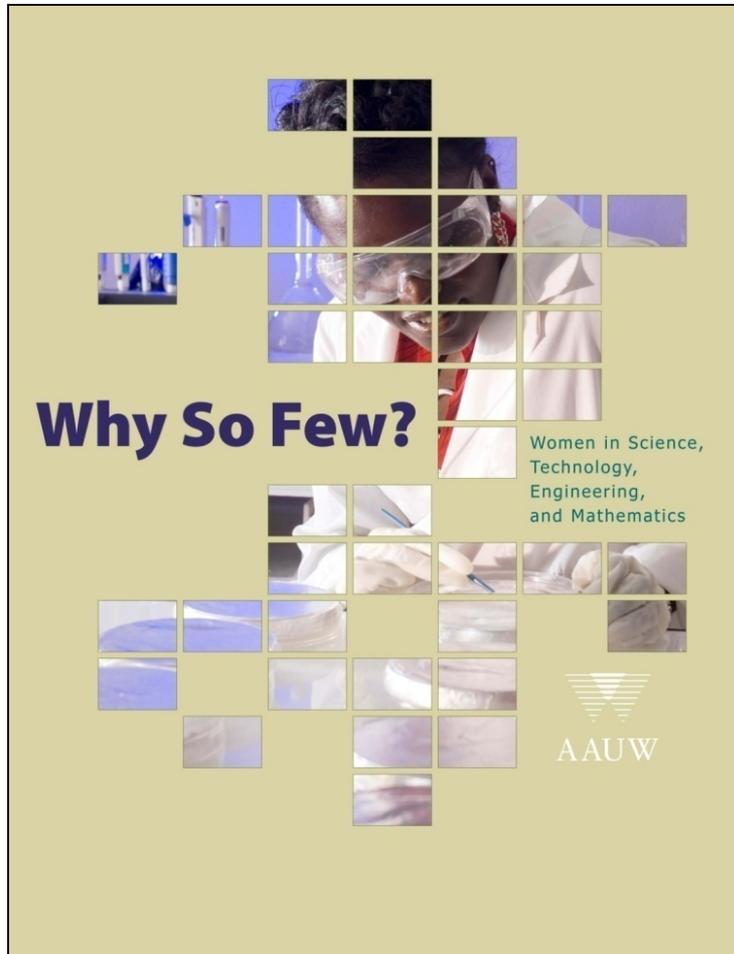
Bias against Women in Nontraditional Fields

- Women in “male” jobs are viewed as less competent than their male peers.
- When women are clearly competent, they are often considered less “likable.”
 - Raise awareness about bias against women in STEM fields.
 - Create clear criteria for success.

Source: AAUW, 2010 Why So Few? Women in STEM



Why So Few? Women in Science, Technology, Engineering, and Mathematics



To download the report:

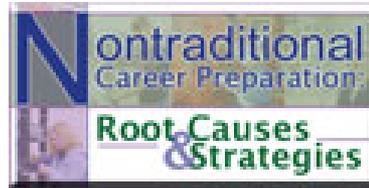
www.aauw.org

To contact the researchers:

aauw-research@aauw.org



For More Strategies



- Authors: Lynn Reha, ICSPS; Mimi Lufkin, NAPE; Laurie Harrison, Foothill Associates
- Available at www.stemequitypipeline.org



Questions?

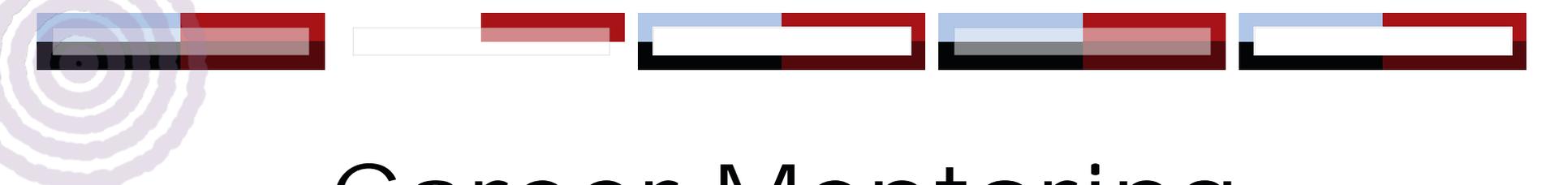
Ask the panelists questions using the Chat box at the lower left.



Why We Started



- Attract and retain females to nontraditional careers
- Paths involving math and science skills still remains a challenge



Career Mentoring

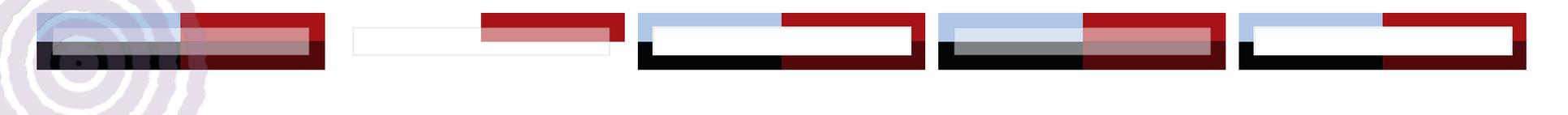
- Girls are less likely to plan their courses in preparation for a career.
- Without guidance, girls view fewer occupations as open to them.
- Girls limit expectations to traditional fields not considering today's higher paying, technical jobs.

Career Mentoring

- Females can earn as much as 50-100% more in nontraditional jobs for women than traditional jobs.
- A career goal motivates a girl to achieve in school.



GIRL
TECH



Career Mentors Help Girls

- Recognize the reasons for doing well in school
- Become realistic about the demands of the workplace
- Know they can succeed and to see how to succeed by serving as their role models



Girl Tech



“Despite gains in such fields as biology and medicine, women and girls continue to shy away from many science, engineering and technology careers.”

[Equality in Science Still Lagging for Women.](#)
Education Daily. 07/18/2001



GIRL
TECH

Interesting Statistics

- Non Traditional Occupations for Women
 - Architecture and Engineering Occupations-13.8%
 - Engineering Managers 8.1%
 - Computer Programmers 20.4%
 - US Dept. of Labor, Women in the Labor Force: Databook Dec. 2010, www.bls.gov



GIRL **TECH**

GirlTech

- Research shows that role models and mentors are an essential element of helping female students be successful in nontraditional career paths.
- In order to help females be successful in nontraditional career paths a mentoring system was put into place to serve students in our STEM related programs



GIRL **TECH**

Program Mission

To equip female students with skills to pursue careers in STEM.



Program Description

- ➔ Students participate in activities designed to provide awareness of STEM
- ➔ Students further explore STEM careers





Steps to Developing Program

- Identify a site coordinator
- Recruit up to 25 female students
 - Nominated by counselor, teacher or site coordinator
 - Student completes an application and interest profile
 - Student completes an interview

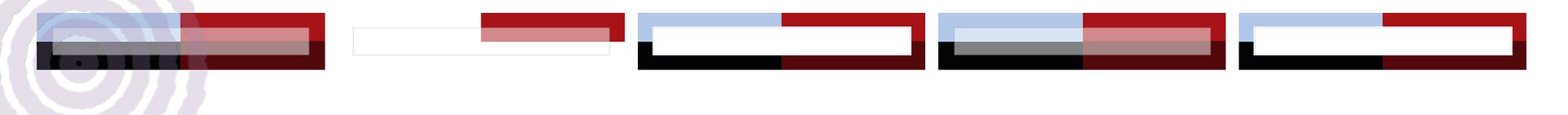
Steps to Developing Program

➤ Recruit Mentors

- Used advisory groups, instructors, personal, and other recommendations

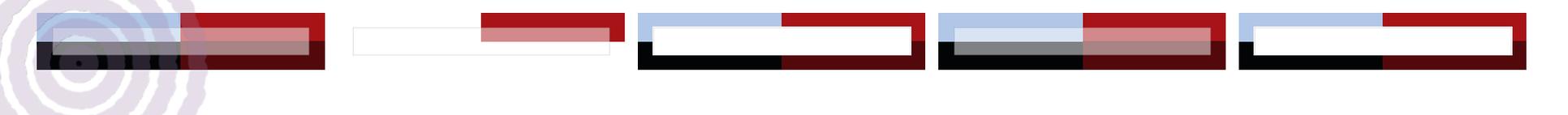


GIRL
TECH



Mentor/Student Match Up

- Primarily match students with mentors in identified career path
- Sometimes could not find female mentors in the career path!
- The second variable in matching is interests shared



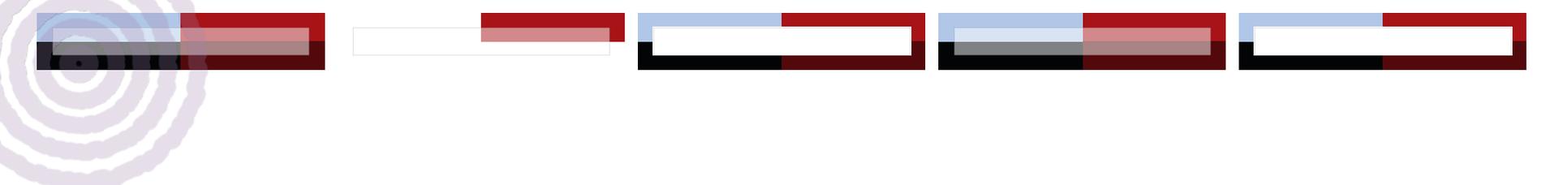
Program Activities

- Communication between student and mentor weekly
- Face to face activities
 - Meet and Greet
 - Professional Development Workshops
 - Job Shadowing
 - Industry Tours
 - Year End Celebration

Outcomes

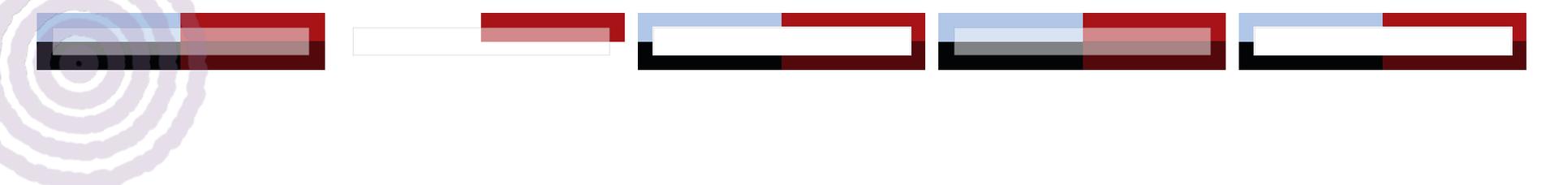
- Increased female participation and completion of secondary and postsecondary STEM related programs





Outcomes

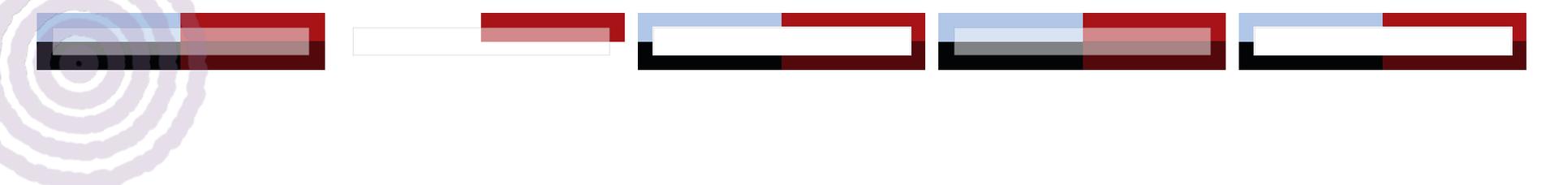
- Increased knowledge of STEM career opportunities
- Nontraditional recruitment/retention model to be replicated throughout state



Outcomes

➤ Girl Tech/Pre-engineering Graduates by year.

➤ Total # of Seniors	#declaring STEM major
➤ 2005/2006-4	4
➤ 2006/2007-8	8
➤ 2007-2008-10	9
➤ 2008-2009-3	3
➤ 2009-2010-5	4



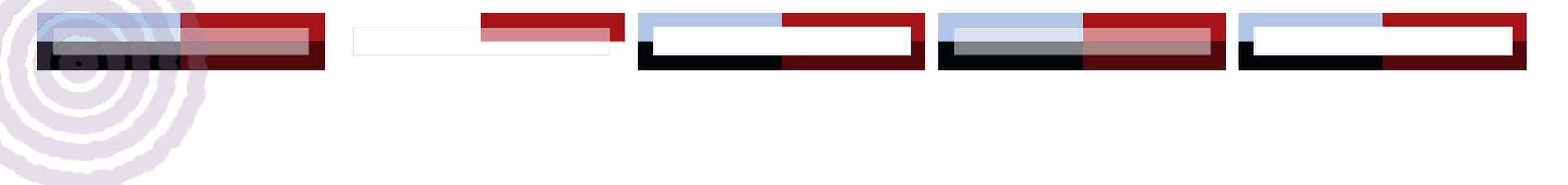
Outcomes

- Girl Tech as a Recruitment Tool
 - Female Enrollment Pre-Engineering
 - 2007/2008-16.8%
 - 2008/2009-18.8%
 - 2009/2010-24%
 - 2010-2011-16%

Outcomes



- Relationships that “clicked” really clicked
- Job shadowing highly rated
- Career awareness strengthened



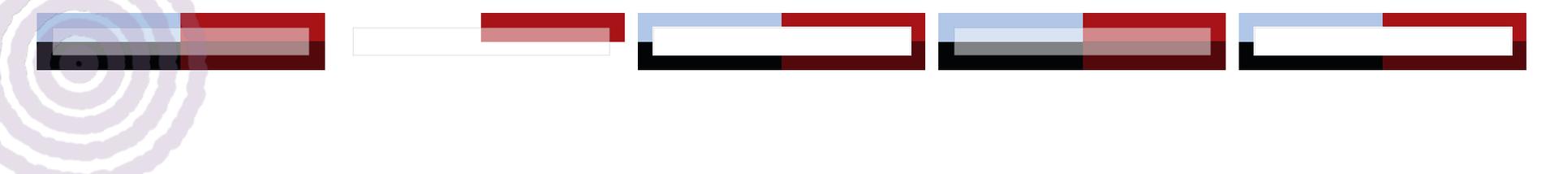
Outcomes

- Girls have reported they have learned more about themselves.
- Girls feel they have gained confidence.
- More determined to reach career goals.
- Better prepared for my future.

Achievements

- Education Innovator of the Year
- Program and Practices That Work National Award Winner 2009





Career and Academic Connections

➤ <http://www.okcareertech.org/cac/Pages/Equity/girltech.htm>

Questions?

Ask the panelists questions using the Chat box at the lower left.

Contact Information

Jessica Bullock

Recruitment Manager, Francis Tuttle Technology Center

jbullock@francistuttle.edu

Mimi Lufkin

Chief Executive Officer, National Alliance for Partnerships
in Equity

mimilufkin@napequity.org

Thank You!

An archive of this Webinar, and future Webinars, will be available at www.acteonline.org/webinars.aspx.

Many ACTE Webinars are offered to members only. Learn more at www.acteonline.org/join.aspx.

Please take a moment to complete the evaluation. You will receive a certificate of attendance upon submitting!

- <http://eo2.commpartners.com/users/acte/evaluation/index.php?id=5793>
- Certification code: acte
- You may need the password in your registration e-mail