



SciGirls

pbskids.org/scigirls

Family Guide for Engaging Girls in STEM



Izzie

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Welcome to SciGirls!

Your girl is participating in a *SciGirls* program designed to spark girls' curiosity in science, technology, engineering, and math (STEM) through activities that promote knowledge and discovery. *SciGirls* is all about hands-on STEM inquiry. Girls learn the science and engineering processes, work collaboratively to investigate meaningful questions, are introduced to female STEM role models and see how STEM helps people solve problems, achieve goals, and help others. By the end of this program we hope your girl will have developed a positive STEM identity and be encouraged to continue pursuing STEM in high school and college.

SciGirls believes that families are partners in helping girls to pursue STEM studies. This guide contains strategies and practical tips to help you encourage your girl to be STEMsational!



WHAT IS STEM?

STEM describes an approach to teaching and learning that combines scientific inquiry and engineering design in hands-on personally relevant learning experiences that are grounded in real world applications and integrate technology and mathematics into all aspects of the investigation. STEM learning opportunities are active. Such opportunities foster skills such as critical thinking, creativity, problem solving, communication, and collaboration. STEM is an important topic in education today because these fields are important growth areas for the U.S. economy.

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Why is STEM education so important?

STEM has a lot to offer young people:

Careers

Women only represent 26% of the STEM workforce. Encouraging women and others who are underrepresented to enter these fields will ultimately improve these professions, maximizing innovation to create products and services that are better representative of all users. In addition, jobs in these areas offer higher than average salaries, and employment in STEM occupations are expected to increase much faster than the overall growth rate for occupations.

Life Skills

At the most basic level, STEM attempts to answer how things work. The scientific and engineering processes offer a framework for understanding important ideas, big and small. In addition, while using these processes, young people learn how to plan, cooperate, communicate, problem solve, and apply their creativity.

Science Literacy

In today's society, it's important for everyone to have basic scientific knowledge to continue to learn and to make informed decisions. Even if your girl chooses to go into another field, a foundation in STEM studies will serve her well in the future. Science literacy gives us a sense of empowerment to make a difference in our community and the world!

Springboard for Opportunities

New technologies are being invented every day; it's impossible to anticipate what inventions may drive our culture in the next five or ten years. A strong foundation in STEM topics will open doors for career opportunities we don't even know about yet. The workforce is changing quickly and new jobs that don't even exist will be available to your girl. Being confident in STEM will help prepare her for possible opportunities.

Fun Times!

While pursuing their own interests in STEM topics, young people can try new things, meet engaging people, and go to interesting places. Programs like *SciGirls* can provide fun, engaging STEM activities that differ from the formal classroom setting. Activities such as designing a scientific investigation, creating a solution to a technical problem or visiting with a female scientist or engineer can inspire girls and allow them to see STEM in a different light.

How can you support her in STEM?

Invite Questions

Encourage your girl's natural curiosity about the world. Scientists and engineers are professional question askers and problem solvers. Let your girl know that it's perfectly acceptable not to have all the answers, and encourage her to explore and discover! Celebrate all attempts at trying new things. Even if you aren't comfortable with STEM, be positive.

Encourage her to Pursue STEM in School

Expect girls to do well in STEM and communicate your expectations clearly. With the growing importance of science and technological literacy, it is important to spark and strengthen girls' engagement, interest, and confidence in STEM subjects in elementary and middle school. Once in high school, your girl will make choices that will either open or close doors to STEM studies and career choices. Having a strong knowledge base in STEM topics will give your girl the opportunity to access any career path she chooses, with confidence. Help her see the connections between STEM classes and future career options. Start early!

Help Access STEM Opportunities

Great STEM learning opportunities can be found outside the classroom. Learning opportunities for kids can be found at science museums, zoos, scouting organizations, and STEM clubs during after-school hours, weekends, and summer breaks. These programs often provide girls with introductions to working female mentors who can help girls navigate the course of becoming a scientist or engineer.

Connect her to a Role Model/Mentor

Seeing women who have succeeded in STEM helps inspire and motivate girls, especially when they can relate to these role models as people with lives outside of work. Role models and mentors not only broaden girls' views of who does science, but expand girls' vision of what's possible in their own lives. You can share role models with your girl by reading biographies, looking at video and text profiles online and watching tv shows (fictional and documentary) that feature female STEM role models. Talk with family, neighbors, friends and community members that work in STEM fields and ask them questions about what they do and how they got there.



How can you offer a STEM-friendly home?

STEM is about asking questions and exploring. You can start by being curious about how everyday things work. What happens when you flip a light switch on? What happens when you use different ingredients when making cookies? Encourage safe experimentation and discovery in the kitchen and backyard, where your girl can practice predicting, measuring, observing, and analyzing. Offer basic supplies, Internet access, a library card, and a space where she can make a mess. Talk to her about math and science. Ask her about what she's learning in school. Encourage her to share her struggles and her successes!

SciGirls CHALLENGE

Discover how water changes the colors of markers.

Here's How:

You'll Need:

- 1.** Create a tissue paper flower: Fold facial tissue on the short side accordion style. Wrap top 2 inches of pipe cleaner in the middle of the folded facial tissue to hold it in place.
Cut the folded end of the facial tissue. Peel apart the layers of the facial tissue until it resembles a flower.
- 2.** Color the flower with markers as much as desired.
- 3.** Lightly spray the flower with water.
- 4.** What happened to the marker colors? Did you notice any patterns?
- 5.** Create multiple flowers and test out different colors of markers. Test out different marker brands. Do the same colors in different brands respond the same way?

- facial tissues
- washable markers
- pipe cleaners

Additional resources for your SciGirl!

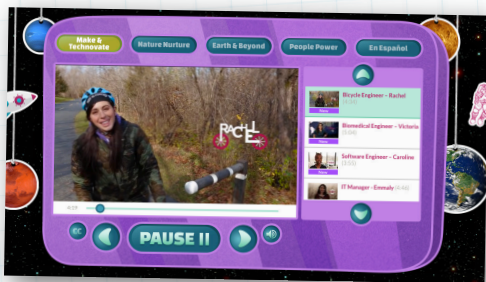
The Connector:

Search The Connector (theconnectory.org), an online database of STEM opportunities for youth, to find STEM opportunities.



PBS Kids:

SciGirls provides videos featuring young female professionals in STEM at pbskids.org/scigirls/videos. For more role models visit FabFems (fabfems.org), a national database of women in STEM professions who are inspiring role models for young women.



PBS Parents:

Head to pbsparents.org/scigirls for more great family STEM activities!

