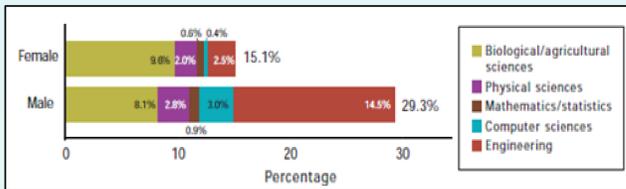


Background

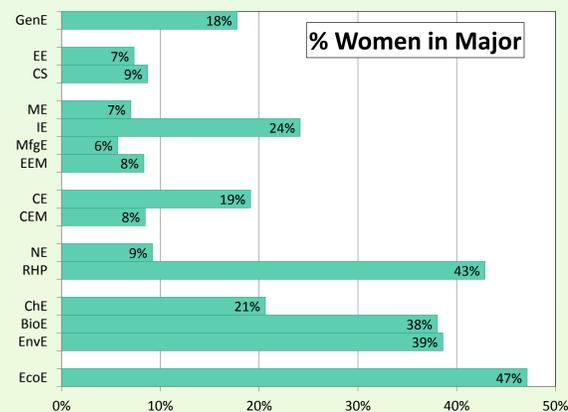
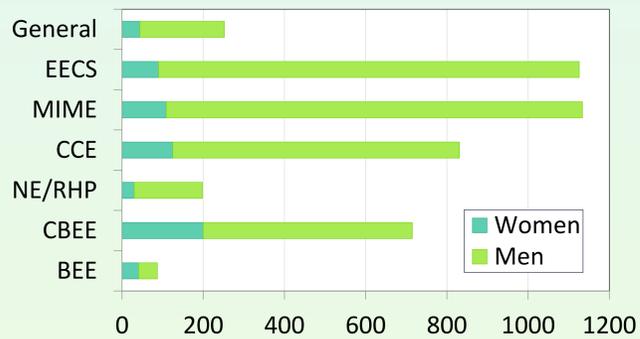
Historically, **women have been under-represented in STEM fields**. Today, virtually of the gender gap in STEM subjects in college comes from the **gender gap in engineering and computer science**.

Intent of 1st Year Students by Major



The College of Engineering at **Oregon State University has less women (15%)** than the national average (20%). This is largely due to the size of the MIME, EECS, and CCE dept.'s, where the gender gap is the highest.

Students in Engineering at OSU



Female students gravitate more toward majors that directly relate to **the medical field and the environment (RHP, BIOE, EnvE, and EcoE)**.

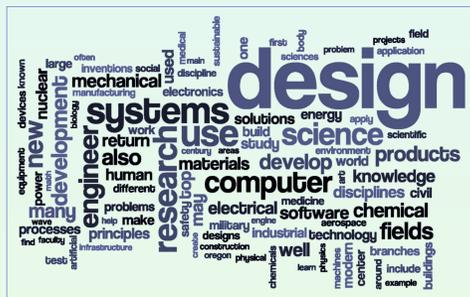
Abstract

Women are highly-underrepresented in undergraduate engineering majors, making up just over 15% of students in engineering and computer science at Oregon State University. High school girls' interest in pursuing engineering in college is affected by the way language frames engineering careers. The status-quo engineering frame is made up of terms that are generally unappealing to girls. Shifting the frame around engineering to better fit frames used by most women will attract more women to engineering. An improved frame should emphasize the skills used in engineering other than math and science, engineers' connections to society, and other values associated with engineering careers.



100 Most Common Words

These "word clouds" show the most common words used on selected websites that explain the field of engineering. The bigger a word appears, the more often it is used.



General Audience



Female-Specific Audience

Status-Quo Frame



ENGINEERING = MATH + SCIENCE

- Who are engineers?
 - Men, boys, really smart people and nerds
- What skills do engineers use?
 - Math, science and problem-solving
- What do engineers do?
 - I don't know...?
 - Design and build machines, cars, and bridges
- What is being an engineer like?
 - Complex, too difficult, and boring

Dominant Female Frame

- Female social patterns stress:
 - Relationships
 - Cooperation
- Girls value careers that:
 - Have good working conditions
 - Provide flexibility and security
 - Make a difference, benefit society
- Girls respond to messages that portray women:
 - Helping people
 - As connected to society
 - As capable and interested



Improving the Frame

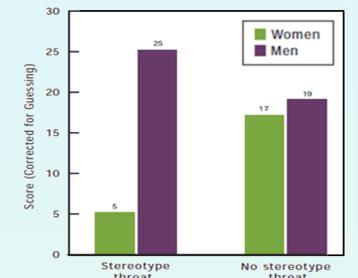
Girls do not do as well in a particular STEM activity when they think boys are better at it.

1. Avoid the status-quo frame

2. Show that women are engineers

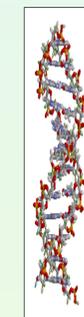
3. Emphasize skills other than math and science (communication, flexibility, etc.)

Scores on a Challenging Math Test by Gender



Engineers in industry think **attitudes** are more important than **technical skills**. Over **90%** say **communication skills are very important**, compared to just under 80% that say engineering fundamentals are very important.

50% of teen girls were interested in "Using DNA tests to solve crimes," only **20%** were interested in "DNA testing." The verb makes a difference!



4. Show that engineering leads to a high quality of life

5. Give examples of engineering helping society

6. Show engineers engaging with others

7. Emphasize financial and job security

Engineering majors are the **highest paid** 4-year degrees.



The engineering unemployment is **4% lower** than the average rate

Acknowledgements

- Eric Hill (UHC)
- Ellen Momsen (College of Engineering, WME)
- Dr. Janet Lee (Women's Studies)
- College of Engineering Ambassadors:
 - Justin Chi, Cassandra Loren, Devon Frazier, Robin Wagner, Brynn Livesay, Alex Mosely and others