SciGirls CONNECT

Celebrating ten years of SciGirls CONNECT

Annual Report 2019-2020
In 2005, Twin Cities PBS (TPT) created SciGirls®, a multiplatform science, technology, engineering and math (STEM) education program that is changing how millions of girls (and boys!) think about, engage in and pursue STEM studies and career paths. This innovative program integrates Emmy Award-winning television episodes, online games and media, and hands-on activities to drive STEM curiosity and learning.

In 2011, the SciGirls CONNECT project was created as a broad national outreach effort to encourage educators to adopt research-based, gender equitable and culturally responsive teaching strategies to engage girls in STEM. The SciGirls CONNECT network is a supportive community of dedicated educators who provide the spark, the excitement and promise of a new generation of women in STEM careers.

The Big Picture

**TELEVISION**

At the heart of SciGirls is a national PBS television series for girls between the ages of 8 and 13. Each half-hour episode follows a different group of real girls mentored by a dynamic female STEM professional. Over 50 million viewer impressions on TV to date!

**WEB**

The SciGirls website is the first safe social network for children on PBS and includes 39 episodes and 27 role model videos, games and opportunities for youth to engage in 50 STEM activities. The PBS Kids’ video app has garnered over 51 million views of episodes! PBSLearningMedia.org also hosts all SciGirls episodes and activities reaching 1.8 million educators annually.

**OUTREACH**

The SciGirls CONNECT educational outreach network includes 204 partner organizations in 35 states and the territory of Puerto Rico. SciGirls has trained over 5,280 educators, working with 104,000 diverse, young people in urban and rural areas nationwide.

SCIGIRLS STRATEGIES

How to Engage Girls in STEM

With the support of the National Science Foundation (NSF), the SciGirls Strategies guide was updated and debuted in 2019 based on a literature review of 120+ research publications from the past five years on what practices have an enduring impact on girls’ STEM identity. Building a robust and positive STEM identity can help girls persevere in the STEM disciplines throughout middle and high school. The SciGirls Strategies forms the foundation of all SciGirls media and activities.
How It Works

Since 2011, SciGirls CONNECT has built a network of empowered professionals dedicated to inspiring more girls to pursue STEM study and careers.

Girl-serving organizations nationwide are recruited to become a SciGirls partner organization.

A certified SciGirls Trainer provides a face-to-face training in media-enhanced STEM education and role modeling strategies at the partner site. Partner organizations receive a stipend to support staff and programming at their site. Partner organizations invite internal staff as well as other educators in their communities to participate in the training.

Trained staff and educators develop and implement SciGirls programs to inspire the next generation of STEM innovators.

All partner organizations have full access to SciGirls resources, including videos, activity guides, webinars, and ongoing support.

Train-the-Trainer

All trained educators are eligible to apply to the SciGirls Train-the-Trainer program, where they become certified to empower other educators with gender equitable strategies.

Trainers lead SciGirls workshops for educators in their region. This model creates a robust and growing network of SciGirls practitioners. The impact is exponential!
The SciGirls CONNECT Network includes 204 partner organizations and 97 SciGirls Certified Trainers across 35 states and the territory of Puerto Rico. SciGirls CONNECT partners include community-based programs like the YMCA and Girls, Inc., Girl Scouts, museums, organizations that serve Spanish-speaking youth, universities, schools and more. The network is a robust community of practice which supports collaboration and sharing of best practices within diverse informal and formal STEM learning environments.
by the Numbers
since 2011

The SciGirls CONNECT network has 204 partner organizations across 35 states.

97 SciGirls certified trainers have completed 291 trainings.

5,280 educators have been trained in SciGirls' gender equitable strategies.

1,606 SciGirls programs created, reaching 103,779 youth participants.
SciGirls Reach

Since 2011, SciGirls has reached 103,779 youth participants!

In All Communities

SciGirls programming takes place in diverse geographic settings, serving youth in suburban, urban and rural communities across 35 states.

GENDER

SciGirls content is primarily focused on eliminating the barriers that prevent girls from pursuing STEM study and careers. However, SciGirls content and activities are accessible to all youth independent of gender and have proven engaging for girls and boys.

GRADE LEVEL

SciGirls content resonates best with middle school students, a critical stage for STEM identity development. With support from SciGirls staff, educators can customize their programs to serve girls (and boys!) of all ages. The majority of SciGirls programs serve girls from grades 4-8, and about 25% of programs also serve boys.
SciGirls programs take place in a variety of settings. Educators are encouraged to leverage their own STEM content with SciGirls content. Most SciGirls programs take place in the afterschool environment, with significant summer camp programming.

Race & Ethnicity

Cultural responsiveness is a cornerstone of SciGirls vision. SciGirls program participants come from a variety of cultural, racial and ethnic backgrounds. A quarter of all SciGirls programs serve Hispanic students and all SciGirls media and activities are available in Spanish, with six episodes and 10 role model videos produced originally in Spanish.

Across the Nation

SciGirls shared the SciGirls Strategies and resources to educators and parents at 61 national and international conferences in 2019-2020 including National Science Teachers Association, Association of Science and Technology Centers and many more.

The SciGirls Strategies state that girls benefit from relationships with role models and mentors. SciGirls provides role modeling opportunities—in-person and virtually—to reach girls through as many avenues as possible.

If she can see it, she can be it.
- Geena Davis Institute on Gender in Media

Role Model Videos

Combining the power of media and the impact of role models, SciGirls has produced four series of role model videos. These short-form videos feature female professionals from diverse cultural and STEM professional backgrounds sharing their STEM stories. Role models delve into both the challenges and triumphs of “a day in the life” in the STEM workforce. They highlight female STEM professionals and have been filmed in Spanish and English across the U.S.

National Girls Collaborative & FabFems

SciGirls is excited to continue our partnership with the National Girls Collaborative (NGC). A cornerstone of NGC’s girl-centric model is role modeling. As such, NGC developed FabFems, a national role model database that connects female STEM professional role models with girl-serving organizations. This open-access database allows programs to easily find role models in their geographic and content area.

FabFems has been a critical resource for SciGirls’ partner organizations as we encourage all role models to register and continue inspiring young women to pursue STEM study and careers.

In partnership with NGC, SciGirls has created a guide and an online tutorial in best practices for role models.
The SciGirls’ network continues to grow! In 2021 and 2022, SciGirls’ projects will help children explore space science, and investigate the citizen science happening across 16 National Parks. Together, with our nationwide partners and women STEM role models, SciGirls continues to inspire children, families and educators in STEM learning.

**SciGirls in the National Parks**

Funded by the NSF, this season will focus on citizen science in the National Parks. The project includes outreach and training for educators and National Park Service women role models for girls. New episodes will be filmed at five diverse National Parks. The project also includes role model videos of women who work at the parks, providing inspiration for girls. SciGirls outreach programs for girls (age 8-13) will take place at 16 National Parks across the U.S. Episodes will launch in 2023.

**SciGirls in Space**

*Season Six*

Funded by NASA, this season will focus on space science and feature episodes at the Goddard Spaceflight Center, Marshall Spaceflight Center, Johnson Space Center, Langley Research Center and Jet Propulsion Laboratory. It also includes role model videos of young women who have participated in NASA opportunities. Space-themed outreach programs for girls and families will occur at 16 diverse SciGirls partners across the U.S. Episodes will launch in 2022.

SciGirls Reaches Over 50 Million Viewers!

SciGirls hits the 50 million mark on air! Since launch in 2010, SciGirls has had 122,000 telecasts on 719 PBS channels across all 50 states with 51 million viewer impressions and a market penetration of 100% in the top 50 PBS markets. In addition, online at the PBSKidswebsite and PBSKidsApp there have been 50 million streams of SciGirls episodes!

SciGirls & Hour of Code

SciGirls has three activities featured on Hour of Code, a global initiative to introduce millions of students to computer science. Learn to code and collect scientific data on the ocean floor game with SciGirls game CodeQuest, send digital signals to a friend with Passion for Pixels or try Code Creators to learn how to write out a computer program with pseudocode!
Black Lives Matter Commitment

“Black lives matter. Yesterday, today and tomorrow, they matter.

Since SciGirls’ genesis, we have worked with educators, parents, policymakers and other stakeholders to empower all youth—across all genders, races, ethnicities, socioeconomic statuses and any intersection of these factors—to explore and engage in STEM. In the wake of George Floyd’s death, this effort continues, with a specific focus on deconstructing the systemic racism that has long tamp down the spirit, innovation and contributions of Black learners. In this spirit, we will:

- **Highlight Black voices via STEM Storytelling:** Sharing narratives of Black girls’ and role models’ creativity and abundance around STEM is a long-held practice, but welcoming more Black talent “behind the camera” will be a key focus. We commit to equitable and intentional practices around hiring and retention of Black media makers and educators.

- **Help Educators Create Culturally Responsive Learning Environments:** While our work in this space has reached 5,300 educators, we commit to developing and providing professional development focused specifically on anti-racist practices.

We acknowledge this is just the beginning. We have not done enough to address racism, nor have we done everything well. However, we are committed to change within our organization and ourselves.”

The SciGirls team are working on proposals to fund and research this work around intersectional barriers for Black girls in STEM.
The SciGirls approach - for the TV show, website, and educational materials - is rooted in research about how to engage girls in STEM. A quarter of a century of studies have converged on a set of common strategies that work, the SciGirls Strategies: How to Engage Girls in STEM. The aligned SciGirls Literature Review was published in 2020.

The SciGirls Collection includes tips around authentic STEM practices, effective group work and the SciGirls Strategies, research-based strategies proven to engage youth in STEM and includes all 50 SciGirls STEM activities suitable for middle school students. Topics include: Earth & Space Science, Engineering & Design, Health, Life & The Environment, Physical Science and Technology. The guide will be distributed to SciGirls' 204 national educational partners, 97 SciGirls Trainers, and SciGirls trained educators in 2021.

Check out SciGirls publications in NSTA's Connected Science Learning magazine!

- SciGirls Strategies: Using Gender-Equitable Teaching Strategies and STEM Video Narratives to Engage Girls in Nontraditional STEM Fields
- The SciGirls Strategies: How to Engage Girls in STEM
SciGirls’ five PBS seasons include **39 episodes** on diverse STEM topics and feature early career women mentors and small groups of girls who investigate STEM in their communities. Girls’ families and friends are highlighted in episodes contributing to SciGirls focus on cultural diversity. Upcoming seasons include a season about space science and a season about citizen science in the National Parks.

**SciGirls in Space** was funded by the International Space Station National Lab and features real-life SciGirls who participated in The National Design Challenge, a program that invited students to design experiments that become part of the International Space Station's research efforts. Their experiments were flown to the space station aboard unmanned cargo missions.

PBS SciGirls series of role model videos: **Real Women, Real Jobs** and **Latinas at Work** feature 24 women who are the innovators, problem-solvers and dreamers that live next door. They’re passionate about their work, hobbies, families and helping to make the world a better place. They share their strategies for overcoming challenges and finding success and joy in jobs where women are underrepresented.
SciGirls Emmy Awards

- *SciGirls’ first season* - Day Time Emmy Award for Best New Approaches – Daytime Children’s show.
- *Real Women, Real Jobs* - 2016 Midwest Regional Emmy Award for Best Teen Show!
- *SciGirls’ fourth and fifth seasons* were nominationed for the Day Time Emmy Awards for Best Educational Show.

Funded by the NSF and Craig Newmark Philanthropies, *Women in Tech* introduces nine women with diverse lived experiences taking unique paths to find technology jobs that they love. They tell their own stories of struggle and triumph and reveal how they’ve built careers and communities where they can express their personal interests and identities.

SciGirls Goes Global

New Global Partners Help *SciGirls* Reach More Youth!

**Discovery Education**: *SciGirls* episodes and role model videos will reach educators and learners in **90 countries**.

**VMe**: Vme cable television aired *SciGirls’* fourth season reaching many new Spanish speaking viewers on air and online.

**Akili Kids**: *SciGirls* is now being broadcast in Kenya, Africa.

Across the last decade, *SciGirls* team members have presented our work to educators in Egypt, Russia, Chile, Kazakhstan, Kyrgyzstan, Turkmenistan, Turkey, South Africa, Australia, Canada, Brazil, Scotland, United Kingdom, Germany, Jordan, Costa Rica, China and Mexico!
On air, through PBS distance learning initiatives the broadcast of SciGirls grew from 108 to 387 channels. Online, during this same period, SciGirls saw a surge in PBSKids traffic (89%) on the PBSKids App (34%); on PBS Learning Media (40%). And on YouTube, SciGirls had an increase in new subscribers (86%), views (37%) and watch time (67%).

In SciGirls newest game, Code Quest, play with Izzie and Jake, as they become helpers at their local Aquarium to research and create a new ocean reef exhibit. Code “Subby, the submarine” to collect information about the animals and habitats living in the reef.

Other games include:
- Aquabot - Build your own naturally bouyant robot
- Dream Team - Play cards with friends, featuring the TV SciGirls
- Creature Features - Help Izzie collect citizen science data in the wild

As part of their coronavirus response, PBS stations moved quickly to address the distance learning needs of students across the county.


PBS WORLD Channel: PBS WORLD is carried by 174 partner PBS stations and 80% of US TV households. In March 2020, PBS WORLD began broadcasting At-Home Learning programs weekdays. SciGirls appeared in the WORLD At-Home Learning block 28 times.

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**Research and Evaluation Findings 2010-2021**

**SciGirls Media:**
- Viewers of SciGirls media report an increase in their interest in and understanding of STEM processes and feel that seeing successful females amplifies confidence in their own abilities and motivation to do STEM.
- Exposure to SciGirls media has been shown to increase girls’ understanding of citizen science, and their interest and self-efficacy in citizen science, with a special influence on girls of color.

**SciGirls Outreach:**
- Educators consistently trust SciGirls’ resources as reliable tools that build girls’ confidence, deepen STEM skills, and spark passion in STEM.
- SciGirls educators (n=1070) rated gender equity PD and the SciGirls Strategies as "extremely valuable".
- SciGirls educators report firmly believing that girls are “significantly impacted” by participating in programs that use SciGirls resources. Educators cite increased confidence and interest in STEM, and increased awareness of STEM careers.
- Educators also report that using the SciGirls Strategies is “very effective” in engaging girls from diverse racial, ethnic, and socioeconomic backgrounds in STEM.
- Girls reported higher rates of emotional connection to STEM, an important component of STEM-related identity development.
- Programs that used equitable strategies, involved families and personally relevant activities, built girls’ positive STEM identities.
- Girls’ increases in STEM identity have been shown to be driven by recognition from educators and peers.
- Girls, ages 9-11, report a higher rates of emotional connection to STEM than older girls (ages 12-14) supporting the need for early intervention.

For more research and evaluation reports, visit: SciGirlsCONNECT.org/Evaluations
SciGirls Works!

“SciGirls is an exciting educational series that strives to change how girls view traditionally male fields like engineering and technology by introducing viewers to real tween girls who are using their science prowess to explore -- and sometimes change -- the world.”
- Common Sense Media

“Tweens identify with the SciGirls and their investigative adventures in learning. The series poses interesting questions, viewers travel on fun field trips, are engaged with hands on activities and see real life applications of math, science and engineering. An interactive dynamic website provides safe social networking allowing further inquiry and connections when the show is over.”
- KCTS Public Media (Seattle)

“By comparison with much of the so-called activity-based material on the market, [SciGirls'] well-organized but open-ended labs stand out for their originality and authenticity.”
- NSTA Recommends

“The program, website and education materials provide encouragement to young women that they can make a difference in the growing STEM environment.”
- KCTS South Dakota Public Broadcasting


For more research and evaluation reports, visit: SciGirlsCONNECT.org/Evaluations
Websites

SciGirls is a Twin Cities PBS website for educators that includes:

- PBS Kids (pbskids.org/SciGirls)
- SciGirls CONNECT.org (pbslearningmedia.org/collection/SciGirls)
- SciGirls PBS Kids (pbskids.org/SciGirls)

SciGirls CONNECT.org is a Twin Cities PBS website for educators that includes:

- STEM Media
- Activities
- Gender equitable teaching strategies
- Training for STEM role models
- Resources for SciGirls trainers

This material is based on the work supported by the National Science Foundation under Grant No. #1612605. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.