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

**Presented by: Ellen Robinson and
Thea Sahr**

Wednesday, February 3, 2010

Engineer **Your Life**
Dream big. Love what you do.

Spark Girls' Interest in Engineering

Photo Credit: Tom Coughlin, Nicaragua Summer Exchange 2007



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Introduction

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WGBH Presenters



*Ellen Robinson
Outreach Coordinator
Engineer Your Life*



*Thea Sahr
Associate Director
Educational Outreach*



Poll Question

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.
- ✗ No, I know very little about EYL.

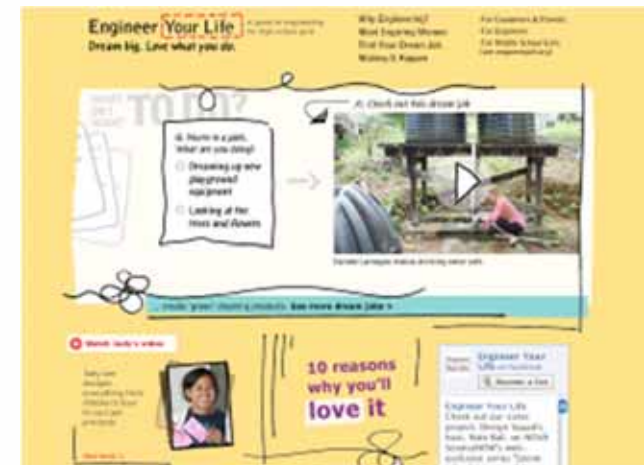


What is Engineer Your Life?

EYL is:

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

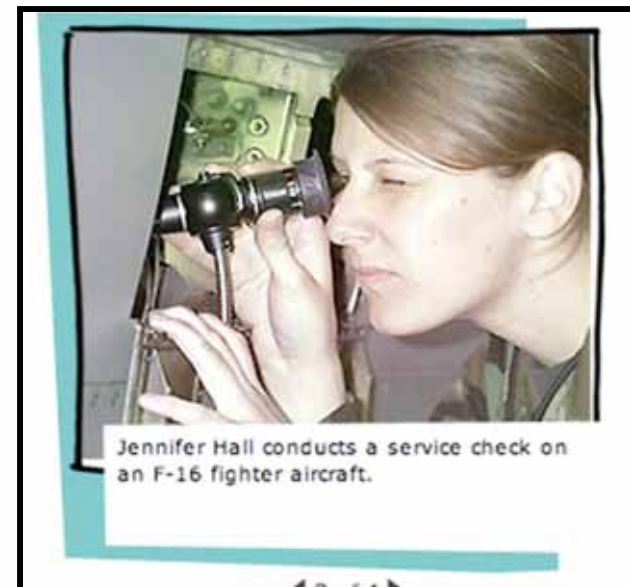
79% of girls who are using the EYL website report engineering as their #1 career choice.





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



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A Web Tour

Engineer Your Life

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A guide to engineering
for high school girls

Why Engineering?
Meet Inspiring Women
Find Your Dream Job
Making It Happen

For Counselors & Parents
For Engineers
For Middle School Girls
(see engineergirl.org)

WHAT
DO I
WANT

g over a
inking...
gel
ater clean
to swim

new
question

new
question

new
question

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.

... make air travel more comfortable. [See more dream jobs >](#)

Watch Daniele's video

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



[See next >](#)

10 reasons
why you'll
love it

Engineer
Your Life

Engineer Your
Life on Facebook
You are a Fan

Engineer Your Life
Check out our sister
project, Design Squad's,
host, Nate Ball, on NOVA
ScienceNOW's web-
exclusive series "Secret
Life of Scientists." You



Meet an 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



The Duke CANstruction team, which built structures out of canned food and then donated them to a local food bank.



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*

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Let's Pause
for Questions

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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."*



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.”



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."

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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

Project Messages	Appeal to	
	Girls	Boys
Live your life, love what you do	82%	81%
Creativity has its rewards	74%	81%
Make a world of difference	72%	79%
Create possibilities	71%	77%
Engineer Your Life:		

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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)

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Let's Pause
for Questions

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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 engineeryourlife.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



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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



Daniele with some community members who helped create a safe water system in the West African country of Guinea.



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



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Evaluation Results



An independent evaluation found:

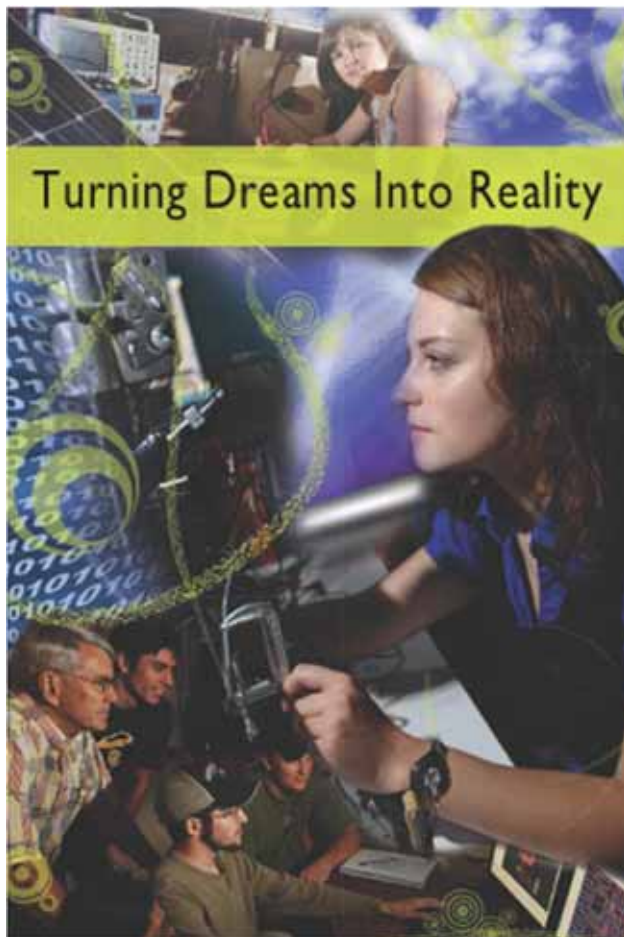
- EYL is sparking an interest in engineering—**79%** of girls familiar with EYL list **engineering** as their **number one career choice**.
- EYL is **inspiring** girls—**75% of girls** familiar with EYL said the site made them want to take an **engineering class**.
- EYL is helping girls **understand** 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.

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Before



After



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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



*For more information, go to
nsta.org*

- **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

Engineer Your Life

Saturday March 20, 5-6pm

** Special Guest: Stefanie Chang,
International Project Director
Hands On Disaster Response*

- **Visit our exhibit booth**

**Stay tuned for more web seminars
from WGBH and NSTA:**



Wednesday, February 17

Teaching Biotechnology:

New Tools and Resources for the STEM Career Pipeline

NOVA®

Wednesday, May 26

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Questions?



The Johnson Space Center offers college students paid, full-time internships, providing them with invaluable experience unavailable in the classroom.

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

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- United Engineering Foundation

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Multimedia Overview




Flash Player Required

Free Learning Resources

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<http://learningcenter.nsta.org>



<http://www.elluminate.com>

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