WGBH: Engineer Your Life: Spark Girls’ Interest in Engineering

Presented by: Ellen Robinson and Thea Sahr

Wednesday, February 3, 2010
Spark Girls’ Interest in Engineering
Introduction
WGBH Presenters

Ellen Robinson
Outreach Coordinator
Engineer Your Life

Thea Sahr
Associate Director
Educational Outreach
Tell us about you!

Which of the following is your primary subject area?

A. Earth/Space Science  
B. Biology/Life Science  
C. Physical Science/Technology  
D. Integrated/General
Did you know that...

• Less than 20% of students enrolled in engineering degree programs are women, yet more women are now pursuing college degrees than men.

• Girls take math and science courses at the same rates as boys, and perform as well as or better.
Why aren’t more girls choosing engineering?

Here are some of the “theories:”

- girls aren’t interested
- they can’t do math and science as well as boys
- they are opting out of careers that utilize ‘hard science’

What if I told you it’s because … they don’t know what engineering is?
How can we change this?

• We need to reposition engineering as creative, collaborative, lucrative, and rewarding.

• Engineer Your Life has resources and messages you can use to help girls understand what an education and career in engineering looks like.
Poll Question

Are you familiar with Engineer Your Life?

√ Yes, I’ve visited the Web site.
X No, I know very little about EYL.
What is Engineer Your Life?

EYL is:

- A growing coalition of 100+ engineering groups
- Original qualitative consumer research
- Tested messages
- A website
- Effective

79% of girls who are using the EYL website report engineering as their #1 career choice.
Today’s agenda

• A Web Tour
• What Girls Think About Engineering and What We’re Telling Them
• Advising Girls About Engineering
• Evaluation Results
• Next Steps and Q&A
A Web Tour
Engineer Your Life
Dream big. Love what you do.

Q: What did you like to do as a kid?
- Play video games
- Ride your bike

A: Check out this dream job
Tara Teich creates Star Wars video games.

10 reasons why you’ll love it

Daniele Lantagne travels the world to teach safe drinking water practices.

Watch Daniele’s video

See next >
Meet an engineer

Video profile of Judy Lee
If you cannot view Judy’s video during the live presentation, go to: www.engineeryourlife.org
• Click on “Meet Inspiring Women” (top of page)
• Click on “Video Index” (bottom of page)
Is engineering a good career choice?

- Engineering was named one of Best Careers 2008 by U.S. News & World Reports

- Career starts with a four year bachelor’s degree

- Average starting salary $47,960-$60,718
What engineers like about their careers

• “I enjoy the travel and interacting with an amazing array of people.” - Daniele Lantagne

• “I feel pretty lucky to have such a creative and interesting job. I’m surrounded by brilliant people. It doesn’t seem like work. It’s just plain fun!” - Judy Lee

• “It’s never boring. I feel that I can make a difference in society by working on new technologies to improve people’s lives.” - Mona Masghati

• “Engineering is such a versatile field. It is practical, applicable, and always in demand.” - Molly Lebowitz
Let’s Pause for Questions
What Girls Think About Engineering and What We’re Telling Them
Research

• Gauge high school girls’ level of interest in and awareness of careers in the engineering field

• Assess general career motivators and barriers to the engineering field

• Evaluate current messages being put forward to the target audience by the engineering community

• Explore messaging opportunities for increasing enrollment in the engineering field
What do high school girls think?

• Engineering is for people who LOVE both math and science
• Don’t know what engineering is
• Aren’t interested in the field nor do they think it is “for them”

“Someone who excels in math and science.... Someone who is motivated, dedicated, and who doesn’t mind sitting in a cubicle all day.”

Findings from Extraordinary Women Engineers Report
Poll Question

Are you surprised by the girls’ answers and opinions about engineering?

A. Yes
B. Somewhat
C. No
What Do Counselors Think?

• It is **not popular** or well-understood.
• Appropriate only for **unique students**.
• Students who have been identified as potential engineers are shocked—they don’t think of themselves as **nerds**.
• Engineering is a **limiting choice**—they want their students to be able to do lots of things over their career.
What do high school girls think?

What are the **first two words** that come to mind when you hear “engineer”?

- math and science
- building
- men
- really smart
- cars
- problem-solving
- complex
- engines
- design
- trains
- bridges
- nerdy
- too difficult
- boring
- science
- machines
- Dilbert
- hard
- boys
- don’t know

*Findings from Extraordinary Women Engineers Report*
What engineers tell young people

- Engineering is stressful and challenging
- They stress the importance of **SUPERIOR** math and science abilities

“It’s not easy—but if you’re the type who when faced with a problem some would call impossible is even more driven to move mountains to find a solution, then you might have it in you to be an engineer.”

*Findings from Extraordinary Women Engineers Report*
What high school girls want

**Enjoyable**
“How happy I will be—what’s the point of doing anything you don’t like?”

**Good working environment**
“If I can’t interact with people…I will probably drop the job.”

**To make a difference**
“That I would make a difference in some way, you know, make my mark on the world.”

**Income**
“As shallow as it sounds, money is the one thing I have to consider when I’m choosing a job. I’m not going to do something that I know can’t help me pay bills.”

**Flexibility**
“My career can’t consume all of my time…I need free time to do a lot of other things…before I die.”

*Findings from Extraordinary Women Engineers Report*
Disconnect

**HS Girls**
- Enjoying what I do
- Good working environment
- Making a difference
- Good income
- Flexibility

**Engineering Community**
- It’s a challenge
- Go for it! It’s difficult but rewarding
- Use math & science to solve problems
# Effective messages

<table>
<thead>
<tr>
<th>Project Messages</th>
<th>Appeal to Girls</th>
<th>Appeal to Boys</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live your life, love what you do</td>
<td>82%</td>
<td>81%</td>
</tr>
<tr>
<td>Creativity has its rewards</td>
<td>74%</td>
<td>81%</td>
</tr>
<tr>
<td>Make a world of difference</td>
<td>72%</td>
<td>79%</td>
</tr>
<tr>
<td>Create possibilities</td>
<td>71%</td>
<td>77%</td>
</tr>
</tbody>
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**Engineer Your Life:**
So what about the math and science?

Once girls have an understanding of engineering and what life is like as an engineer, then we can fill them in about the requirements. But we need to put it in to context.

“Math is the basis of engineering, but you don’t have to love it. You just have to be able to do it.”

-Judy Lee, Mechanical Engineer
Meet an another engineer

Video profile of Daniele Lantange
If you cannot view Daniele’s video during the live presentation, go to: www.engineeryourlife.org
• Click on “Meet Inspiring Women” (top of page)
• Click on “Video Index” (bottom of page)
Let’s Pause for Questions
Advising Girls about Engineering
Identifying potential students

There is no one “type” of person who becomes an engineer. If you know kids who:

* are creative
* like collaborating with others
* are curious and persistent
* want to make a difference
* like solving problems or improving a process

Are B+ students and above

On college track = on engineering track
Take engineering for a test drive

- Explore enginereeryourlife.org
- Take engineering courses in school
- Attend a summer or after-school program
- Watch Design Squad
- Talk to engineers
- Consider an internship or summer job

“Try as many things as possible. Find internships in different areas, experiment, and make sure that you see all that engineering can offer.”

- Rachel Fine, Mechanical Engineer
Recommended high school coursework

- Math (4 years)
- Science (4 years)
- Language Arts (4 years)
- Foreign Languages (3 years)

“It’s important to take a rich variety of classes and learn everything you can because you never know. Life changes. Getting a full education will benefit you later on in ways you can’t imagine now.”

- Tara Teich, Computer Engineer
Researching engineering schools

- Do a search
- Make contact
- Look for interesting opportunities
- Consider your options
- Talk to your parents

“Follow your passions … find out what really captures your interest and then determine the path to get there.”

- Daniele Lantagne, Environmental Engineer
Scholarships and financial aid

• Online
• U.S. Department of Education
• Local opportunities
• Colleges/Universities
• Higher Education Resource Centers
• Engineering Societies and Associations

“If I knew then what I know now, I could have applied for plenty more scholarships. There are a lot of opportunities out there.”

- Melissa Reeves, Electrical Engineering Student
Evaluation Results
An independent evaluation found:

- EYL is sparking an interest in engineering—79% of girls familiar with EYL list engineering as their number one career choice.
- EYL is inspiring girls—75% of girls familiar with EYL said the site made them want to take an engineering class.
- EYL is helping girls understand the rich variety of interesting jobs available to engineers and how to pursue an engineering degree.
- EYL is filling an important need for school counselors, particularly in schools with few engineering resources.
Before

Turning Dreams Into Reality

After

ENGINEERING
Because Dreams Need Doing

What do rock 'n roll and laser tag have to do with engineering? Find out at the ECEE Design Expo April 30, 2009
Next Steps and Q&A
EYL in your school

- Tell your students and their parents about the site
- Share EYL with your fellow teachers and counselors
- Show short video clips to students and parents (class, open house, morning announcement, career day, Engineering Week, PTA meeting, School Fair)
- Distribute free brochures and postcards
- Tell your students about EYL’s Facebook Quiz
• Come to our presentations:

  **Informal Science Share-a-thon**  
  Friday March 19,  4-6pm  

  **FETCH! With Ruff Ruffman**  
  Saturday March 20,  8-9am  

  **Design Squad**  
  Saturday March 20,  12:30-1:30pm

• Visit our exhibit booth

For more information, go to nsta.org
Stay tuned for more web seminars from WGBH and NSTA:

Wednesday, February 17
Teaching Biotechnology:
New Tools and Resources for the STEM Career Pipeline

Wednesday, May 26
NOVA
Questions?

Do you have any questions about this presentation or any of the information used during the presentation?

Contacts:

Ellen Robinson
___ellen_robinson@wgbh.org

Thea Sahr
___thea_sahr@wgbh.org
Special thanks to:

Major funding for Engineer Your Life provided by:
• The National Science Foundation
• Northrop Grumman Foundation

Additional funding provided by:
• Stephen D. Bechtel, Jr.
• United Engineering Foundation
http://learningcenter.nsta.org
http://www.elluminate.com