

DESIGN SQUAD TRAINING OTHERS TALKING POINTS

SLIDE 1—TRAINING

1. Welcome participants to the *Design Squad* Training.
2. Introduce yourself and share why you are involved with *Design Squad*.
3. Announce length of training and other logistics such as break times and locations for bathrooms, water fountains, and emergency exits.

SLIDE 2—A MULTIMEDIA PROJECT

1. Introduce *Design Squad*:
 - A. Over the course of 13 episodes, eight high school students compete to design and build fantastic, whimsical, fully operational engineering projects—everything from a machine that automatically makes pancakes to a motorized red wagon that can reach speeds of up to 20 mph. In the final episode, the two top-scorers battle for the Grand Prize—a \$10,000 college scholarship provided by the Intel Foundation.
 - B. The show is hosted by two real engineers and is the only engineering show on television for kids.
 - C. 13 video profiles of real engineers will dispel the “I can’t do that” stereotype and replace it with “That’s engineering? I want to do that.” Visit pbskidsgo.org/designsquad/engineers to download the *Design Squad* video engineer profiles. (Available in Feb. 2007.)
 - D. Each episode of *Design Squad* utilizes animations to illustrate the engineering, science, and math concepts necessary to solve that week’s challenge. Download these short clips at pbskidsgo.org/designsquad/engineers. (Available in Feb. 2007.)
2. Tell them about the Web site:

The *Design Squad* Web site offers behind-the-scenes information about the cast, games, descriptions of the show’s engineering challenges and solutions, plus an e-Zine that highlights the role of engineers in society. The Web site also offers downloadable resources for events and workshops such as video clips and printable signs. A whole section of the Web will be devoted to engineers at pbskidsgo.org/designsquad/engineers. While the full site will launch in early February 2007, you can visit the preview site today and see clips from the show, meet the cast, and learn more about the outreach.

3. Discuss the outreach campaign:

Tell your workshop participants that *Design Squad* is building a community committed to fostering a positive image of engineering. Through partnerships with engineering groups and education groups, we can work together to deliver engaging engineering activities to places where kids, ages 9–13, can be found: afterschool programs, schools, museums, and malls.

SLIDE 3—TODAY’S AGENDA

1. Review the agenda.

a. **Watch TV**

We’ll get a chance to see a short clip from the show.

b. **Outreach Goals, Get Involved, and Resources**

We’ll also spend some time going over *Design Squad’s* goals, ways we can get involved, and the resources they are offering us. Our job today is to think about how we can use these in our outreach efforts.

c. **Hidden Alarm**

This activity challenges us to build an alarm, complete with circuits and switches, so small we can sound an alarm and people won’t know where the sound is coming from.

d. **Today’s Tweens**

We’re going to spend some time learning about 9- to 13-year-olds. We’ll also review the research results from the Extraordinary Women Engineers Project (EWEP). While this research focuses on what high school girls are thinking about engineering and careers, it illustrates how important it is for us to begin reaching out to middle-school aged kids and how we can talk to them about engineering.

e. **Pop Fly**

Our second challenge of the day is to send a ping-pong ball flying—our materials are a paint stirrer, some tape, and a spool.

f. **Design Process & Working with Kids**

We’ll learn to guide kids through an activity using the design process and review more tips for working with kids.

g. **Support *Design Squad***

We’ll also discuss additional ways to support *Design Squad*.

2. Summarize by letting participants know that they’ll leave the training with ideas and hands-on challenges they can use immediately with kids.

SLIDE 4—SNEAK PEAK

- I. Show the Design Squad compilation reel.

SLIDE 5—OUTREACH GOALS

- I. Review the *Design Squad* goals. Lead a discussion about how these goals match those of your workshop participants.

SLIDE 6—GET INVOLVED

- I. Share with your participants that there are many ways to get involved in *Design Squad* from working with kids in a small group setting or to hosting a large event.
2. Partnerships—Ask them to think about who they are already working with and what new partnerships they may be able to develop. *Design Squad* is creating partnerships at the national level with groups like local public television stations, Girl Scouts and Boys & Girls Clubs. Visit pbskidsgo.org/designsquad for a complete list of national partners.
3. Spread the word—Let your participants know that *Design Squad* welcomes all help in getting the word out about the show and its resources. Brainstorm potential ways people can spread the word, from linking to our Web site to sending emails to friends and family, to writing articles about the show and your outreach efforts.
4. Before you show the next slide, ask participants to share why they think out-of-school engineering experiences are important to kids.

SLIDE 7—WHY DO IT?

- A. Read the bullets points on this slide, elaborating as needed:

Out-of-School Experiences can...

- **Spark kids interest and confidence in doing engineering**
Kids have greater freedom to test out their ideas without feeling pressure to come up with the “right answer.” This can spark kids’ interest and confidence in engineering.
- **Open doors to future careers**
Studying engineering leads to a rewarding career in engineering as well as serving as an entry point for many other careers—doctors, lawyers, business professionals, teachers, etc...
- **Send the message that everyone can do engineering**
When you try activities with kids and show your own curiosity and

willingness to have fun, you send an important message.

SLIDE 8—RESOURCES

1. You've already told them about the TV show, engineer profiles, animations, and Web site, so concentrate on the two great resources they can use in their outreach:
 - A. Educator's Guide: Geared to afterschool programs, this resource provides four multi-session engineering challenges that you can use with 5th to 8th graders over a 10-week period. Each unit takes two to three meetings to complete and includes teaching tips, science and engineering background information, and group management strategies.
 - B. Event Guide—Complete with five hands-on activities developed for use at events, this guide contains tips, reproducible handouts, and evaluation forms that will help you plan and organize your event from beginning to end.

Download copies of both guides from pbskidsgo.org/designsquad (available in February 2007).

2. Remind them that the rest of the training is designed to show how they can use these resources with kids in workshop settings and at events.

SLIDE 9—HIDDEN ALARM

1. Before your training:
 - try this activity yourself
 - review the challenge sheet
 - collect the necessary materials
 - make copies of the challenge sheet for each of your attendees
2. Distribute copies of the challenge sheet and materials to attendees.
3. During the training, facilitate this challenge as you would lead it with kids.

SLIDE 10—TODAY'S TWEENS

1. Ask your participants how much contact they have with 'tweens,' people between the ages of 9 and 13.
2. Also ask if anyone knows what Generation Y means? According to Wikipedia "Generation Y is the cohort of people born immediately after "Generation X", though the term is itself controversial and is synonymous with several alternative terms, listed below. It usually describes people born from the late 1970s through the 1990s."

3. Review the factoids on this slide and ask your participants, “What do you think they think about engineering?”

SLIDE 11—WHAT DO THEY THINK?

1. The information on the next several slides is from the Extraordinary Women Engineers Project. Before the training, download the full report at www.engineeringwomen.org and review. We recommend that you view the video of Kito Robinson presenting this research, also on this Web site.
2. Share with your participants that this is what high school girls think about engineering. And while our audience is middle school-aged kids, it is safe to assume that they are probably thinking this as well.
3. Discuss with your audience the meaning of “love” for a young person. For example, while the average adult might love sushi, for a young person, love is associated with strong passion and overwhelming feelings. It is a very strong word.

SLIDE 12—WHAT WE’RE TELLING THEM

1. Share with your attendees the meaning of the word “superior” for young people, especially girls. Superior abilities to young people means getting all A+’s, not B+’s or even A’s.

SLIDE 13—WHAT DO THEY WANT?

1. Researchers from the EWEP asked girls what they wanted from a career. Review the list on the slide.

SLIDE 14—DISCONNECT

1. From this research we have learned that engineers stress the process of becoming an engineer, rather than the benefits and rewards of being an engineer. When doctors talk about their careers they don’t typically start with how good you have to be in math and science or the number of standardized tests you’ll take over a lifetime. They talk about the joys of saving lives, of helping people.
2. Discuss that it is not that the message about engineering isn’t reaching young people, it is that they do not like what they are hearing about engineering.

SLIDE 15—WHAT CAN WE SAY?

1. Use these real quotes from the EWEP survey to lead a discussion about how

engineers can start talking about the benefits and rewards of being an engineer and how in sync these are with the type of careers young people want:

1. Enjoying what I do
2. Good work environment
3. Making a difference
4. Good income
5. Flexibility

SLIDE 16—POP FLY

1. Before your training:
 - try this activity yourself
 - review the challenge sheet
 - collect the necessary materials
 - make copies of the challenge sheet for each of your attendees
2. Distribute copies of the challenge sheet and materials to attendees.
3. During the training, facilitate this challenge as you would lead it with kids.

SLIDE 17—DESIGN PROCESS

1. Joke with your audience that you hope this looks familiar!
2. Tell them that every aspect of *Design Squad*—the television show, the Web site, and the outreach campaign—reinforces the design process. For example, did they notice that on the challenge sheet, each step in the challenge is introduced as a step in the design process (i.e., brainstorm, build)? This structure provides a path for both the kids and the facilitators to use when doing activities.

SLIDE 18—WORKING WITH KIDS

1. Before the training, make copies of the “Working with Kids” handout from the Event Guide for each of your attendees.
2. Review the tips on the slide and encourage participants to review the handout after the training.

SLIDE 19—WORKSHOPS

1. Talk to your participants about presenting a *Design Squad* workshop to a small group of kids in classrooms or afterschool programs. A great resource for activities is the Educator’s Guide.

2. The Educator's Guide has four multi-session units, divided into individual challenges. Each challenge emphasizes teamwork and creative problem-solving and comes equipped with leader notes, discussion questions (and answers!), and activity sheets. The four units are:
 - Motorized Car (three challenges): Kids first build a rubber band-powered car, then motorize it, and finally customize it.
 - Dance Pad Mania (three challenges): Kids build a foot-operated dance pad that sounds buzzers and flashes lights.
 - Kicking Machine (two challenges): Kids build machines that send ping-pong balls scooting across the floor.
 - Wind Sculpture (two challenges): Kids build a tower with parts that move in the wind.
3. Use the graphic on this slide to illustrate how the challenges in the Educator's Guide are designed to be flexible and can accommodate a variety of schedules.
4. Let them know that the Educator's Guide will be available for download in early February 2007 at pbskidsgo.org/designsquad.

SLIDE 20—EVENTS

1. Review the basics of what a *Design Squad* event looks like with your participants.
2. You might also want to brainstorm some potential locations—libraries, afterschool programs, malls, and museums.
3. Share with them the resources they can use:
 - Challenge stations—Set up tables at the event that feature the five activities from the Event Guide: Hidden Alarm, Four Corners, Rubber Band Car, Kinetic Sculpture, Pop Fly. Let them know the activity sheets are also available in Spanish. They can download them at pbskidsgo.org/designsquad/engineers.
 - Testing zone—Create a space where participants can test their results—how far their rubber band car travels, how well their sculpture holds up in the wind, or how high their ping-pong ball flies.
 - Engineer profiles—Set up a monitor to showcase the engineer profiles. Remember they can be downloaded from the Web site.
 - Reproducible signs—There are a variety of designed signs they can download from the *Design Squad* Web site to use at their event.

4. Discuss good locations to host an event—museums and malls.
5. Also discuss the importance of partners. Remind them that they can convene a committee. Partners may be able to offer a venue, volunteers, and/or publicity opportunities. Consider asking representatives from various engineering disciplines and companies, schools and afterschool programs, universities and colleges, and your local public television station and other media partners to volunteer.

SLIDE 21—SUPPORT *DESIGN SQUAD*

1. You can support *Design Squad* locally by providing local corporate underwriting on your local station.
2. Remind your participants that local public television stations set their broadcast schedule. So if your station isn't airing *Design Squad*, call them to discuss their decision.
3. Many public television stations have an outreach staff. You may want to contact yours about partnership opportunities.
4. You can also support *Design Squad* by making a contribution to the Engineers for *Design Squad* fund. The money collected by this fund will underwrite the show, the Web and the outreach. Donate today at www.wgbh.org/designsquadfund.

SLIDE 22—SUPPORTING *DESIGN SQUAD*

5. But wait there is more. *Design Squad* couldn't survive without the support of our national funders—please be sure to thank them on this slide.