Welcome to the National Girls Collaborative Project Webinar:

Mission Solar System: Engaging Girls in Engineering and Space Exploration Careers

Thank you for joining us! We will begin at 11:00 AM Pacific/ 2:00 PM Eastern.
Webinar Agenda

• NGCP Overview
• What is Design Squad Nation?
• Mission Solar System Resources
• Implementing Design Squad Nation and Mission Solar System
• Question and Answers
• Get Involved & Wrap Up
NGCP Vision

The National Girls Collaborative Project (NGCP) brings together organizations that are committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM).
Access to Shared Resources
Strengthening Capacity
Equity
Mission: Solar System

Engaging Girls in Engineering and Space Exploration Careers
Today’s Agenda

• What is *Design Squad Nation*?

• **Mission: Solar System** resources

• Implementing **Mission Solar System** and *Design Squad Nation* resources

• Questions
Design Squad Nation is a NSF-funded multimedia program for middle school children whose goals are:

- Introduce kids to engineering
- Update kids’ image of the profession
- Give kids an opportunity to think and build like engineers
- Show how engineering connects to what kids are interested in and to daily life.
Join DSN Now

DESIGN Your World

What's new?
Blast a marshmallow across the room! Build and test your very own Marshmallow Blaster. How far and fast will your marshmallows fly?

Join

Find

Play

Become a Top Builder!
Answers to your questions
Our newest game

What stuff do you like?
Outdoors Fashion Sports Art Music Robots Animals
Games Vehicles Food Flying Funny Friendly Random

pbs.org/designsquad
DESIGN Your World

What's new?
Blast a marshmallow across the room! Build and test your very own Marshmallow Blaster. How far and fast will your marshmallows fly?

Join
Top Builder
Poster Coaster

Find
Questions & Answers

Play
Fidget Factory

What stuff do you like?
Outdoors  Fashion  Sports  Art  Music  Robots  Animals
Games  Vehicles  Food  Flying  Funny  Friendly  Random

Join DSN Now
It's FUN + EASY!
Engage Kids in Hands-on Engineering

Use DESIGN SQUAD NATION activities, animations, video profiles, and episodes in classrooms and afterschool programs, in libraries and museums, at events and at home.

Find resources by topic:

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<th>Topic</th>
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<tr>
<td>Electricity</td>
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<td>Force/Energy</td>
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<td>Structures</td>
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<td>Technology/Materials</td>
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Free Online Resources

- Guides
- Challenges
- Episodes
- Animations
- Engineer Profiles
- Short Videos
- Online training materials
- Website

pbs.org/designsquadv
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 or better.
Why aren‘t more girls choosing engineering and technology careers?

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 it is?
Findings from Extraordinary Women Engineers Report
So the basic problem is that kids don’t know what engineering is ....

How can we show them what it’s all about?
Engineers are changing the world all of the time. They dream up creative, practical solutions and work with other smart, inspiring people to invent, design, and create things that matter.
GOALS

• Increase curiosity about engineering and space exploration

• Develop critical thinking and problem solving skills

• Encourage pursuit of STEM studies and NASA-related careers
Mission: Solar System

Background
Parents, Educators & Engineers

Engage Kids in Hands-on Engineering

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GUIDES

Find a collection of activities within each guide, or search for activities by topic in Resources.

Mission: Solar System

NASA and DESIGN SQUAD NATION team up to inspire a new generation of engineers. This guide has six space-based hands-on challenges for school and afterschool programs, grades 4-8.

Read more
Download PDF: Full guide (English)

Adaptive Technologies Special Collection

These media resources from MEDAL QUEST and DESIGN SQUAD help students explore how science, technology, engineering, and math support athletes with physical disabilities as they compete at elite levels.

Read more
MISSION: SOLAR SYSTEM

NASA AND DESIGN SQUAD NATION TEAM UP TO INSPIRE A NEW GENERATION OF ENGINEERS

Hands-on Challenges

Soft Landing

Robo Arm

Down to the Core

Inspector Detector

Invisible Force

Mission Guide Home
Hands-on Challenges
Engineer Videos
Teaching Tips
Training Video
Related Resources

pbs.org/designsquad
Mission: Solar System resources

- **Educator guide** containing leader notes and poster
- **Hands-on engineering challenges**
- **Do-It-Yourself videos** to show kids before the challenges
- **Career videos** profiling young NASA engineers
- **Family sheets** with video discussion prompts
- **Tutorial video** for educators
Mission: Solar System

Every aspect of Design Squad Nation reinforces the DESIGN PROCESS.

Use it with kids to

• Expand their thinking
• Become more innovative
• Learn from their mistakes
Mission: Solar System guide

- 5 hands-on activities
- Leader notes
- Standards alignments
- NASA connections
- Year of the Solar System poster
- Assessment rubric worksheet
Leader Notes

• Provide Open-Ended Questions
• Offer Troubleshooting Tips
• Contain Extension Activities
• Articulate Learning Goals
• Make Curriculum Connections
Design Challenge Performance Assessment Rubric

<table>
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<tr>
<th>Challenge name:</th>
<th>Names of team members:</th>
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<tr>
<th><strong>Identifying the problem(s) and brainstorming solutions</strong></th>
<th><strong>Points:</strong></th>
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<tr>
<td>Showed a clear understanding of the problem(s) to solve, independently brainstormed solutions.</td>
<td></td>
</tr>
<tr>
<td>Needed some teacher direction to define the problem(s) and brainstorm possible solutions.</td>
<td></td>
</tr>
<tr>
<td>Needed lots of teacher direction to define the problem(s). Little if any independent brainstorming.</td>
<td></td>
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<tr>
<td><strong>Working as a team member</strong></td>
<td><strong>Points:</strong></td>
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<tr>
<td>Worked well together. All team members participated and stayed on task.</td>
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<tr>
<td>Some team members were occasionally off task.</td>
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<tr>
<td>Most team members were often off task and not cooperating or participating fully.</td>
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<tr>
<td><strong>Using the design process</strong></td>
<td><strong>Points:</strong></td>
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<tr>
<td>Team brainstormed many design ideas and tested and improved the design. Final design complete or nearly complete and shows creative problem solving.</td>
<td></td>
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<tr>
<td>Some team members were occasionally off task.</td>
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<tr>
<td>Team brainstormed few design ideas and did little testing or redesigning. Final design lacks clear design idea(s).</td>
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<tr>
<td><strong>Processing the science and engineering</strong></td>
<td><strong>Points:</strong></td>
</tr>
<tr>
<td>Team gave a strong presentation of its solution to the challenge and showed clear understanding of the science concepts and design process.</td>
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</tr>
<tr>
<td>Team gave a basic presentation of its solution to the challenge and showed basic understanding of the science concepts and design process.</td>
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</tr>
<tr>
<td>Team gave a weak presentation of its solution to the challenge and showed little understanding of the science concepts and design process.</td>
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<tr>
<td><strong>Total Points:</strong></td>
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Mission: Solar System

5 hands-on activities

- Leader notes
- Student handouts
- NASA connection
- Extension activities
- Performance assessment rubric
Activity: ROBO ARM

Challenge: Design and build a robotic arm that can lift a cup off a table.

Materials: Cardboard, brass fasteners, straws, fishing line, paper clips, paper cups, and tape
Mission: Solar System

Robo Arm activity DIY video
Mission: Solar System

NASA Engineer Profiles
Mission: Solar System

NASA engineer profile video
Mission: Solar System

Tutorial Video for Educators
How can I use these resources in my work?
Ways To Use Design Squad Nation

- Events
- Camps
- Classroom
- Afterschool
Ways To Use Design Squad Nation

- Events
- Camps
- Classroom
- Afterschool
Ways To Use Design Squad Nation

- Events
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- Afterschool
Ways To Use Design Squad Nation

- Events
- Camps
- Classroom
- Afterschool
"Design Squad Effective at Teaching Kids"

Students exposed to *Design Squad* learned significantly more about key *science concepts* (i.e., electrical circuits, sound, Newton’s Laws, force, and air pressure) than students who were not exposed.
Design Squad Helps Kids Understand Engineering

Students exposed to Design Squad demonstrated a better understanding ...

- what engineering is
- that engineering involves having a great imagination
- of the types of projects that engineers work on

Seven out of the eight teachers reported that the Design Squad challenges strengthened their students’ ability to cite examples of what an engineer does and helped them expand their definition of what engineers do (beyond just driving a train, for example).
Design Squad Encourages Positive Attitudes Toward Engineering

Students exposed to Design Squad...

- demonstrated more positive attitudes towards engineering,
- were *less likely to believe the stereotype* that “engineering is boring”

Seven out of the eight teachers agreed that Design Squad made their students **more excited** about **engineering** as a career choice and provided an opportunity for students to educate one another about the design process.
Resources

To request your copy of the Mission: Solar System guide email: designsquad_feedback@wgbh.org

Subject: Mission: Solar System guide
Next Steps

• Visit the **Mission: Solar System** page on the Design Squad website
  

• Sign up for our e-newsletter

• Upload photos and share stories on Facebook
  
  www.facebook.com/DesignSquadNation
  
  www.facebook.com/DesignSquadEducators
Questions?

Anna Hohos

Anna_Hohos@wgbh.org
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Get Involved

National Girls Collaborative Project

Call for Abstracts for WEPAN's upcoming conference! Abstracts up to 350 words are due by November 15, 2012. 2013 Conference theme is: Engage Everyone: Building an Inclusive Climate for Diverse Communities for Women in STEM.
Get Involved
Get Involved

National Girls Collaborative Project

November 2012

Building the Capacity of STEM Practitioners to Develop a Diverse Workforce

NGCP Updates

Arizona, Louisiana, and California Conduct Successful Kick-Off Events!
Congratulations to the Arizona Science, Technology, and Engineering Collaborative (ASTECA) Project for Girls, Louisiana STEM Girls Collaborative Project (LaSTEM GCP), and the California Girls in STEM (CalGirlS) Collaborative Project for their successful kick-off events. These events provided opportunities for organizations to connect and collaborate with others in their regions doing similar work, as well as to meet new partners. A few highlights: Arizona showcased a demonstration from the Physics Factory and provided an opportunity for participants to tour Biosphere 2. Louisiana featured a hands-on breakout session with the Emmy award-winning PBS' Design Squad Nation discussing how to boost girls' interest in engineering using multimedia resources and activities with a panel discussion of Louisiana women leaders in STEM. California's highlights included keynote speaker Judy Lee of IDEO and an inspiring panel of girls talking about what encourages them to pursue STEM.
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