SciGirls

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The Big Idea

To change how millions of girls (ages 8-13) think about STEM
Our Approach

★ On TV
  – national PBS Kids series

★ Online
  – safe, social networking website

★ On the Ground
  – SciGirls clubs and activities
Began as an outreach program of SciGirls

A summative evaluation found that girls gained:

★ confidence
★ a deeper understanding of inquiry
★ a broadened awareness and interest in science careers
On TV

check your local PBS listings –OR- watch full episodes online at pbskidsgo.org/scigirls

Features *real* girls doing investigations they’re passionate about

Highlights the *process* of science
Twelve half-hour episodes:

- Turtle Mania
- Puppet Power
- Dolphin Dive
- Digging Archaeology
- Horsing Around
- Blowin’ in the Wind
- High-Tech Fashion
- Science Cooks!
- Underwater Eco-Adventure
- Robots to the Rescue!
- Star Power
- Going Green
Sizzle Reel
video clip
Our Philosophy

- Rationale/Research
- *SciGirls Seven*: Strategies to engage girls in STEM
- Tips for using the *SciGirls Seven*
- Applying the *SciGirls Seven*
Percentage of Employed STEM Professionals Who Are Women
Selected Professions, 2008

Women in the labor force: A databook (Report 1018) (Washington, DC), Table 11.
Bachelor’s Degrees Earned by Women in Selected Fields, 1966–2006

By Liesl Chatman, Katherine Nielsen, Erin J. Strauss, Kimberly D. Tanner, J. Myron Atkin
1. Girls benefit from collaboration, especially when they can participate and communicate fairly. (Parker & Rennie, 2002; Fancsali, 2002)

⭐ Encourage working in small groups

Experiment with:

- **cooperative groups** (assigned roles)
- **collaborative groups** (no predetermined roles)
SciGirls Seven

★ Speak up promptly if a girl makes a distasteful remark, even jokingly. Set the rules at the start: no teasing or unfriendly talk.

★ Create a community atmosphere that is open and positive. Start with “icebreaker” activities involving communication and teamwork.
2. **Girls are motivated by projects they find personally relevant and meaningful.** (Eisenhart & Finkel, 1998; Thompson & Windschitl, 2005; Liston, Peterson, & Ragan, 2008)

- **Demonstrate and talk about your own enthusiasm** for the scientific material, and how it affects you *personally.*

- **Create a “need to know.”** Ask yourself - *why would kids need to know this?*

- **Use case studies.**
3. Girls enjoy hands-on, open-ended projects and investigations. (Chatman, Nielsen, Strauss, & Tanner, 2008; Burkam, Lee, & Smerdon, 1997; Fanscali, 2002)

- **Try an activity without step-by-step directions.** Don’t shortchange your girls by assuming they can’t do something without prescribed directions.

- **Encourage girls to suggest approaches to a problem.** When stumped, have girls start by identifying, drawing, or labeling things they *do* understand.

- **Resist answering the question “Is this right?”** Rather, suggest ways for girls to check the answer for themselves.
4. Girls are motivated when they can approach projects in their own way, applying their creativity, unique talents and preferred learning styles. (Eisenhart & Finkel, 1998; Calabrese Barton, Tan, & Rivet, 2008)

- Allow girls to design their own experiments. Act as a facilitator rather than a leader or expert.

- Use girls’ language to reiterate their point. Don’t reword unless you have permission from the speaker.
Help girls feel that they are valued members of a group by asking them to share personal stories. A journal or blog provides an avenue for reflection on learning.

Encourage girls to communicate their findings in a variety of ways: poetry, music, posters, plays, 2D- and 3D-models, drawings, etc.
5. Girls’ confidence and performance improves in response to specific, positive feedback on things they can control – such as effort, strategies and behaviors. (Halpern, et al., 2007; Zeldin & Pajares, 2000; Blackwell, Trzesniewski, & Sorich Dweck, 2007; Mueller & Dweck, 1998)

⭐ Reward success publicly and immediately. Avoid statements such as “You are really good at this!” It sends the message that being smart doesn’t require effort or struggle.

⭐ Convey the same level of respect for and confidence in the abilities of all your girls. Introduce girls to the good work done by their peers.
Let a girl know you believe she can improve and succeed over time. The brain is a muscle that can get stronger with time; skills can be improved with practice.

Emphasize that working scientists struggle and make mistakes, too.
6. Girls gain confidence and trust in their own reasoning when encouraged to think critically. (Chatman, et al., 2008; Eisenhart & Finkel, 1998)

- Let girls embrace the scientific process. It is okay to make mistakes; there is more than one way to solve a problem.

- Support an environment free of “instant answers.” Address girls’ anxiety about not getting the answer by refocusing their attention on the problem at hand.

- It’s okay to disagree. Stress the importance of considering different approaches and viewpoints. Remind girls of the importance of using solid evidence when making a claim.
7. Girls benefit from relationships with role models and mentors. (Liston, et al., 2008; Evans, Whigham, & Wang, 1995)

- **Invite guest speakers** from *all* levels.

- **Invite guest scientists to help lead an activity.** If you are unsure of their comfort level working with children, pair them with other educators or leaders.

- **Show videos of female scientists.**
SciGirls

Activity Guides

- SciGirls Engineer It
- SciGirls Get Tech
- SciGirls Go Green
- SciGirls Live Healthy

pbs.org/teachers/scigirls
Girls everywhere can join the SciGirls revolution online at: pbskidsgo.org/scigirls
Girls make profiles and express themselves by customizing them.
SciGirls can share their own projects. Submit yours today!

**WHAT IS SWEETER?**

**by wissenschaft**

What we did:

We added sugar and agave syrup to lemon juice. Then we held a taste test. We remind our experiment, consuming equal amounts (6 grams) of sugar and agave syrup. This time we did a blindfolded taste test. Everyone who tasted the juice said the white sugar one was sweeter.

What we wanted to know:

What is sweeter, agave syrup or white sugar? The bottle of agave syrup says it is sweeter but we wanted to test it.
Additional Sites

pbs.org/teachers/scigirls

pbs.org/parents/scigirls

tpt.org/scigirls/outreach
Activities and video in Spanish and English

Aligned to National Science Standards

More resources coming!
LISTA de COMPROBACIÓN para hacer un Club SciGirls:

- Invita amigas/miembros del club
- Crea un plan para el club
- Programa los horarios de las reuniones y las actividades
- Crea el “bling bling” de tu club
- Visita pbskids.org/scigirls para más ideas

CHECK LIST for making a SciGirls Club:

- Invite friends/club members
- Create a club plan
- Schedule meeting times and activities
- Create club bling
- Visit pbskids.org/scigirls for more ideas
brainSTEM - SciGirls

Download game cards and instructions at pbs.org/teachers/scigirls/print/
For additional game boards, please email scigirls@tpt.org
Every Girl can be a SciGirl!