

# SciGirls in Space 2022 Pre /Post Professional Development Educator Survey Results

By Dr. Hilarie B. Davis April 21, 2022

Outreach professional development was offered to 15 sites in two 2.5 hour online sessions on April 20 and 27<sup>th</sup> via zoom. Participants were asked to do five things before the first webinar: 1) Watch one SciGirls episode, 2) Watch one SciGirls role model video, 3) Read one SciGirls activity, 4) Read the SciGirls Strategy Guide, 5) Complete a pre survey on their prior experience with SciGirls, their intended use of this training, and how they planned to involve families (N=23). A post survey asked them to evaluate the professional development and identify any needs for implementation (N=20).

Sample screen shots of slides from professional development:

## Outreach Programs

### Program Requirements

- Hold a SciGirls in Space outreach program
  - Can be in partner's desired format (afterschool sessions, summer camp, virtual or in person, etc.)
  - SciGirls in Space outreach program can be integrated into an existing program or be a new program
- Programs Must Include:
  - 20 girls in 5<sup>th</sup> – 8<sup>th</sup> grade
  - At least two (of six) SciGirls in Space activities
  - At least one SciGirls episode
  - 2 SciGirls Role Model Videos
  - One role model visit with a NASA woman role model (in person or virtual)
  - A closing session in which families (parents/caregivers) are invited to share girls' projects, meet a role model or view a role model video
- Partner Organizations will complete all evaluation activities:
  - Girls in programs will complete post-program evaluation surveys
  - Educators will complete pre- and post-training evaluation and post-program survey

### Using Media for Education

- Watch the Video ahead of time!
  - Think about key points
- Define it! Tell learners what the video is.
- Activate Prior Knowledge
  - Help make connections
- Press Pause
  - Make predictions
  - Build investment
  - Was I right?
- Make it Meaningful
  - Tell them *why* they are watching it
- Get Specific!
  - Tell them particular things to watch for
- Allow for Reflection and spark discussions!
  - Watch, Think, Share
  - Think, Pair, Share
  - Start with open, general questions

## **Evaluation Summary**

Most of the educators (75%) who attended the professional development have been involved with SciGirls before, some for as long as 10 years. They value the program for how it supports diverse students and especially girls. Several run other programs for girls and integrate SciGirls into that. They highly rated the professional development as a refresher, hearing about the new program, hearing about other programs, and seeing new resources. They all plan to implement SciGirls in Space within the next year, many during this summer, for an estimated total of over 1300 girls.

## **Pre Survey**

- Three-quarters of the educators (N=23 from 16 institutions) have done SciGirls activities before in summer camps, after-school programs, and teacher training.
- They signed up because they “love” SciGirls and are always interested in new programming, to learn how to educate girls better, to partner with a community organization, and as an opportunity to expose more girls to SciGirls.
- Most sites will offer SciGirls in space this summer; five will offer it in the fall; and five will offer it on an ongoing basis. They will offer it to anywhere from 15 girls to 500 for a total of about 1300 girls.
- They plan to involve families with newsletters, end of program presentations, and encouraging the girls to communicate with their families.
- Their concerns were understanding the requirements, knowing how often they can offer it, knowing how to evaluate it, and having more opportunities to work with PBS.

## **Post Survey**

- Twenty representatives from 14 institutions completed the post professional development survey.
- They highly rated all aspects of the professional development on a scale of 1-5, with 5 being the highest: Collaborating/networking (3.6), Professional development format/process (4.3), Quality of presenters (4.6), SciGirls Framework and Strategies (4.8), and Getting your questions answered (4.8).
- They appreciated hearing about other programs, how to get role models, going through the strategies, links to additional resources, and seeing the website content. They liked all of the PD (3.7//5) and would like more networking and even opportunities to connect girls across sites (3.4/5) and more activities (3.2/5) and how to think creatively about programming.
- Educators rated themselves higher after the professional development on implementing SciGirls activities (6.4 before, 8.7 after) and working with diverse students (7.3 before, 8.2 after).
- Overall, participants reported that the professional development met their expectations (4/5), was well run and organized (4.6/5), fun (3.9/5), and a good use of their time (3.9/5). They would like more depth of information about activities, ways to plan their SciGirls events, additional networking with other sites, and more information on working with diverse students.
- Seventeen of the 20 participants reported the professional development reinforced their thinking about girls in STEM as a good reminder of why and how we can support girls in STEM.

### **Pre Professional Development Survey Detailed Findings N=23**

Representatives of 16 institutions completed the pre survey. Challenger Learning Center of Maine is also participating but did not complete the pre-professional development survey.

- Basic Enhancements, Inc. (Discover Your World STEM)
- ExplorationWorks
- Fleischmann Planetarium & Science Center
- Florida State University Schools
- Girls Inc. of TNV
- National Magnet Lab
- NDSGC & ND NASA EPSCoR
- North Dakota Space Grant (NDSGC)
- PARI Pisgah Astronomical Research Institute
- Ramapo Airmont Challenger Center
- Reading Public Museum
- Rosman Middle School
- Science Center of Iowa
- Scobee Education Center
- spectrUM Discovery Area
- WSKG Public Media

Have you done SciGirls activities before? 75% yes

If Yes, when and what?

- *Since 2010, we lead a SciGirls summer camp. We also do SciGirls activities regularly in our museum at our Discovery Bench and through other after-school programs.*
- *SciGirls Summer Camps over the past 8 years.*
- *We have hosted a SciGirls Trainer from Austin to provide a teacher workshop*
- *We are part of the Black SciGirls program*
- *I completed a SciGirls educator professional development in 2018 at the National Mag Lab and I taught two summer camps through the Mag Lab using SciGirls activities.*
- *Coding Program, Pre COVID*
- *Supported SCI GIRLS CODE*
- *In our teacher workshops, in a space camp for girls through SciGirls in summer 2019 ending in call to ISS, at public engagement events*
- *I am a certified trainer from the class of 2013 !*
- *SciGirls Code & SciGirls in Space (Christina Koch Downlink)*
- *2013, 2018*
- *2015 SciGirls professional development with a visiting SciGirls presenter; learned about SciGirls methodology, programs and activities; teacher Inservice*
- *Up to 10 times each year, since 2015*
- *I have taught a Sci-Girls summer camp and after school classes*
- *Deep sea diver, at a Girls in Science Event, in camps*
- *We hosted a SciGirls Trainer workshop pre-pandemic*

- *Pre-Pandemic*
- *Too many to list, roughly 3 - 4 years ago*

Why did you sign up for SciGirls in Space training?

- *We love SciGirls and always enjoy the curriculum.*
- *A continuation of other SciGirls programs that we have offered.*
- *We provided a letter of support for the original proposal submitted for funding of the SciGirls in Space unit.*
- *To enhance our curriculum, strategies and needs for our Fall Club and beyond.*
- *I teach Earth/Space science and I am passionate about guiding girls into STEM fields.*
- *Provide STEM programming/resources for our middle school participants*
- *Grow understandings of serving underrepresented, aligns our annual goals, meet the needs of our public*
- *For awesome STEM activities for our older girls here.*
- *Our organization is offering this curriculum, and I wanted to learn more about it.*
- *I plan our summer camps and I want to learn how to advocate for girls in science better.*
- *Love the content and strategies!*
- *SciGirls programming is integrated into the mission of our public media station and I feel deeply about sharing these kinds of experiences with girls in our area.*
- *We have done other SciGirls programs and activities that have been quite successful.*
- *Being a new partner with SciGirls we are participating in the professional development to ensure that we are properly trained on the SciGirls materials and to be prepared to administer it to the children that then participate in our SciGirls in Space program.*
- *To assist in programming*
- *I enjoy being in the know of the most innovative practices to promote STEM education to the youth.*
- *Most content we work with for the general public is Space Science-centric; SciGirls is a great program with great goals.*
- *The opportunity to partner with a community organization and promote science learning for girls. To extend learning beyond my classroom. To learn something new!*
- *We have been involved in SciGirls since 2015 and the SciGirls 7 has become part of the teaching philosophy for many of our instructors. Plus we love space exploration so it seemed like a natural fit.*
- *To learn more tools to teach SciGirls*
- *SCI girls experiences are so applicable and quality that any topic that aligns to our audience our organization would participate in*
- *We provided a letter of support for the NASA Grant proposal in 2019.*
- *This is a great way to get girls to enjoy science and to believe that they can do it!*
- *Invitation to train so we can use it in summer camp and take advantage of grants.*
- *Opportunity to expose more girls to SciGirls*

When will you use what you learned?

Summer This summer

This summer! We have a STEM Ambassador program of college

Summer students who implement these lessons at public engagement events

and in K-12 classrooms. We will also use at upcoming educator professional development workshops and at a space camp for middle school girls this summer, as directed by our participation in this specific program.

- Summer Summer
- Summer Starting this summer, and on
- Summer Not sure yet. May be able to run as an after-school, weekend, or
- Summer summer camp program depending upon length of time required.
- Summer during our summer camp
- Summer This summer, in our two SciGirls summer camps.
- Summer I will use this professional development in SciGirls summer camps
- Summer this summer.
- Summer I will share these resources with educators beginning this summer.
- Summer throughout planning, implementation of camps & in our Girls in
- Summer Science Initiative
- Summer in camp in our Girls in Science Program
- Summer We have an all-girl camp program in July
- Summer We hope to use this program this summer for our camps.
- Summer The information will hopefully be applicable in many situations;
- Summer however, our all-female program will run the week of July 25 -29,
- Summer 2022
- Fall In the fall of 2022.
- Fall We plan to start using what we learn in October, however I'm sure
- Fall various aspects of what we learn during the professional
- Fall development will start to be used before October.
- Fall I will be planning a SciGirls in Space after school program for Fall
- Fall 2022.
- Fall Fall
- Fall We will put into practice while developing programing
- Fall immediately. But implementing this fall.
- Ongoing Workshops with visiting school groups, camps, community
- Ongoing engagement days, etc.
- Ongoing During board and donor meetings
- Ongoing Daily in my work.
- Ongoing During programming and future events
- Ongoing In afterschool Science Club for girls (also probably integrated some
- Ongoing into my science class).
- Ongoing Immediately. The goal is to present/share at a Summer Program
- Ongoing and in the Fall with my students.

With what group will you use SciGirls in Space? How many?

- 500 Girls in our programs, approximately 500
- 300 Our Club participants- 300+/increasing over time.
- 80 I will use them in our summer camps. We have 4 camps per week with about 20 students each.

60 About 60 students in summer camps. 20 - K-2nd, 25 - 3rd-5th, 25 - 6th-8th  
 40 I will begin with after school programming of 40 girls - having them  
 35 participate in the activities I learn during this training.  
 Middle school, 20-50  
 A special group of 20-30 middle school girls with some high school students  
 25 assisting  
 25 Middle School, Grades 5th-8th approximately 25  
 25 5th-8th approximately 25  
 24 Our 24 students in summer camps this summer.  
 24 SciGirls summer camps with 24 students  
 20 Artemis Academy for Girls/16-26 girls  
 20 20 or so 5th-8th grade girls  
 20 Teachers, public, middle school girls. MS girls camp is ~20 participants.  
 Middle school aged girls that have participated in our prior school and girl  
 20 scout programs. Perhaps up to 20 girls.  
 We are going to primarily use our SciGirls in Space with a group of children  
 20 that sign up specifically for this program. We are hoping to have between 20-  
 25 children sign up for the program, however, more would be wonderful!  
 20 middle school, 20  
 20 16-26 middle school age girls in summer camp  
 20 Our fall STEM Club group cohort at a school ~20  
 15 SciGirls Summer Camp in July, 15 girls.  
 15 current plan, group of 10-20 girls  
 ? Summer Camp Students, Classroom students, weekend workshop participants.  
 One or more groups we will offer first to underserved audiences, including  
 Title 1 students, specifically targeting girls, but we know that the content will  
 be great for all potential audiences.  
 Not sure yet.

How will you involve families?

- *We connect with families throughout the week and host an after-camp parent showcase.*
- *Family event at the end of the program.*
- *The families are currently engaged with us in after-school programs in April and May.*
- *We invite families to our STEM Sessions as well as Club celebrations.*
- *Families will be invited to attend a closing celebration to showcase the program.*
- *Written communication and hopefully celebration of their work in an in person experience.*
- *By offering information about programs to be offered*
- *In programs at the Science Center*
- *Families will be invited to attend the final day of the space camp, for a closing ceremony, celebrating the students' accomplishments throughout the camp.*
- *They will be invited to an event to showcase what their students have done during the after school program.*
- *In the past families have attended presentations to see what the SciGirls have accomplished, and have provided snacks at various meetings throughout the year.*

- *We are hoping to involve families by having some of the programming be a family event where the families of the children that are involved in our SciGirls program participate in the activities.*
- *events families can join to see student work*
- *Community Events, General Communication, I'm sure I think of something once I have a full understanding of what's expected.*
- *Some activities/program components will include family members of girls/participants.*
- *Involvement with a showing of student work.*
- *Families will receive an email before camps detailing the activities. Some of our campers may receive emails with pictures of their participation.*
- *Our campers will be able to share what they learn with their families.*
- *To be decided, likely working on celebration and in communication*
- *The families are involved with our cohort during an after-school program.*
- *Have them join at the end of selected sessions/activities to show off girls' work in order to engage them in understanding the projects, trying them out when applicable, and (most importantly) to have them proud of what their daughters can and did do.*
- *I always encourage students to share with families, apps such as SeeSaw or ClassDojo, outreach events.*
- *Send newsletter, resources and questions to engage the girls in conversation around the subject.*

What are your questions or concerns going into the training?

- *We intend to incorporate SciGirls activities into our existing programs to complement our work.. They are not intended to replace or recreate our existing all-female programs.*
- *Clearly understand how we can evaluate the programming*
- *What resources are available? Role Model connections? Will there be pre/post surveys for girls/families to participate in? How many times can we run the programs?*
- *Biggest concern: Length of time required to run the program.*
- *Was I supposed to receive any materials before the training?*
- *Can I get a signed copy of the MOU. I was not able to download and print?*
- *I'm curious about what it would take to partner with PBS Kids on a larger scale. I mean getting more educators and districts involved.*
- *What are some of the most innovative Computer Science opportunities that Sci-Girls have available for students and their mentors?*
- *Who's the principal investigator for this research project and will I have direct access to him/her?*
- *We are curious about updated programs since we first participated/trained with SciGirls, specifically the Space components instead of general science activities.*
- *Easy implementation strategies, family involvement ideas*
- *What are the requirements?*
- *Strategies for success with implementation*
- *We intend to incorporate the SciGirls activities into the existing camp activities as opposed to solely running SciGirls camp.*

- *What are your expectations from us? How can we work more with you? I have other student programs I work with - how can I bring them into the SciGirls family?*
- *Is there a minimum number of hours of programming required?*
- *Excited to learn and find out more! (3)*
- *No questions - excited to learn! (12)*

**Post Professional Development Survey Detailed Findings N=20**

Representatives from 14 institutions completed the post survey.

- Basic Enhancements, Inc. (Discover Your World STEM)
- Challenger Center of Maine
- ExplorationWorks
- Girls Inc. TNV
- National High Magnetic Field Laboratory
- North Dakota Space Grant Consortium
- Pisgah Astronomical Research Institute
- Reading Public Museum
- Rosman Middle School
- Science Center of Iowa
- Scobee Education Center
- spectrUM Discovery Area
- Town of Ramapo Challenger Center
- WSKG Public Media

Rate the different aspects of the training? 1-5=highest

	Mean
Collaborating/networking	3.6
Professional development format/process	4.3
Quality of presenters	4.6
SciGirls Framework and Strategies	4.8
Getting your questions answered	4.8

Other described

- *LOVE SciGirls*
- *Role Model video was great*

Comments on parts that were most valuable to you

- *New resources for professional development role models and finding role models. Materials to share with other instructors for our SciGirls programs.*
- *I enjoyed sharing ideas and hearing what is happening at other programs across the country. Networking is super important and one of the best parts of trainings.*
- *Going through the strategies and going over lots of examples.*
- *Chat Q&A and posted links and ideas.*
- *I like the SciGirls resources guides and online materials, complemented by the background and discussions in the presentation.*

- *A refresher is always good! So I appreciated that. But it would have been even better if there were more substance in the "in space" part of the training.*
- *Day 2 of professional development was a high point. Walking through the strategies and hearing others applications was helpful*
- *The content of the Sci Girls connect website has been incredibly helpful. I have used it as a resource many times.*
- *I appreciate all of the new learning experiences and connections.*

What did you like least? Rate 1=not true for me, 5=very true of me

	Mean	Number of Each Response				
		1	2	3	4	5
Professional development logistics	3.1	4	2	5	7	2
Aspect of presentation	3.0	6	1	4	6	3
Liked all	3.7	2	0	5	9	4
Wanted more activities	3.2	3	3	5	6	3
Wanted more networking	3.4	2	2	7	5	4
Wanted less about SciGirls Framework and Strategies	2.1	9	4	5	1	1
Miscellaneous	2.4	6	2	10	2	0

Comments on above responses

- *More space specific activities would be good.*
- *I would like to see opportunities for groups across the cohort to connect, i.e.. girls in Texas videoconferencing with girls in Michigan, etc...*
- *The way the question was phrased above is confusing. I'm not sure I answered it as intended.*
- *The first week was bones of the grant and was not as useful as the second week. In person would be fabulous to have modeling of the activities or a demonstration of one of the activities and then conversation to reflect would have been helpful*
- *Everything training-wise was fine. I would love more strategies for thinking creatively about designing programming.*

Rate yourself before and after 1-10

	Before	After
Implementing the SciGirls activities covered at the training	6.4	8.7
How to work with diverse student audiences	7.3	8.2

What overall feedback do you have? 1=strongly disagree, 5=strongly agree

	Mean
The professional development was well run and organized	4.6
I would have liked more information about the professional development agenda before I arrived	2.8
I found the professional development to be a good use of my time	3.8
The professional development generally met my expectations	4.0
I had fun at the training	3.9

I would have preferred more time to prepare for the SciGirls activity I will lead	2.2
I would have preferred more opportunities related the professional development material to my own situation	2.7

Are there any topics you would have preferred to see covered in greater depth? (such as the activities, working with diverse students, using SciGirls framework) If so, please describe.

- *Having more information on working with diverse students is always helpful. How to keep students engaged, how to be culturally sensitive/aware.*
- *I was concerned that while we are talking about breaking stereotypes, there is a group that design their activities within the framework of existing stereotypes as if this is a best practice.*
- *I think additional networking time to learn about how the others are leading SciGirls work would have been helpful.*
- *Activities*
- *Greater depth of information about the activities and ways to plan our SciGirls event.*

Did the professional development change your thinking about girls in STEM?

	N
Yes	1
No	2
Reinforced my thinking	17

Please explain

- *Having others offer feedback on how the SciGirls Strategies are being used or apply to other programs is helpful.*
- *We have done several SciGirls programs - confident that we can do another.*
- *We have been designing girl focused programming for some time. We engage many professional women for our STEM Summit which is a part of the camp program where we intend to deploy SciGirls activities. For most, I cannot require them to take a part in a professional development session prior to presenting.*
- *Our organization also focuses on girls in STEM. We base much of our trainings on your findings and materials. So it was familiar to me.*
- *It was just a good reminder of why and how we can support girls in STEM and helped get me excited about the program.*