You Can Make a Difference:
Planning Role Model Visits and Field Trips to
Inspire Girls in Science, Technology, and Engineering

National Girls Collaborative Project Conference
October 21, 2010
Agenda

• Icebreaker – Put Yourself on the Line
• Overview of Techbridge
• Career Exploration Activity – Career Step Up
• Discussion: Successes/Challenges of Introducing Role Models
• Role Model Tips & Case Studies
• Hands-on Activity – Kitchen Kapers
• Resources
• Questions
• Evaluation
Icebreaker: Put Yourself on the Line
What do girls imagine when they think of technology, science, engineering?
A Multifaceted Approach

**Girls**
- After-school and summer programs
- Girl Scout Council programs
- Career exploration focus

**Teachers**
- Professional development
- Summer Institute

**Families**
- Family events
- Family science guide

**Role Models**
- Role model trainings
- Resource guide and toolkit

**Partners**
- Curriculum
- Trainings and resources
After-School Programs

- 16 programs across three school districts
- 500 girls served annually
- Support for teachers, families and role models
- Testbed for curriculum development
Girl Scouts Partnership

- Programs-in-a-box model
- Partnership with Girl Scout Councils in CA, TX, MD, and FL
- Scale up with 8 additional councils
- Reaching 12,000 girls over 3 years
The Techbridge Difference

- 94% believe engineering is a good career for women
- 89% feel more confident trying new things
- 96% know more about how things work
- 88% cited role models and field trips as an influence in increasing career interest
- Longitudinal study shows 82% more interested in career in science, engineering or technology
Highlights of our Success

- A “model program demonstrating significant achievement” by NSF
- 10-year track record and proven model
- Served over 4,000 girls through direct programs
- Trained 5,000 role models and partners
Activities for Girls
Building Teamwork & Community
Building Skills and Confidence
Career Exploration

Life Maps

Career Calendar
Career Step Up

Electrical Engineer

Electrical engineers design parts for anything that uses electricity. They think about how to power everything from very small products, like computer chips, to very large products, like airplanes.

Electrical engineers work with lots of other types of engineers to design new products and improve existing ones.

Electrical Engineers make around $58,000 a year!

Projects you might work on:
- Design a new iPod
- Develop a new video game
- Improve a computer chip to make it work faster
- Design the electrical supply to a clothing factory
- Build a new tiny camera that doctors use in surgery

Companies you might work for:
- Computer companies like Microsoft or Apple
- Car companies like Toyota or GM
- Toy companies like LeapFrog or Nintendo
- An energy company like PG&E
- An electronics company like Sony

Techbridge
Additional Career Activities & Icebreakers

What is Electrical Engineering?

design, produce, powerful, electrically, teams
Discussion

What successes/challenges have you experienced when bringing in role models?
Role Models Can Have Significant Lasting Impact

“I walked in there and I knew that’s where I wanted to work.”
- middle school student
# Recipe for Success

<table>
<thead>
<tr>
<th>Component</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>Icebreaker</td>
<td>• Sets tone and warms up girls and role models</td>
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<tr>
<td>Personal Story</td>
<td>• Makes connection to students</td>
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<tr>
<td>Hands-on Activity</td>
<td>• Engages students</td>
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<tr>
<td>Wrap-up and Reflections</td>
<td>• Questions and feedback</td>
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Tip 1: Start with a Personal Story

Patty, software engineer at Google, shares her story of growing up in the same neighborhood as many of our girls.
Tip 2: Share Your Passion

Marie, electrical engineer at Intel, gushes about how much she loves the work she does.
Tip 3: Make it Interactive

Lyn, mechanical engineer from Integral Group, dissects hairdryers with the girls.
Tip 4: Dispel Stereotypes

Emily, a graduate student in environmental engineering from UC Berkeley, shares stories about her family, hobbies, and work.
Tip 5: Provide Academic and Career Advice

Reinforce the importance of never giving up

Highlight benefits like a flex schedule, travel, health insurance

Let girls know that a second language is an asset

Josetta, a patent attorney with Chevron, talks about the personal and financial rewards that come from studying engineering.
Case Study: Classroom Visit

SWE Mechanical Engineer
Icebreaker: Be the Machine
Nancy's Background

• Hobbies:
  – Community Service
  – Basketball
  – Dancing
  – Baking

• My pet rabbit Maya
Introduction: School and Work

• Graduated in 2008
  – Mechanical Engineer (B.S.)
  – Management (minor)

• Berkeley M.S./Ph.D. program

• First generation college student
  – Financial aid
Activity: Reverse Engineering
Wrap Up and Reflections

• Share one thing that surprised you.

• What can we do better?

“A satisfying job should not be something you enjoy but also one where you work with people who can cooperate well with you and allow you to have a social life.”

• What did you learn today?

• How did the role models help you think about your future?

“I liked that I had someone to talk to finally because I have been thinking of my future and wasn’t sure where to start.”
Case Study: Field Trip

Introduce a Girl to Engineering

The Science and Engineering Behind Wastewater Treatment
Planning and Preparation

Take care of logistics - start early!
- Transportation, permission slips, school approval

Prepare students
- Exchange bios in advance
- Provide list of questions to ask role models

Prepare company and role models
- Share role model resource guide
- Recruit a diverse group of role models
- Review agenda for the field trip
Agenda

9:45   Arrive at location
10:00  Welcome and Introductions
10:15  Icebreaker
10:30  Scavenger Hunt
12:00  Lunch with role Models
12:45  Hands-on Activity
1:40   Question and Wrap up
2:00   Depart
Welcome and Introductions
I’m building a motorized barcalounger.

I’m not sure what I want to be, but I’m leaning towards an environmental biologist.

My favorite subjects are math and science. Math because I like numbers, and science because I like to explore the world.

My first pet was a mutt. We used to live on a street named Trevor in a town called Cheviot. My Dad would tell people she was a Trevor-chevo-ainian.
# Scavenger Hunt and Office Tour

## Carollo BINGO

<table>
<thead>
<tr>
<th>Building</th>
<th>Fun Stuff</th>
<th>This-N-That</th>
<th>Geography</th>
<th>Careers</th>
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</thead>
<tbody>
<tr>
<td>What kind of stone is the Conference Room table made from?</td>
<td>Find someone who keeps a jar of candy on their desk.</td>
<td>Ask someone, “How do people limit the use of paper at Carollo?“</td>
<td>Find someone who was born in a foreign country.</td>
<td>Ask someone, “What did you want to be at my age?“</td>
</tr>
<tr>
<td>What material are the window shades made from?</td>
<td>Ask someone, “What is the most interesting part of your job and why?”</td>
<td>Find a Techbridge role model</td>
<td>Ask someone, “Does your job require travel and where do you go?“</td>
<td>Ask someone, “What was the most interesting interview question you were asked when applying to work here?“</td>
</tr>
<tr>
<td>Find out what material the kitchen cabinets are made from.</td>
<td>As what we do on Friday.</td>
<td>What is the old house next door?</td>
<td>Find someone who is bilingual.</td>
<td>Ask someone how they use math and science in their job.</td>
</tr>
<tr>
<td>Find chair in the office that says, “Waste Food.”</td>
<td>Find someone who rode their bike, took the bus, or walked to work today.</td>
<td>Find someone who has rebar on their desk</td>
<td>Find someone who has worked in a foreign country.</td>
<td>Ask someone, “How do I get the training and education to do your job?“</td>
</tr>
<tr>
<td>Find the structural braces for the library shelves.</td>
<td>Find someone with a plant in their office.</td>
<td>Find someone who drives a hybrid car.</td>
<td>How many countries are Carollo’s engineers from?</td>
<td>Ask someone, “Where do you see yourself working in 5 to 10 years?“</td>
</tr>
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Up Close with Role Models
Lunch with Role Models

What is your job like?

What did you want to be when you were my age?

What is a starting salary in your field?

Was college hard?

What do you like to do outside of work?

What is the best part about your job?
Hands-on Activity
Wrap-up and Goodbyes
Points to Remember for Role Models

- Keep welcome and introduction brief
- Recruit diverse role models
- Highlight green initiatives
- Make tour interactive
- Talk about why you love your work
- Offer academic guidance
- Highlight the importance of perseverance
- Keep language simple (no acronyms)
- Don’t share negative aspects of your job
Kitchen Kapers
Additional Hand-on Activities
Drip Drop
Bubble Design
Spaghetti Tallest Tower
Peanut Butter and Jelly Sandwich Packaging
Tips for Introducing Science/Engineering Activities

• Try experiment or project before doing it with students.
• Encourage students to make predictions.
• Ask open-ended questions.
• Make science and career connections.
• Don’t worry if you don’t know the answer. Show students ways to find answers themselves.
Brainstorm

Where can you find role models in your community?
Where to Find Role Models

• Reach out to professional groups like Society of Women Engineers, ACM, AWIS, etc.

• Science and engineering departments at nearby universities

• Parents of girls served

• Cold call companies in your community (think of the science/engineering/technology companies that are hiring)

• Contact other organizations like National Eweek or 4-H

• Ask everyone you know
Resources

Role Model Toolkit

Parent Resource Guide

www.techbridgegirls.org
Girls Go Techbridge
Programs-in-a-Box

Make it Green

Girls will learn about green design by constructing a green studio from start to finish - from brainstorming an idea, to creating a floor plan, to building “green.”

Design Time

Girls will build catapults, create bags for a client and design and prototype a toy all while learning about the engineering design process.

Power it Up

Girls will explore electronics and circuitry by learning about basic electronic components, building different kinds of circuits and learning to solder.

Girl Scouts and Techbridge have joined together to offer three fun, hands-on programs-in-a-box to inspire girls in science and engineering!
Questions & Thank You!

www.techbridgegirls.org
techbridge@chabotspace.org