Final Evaluation Report

Twin Cities Public Television (*tpt*)

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By

Knight Williams Inc.

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Significant findings

Throughout the five year *SciGirls CONNECT* grant the independent evaluation firm Knight Williams assisted *tpt* in a wide range of program evaluation activities. Given the project's emphasis on a Train-the-Trainer model, the evaluation prioritized two goals: (i) assessing the various levels of *CONNECT* trainings from different vantage and time points, and (ii) capturing information on the implementation of *SciGirls* programs led by those who completed a training. This evaluation approach allowed the team to collect ongoing data over the course of the grant and share this information with *tpt* on a regular basis, serving both formative and summative functions.

The main findings that emerged over the course of the project are summarized below, categorized by the key professional audiences on which the evaluation focused: **trainees** (educators who attended *tpt*'s Train-the-Trainer training to become *SciGirls* trainers), **trainers** (educators who were certified as *SciGirls* trainers and subsequently conducted their own trainings), and other **educators** (educators who attended a *SciGirls* training in their region and implemented local *SciGirls* programs).

➲ **Trainees**: Overall, the trainees consistently reported that they valued every aspect of the Train-the-Trainer training, that they gained new skills and knowledge, that the training increased their confidence and sense of preparation to train and mentor others, and that they were particularly enthusiastic about the *SciGirls Seven* strategies presented. When asked what they liked and disliked most about the training, the trainees most often liked the opportunity to collaborate/network and disliked an aspect of the training logistics.

➲ **Trainers:** Overall, the trainers pointed to three main highlights of the *SciGirls* trainings they implemented: participants' excitement, engagement, or increased comfort; the *SciGirls* activities; and the discussions that took place. The PowerPoint template and slides were most often cited as the most helpful training resources provided by *tpt*. None of the resources stood out as least helpful to the majority of trainers.

Reflecting on their work at the end of each year, the majority of the trainers said sharing *SciGirls* was both their main training accomplishment and also the highlight of their experience of being a trainer. The trainers most often pointed to the trainer resources, training, and follow-up support provided by *tpt* as the main factors that facilitated their success. All of the trainers reported that their involvement with *SciGirls* helped create or reinforce their passion for inspiring girls' interest in STEM and STEM careers.

➲ **Educators:** Overall, the educators indicated that they found all of the training sessions valuable, that they gained new skills and knowledge from their training, and that they felt ready to use and apply what they had learned. They also consistently reported that they felt well prepared to implement the *SciGirls* activities and that they planned to incorporate the *SciGirls Seven* strategies broadly. The educators most often identified the most valuable aspect of the training to be the hands-on activities, followed by the *SciGirls* resources, and then the information about how girls learn STEM. When asked to specify the most valuable thing they learned, the largest group pointed to how girls learn STEM. Most educators also separately further confirmed that the training changed their thinking about girls in STEM in some way.

Though a relatively small group of educators submitted report forms about their *SciGirls* programs, those who did indicated extensive use of the ten activity strategies reflected in the *SciGirls Seven*. More than two-thirds reported that their youth participated in ways that drew on at least seven of the ten strategies. The three most frequently cited strategies were: engaging in hands-on, open-ended projects and investigations; collaborating in groups; and receiving specific, positive feedback. The educators most often identified their main program highlights to be the hands-on elements or the *fun* or *excitement* they observed in participating girls. Their greatest challenges tended to involve recruiting girls to attend or stay in their program and/or managing participant dynamics.

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Introduction

The *SciGirls CONNECT* project is an outgrowth of a previous *SciGirls* outreach effort supported by a grant from the National Science Foundation's (NSF) Program for Gender Equity. Titled *Dragonfly TV SciGirls* (*SciGirls),* this initial outreach project was designed to encourage girls' interest in science by building capacity among outreach professionals in the area of gender-equity teaching and learning. The project emphasized the use of videos featuring girls engaged in authentic inquiry, drawn from the *DragonflyTV* series. Between 2005 and 2008, Twin Cities Public Television (*tpt*), the PBS affiliate station in St. Paul/Minneapolis, awarded 24 organizations with outreach grants, multimedia resources, and training to help outreach staff implement *SciGirls* outreach initiatives in their local communities. To assess the impact of the grantee program, the independent evaluation firm Knight Williams Research Communications (Knight Williams) conducted a summative evaluation of the program's first three years. The evaluation report is available at: http://informalscience.org/images/evaluation/report_280.PDF.

Beginning in 2011, *SciGirls CONNECT* (scigirlsconnect.org) was funded by the NSF Division Of Human Resource Development (HRD) as a five year Diffusion Scale Up Project. The purpose of the Scale Up funding was to enable *tpt* to expand on the earlier *SciGirls* initiative by investing in a broad national outreach effort focused on developing the training, support, and capacity necessary to engage and sustain participating partner organizations and their *SciGirls* programs beyond the startup year, into the future.

The Scale Up work generally took place as follows. First, girl-serving organizations across the country applied to become *SciGirls* partners. In addition to a $200 stipend to support staff and programming at their site, a certified *SciGirls* trainer then provided an in-person training in STEM education and role modeling strategies at the partner site, for partners' internal staff and local educators. A map of partner organization locations is shared to the right.

The trained staff and educators then developed and implemented *SciGirls* programs in their communities, with full access to the *SciGirls* resources (including videos, activity guides, and webinars) and ongoing program support from *tpt*. Additionally, trained educators who went on to participate in *tpt*'s Train-the-Trainer training became certified to lead their own *SciGirls* trainings, further expanding the reach of the program. A simplified diagram of this trainer Scale Up model is below.

Map of the *SciGirls CONNECT* partner locations, from the *SciGirls CONNECT* Annual Report: 2014-2015
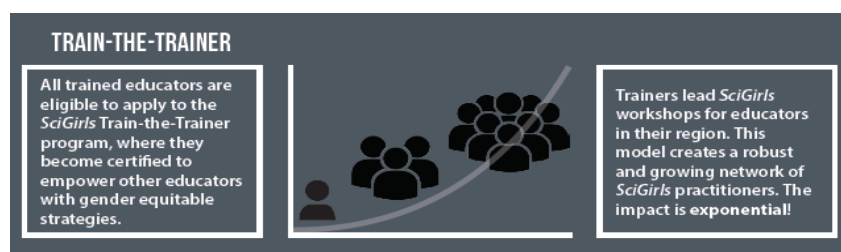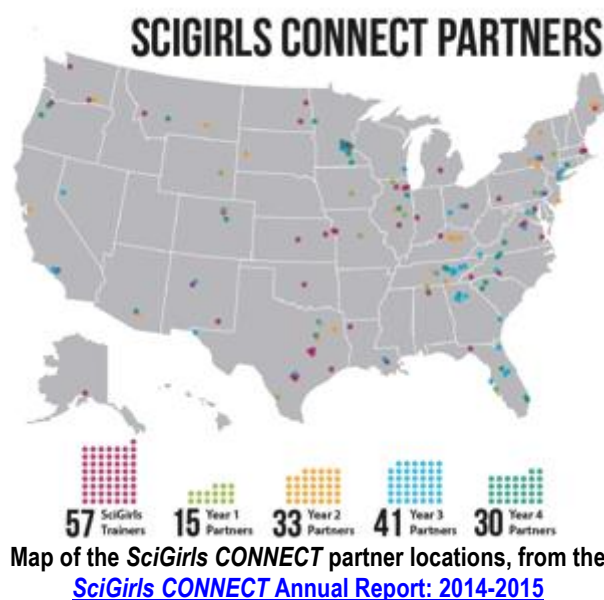
Simplified diagram of the *SciGirls* trainer Scale Up model, from the *SciGirls CONNECT* Annual Report: 2014-2015

Overview of *SciGirls CONNECT* evaluation activities and key questions

During the *SciGirls CONNECT* grant (between 2011 and 2015), the independent evaluation firm Knight Williams assisted *tpt* in a wide range of program evaluation activities. The main activities conducted over the course of the project, as well as the key evaluation questions considered in each case, are summarized below, categorized by project audience: **trainees** (educators who attended *tpt*'s Train-the-Trainer training to become *SciGirls* trainers), **trainers** (educators who were certified as *SciGirls* trainers and subsequently conducted trainings in their regions and in other locations around the U.S.), and other **educators** (educators who attended a *SciGirls* training in their region and implemented local *SciGirls* programs).

Trainees

With the exception of Year 2, the *SciGirls* project staff annually trained a new group of trainees at Train-the-Trainer trainings hosted directly at *tpt*. Upon completion of these trainings, the attendees officially became *SciGirls* trainers. For three of the four trainings, the evaluation team summarized the trainees' responses to a paper Train-the-Trainer Evaluation Form (TTT) completed at the conclusion of the 1.5-day training. The key evaluation questions addressed by the TTT included*:*

- To what extent did the training improve trainees' confidence, sense of preparation, and ability to share *SciGirls* with others?
- Did trainees indicate that they gained knowledge and skills from the training?
- Did trainees feel the training was well organized and run?
- What features did trainees like most and least about the training?
- What did trainees hope to gain from being a *SciGirls CONNECT* trainer, and how did they think their involvement would affect their work?
- Did trainees have suggestions for improving the training experience?

Trainers

Training implementation

Educators who were certified as *SciGirls* trainers through the above Train-the-Trainer training subsequently conducted trainings in their local areas and in other locations around the U.S. Each time these trainers conducted a full-day *SciGirls* training they were in turn asked to reflect on their implementation experience by completing an online [Trainer Workshop Reflection Form (TWRF)](). Developed and piloted in year 1 and administered beginning in Year 2, the key evaluation questions addressed by the TWRF included:

- What did trainers identify as the highlights and challenges of their training?
- What resources and forms of support from *tpt* did the trainers find most and least helpful?
- Did trainers have suggestions for improving the training experience?

Three types of *SciGirls* professional audiences

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Trainees
Educators who attended *tpt*'s Train-the-Trainer training to become *SciGirls* trainers

Trainers
Educators who were certified as *SciGirls* trainers and subsequently conducted trainings in their local areas and in other locations around the U.S.

Educators
Educators who attended a *SciGirls* training in their region and implemented local *SciGirls* programs

Annual training reflections

As the trainers conducted multiple trainings throughout the year, the evaluation team gathered their reflections on their training experience over the previous year through an online [Trainer Annual Reflection Form (TARF)](). This form was administered toward the end of Years 2 through 5. The key evaluation questions addressed by the TARF included*:*

- What did trainers identify as the highlights of being a *SciGirls CONNECT* trainer?
- What were trainers' main and personal accomplishments each year they were involved in the project?
- Did trainers find the training resources helpful, and did they have suggestions for improving the resources?
- To what extent did the training improve the trainers' passion for inspiring girls in STEM and attitude toward STEM learning and girls?
- Did trainers face any challenges in meeting their goals or *tpt*'s expectations?

Educators

Training feedback

Each year of the grant period, educators participated in local *SciGirls* trainings that were led by *tpt*-trained *SciGirls* trainers. In Year 1 the evaluation team developed and piloted a survey for use in gathering these educators' feedback on their training experience and expectations for conducting *SciGirls* programs in their local settings. In Year 2, the evaluation team made the form available as an online [Educator Training Feedback Form (ETFF)]() and then subsequently as a paper form to help encourage completions. The key evaluation questions addressed by the ETFF included:

- What did educators identify as the most and least valuable aspects of the training?
- Did educators indicate that they gained knowledge and skills from the training?
- Did educators feel the training was well organized and run?
- To what extent did the training increase educator awareness of issues in gender-equity teaching and learning? In particular, did the training raise awareness of how girls learn, experience, and enjoy science?
- How did educators expect to apply what they learned at the training?
- Did educators have suggestions for improving the training experience?

Program implementation

In addition, beginning in Year 2, as the educators began implementing local *SciGirls* programs, the evaluation team developed, and again subsequently updated, the [Educator Program Report and Reflection Form (EPRR)](), designed for educators to complete after they conducted each local *SciGirls* program. This form was completed by educators year-round. The key evaluation questions addressed by the EPRR included*:*

- What did educators identify as the highlights and challenges of their *SciGirls* programs?
- What types of *SciGirls* programs did the educators hold and what were the lengths of their programs?
- When and in what types of settings did educators hold their programs?
- How did youth participate in their programs?
- How many youth attended their programs, what were the community types in which the youth lived, and what were the grade levels, gender, and racial/ethnic backgrounds of the youth?
- To what extent were other individuals present during the programs?
- To what extent did educators evaluate their *SciGirls* programs?

Additional information about the evaluation activities, as conducted on a year-to-year basis, may be found in the table on the following page.

In sum, the evaluation team implemented the evaluation of *SciGirls CONNECT* to address the preceding sets of bulleted questions relating to the Train-the-Trainer training, the annual feedback gathered from *SciGirls* trainers, the trainings for educators, and a limited sample of *SciGirls* programs. As the questions indicate, the evaluation activities prioritized evaluating the trainings from different vantage points, allowing the team to collect ongoing data over time and share this information with *tpt* on a regular basis. As such, Knight Williams' evaluation activities served both formative and summative functions, flowing through the project so *tpt*'s staff had access to regular and timely data and feedback about the status of the *SciGirls CONNECT* activities. For all online forms referenced above, the evaluation team provided the project team with database updates on a monthly basis and prepared a compilation report of the survey responses each year.

Given the iterative and ongoing nature of the evaluation, but also recognizing that the grant was funded by the NSF as a Diffusion Scale Up project, the evaluation was also conducted with an eye towards the following overarching questions:

1. How effective is the "Scale Up" model in training educators, providing resources, and building community?

2. How did *SciGirls CONNECT* impact the knowledge and skill levels of trainers and educators?

3. How did trainers and educators perceive and use the *SciGirls Seven* strategies in their trainings, programs, and other areas of their work?

			Primary evaluation deliverables for *SciGirls CONNECT*			
Audience	**Instrument**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**
Trainees (*Train-the-Trainer* **attendees**)	**Train-the-Trainer Evaluation Form (TTT)** (*Attendees of Train-the-Trainer training attend.*)	1) Attend/advise MN training Nov 2011 2) Develop/pilot/revise TTT form 3) Produce TTT Year 1 compilation report	NA	1) Compile/analyze TTT surveys after *tpt* sends KW paper forms from May 2013 training 2) Produce compilation report (July 2013)	NA	1) Enter/analyze data from May/ June 2015 training 2) Produce final TTT report on Years 1, 3, 4, and 5
Trainers	**Trainer Workshop Reflection Form (TWRF)** (*Trainers complete after full day training*)	1) Review/comment on Train-the-Trainer RFP; 2) Develop/pilot TWRF form	1) Revise and pilot TWRF form 2) Create TWRF online platform for *tpt* to administer to trainers **http://www.knightwilliams.com/scigc/sgcreflection.aspx**	1) Maintain TWRF online platform & database 2) Send database to *tpt* upon request	1) Maintain TWRF online platform & database 2) Send database to *tpt* upon request	1) Produce final TWRF report of all data through 12/31/15 2) Keep TWRF form open through 12/31/15
	Trainer Annual Reflection Form (TARF) (*Certified trainers provide reflections and feedback on factors that led to success*)	NA	1) Develop and pilot TARF survey/interview protocol 2) Create TARF online platform for KW to administer to trainers **http://www.knightwilliams.com/scigc/sgcstrain.aspx** 3) Administer TARF to trainers 4) Produce TAR compilation report (Jan/Feb 2013)	1) Administer annual TARF surveys from Year 2 (Dec 2013) 2) Produce TARF compilation report (Jan/Feb 2014)	1) Administer annual TARF surveys from Year 2 (Dec 2014) 2) Produce TARF compilation report (Jan/Feb 2015)	1) Produce final TARF report on Years 2-4 2) Administer final TARF 12/31/15
Educators	**Educator Training Feedback Form (ETFF)** (*Attendees of SciGirls training complete*)	1) Develop/pilot ETFF form	1) Revise ETFF form 2) Produce Year 2 ETFF compilation report Create ETFF online platform for *tpt* to administer to educators**http://www.knightwilliams.com/scigc/sgctrainerform.aspx**	1) Maintain ETFF online platform & database 2) Produce bi-annual ETFF compilation reports (June 2013, Feb 2104)	1) Maintain ETFF online platform & database 2) Produce bi-annual ETFF compilation reports (June 2014, Feb 2015)	1) Produce final ETFF report of all data through 12/31/15
	Educator Program Report and Reflection Form (EPRR) (*Educators complete after each program*)	NA	1) Develop/pilot EPRR form 2) Create EPRR online platform for *tpt* to administer to educators **http://www.knightwilliams.com/scigc/sgcprogram.aspx; updated as of 10/30/2013: http://www.knightwilliams.com/scigc/sgcprogramtest2.aspx** 3) Produce EPRR compilation report (Feb 2013)	1) Maintain EPRR online platform & database 2) Send database to *tpt* upon request 3) Produce annual EPRR compilation report (Feb 2014)	1) Maintain EPRR online platform & database 2) Send database to *tpt* upon request 3) Produce annual EPRR compilation report (Feb 2015)	1) Add activity and video descriptions to form by 4/30/15 2) Produce final EPRR report of data through to 12/31/15

Report outline

The findings from the report are presented in three parts.

> **<u>Part 1</u>**: Part 1 presents the findings from ***Train-the-Trainer Evaluation Forms (TTT)*** completed by educators who completed *tpt*'s Train-the-Trainer training in 2011, 2013, or 2015.

> **<u>Part 2</u>**: Part 2 presents the findings in two sections: Part 2a presents the findings from the ***Trainer Workshop Reflection Form (TWRF)***, completed by trainers each time they conducted a full-day *SciGirls* training. Part 2b presents the findings from the ***Trainer Annual Reflection Form (TARF)***, completed by trainers toward the end of each project year.

> **<u>Part 3</u>**: Part 3 presents the findings in two sections: Part 3a presents the findings from the ***Educator Training Feedback Form (ETFF)***, completed by educators who participated in a *SciGirls* training. Part 3b presents the findings from the ***Educator Program Report and Reflection Form (EPRR)***, completed by educators year-round each time they implemented a local *SciGirls* program.

Parts 1-3 are followed by a summary of these findings. The report concludes with a consideration of the key evaluation and overarching questions provided in the previous section.

Findings

Part 1: Train-the-Trainer findings

Method

During the first year of the *SciGirls CONNECT* project the evaluation team attended the initial Train-the-Trainer training, which was hosted at *tpt* and led by *SciGirls* project staff. In preparation for this and subsequent annual Train-the-Trainer trainings, the evaluation team developed the Train-the-Trainer Evaluation Form (TTT). As introduced on page 6 (under Trainees), the TTT comprised a paper-based survey that participants completed at the conclusion of the 1.5-day training to provide feedback on their experience.

Prior to completing the TTT, trainees were informed that the form was developed by the independent evaluation team from Knight Williams and that their responses would be combined with those from other participants and reported in the aggregate. They were further informed that the evaluation was funded by a grant provided by the National Science Foundation, and that their frank and honest input was appreciated and would help guide the direction that *tpt* takes in planning future training programs.

During Years 1, 3, and 5, the evaluation team analyzed the trainees' responses to the TTT and prepared a compilation report of the survey responses at the end of each year. Across these three years, a total of 46 trainees submitted TTTs. As shown in the chart to the right, 10 trainees submitted TTTs in 2011, 14 submitted TTTs in 2013, and 22 submitted TTTs in 2015. As noted in the [SciGirls CONNECT Annual Report: 2014-2015](#), a total of 57 trainees attended a Train-the-Trainer training, for a TTT response rate of more than four-fifths (81%) of trainees.

Number of trainees who submitted TTTs, by year (N=46)
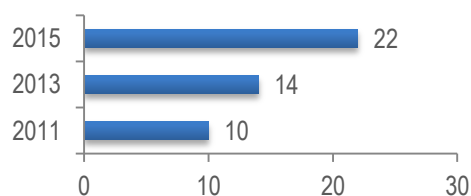
Year	Number
2015	22
2013	14
2011	10

Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[1] The analysis was both deductive, drawing on the objectives of the training program, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

Findings

The Part 1 findings are presented as follows: what trainees liked most and least about the Train-the-Trainer training, if and how trainees valued different elements of the training, the most valuable ideas/concepts/facts and skills trainees gained, their overall feedback about the training, their feedback about the length and density of the training, the training's impact on their knowledge and skill levels, the training's impact on their confidence and sense of preparation, other impacts of the training, trainee feedback about project expectations, assistance trainees thought they would need from *tpt* down the line, what trainees hoped to gain from their involvement with *SciGirls CONNECT*, if and how trainees thought the project would influence their work, and their suggestions for improving future Train-the-Trainer trainings.

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[1] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

1.1 What trainees liked most about the Train-the-Trainer training

When asked what they liked most about their Train-the-Trainer training, all 46 of the trainees answered the question. As shown in the chart below, the largest group, nearly three-fifths (59%), explained that they liked the opportunity to collaborate and network with other participants. About a quarter (24%) liked the hands-on activities, and more than a tenth each pointed to the focus on adult learning strategies (13%) and/or commented on something relating to the training format or process (11%). Less than one-tenth each pointed to the quality of presenters (9%), the *SciGirls Seven* strategies (7%)[2], and the feedback they received (2%). Less than one-sixth (15%) shared miscellaneous responses.

Train-the-Trainer training, image provided by *tpt*

What trainees liked most about the training (N=46)

Percentage of trainees

Category	Percentage
Collaborating/networking	59%
Hands-on activities	24%
Adult learning strategies	13%
Training format/process	11%
Quality of presenters	9%
SciGirls Seven strategies	7%
Receiving feedback	2%
Miscellaneous	15%

Examples of trainees' comments on these themes are shared below:

Opportunity to collaborate and network with other participants (59%)
- *Networking with other museums and people that work with SciGirls materials. I found this very helpful to problem solve together and learn from each other*
- *Lots of opportunity to network. Meeting people I email or see on the Ning. Sharing who we are- not just what we do.*
- *Going through activities as both presenter and participant and discussing strategies that help us in our work as presenters. It was good collaboration in a safe space.*
- *Appreciated the community building which allowed great networking and sharing of resources! Awesome!*
- *The networking aspect of the training. It was great to connect with other informal educators in various states + discuss the different programs we offer.*
- *Love the collaboration, it was fun, always engaging very professional + energetic, very well managed + thought out, great content*

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[2] Please see Appendix 1 for more information about *SciGirls Seven*, from the online book *SciGirls Seven: How to Engage Girls in STEM*.

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Hands on activities (24%)
- *Going through activities as both presenter and participant and discussing strategies that help us in our work as presenters. It was good collaboration in a safe space.*
- *Having the opportunity to concentrate on and practice the modules…*
- *I really enjoyed doing and presenting the activities because it forced me to become comfortable with them.*
- *I liked being forced to facilitate the activity we were comfortable with. It's so important to leave our comfort zones to grow and learn, and you created a safe environment to do that.*

Adult learning strategies (13%)
- *The information presented on adult learning/cultural understanding - they are two extremely valuable topics relevant to my work*
- *Strategies for teaching Adult Learners…*

Training format/process (11%)
- *The process and training methods used were fantastic! From the snowball fight to the "hugs and kisses", the methods were helpful and encouraging. I felt totally comfortable at all stages of the training*
- *Length, hands-on approach and format. It was just the right combination of time, activities, etc.*
- *The format! The discussions and group work were very valuable.*

Quality of presenters (9%)
- *Good trainers!*
- *Great people! Very hands-on, engaging, good modeling*

SciGirls Seven strategies (7%)
- *Drilling down into SciGirls 7 - really helpful. Dr. Billington was Awesome!*
- *I feel well informed as to how to move forward with training, and I have more resources in terms of SciGirls 7 research.*

Receiving feedback (2%)
- *Practice and feedback during activities. I enjoyed the interaction most. For example: all of the partnered conversation (then switch!!) on the SG7 and the "Hugs and Kisses" component requiring self reflection and sharing*

Miscellaneous (15%)
- *Learning about required readings…*
- *The opportunity to share, interact in small groups; the ice breakers; resources*
- *I loved getting the chance to learn more about SciGirls network of partners and resources that I can now use for my science center and students*
- *Gaining access to SciGirls resources + Support*
- *The variety of information and presentation styles…It kept things interesting*
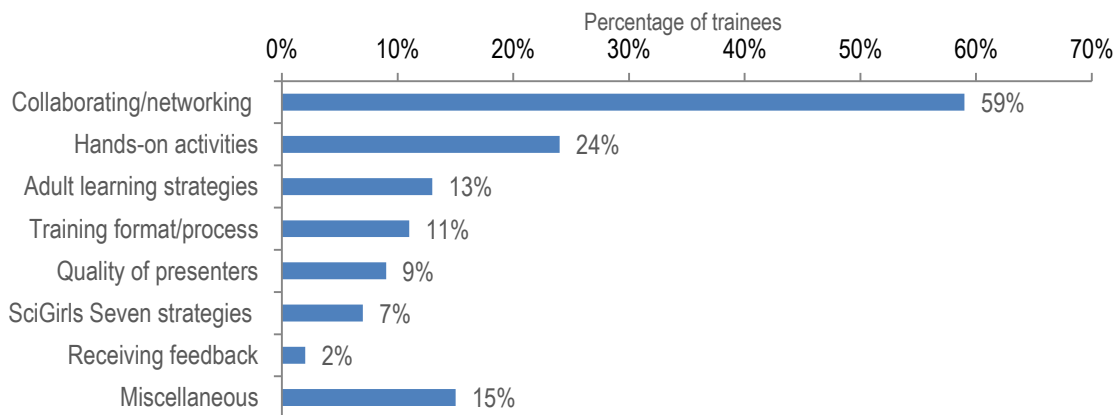- *Size of the group; varied activities*

1.2 What trainees liked least about the Train-the-Trainer training

When asked what they liked least about the Train-the-Trainer training, 38 of the 46 trainees answered the question. The remaining 8 trainees may have left the question blank to indicate that they liked everything about the training. As shown in the chart below, of those who shared a response, more than a quarter (26%) pointed to the logistics of their training. More than a tenth each explained that they disliked an aspect of the way the training was presented (13%), said they liked everything (11%), noted that they wanted to learn more about adult learning (11%), or indicated that they wanted additional activities (11%). Less than a tenth each wanted more networking (8%), disliked working over lunch (5%), wanted less discussion of the *SciGirls Seven* and gender-related topics (5%), and/or wanted to visit the local museum or PBS station (5%). Less than a quarter (24%) shared miscellaneous feedback.

What trainees liked least about the training (n=38)

Percentage of trainees

Category	Percentage
Training logistics	26%
Aspect of presentation	13%
Liked all	11%
Wanted more on adult learning	11%
Wanted more activities	11%
Wanted more networking	8%
Working over lunch	5%
Wanted less Scigirls Seven and gender	5%
Wanted museum or station visit	5%
Miscellaneous	24%
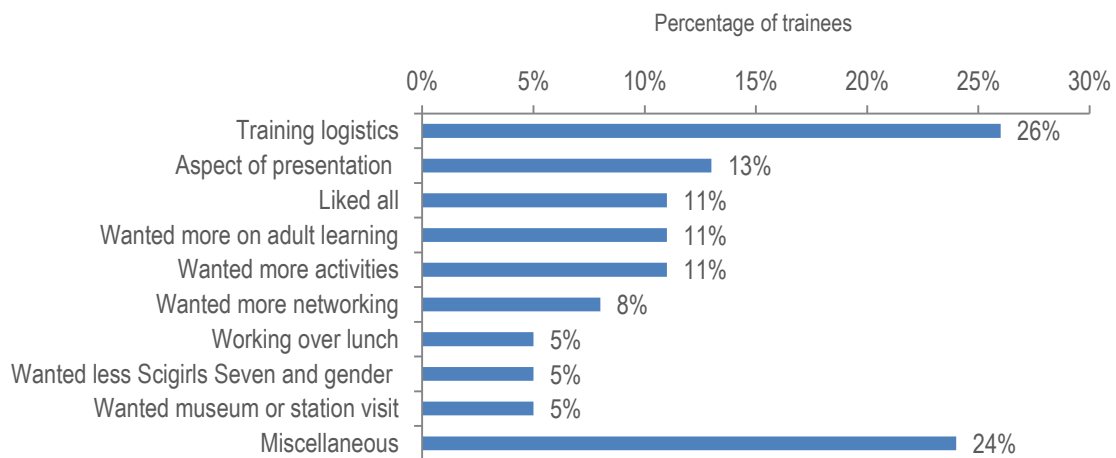
Examples of trainees' comments on these themes follow below:

Training logistics (26%)
- *Dinner - have an opportunity to mingle with others, seemed that some stayed in their own groups*
- *I do not like so much sitting.*
- *Is there another way to do binders? Ebook? It's just too big + hard to carry back and forth*
- *That is was much longer, that we did not get to the PBS studies*
- *This is a very nit-picky point, but the flashing of room lights to get the group's attention was very off-putting*
- *Early starts - jet lag!*
- *I didn't like the idea of blinking the lights to indicate a change in activity. It hurt my eyes*
- *8:00 AM start time! 3 days of 6-7 hours each would be helpful, attention-wise.*

Aspect of presentation (13%)
- *Be careful using acronyms (example, Big Picture overview). Don't ask questions while we're writing or have all questions on slides or white board to look back to after you answer the first question let us know which slide shows will be available afterward.*
- *Being told about the activity I need to run an evening before the activity. I had time only after 10pm to prepare for that next day event.*
- *A bit too fast-paced, I always felt one step behind*
- *Sometimes we got a little off track and that was distracting. I wish some discussions could have lasted longer!*
- *I wish that the NGCP and SciGirls Seven tenets on the first day. To get an overview of how NGCP and SciGirls relate to each other.*

Liked all (11%)
- *I liked it all!*
- *I can't think of anything off the top of my head! Everything was helpful and organized.*

Wanted more on adult learning (11%)
- *That we didn't get to talk more about adult learning. I think that's an important piece especially if you'll be training other adults.*
- *Would have appreciated more time to focus on Adult Learner strategies and practice in front of peers*
- *Maybe it would have been more productive to spend less time on SciGirls 7 which we all knew quite well and more time on strategies for working with adults.*

Wanted more activities (11%)
- *As always, would appreciate more time to practice and network and practice activities more; but I appreciate the online opportunities to continue the conversation.*
- *Would've been nice to have practiced more activities (not just those that we had done in a previous trainings) but I know time is limited.*
- *May have been nice for a few more hands-on activities; activities we do with the girls/educators*

Wanted more networking (8%)
- *Wanted more opportunity to network - awesome group of people. I realize this is a packed workshop - and am reaching to find something I liked least.[3]*
- *As always, would appreciate more time to practice and network and practice activities more; but I appreciate the online opportunities to continue the conversation.*
- *Trying to focus on presentations while eating. Working while eating left almost no networking time.*

Working over lunch (5%)
- *Trying to focus on presentations while eating. Working while eating left almost no networking time.*
- *The working over lunch. I felt as though there was too much to do on day 1 with a packed lunch as well. More of a break and social time*

Wanted less SciGirls Seven and gender (5%)
- *Maybe it would have been more productive to spend less time on SciGirls 7 which we all knew quite well and more time on strategies for working with adults.*
- *The statistics and data on gender inequality were important but I would have benefitted more from spending more time on adult learning, tools + resources etc.*

Wanted museum or station visit (5%)
- *That is was much longer, that we did not get to the PBS studies*
- *Did not get to visit the science museum of MN, but that is not the fault of tpt*

Miscellaneous (24%)
- *The less engaging parts (lectures), some disorganization/confusing parts*
- *I was tired the 2nd day*
- *I don't know*
- *Some side banter about things irrelevant to me and others.*
- *The mental drain, but there's no way around that*
- *It wasn't huge, but the difference in our orgs/applications made some content less applicable.*
- *I felt like some of the activities/topics were a little rushed. Maybe adding just a few more hours to the training would be beneficial*

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[3] In their TTT responses, trainees occasionally used "training" and "workshop" interchangeably.

1.3 Value of the Train-the-Trainer training elements

Trainees were asked to rate the value of the various Train-the-Trainer training elements. While there were some differences of opinion as evidenced by the range of ratings in each case, the sessions on gender equity/the *SciGirls Seven*, tools and resources, and trainer-led *SciGirls* activities were generally rated *extremely valuable* (median rating 5.0) by the trainees on a scale of 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*), as shown in the table below. The whole group debrief and training binder sessions were also generally considered *extremely valuable* (median rating 5.0 each), and the trainees generally found the following elements *moderately valuable* (median rating 4.0 each): the welcome and big picture overview, the adult learning strategies sessions, and the individual debriefs.

Median trainee ratings of Train-the-Trainer training elements (N=46)					
	Not at all valuable 1.0	Slightly valuable 2.0	Moderately valuable 3.0	Very valuable 4.0	Extremely valuable 5.0
Welcome and big picture overview				4.0 RANGE 1.0-5.0	
Gender equity/*SciGirls Seven* sessions					5.0 RANGE 3.0-5.0
Adult learning strategies sessions				4.0 RANGE 2.0-5.0	
Tools and resources sessions					5.0 RANGE 3.0-5.0
Trainer-led *SciGirls* activity sessions					5.0 RANGE 3.0-5.0
Individual debriefs				4.0 RANGE 2.0-5.0	
Whole group debriefs					5.0 RANGE 3.0-5.0
Training binder					5.0 RANGE 3.0-5.0

1.4 Most valuable ideas, concepts, or facts gained by trainees

When asked to identify the most useful ideas, concepts, or facts they gained from the training, 45 of the 46 trainees shared a response. As shown in the chart below, more than two-thirds (69%) of this group pointed to the information about the *SciGirls Seven* and gender equity strategies, while more than a fifth each appreciated the information about implementing activities and resources (22%) and/or commented on the strategies for working with adult learners (22%). About a sixth (16%) found the information about working with a diverse group of youth to be most valuable, and less than one-tenth (7%) shared miscellaneous responses.

What trainees found to be the most useful ideas, concepts, or facts gained from the training (n=45)
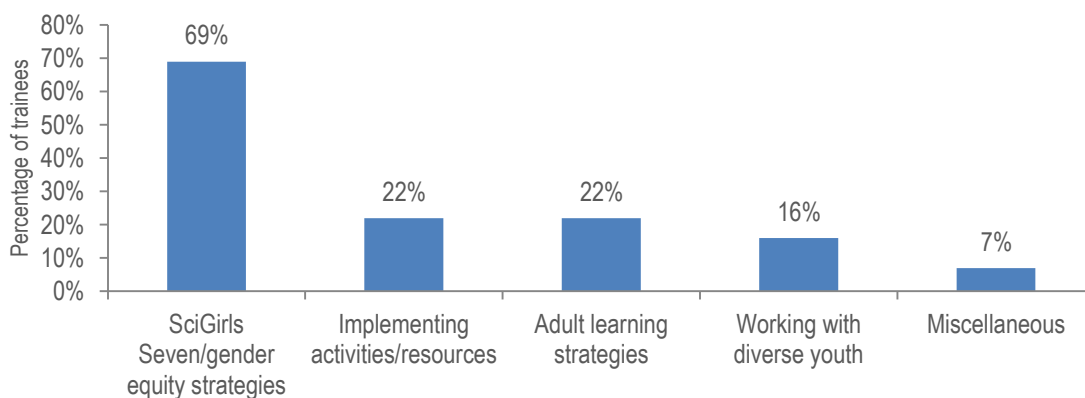
Examples of trainees' comments on these themes follow below:

SciGirls Seven/gender equity strategies (69%)
- *New tips to implement the SciGirls Seven Strategies. Also, it was useful to get tips on how to explicitly explain how you use the strategies*
- *SciGirls 7 refresher, Gender Equity facts, "Why so few"*
- *In depth look at the Seven Strategies and being able to feel comfortable with them*
- *SG7 of course. Also allowing participants to practice and receive feedback in a safe and friendly environment- great strategy for training. Thought from others on ways to incorporate role models*
- *Discussion on where we can use and implement this training. How SG7 and activities can relate to programs beyond just SciGirls specific.*
- *To be explicit with SciGirls 7 pointing out how I integrated the 7 into the lesson, when presenting activities to adults.*
- *Explicit gender equity, changing the message.*
- *Gender equity and how to recognize and promote it!*
- *SciGirls 7 and gender equity session.*
- *Being more explicit about gender equity issues, even with younger students. Adult learning strategies.*
- *The SciGirls Seven - many of those are things I try to use in my workshops/programs but now that I have a good grasp of all of them I will strive to ensure that all 7 are covered in my programs.*
- *I am really looking forward to taking what I learned about FabFems, the connectory, SciGirls 7 and integrating them into all the science center programs*
- *I learned a lot about girl's relationships with STEM, this will help me become more in tune with girls while I am engaging them in STEM outreach.*
- *SciGirls 7, explicitly stating gender bias = important conversation*
- *The concepts/facts behind the SciGirls Seven source materials, facts, trends, etc.*

Implementing activities/resources (22%)
- *Discussion on where we can use and implement this training.*
- *The trainer led activities provided after of great ideas + concepts.*
- *Overviews of PowerPoint's, training schedule examples, SciGirls resources. I feel like everything is there for me (info, tools, strategies). With a little organization, I feel confident that I will be able to carry out the training sessions*
- *Practicing the activities and seeing how other have done it.*
- *Links to articles and info about how to use them.*
- *The binder of resources is awesome*

Adult learning strategies (22%)
- *Adult learning strategies.*
- *It was very useful to train adults using a SciGirls activity*
- *Adult learning strategies.*
- *Adult learner strategies and logic model.*
- *The hands-on activities + learning more about the concept of citizen science*

Working with diverse youth (16%)
- *The trainer led activities provided after of great ideas + concepts. The minority facts/stats were also really eye opening.*
- *Equity and cultural sensitivity perspectives and research*
- *Diff learning styles, strategies could be relevant to applied to other groups, that all of this matters in the long run*

Miscellaneous (7%)
- *The hands-on activities + learning more about the concept of citizen science*
- *Citizen science was all new to me*

1.5 Most useful skills gained by trainees

Trainees were asked about the most useful skills they thought they gained from the training. As shown in the chart below, 43 of the 46 trainees shared a response to this question. Two-fifths (40%) of this group found the information about how to incorporate and communicate the *SciGirls Seven* to be most useful. More than a third (35%) pointed to what they learned about working with adult learners, while less than a third (30%) commented on what they learned about implementing the *SciGirls* activities. Less than a tenth each explained that they found what they learned about working with diverse student audiences to be most useful (7%), said they hadn't learned any useful skills (2%), or shared miscellaneous feedback (2%).

Train-the-Trainer training, image provided by *tpt*

The most useful skills trainees felt they gained from the training (n=43)

Percentage of trainees

How to incorporate/communicate SciGirls Seven	40%
How to work with adult learners	35%
How to implement SciGirls activities	30%
How to work with diverse student audiences	7%
Nothing	2%
Miscellaneous	2%
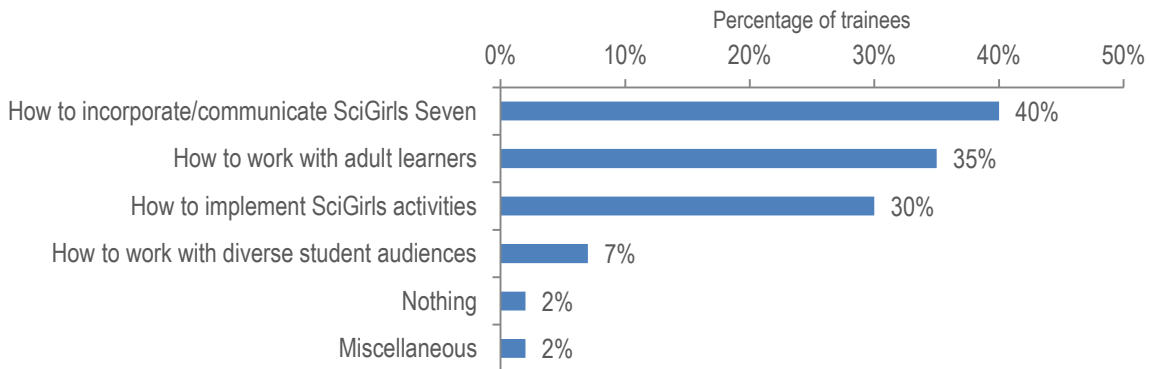
Examples of trainees' comments on these themes follow below:

How to incorporate/communicate SciGirls Seven (40%)
- *Putting the 7 Strategies to use in programs/training*
- *Practicing and starting to master using the SciGirls 7, since I don't get to use them in my role at the museum*
- *Heading the activities while using the SciGirls 7 and being able to have "elevator" speeches ready for any of the seven strategies*
- *How to frame the SciGirls 7 in actual training*
- *How to incorporate the SciGirls 7 during instruction to educators.*
- *Practice integrating SG7 explicitly in activities.*
- *Connecting through SciGirls CONNECT and networking*
- *You don't have to be a STEM expert to do the training, hands-on experience, gender equity awareness + recognizing it*
- *Ability to apply SciGirls 7 to existing activities*
- *How to use the SciGirls 7 and demonstrate these to teachers*

How to work with adult learners (35%)

- *Managing student and adult learning when presenting SciGirls trainings.*
- *Confidence with my ability to lead a workshop/training*
- *Facilitating adult learning with SciGirls activities.*
- *Adult learning strategies for my workshops.*
- *Facilitation skills with adults.*
- *I enjoyed discussing the adult learning strategies. I tend to use reflection in a lot of my programs but will now try to incorporate all of them*
- *Skills about Adult learning styles will be invaluable*
- *Practicing facilitating to fellow educators*
- *The confidence to educate adults*

How to implement SciGirls activities (30%)

- *Planning how to facilitate a project*
- *Facilitation and Discussion skills. How to relate ideas and activities to SciGirls 7*
- *Ways of communicating SciGirls (website, parking lot, world cafe, think/pair/share)*
- *You don't have to be a STEM expert to do the training, hands-on experience, gender equity awareness + recognizing it*
- *Ability to apply SciGirls 7 to existing activities*
- *How to use the SciGirls 7 and demonstrate these to teachers*

How to work with diverse student audiences (7%)

- *Culture competence strategies*
- *Also ways to teach STEM to all learning styles*

Nothing (2%)

- *I think the ideas and knowledge is more useful than the actual skills taught*

Miscellaneous (2%)

- *Collaboration, social skills*

1.6 Overall trainee feedback about the Train-the-Trainer training

The trainees were asked to rate their level of agreement with a series of statements about different aspects of the Train-the-Trainer training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*) each, as shown in the table below. While there were some differences of opinion as evidenced by the range of ratings in each case, overall the trainees *strongly agreed* (median rating 7.0 each) that the training was well run and organized, a good use of their time, generally met their expectations, that they had fun, and that they acquired knowledge that would have been difficult to obtain without having been there in person. The trainees were generally *neutral* (median rating 4.0 each) about wanting more information about the training agenda before they arrived, having more time to prepare for the activity they led, and having more opportunities to relate the training material to their own situation.

Median trainee ratings of the Train-the-Trainer training (N=46)							
	Strongly disagree 1.0	Disagree 2.0	Somewhat disagree 3.0	Neutral 4.0	Somewhat agree 5.0	Agree 6.0	Strongly agree 7.0
The training was well run and organized.							7.0 RANGE 5.0-7.0
I would have liked more information about the training agenda before I arrived.				4.0 RANGE 1.0-7.0			
I found the training to be a good use of my time.							7.0 RANGE 6.0-7.0
The training generally met my expectations.							7.0 RANGE 4.0-7.0
I acquired knowledge at the training that would have been difficult to obtain without being here in person.							7.0 RANGE 5.0-7.0
I had fun at the training.							7.0 RANGE 6.0-7.0
I would have preferred more time to prepare for the *SciGirls* activity I led.				4.0 RANGE 1.0-7.0			
I would have preferred more opportunities to relate the training material to my own situation.				4.0 RANGE 2.0-7.0			

When invited to comment on their ratings, some trainees shared feedback about things they liked about the Train-the-Trainer training, as in:

- *This training allowed me to really understand. SciGirls activities and SciGirls 7 on a deeper level. Very helpful*
- *All was great!*
- *I felt we were give ample time to read our papers/articles and activities*
- *I run my own small business during Enr. Ed outreach. I can find multiple ways to incorporate SciGirls and the strategies into my programs.*

At the same time, a handful commented on the amount of time they had to prepare for the activity they led, with a few saying they would having liked extra time, others saying they found it useful to jump right in, and one sharing feedback about how the structure of the activity might have been improved. Trainees' feedback about the activities they led are shared below:

- *For the activity, was good to do the learned and outlined activities; really pushes you and gets you to comfort level.*
- *I enjoyed teaching the SciGirls activity but only had about 5 minutes to prepare. A few more minutes would be beneficial*
- *Not a lot of time, but maybe 10-15 min of prep time*
- *While my internal organizer would have liked more time to prepare for my activity, I think having to do it somewhat "on the fly" was very useful.*
- *For last two: Having more time to prep would've been good but it was also great to just throw us into it. Also, yes more time to relate to own situation but with team or partner input. They can offer out-of-the-box thoughts.*
- *About leading the SciGirls Activities- if you wait until you are comfortable, then 1 of 2 things: 1- You don't need to be trained, 2 You'll never do it. All the presentation stuff only gets easier by practicing. You have to jump in, do it, then do it again to get to the point of 1*
- *It might have been interesting to select a module e.g. dough creatures, assign it to three volunteers, then let the 3 elaborate on the delivery of the session, then give the session. For concepts like electricity, the information can be challenging*

Finally, a few trainees explained that they would have liked more of a focus on how the Train-the-Trainer training would translate to their individual situations, as in:

- *I would have liked time to talk about what our trainings will "look like". Thoughts from others about how to train alone, tips on taking a training of the road, etc. I understand that will happen later via conference call. Also how to mentor long distance.*
- *More opportunities to relate training to own situation... I feel I need to go back and have a discussion in my organization as to how to move forward*

1.7 Trainee feedback about length and density of the Train-the-Trainer training

Trainee ratings of Train-the-Trainer training length and density

Trainees were first asked to rate four aspects of the length and density of the 1.5-day training on a scale from 1.0 (*too short* or *too little*) to 7.0 (*too long* or *too much*). As shown in the table below, while there were some differences of opinion as evidenced by the range of ratings in each case, the trainees generally felt that the following aspects of the training were all *about right* (median rating 4.0 each): the 1.5-day training period, the amount of material covered, the amount of formal presentation/lecture, and the amount of time to debrief/discuss.

Median values of how trainees felt about length and density of the 1.5-day training program (N=46)									
1.5-day training period was too short	1	2	3	4 4.0 RANGE 1.0-6.0	5	6	7	1.5-day training period was too long
Training covered too little material	1	2	3	4 4.0 RANGE 2.0-6.0	5	6	7	Training covered too much material
Training featured too little formal presentation/lecture	1	2	3	4 4.0 RANGE 2.0-5.0	5	6	7	Training featured too much formal presentation/lecture
Training featured too little time to debrief/discuss	1	2	3	4 4.0 RANGE 2.0-5.0	5	6	7	Training featured too much time to debrief/discuss

Commenting on these ratings, some of the trainees opted to share additional feedback about how they would have liked to participate in a longer training, as in:

- *Would have likes a 2 full day training session which included an overview/discussion of the workshop agenda found in the Training section of the binder*
- *Making this a 2 day training with a little more time for individual reflection would have been helpful*
- *If making the training a little longer, I would increase the discussion time since this is where rich discoveries are made*
- *Training short but fit into my personal life, so I can't really complain much.*
- *I would have liked to have 4 trainer led activities and more info on adult learning strategies.*
- *2.5 days might have been nice.*
- *I wish that we had more time to network as the training went on (Day 3) as we got to know the participants better in the room. That being said, I felt that I made good use of my "down" time to connect and network with other participants*

At the same time, a few trainees commented on how they found the training a bit long, as in:

- *This group was independent and learned quickly. I think this made some presentations seem long with little/less time for debrief.*
- *Things slowed down a bit after lunch on Thursday despite entertaining lecturer, it went on a bit long.*

Remaining trainees who provided additional feedback commented on the training in general and changes *tpt* might consider in the future, as in:

- *Wonderful training. I'm excited, motivated, but not overwhelmed.*
- *Just right!*
- *I enjoyed the balance of the training*
- *I would like to learn more about the research that supports SciGirls techniques*
- *Maybe have two activities, one least for to do + most comfortable things*

Topics that could have been covered in greater depth

When asked if there were topics they would have liked to see covered in more depth, 38 of the 46 trainees answered the question. As shown in the chart below, about a quarter (26%) of this group noted they would have liked to learn more about implementing *SciGirls* activities, and just over a fifth (21%) pointed to the issue of organizing or preparing their trainings. Slightly less than one-fifth each indicated they would have liked more depth on the topics of working with adult learners (18%) and/or working with diverse student audiences (18%). About a tenth each wanted to learn more about incorporating the *SciGirls Seven* (11%) or explained that there weren't any topics they would have liked to see covered in greater depth (11%). A sixth (16%) shared miscellaneous feedback.

Dough Creatures activity, from the
SciGirls CONNECT Annual Report: 2014-2015

Topics trainees would have preferred to see covered in greater depth (n=38)

Percentage of trainees

Topic	Percentage
Implementing SciGirls activities	26%
Organizing/preparing trainings	21%
Working with adult learners	18%
Working with diverse student audiences	18%
Incorporating SciGirls Seven	11%
None	11%
Miscellaneous	16%
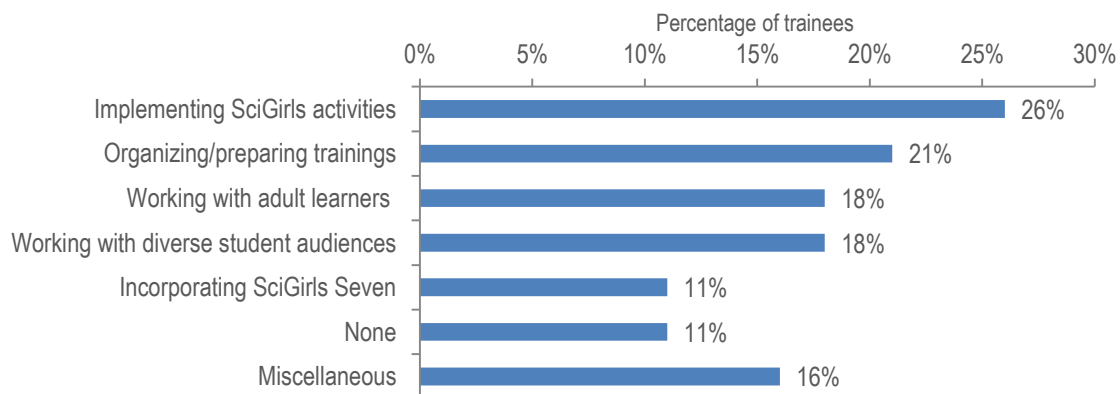
Examples of trainees' comments on these themes are shared below:

Implementing SciGirls activities (26%)
- *Broader coverage on more activities.*
- *Hands-on lesson/activities training*
- *Activities + facilitation of them*
- *More of the hands-on activities*
- *More activities and examples of applying SciGirls 7. Maybe require each of us to bring one W7 to modify at the workshop*
- *Ways to extend/differentiate activities*

Organizing/preparing trainings (21%)
- *Incorporating adult learning strategies- let us practice, More in depth types of trainings, More about how to schedule a training*
- *Training Adults or actually the logistics of doing a training on the road and solo. You all do it a lot, you must have great tips.*
- *What the next steps are for us as trainers. How we can recruit participants and how to assist people with the actual programming (here are good activities, etc.)*
- *What our trainings will look like - best practices, talking points to cover, go over training PowerPoint together.*
- *More discussion/demonstration on a typical full day training.*
- *Organizing our own trainings and going over how they go. Covering all the activities. Expectations and how to fulfill in general.*
- *How SciGirls will be applied to individual trainers programs - good information to have*

Working with adult learners (18%)
- *Adult Learning tips and tricks*
- *Adult Training*
- *Again, would've liked another hour or two on adult learners*
- *Adult learning strategies, cultural competence (with references for more information)*
- *Adult learning strategies.*

Working with diverse student audiences (18%)
- *Cultural discussion.*
- *Working with girls from different background, working with gay boys.*
- *I know most was an overview but I'd like more cultural competency*
- *Gender equity strategies, specific case studies in culture competencies*
- *cultural competency*

Incorporating SciGirls Seven (11%)
- *A little more review of the Gender Equity information in "Why So Few"*
- *More activities and examples of applying SciGirls 7. Maybe require each of us to bring one W7 to modify at the workshop*

None (11%)
- *I thought most of the topics were covered in the right amount of depth.*
- *Everything was good. The night was mostly of activities + topics covered in good detail*

Miscellaneous (16%)
- *Tools + resources, adult learning*
- *Individual presenter evals*
- *More research*

Topics that could have been covered in less depth

Next, the trainees were asked if there were topics they would have liked to see covered in less depth. Only 14 of the 46 trainees answered the question, indicating that at least some of the remaining trainees may have felt the issues were covered in sufficient depth. As shown in the chart below, of those who shared a response, more than a quarter each said there was nothing they would have liked to cover in less depth (29%) or that they would have preferred to spend less time learning about working with diverse audiences (29%). Just over a fifth (22%) pointed to gender issues, more than a tenth (14%) felt the topic of incorporating the *SciGirls Seven* was covered too deeply, and less than a tenth (7%) shared feedback about the topic of working with adult learners. More than a tenth (14%) shared miscellaneous feedback.

Topics trainees would have preferred to see covered in less depth (n=14)
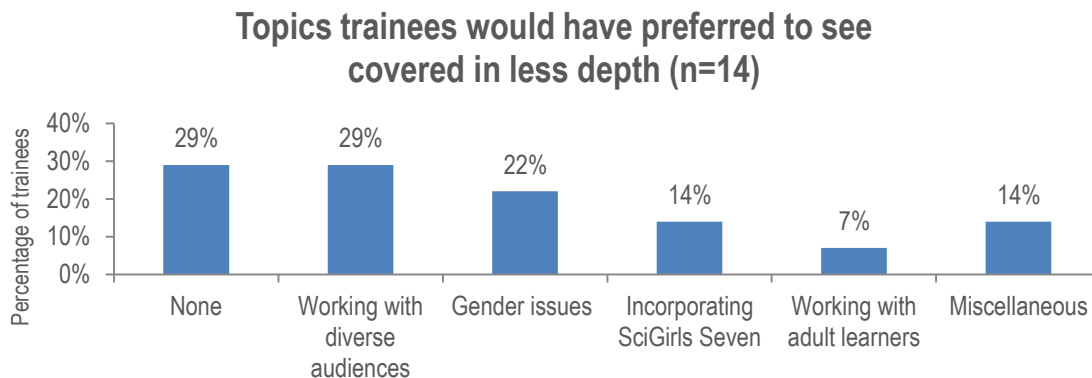
Examples of trainees' comments on these themes follow below:

None (29%)
- *Nope*
- *I thought most of the topics were covered in the right amount of depth.*
- *N/A*

Working with diverse audiences (29%)
- *Less talk about just the Hispanic community.*
- *Cultural competency seemed repetitive at times*
- *Cultural competency…*

Gender issues (22%)
- *Gender inequality*
- *Gender equality (most of us at NGCP already know all of this)*

Incorporating SciGirls Seven (14%)
- *SciGirls Seven…*
- *SciGirls 7*

Working with adult learners (7%)
- *Adult learning styles.*

Miscellaneous (14%)
- *Thoughts on one thing - quick reviews of each activity in each book would be nice... but not sure there would be time to do that.*
- *Technology*

Whether the training omitted or covered topics in insufficient depth

Next, the trainees were asked if the training omitted a topic they wished had been covered. As shown in the chart below, 25 of the 46 trainees answered the question. Of this group, three-fifths (60%) said there were no omitted topics, while less than a tenth each pointed to something related to gender equity issues (8%) or working with adult learners (8%). About a quarter (24%) of trainees who answered the question shared miscellaneous feedback.

Topics trainees felt the training omitted that they wish had been covered (n=25)
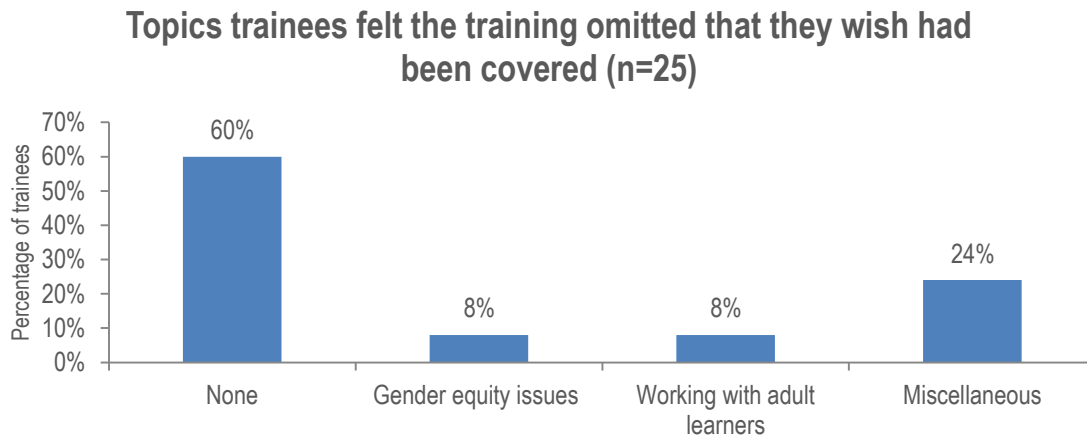
Examples of trainees' comments on these themes follow below:

None (60%)
- *Not that I can think of?*
- *Not aware of any.*
- *I didn't feel like I missed anything or had questions that weren't answered, so I guess no!*
- *Not that I can think of*

Gender equity issues (8%)
- *equality via mere perspective; why do they feel there is still inequality?*
- *I would have liked a bit more on gender equity in general rather than mainly focusing on implications to STEM*

Working with adult learners (8%)
- *How to encourage all trainees to stay involved. When I have trained teachers, there are frequently 1-2 who were clearly told to attend, and sit at the back and don't seem to care. Some "Classroom Management" techniques for Adult Learners might be helpful*
- *Strategies on how to train adults*

Miscellaneous (24%)
- *I'd love to hear clearly what the goals are in 5 years- i.e. sharing Gender Equity info, touching xx girls in 5 years, etc.*
- *I would have liked to discuss models for establishing partnerships.*
- *How to train on SciGirls: mission and values (sizzle reel?)*
- *Training mentors to make interactions with them more fruitful (poss. Connect with portal to the public network for assistance with this)*
- *I wouldn't have known if it wasn't mentioned, but it would be nice to bring an activity from your organization and SciGirl-ize it*
- *More detailed agenda suggestions for full-day trainings*

1.8 Impact of Train-the-Trainer training on trainee knowledge and skill

Impact on knowledge

Trainees were asked to reflect on their knowledge of three topics listed in the table below on a scale from 1.0 (*no knowledge*) to 5.0 (*advanced knowledge*). As shown in the median ratings below, while there were again differences of opinion, the trainees generally reflected that they had *above medium knowledge* (median rating 4.0) of gender equity and the *SciGirls Seven* before the training and after the training had *advanced knowledge* (median rating 5.0). They also indicated that they had *medium knowledge* (median rating 3.0) of the *SciGirls* activities used at the training prior to the training but *advanced knowledge* (median rating 5.0) after. Finally, they indicated that they had *medium knowledge* (median rating 3.0) of adult learning strategies prior to the training but *above medium knowledge* (median rating 4.0) after.

1 = No knowledge		**3 = Medium level knowledge**		**5 = Advanced knowledge**
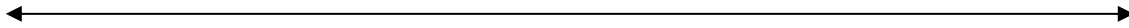
Before training					**My knowledge of…**	**After training**				
1	2	3	4	5	Gender equity/*SciGirls Seven*	1	2	3	4	5
4.0 RANGE 1.0-5.0						5.0 RANGE 4.0-5.0				
1	2	3	4	5	Adult learning strategies	1	2	3	4	5
3.0 RANGE 1.0-5.0						4.0 RANGE 3.0-5.0				
1	2	3	4	5	The *SciGirls* activities used at the training	1	2	3	4	5
3.0 RANGE 1.0-5.0						5.0 RANGE 3.0-5.0				

A handful of trainees shared additional feedback about some of their ratings, as in:

- *This training was amazing.*
- *Not really explicit strategies (cultural competence strategies)*
- *Would have loved a chance to get a brief debrief or overview of the activities I didn't get to watch or lead.*
- *It was great to see all 5 activities and it would have been nice to spend at least a few minutes at the activities we didn't make it to during the 3 rotations.*
- *Looking forward to digging into season 3*

Impact on skill levels

Trainees were also asked to reflect on their skill incorporating the four strategies or processes listed in the table below, on a scale from 1.0 (*no skill*) to 5.0 (*advanced skill*). As shown in the median ratings below, while there were again differences of opinion in each case, the trainees generally reflected that they had *medium skill* (median rating 3.0) incorporating the *SciGirls Seven* into their training presentations prior to the training but after the training had *advanced skill* (median rating 5.0). They also indicated that they had *medium skill* (median rating 3.0) using the *SciGirls* tools and resources prior to the training but after the training had *advanced skill* (median rating 5.0). Furthermore, they had *medium skill* (median rating 3.0) explaining/ demonstrating the *SciGirls* activities used in the training and *above medium skill* (median rating 4.0) after. Finally, they indicated that they had *medium skill* (median rating 3.0) advising or mentoring trainees on topics prior to the training and *above medium skill* (median rating 4.0) after.

1 = No skill					**3 = Medium level skill**	**5 = Advanced skill**				

Before training					My skill level in…	After training				
1	2	3	4	5	Explaining/demonstrating the *SciGirls* activities used in the training	1	2	3	4	5
3.0 RANGE 1.0-5.0						4.0 RANGE 3.0-5.0				
1	2	3	4	5	Incorporating the *SciGirls Seven* into my training presentations	1	2	3	4	5
3.0 RANGE 1.0-5.0						5.0 RANGE 3.0-5.0				
1	2	3	4	5	Advising/mentoring trainees on topics	1	2	3	4	5
3.0 RANGE 1.0-4.5						4.0 RANGE 3.0-5.0				
1	2	3	4	5	Using the *SciGirls* tools and resources	1	2	3	4	5
3.0 RANG: 1.0-5.0						5.0 RANGE 3.0-5.0				

A handful of trainees shared additional feedback about some of their ratings, as in:

- *Advising/mentoring trainees on topics on SciGirls topics learned a bunch of skills on any topics…same skill level earth science*
- *It is great to be connected to such amazing resources! Thank you!*
- *I really like the additional online support (personnel and documents and webinars). Opened up more tools and resources I can use to enhance and strengthen programs run by my organization*
- *I think I still need time to explore the resources and engage with trainers in the community*

1.9 Impact of Train-the-Trainer training on trainee confidence and sense of preparation

Impact on confidence

First, the trainees were asked to rate the extent to which the training increased their confidence in their ability to train and mentor others on a scale from 1.0 (*didn't increase at all*) to 5.0 (*greatly increased*). As shown in the table below, though there was a range of ratings, the trainees generally felt that the Train-the-Trainer training *greatly increased* (median rating 5.0) their confidence in this area.

Median trainee rating of impact on confidence (N=46)					
	Didn't increase at all 1.0	2.0	Moderately increased 3.0	4.0	Greatly increased 5.0
Overall, to what extent has the training increased your confidence in your ability to train and mentor others on *SciGirls*?					5.0 RANGE 2.0-5.0

The trainees were then asked to comment on how the Train-the-Trainer training affected or didn't affect their confidence. Thirty-nine (39) of the 46 trainees responded to the question. As shown in the chart below, more than two-fifths (41%) of this group pointed to the opportunity to practice or prepare for their own trainings. About a quarter (26%) noted that the information about *SciGirls Seven* impacted their confidence, while a fifth (21%) commented on the activity demonstrations and more than one-tenth (13%) mentioned the focus on adult learning strategies. Just over a quarter (26%) shared miscellaneous feedback.

Aspects of the training that increased trainees' confidence to lead their own trainings (n=39)
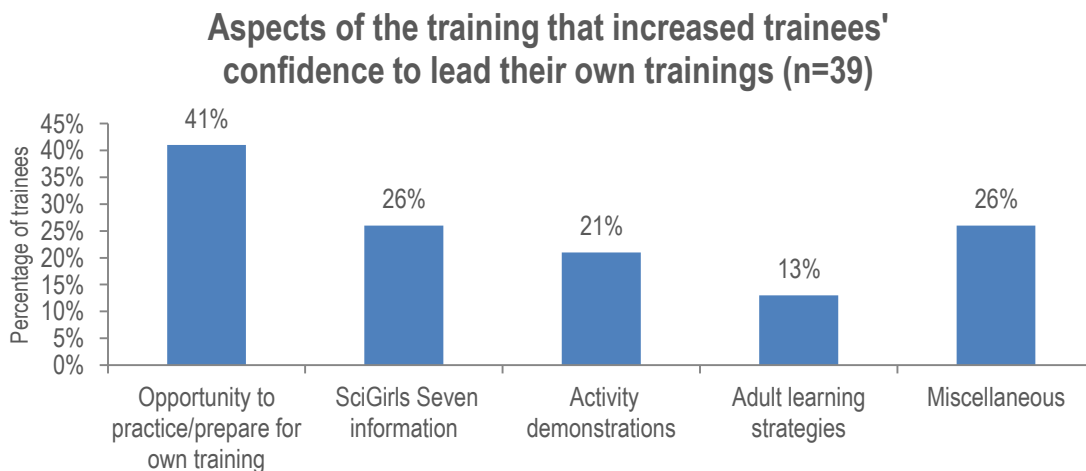
Examples of trainees' comments on these themes follow below:

Opportunity to practice/prepare for own trainings (41%)
- *It allowed me to practice my skills. I am familiar teaching the activity to kids, but not to adults. This training allowed me to practice it and gain confidence.*
- *Great opportunity to practice. Now I'm ready to go. The sample training agendas are a big help!*
- *Providing practice time and feedback. Being with peers who have similar struggles or strengths and discussing there and feeling comradery as we learn together*
- *The opportunity to practice presenting an activity I was unfamiliar with boosted my confidence.*

- *I was clueless coming in, now I get it all, really.*
- *I was already quite confident, but it gave me more ideas + practice*
- *It allowed me to practice my skills. I am familiar teaching the activity to kids, but not to adults. This training allowed me to practice it and gain confidence.*
- *Provided plenty of tools, resources and strategies for training!*
- *You all lead by example, modeling techniques and strategies we can use. Great Job!*
- *Great opportunity to practice. Now I'm ready to go. The sample training agendas are a big help!*
- *Many diverse ideas and practices were shared that can be used in a variety of settings, Time to practice helped*

SciGirls Seven information (26%)
- *Giving the opportunity to learn then teach SciGirls Seven and leading/trying the activities*
- *I feel more confident in understanding and integrating the 7 strategies. After the practices we had (in a safe environment) as well as learning here about the activities and the tools (3 training models) provided, I feel much more confident in leading training on my own.*
- *I am much more confident and feel prepared to deliver SciGirls content and gender equity.*
- *I learned so much about SciGirls and the 7, logistics, etc. but I'm still unsure about how to teach others to interact with young girls (having no experience myself); teaching others to convert existing activities to SciGirls style activities is challenging - not my strength myself*
- *I feel more confident in understanding and integrating the 7 strategies. After the practices we had (in a safe environment) as well as learning here about the activities and the tools (3 training models) provided, I feel much more confident in leading training on my own.*
- *Understand SciGirls "credo" better now and know I can transmit to others via activities/presentations*

Activity demonstrations (21%)
- *Modeling how it was presented.*
- *By practicing and seeing others present, I feel much more confident.*
- *Seeing more activates and the way other people taught made men more comfortable.*
- *making us lead our #5 activity - it was much more fun than I thought*

Adult learning strategies (13%)
- *Just need to practice adult techniques well. Plus with our SciPal we have that resource beyond workshop/training.*
- *It allowed me to practice my skills. I am familiar teaching the activity to kids, but not to adults. This training allowed me to practice it and gain confidence.*
- *I moved away from the role of the front live staff interims of working with the girls but I enjoyed the adult learning strategies since I interact more with our adult volunteer mentors.*

Miscellaneous (26%)
- *Providing practice time and feedback. Being with peers who have similar struggles or strengths and discussing there and feeling comradery as we learn together*
- *Sharing ideas/concerns/questions with colleagues that had diverse backgrounds and professional experiences was great. As a younger person, I appreciated their advice and wisdom.*
- *Just need to practice adult techniques well. Plus with our SciPal we have that resource beyond workshop/training.*
- *I think I have to lead a training to better evaluate my confidence*
- *The enthusiasm and experience of my co-trainers really helped with developing a context for my own stage and implementation*
  I didn't have enough opportunity to practice training adults

Impact on sense of preparation

Next, the trainees were asked to rate how prepared they felt to begin training and mentoring others on *SciGirls* on a scale from 1.0 (*not at all prepared*) to 5.0 *(extremely prepared)*. As shown in the table below, though they gave a range of ratings, the trainees generally felt *very prepared* (median rating 4.0) to begin training and mentoring others on *SciGirls*.

Median trainee rating of impact on sense of preparation (N=46)					
	Not at all prepared 1.0	2.0	Moderately prepared 3.0	4.0	Extremely prepared 5.0
Overall, how prepared do you feel to begin training and mentoring others on *SciGirls*?	4.0 RANGE 2.0-5.0				

The trainees were then asked to comment on any concerns they might have about their level of preparation. Only 29 of the 46 trainees responded to the question, potentially because remaining trainees may not have had feedback to share on this issue. As shown in the chart below, of those who answered the question, about a third (31%) explained that they needed more practice. More than a quarter (28%) said they didn't have any concerns, while a fifth (21%) felt they needed to review the materials. Less than one-tenth (7%) thought they needed guidance on organizing their own training, and more than a tenth (14%) shared miscellaneous feedback.

Trainees' concerns about their level of preparation to lead their own trainings (n=29)
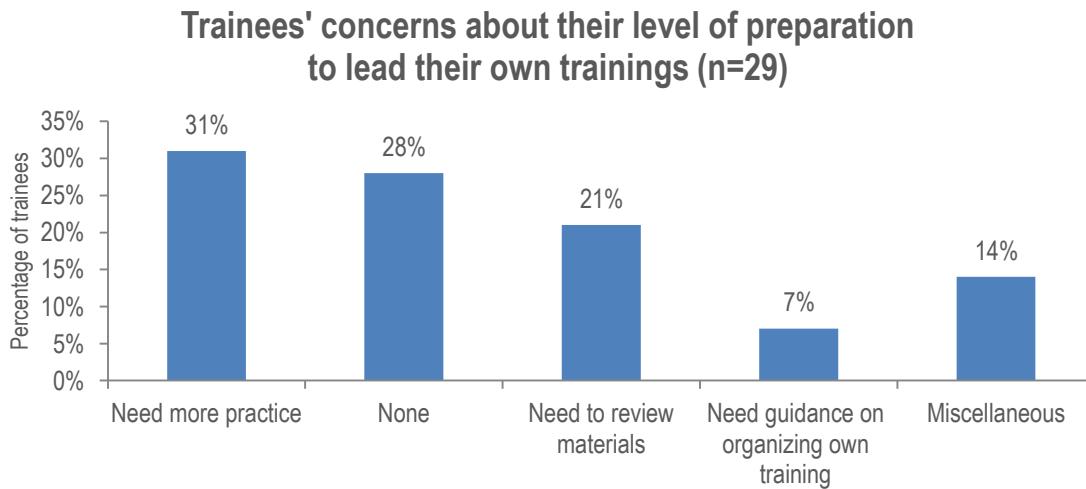
Examples of trainees' comments on these themes follow below:

Need more practice (31%)
- *I just need practice. After the first event I'll feel more experience in leading the activities*
- *Just more personal research/rehearsal/practice to be really great*
- *Just more time to practice and get more experience will give more depth of understanding of activities.*
- *Just need to Practice, practice, practice.*
- *I need to practice leading activates without reading off the sheets.*
- *Need to practice activities*
- *I feel I need to lead the activities with girls/youth to feel totally confident*

None (28%)
- *None.*
- *NA*
- *None, but I'm sure I'll have questions as I begin training.*
- *None. Surprised that I felt as confident when leading the activity.*
- *You have created a safe and open learning environment. I feel prepared now because I feel more comfortable and confident.*

Need to review materials (21%)
- *Just more personal research/rehearsal/practice to be really great*
- *I think is it mostly a matter of sitting down with the training materials and becoming more comfortable with all the material*
- *would like overview of trainer PPT's*
- *Will need to review a bit online if not leading session soon.*
- *I think I read to make sure that I have all the resources so I need time to explore*

Need guidance on organizing training (7%)
- *Customizing my training agenda to the needs of each organization*
- *Would love a discussion about details like room set-up, what you can ask your host to provide us what you provide. A good mentor model (monthly calls, weekly email, etc.)*

Miscellaneous (14%)
- *To make sure to include all the Gender Equity materials and reasoning because of my prior inquiry training*
- *Questions on partnerships*
- *The only concern I have is making sure that I cover everything that is in my contract*
- *I worry about making sure everything is set up and accounted for before a training*

1.10 Other impacts of Train-the-Trainer training on trainees

Reflecting on other impacts of the Train-the-Trainer trainings, trainees were asked to rate their level of agreement with a series of statements on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*). As shown in the table below, though there was a range of ratings in each case, overall trainees *strongly agreed* (median rating 7.0) that they felt ready to network with their colleagues to help establish the *SciGirls CONNECT* community. In general, they also *agreed* (median rating 6.0 each) that they had a good understanding of the goals of the *SciGirls CONNECT* program and that they felt confident to lead a 1-day professional development workshop on behalf of *SciGirls*.

Median trainee agreements with statements about other impacts of Train-the-Trainer training (N=46)							
	Strongly disagree 1.0	Disagree 2.0	Somewhat disagree 3.0	Neutral 4.0	Somewhat agree 5.0	Agree 6.0	Strongly agree 7.0
I feel I have a good understanding of the goals of the *SciGirls CONNECT* program.						6.0 RANGE 5.0-7.0	
I feel confident to lead a 1-day professional development workshop on behalf of *SciGirls*.						6.0 RANGE 5.0-7.0	
I feel ready to network with my colleagues to help establish the *SciGirls CONNECT* community.							7.0 RANGE 5.0-7.0

When invited to share additional feedback about their ratings, all of the trainees who responded commented on their enthusiasm for *SciGirls CONNECT*, as in:

- *You ladies are awesome. I'm so lucky to be a part of this. Thank you!*
- *I'm so motivated and excited to begin training and sharing SciGirls to my local community and beyond.*
- *I need time to explore CONNECT, look over the resources and network via all those great sites*
- *looking forward to making more VA connections and getting more VA trainers*
- *I'm excited to take the resources back to my community and other educators*

1.11 Trainee feedback about project expectations

Next, the trainees were asked if, based on everything they had learned about their new role as a *SciGirls* trainer, they felt the *SciGirls CONNECT* project was asking too much of them and to select a response. As shown in the chart below, of the 43 trainees who answered the question, more than four-fifths (82%) selected *no*, while slightly more than a sixth (16%) selected *not sure* and one trainee (2%) selected *yes*.

**Trainee feedback on whether *SciGirls CONNECT*
was asking too much of them (n=43)**
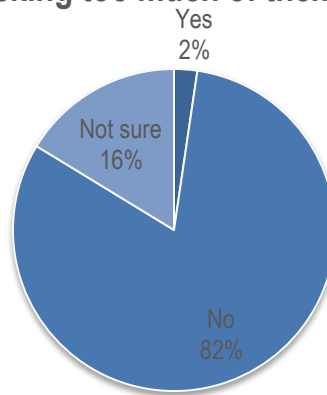
The trainee who felt the project was asking too much qualified his or her response, noting, "*I feel constrained by season 3/ citizen science requirements + not my own strength or interest.*"

Those who indicated that they did not think *SciGirls CONNECT* was asking too much of them generally explained that they were prepared, well supported, and committed to the project. Examples of their feedback are shared below:

- *They have prepared me and they will help with establishing workshops for me to train others*
- *It's a 5-year project, and we are committed to spreading the SciGirls spirit!*
- *You are very clear, supportive, and enthusiastic which makes it all very do-able*
- *I feel like I have been given the training and tools that I need and that the SciGirls staff is here to support me in any way I may need.*
- *We have a lot of support + prior experience*
- *I feel prepared and I love the idea of visiting new museums*
- *I think the resources provided are a great tool to help implement the trainings SciGirls has thought of everything we should need and I appreciate that!*
- *It seems we have ample time to complete our requirements.*
- *You've given us all the tools we need!*
- *Even though we could have spent more time on topics, there were plenty of opportunities presented to continue learning and to get the resources needed.*
- *I knew expectations when I signed up.*
- *Should be easy over 3 years and all this support.*
- *The work aligns well with my job; benefits my job as well*
- *I can easily fulfill the number if trainings in only one year.*
- *Trainings and an event is not unreasonable and we'll have support along the way.*
- *I do a lot of training already. I just have to incorporate SciGirls into the programs we already have*
- *I'm excited to go out and bring SciGirls to my community*

- *You are here to help us! If women (and men) are going to make a positive difference in STEM fields/gender equity a lot is required! WE have to be the change we want to see.*
- *I have support and resources to do the training*
- *I've been well prepared, expectations are clear, it seems do-able.*
- *The trainings we are to conduct should be relatively easy due to laid out lesson plans and availability of resources*
- *It is related to other activities I do, it gives me materials and actually saves me time, so I am very excited to go train the educators.*

Those who were unsure generally indicated that time would tell if the expectations of the project were reasonable for their situations, as in:

- *My decision will largely be based on the amount of time needed to coordinate/schedule/organize with partners*
- *I won't know until I offer first full time workshop, and see what happens and what the interest is in our state.*
- *Unclear of actual time commitment within 5-year grant. Will know more of what actual next steps are after NING and conference call conversations*
- *Still becoming familiar with the material.*
- *Not sure how SciGirls activities can be integrated with our activities/curricula. But confident that I can train my personal community (daughter's school) and neighborhood STEM organization*
- *I haven't embarked on the training my peers yet*
- *I've never led a training like this before. I will have a better idea before + during my first training workshop.*

1.12 Expected assistance trainees thought they would need

After completing their Train-the-Trainer training, the trainees were asked how much assistance they thought they would need from the *SciGirls CONNECT* staff on a scale from 1.0 (*no assistance*) to 5.0 (*extensive assistance*). As shown in the table below, though they shared a range of responses, the trainees generally expected that they would need *moderate assistance* (median rating 3.0) from the *SciGirls CONNECT* staff after the training.

Median trainee rating of expected assistance needed (N=46)					
	No assistance 1.0	2.0	Moderate assistance 3.0	4.0	Extensive assistance 5.0
How much assistance do you expect to need from the *SciGirls CONNECT* staff **after** this training?	3.0 RANGE 1.0-4.0				

When asked to elaborate on any training, development, or education they thought they might need, 30 of the 46 trainees responded to the question. As shown in the chart below, of this group, a third (33%) pointed to logistics support. A fifth (20%) commented on troubleshooting, and less than a fifth (17%) said there was nothing they expected to need from *SciGirls* staff. A tenth (10%) explained that the program's webinars would be helpful, and less than a tenth (3%) thought they might have trouble meeting *tpt*'s expectations. Less than a quarter (23%) shared miscellaneous feedback.

Areas in which trainees thought they might need support (n=30)
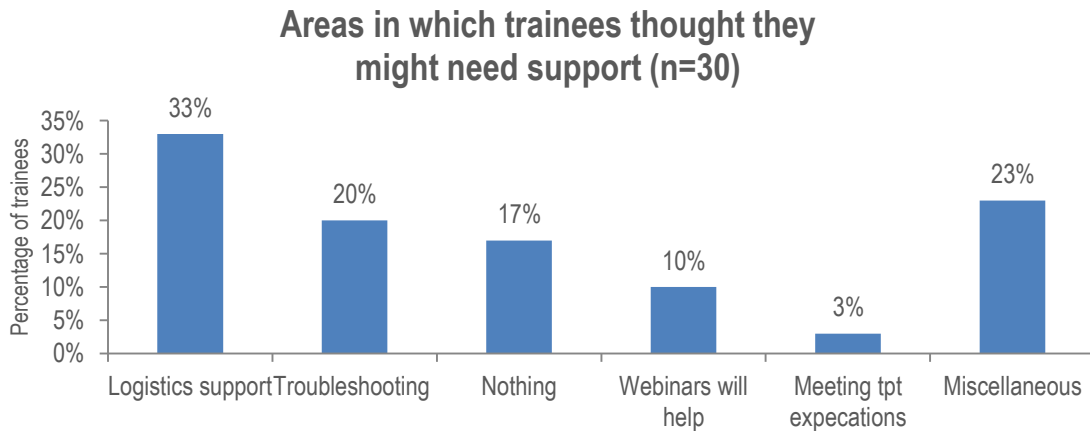
Examples of trainees' comments on these themes follow below:

Logistics support (33%)
- *None- Need help with supplies, Need help identifying agencies/organizations that want training*
- *As mentioned, ideas on how to do a training at a distance (Marketing, Organization, Roles of host, things to remember).*
- *Mostly just dealing with the logistics of doing a training in a distant location and how that will work. Perhaps some gender equity resources as well.*
- *Only because it's still in the phase and I may have logistics questions (how to schedule events, registrations, etc.) I believe if I had attended training one year later when everything was in place I would need very little assistance.*
- *Checking on expectations of training and logistics*
- *Logistics of setting up training at different sites*

- *More info about using the networking opportunities on the website.*
- *None - more logistics*
- *Signing up events - kind of confusing*

Troubleshooting (20%)
- *Trouble-shooting when problems arise, Clear communication and organization of documents, resources, supplies, Easy systems to share with other trainers*
- *Just support with questions + updated resources*
- *Phone conversations and emails with help*
- *I expect to run into questions once I begin training.*

Nothing (17%)
- *Not sure*
- *Nothing at the current time. But questions may come up*
- *None*

Webinars will help (10%)
- *Just continued updates and webinar info.*
- *Not too much, looking forward to webinar.*
- *Just keep up the webinars!*

Meeting tpt expectations (3%)
- *Just some help with making sure I cover all of my training requirements.*

Miscellaneous (23%)
- *Adult Learners: practice, practice, practice (hugs and kisses)*
- *Adult training*
- *Materials for second training and funding support for the screening*
- *Just refreshers with new trainers for connections*
- *Not yet certain in the relationship between SciGirls and the NGCP and how to leverage both of the advance of young ladies learning.*
- *More info about using the networking opportunities on the website.*

1.13 What trainees hoped to gain from their involvement in *SciGirls CONNECT*

Nearly all (44 of the 46) trainees commented on what they hoped to gain from being a *SciGirls CONNECT* trainer. As shown in the chart below, of this group, about two-fifths each explained that they hoped to gain networking opportunities (43%) and/or the experience of sharing *SciGirls* with educators (39%). About a third (34%) pointed to professional development, and more than a quarter (27%) commented on the opportunity to impact more girls. Less than a tenth each hoped to gain access to resources (9%) or to become a mentor (2%). More than a tenth (14%) shared miscellaneous feedback.

Train-the-Trainer training, image provided by *tpt*

What trainees hoped to gain from being a *SciGirls CONNECT* trainer (n=44)
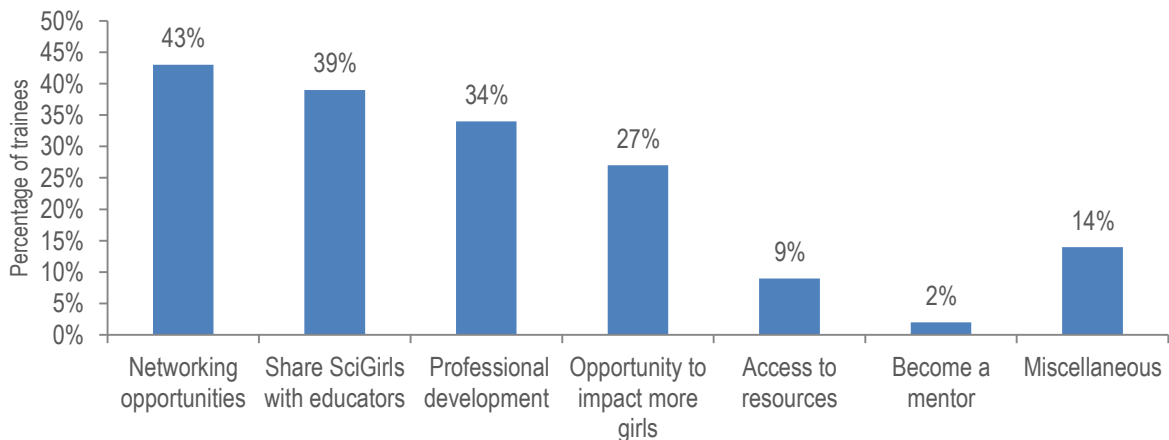
Examples of trainees' comments on these themes follow below:

Networking opportunities (43%)
- *Networking opportunities with other interested in serving girls in science. I am personally invested in engaging girls in science and am excited to share that interest with others*
- *I hope to meet our new museum and outreach people. I want to see their programs in a way you don't at a conference. I want to change the future of some girls with my work.*
- *I look forward to making connection with other museums and community organizations. I am interested in moving forward with girl based programming and seeing where it can lead my career.*
- *More confidence in presentation. More professional connections with people doing like-minded work.*
- *Continued networking, opportunity to share girls in STEM activities.*
- *Expanded network! Advanced adult learning expertise and experience.*
- *I hope to create a larger network for SciGirls and inspire more girls.*
- *More connections with others working towards gender equity.*
- *More networking; changing the world one girl at a time; equal gender representation in science, leadership.*

- *Strengthening my network with other STEM educators, in my state and nationally. Developing my own skills as a workshop facilitator.*
- *Connections to national + local educators*
- *Connections/collaboration opportunities. Hopefully this will allow for more time to focus on gender equity in my job*
- *More connections with K-12 teachers/students in my region, better activities for outreach + summer programming*

Share SciGirls with educators (39%)
- *I am personally invested in engaging girls in science and am excited to share that interest with others*
- *I love the SciGirls 7, and I'm deeply passionate about Girls and Science. I want to help more organizations learn to sue the SciGirls activities, but more importantly, help as many educators as possible understand the issue of gender equality and how to use the 7 strategies to change the way they teach... and hopefully the culture of education so everyone encourages girls to try science, and look at stem careers as a rewarding and fun occupation!*
- *I want to spread passion and excitement to girls and adults alike about getting involved in STEM activities. I want adults to feel comfortable encouraging girls to pick an interest and have the confidence to go for it.*
- *spread the word about SciGirls _ importance of outreach*
- *I hope to become a resource for teachers in the Houston area as well as a Texas STEM leader. I hope to reach educators across the state through various conferences.*
- *I hope I can be a positive influence in girls lives and encourage them to follow their position, be them in STEM or otherwise. I hope I can inspire other educators to do the same. I want to challenge people on their views of women in STEM.*
- *I would like to train others to contribute to decreasing gender inequality in STEM. I believe that we are able to make a difference in young girl's lives by exposing them to fun STEM activities*
- *I hope to get more educators engaged in my collaborative, but offering them a very relevant training opportunity*
- *I hope to be able to bring these resources to the community and gain experience with hosting training to help me be more confident in my abilities and grow professionally.*
- *I hope to share knowledge with educators about the materials and research behind SciGirls so there is more awareness of the issues in STEM for girls. Long term, I hope I can be apart of a movement that truly makes a positive impact resulting in an increase of girls in STEM!*

Professional development (34%)
- *Professionally learn more about the activities and how to teach others to use them. Personally, I wanted to learn more about being a teacher.*
- *I hope to gain more professional development experience, that I can use to help educators and other professionals in my area*
- *More confidence in presentation. More professional connections with people doing like-minded work.*
- *Personally feeling more confident with using and teaching activities and networking!!! Professionally seeing results of partnerships and networking has motivated me to do more.*
- *Confidence and a strong level of competency on "Train-the-Trainers" methods and gender equity. Recognized resource for multiple organizations.*
- *To increase my skill set for informal education, I would like to become more involved with gender and other diversity programs and possible assist in the gathering of research on them.*
- *It is very It is very good professional development as a need educator with no formal training.*
- *A community supporting STEM engagement + Girls! Personally - better prepared for events, really engages participants + effectively professionally enhance our materials + workshops*
- *I'm excited to improve my practice as an educator, specifically in increasing effectiveness and engagement with girl-centered programming at my museum.*

Opportunity to impact more girls (27%)
- *The ability to help the girls in my region connect to STEM opportunities and eventually covers. Personally seeing the fulfillment for educators that we can do this. Professionally to be a resource for my profession.*

- *I hope I can be a positive influence in girls lives and encourage them to follow their position, be them in STEM or otherwise. I hope I can inspire other educators to do the same. I want to challenge people on their views of women in STEM.*
- *I hope to get as many educators trained as I can to hopefully get the resources utilized. It's important to me to be able to empower children*
- *I hope to share knowledge with educators about the materials and research behind SciGirls so there is more awareness of the issues in STEM for girls. Long term, I hope I can be apart of a movement that truly makes a positive impact resulting in an increase of girls in STEM!*
- *I hope to meet our new museum and outreach people. I want to see their programs in a way you don't at a conference. I want to change the future of some girls with my work.*
- *Continued networking, opportunity to share girls in STEM activities.*
- *I hope to create a larger network for SciGirls and inspire more girls.*
- *More networking; changing the world one girl at a time; equal gender representation in science, leadership.*

Access to resources (9%)
- *Recognized resource for multiple organizations.*
- *More resources for girls, leading to higher quality opportunities, increasing collaborative relationships*

Become a mentor (2%)
- *I want to grow professional in that I continue to can be a role model and mentor for my community, not just professionally.*

Miscellaneous (14%)
- *A community supporting STEM engagement + Girls! Personally - better prepared for events, really engages participants + effectively professionally enhance our materials + workshops*
- *Advanced adult learning expertise and experience.*
- *Contributing to the STEM workforce particularly in the Software and physics area*
- *The ability to take my youth level to prevent/facilitator skills use them for a wider range of programming*

1.14 If and how trainees thought the project would influence their work

The trainees were then asked if and how they thought being a *SciGirls CONNECT* trainer would influence the following aspects of their work: the work they do in their current job, their longer-term career or professional growth, and their institutions. As shown in the chart below, all but one of the trainees answered these questions. In each case the majority of trainees indicated that they thought their work as a trainer would affect their current job (96%), their longer-term career or professional growth (89%), and/or their institutions (82%).

Impact of being a trainer on other aspects of trainees' work (n=45)

Percentage of trainees

Work in current job	96%
Longer-term career/professional growth	89%
Institution	82%
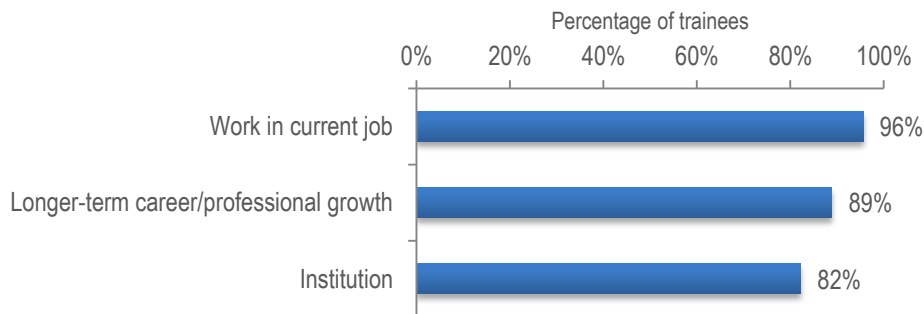
Trainees were then asked to explain how being a *SciGirls CONNECT* trainer would influence these aspects of their work. Examples of their responses are shared below:

Work in current job (96%)
- *I hope I can help get some girls into the STEM pipeline using my existing programs and these new skills*
- *Makes me more aware of encouraging my girls in STEM and how to do that*
- *Yes, I'm currently trainer for another program so this just adds to my repertoire of training I can offer*
- *More specific connections to gender equity and new activities*
- *Yes, we are part of a network that provides professional development, so a workshop for teachers seems natural*
- *I work with girls and the adults that are constantly around them. Sharing fun interactive activities will help keep them engaged.*
- *Add more of these activities to curriculum offered.*
- *It will help me develop a required network*
- *I will be up dating some programs to include SciGirls activities*
- *We will do more SciGirls outreach!*
- *It gives me another resource to provide to educators*
- *Only a little. This will be in addition to my normal duties*
- *Will continue to explore + utilize SciGirls in teacher trainings + informal ed*
- *I believe I can use techniques learned in my job*
- *Will help with adding new and exciting activities to existing programs and help create new programs*
- *I will be more valuable and reach more people*

Longer-term career/professional growth (89%)
- *Professional development*
- *This will affect the awareness I have of the goals of institutions. If I ever switch jobs, I will want to make sure that there will be room for me to incorporate SciGirls principles*
- *I am learning that I enjoy this work and I am open to new career paths*
- *I've become more interested in adult training and this allows me to continue exploring that interest*

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- *I want to be really great at helping prepare others to do this work well*
- *Connecting with other museums and org.'s Ways to implement strategies on all programs*
- *Knowledge of facilitating adult learning and STEM activity knowledge/experience is a huge asset in any facility of work.*
- *Good addition to my resume/CV and adds new ways to help my educator community.*
- *Will look good on resume and build a network with other trainers*
- *Yes, gives me experience teaching adults.*
- *I'd like to make a greater impact than I can in my current position.*
- *I will be leaving my job soon and I hope to use this to make future connections.*
- *Strengthens my resolve to be a mentor to women not just a STEM educator*
- *Had not attended a PD in many years + enjoy the commonality*
- *I want to become a full time educator trainer. This is perfect!*
- *I am getting more and more interested in focusing my career on engaging young women in STEM*
- *Help me with adding new skills to my resume and open doors to possible new professional opportunities*

Institution (82%)
- *My department is always hungry to learn hew strategies and improve so I can provide these skills for them*
- *I think this is very important in our male-heavy senior staff institution*
- *Continues to add skills/programs we can offer to other organizations across the state. We want to recognized as the leading organization in gender equity and STEM*
- *I will train my department in SciGirls Seven!*
- *Train staff/volunteers in new strategies to enhance my institution's programs*
- *We plan to train staff first- we need the practice!*
- *Advancing our mission and reach across state.*
- *Training for my staff will happen on new activities.*
- *Yes! I work in the outreach department and I know everyone will be excited for these resources.*
- *I will pass all my resources on to my colleagues*
- *Yes, under on community initiates development will be sharing with Hispanic/Latin series programs*
- *Others at my institution will need to help me plan events*
- *Our program manager will be working with me to organize training*

1.15 Trainees' suggestions for improving future Train-the-Trainer trainings

When asked if they had suggestions for how *tpt* could improve the Train-the-Trainer training for future participants, 32 of the 46 trainees provided a response. Those who declined to answer the question may have done so because they had nothing to share on this topic. As shown in the chart below, of those who answered the question, more than a quarter (28%) suggested a change to the format of the training, while a fifth each expressed a desire for more discussion or reflection (19%) or said they had no suggestions (19%). About one-sixth (16%) recommended additional hands-on activities, and more than one-tenth each thought it would help if *tpt* streamlined the sessions (13%) or suggested *tpt* lengthen the training (13%). Less than one-tenth (3%) wanted more information about the *SciGirls Seven*, and about a sixth (16%) shared miscellaneous feedback.

Suggestions for improving future trainings (n=32)

Percentage of trainees

Change training format	28%
More discussion/reflection	19%
None	19%
More hands-on activities	16%
Streamline sessions	13%
Lengthen training	13%
More SciGirls Seven	3%
Miscellaneous	16%
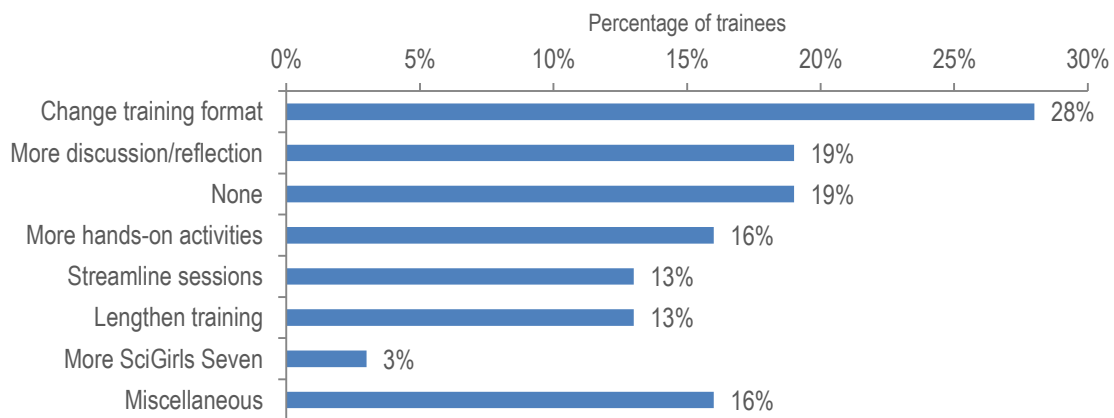
Examples of trainees' comments on these themes follow below:

Change training format (28%)
- *Develop some pre workshop templates for ongoing feedback and ideas on the SciGirls CONNECT site. Maybe not the parking lot but forum pages on the training activities.*
- *More "stretch breaks", maybe some healthier options than candy.*
- *Generally, some presentations were longer than they needed to be. I needed more bathroom/water breaks. I wanted more practice with hands-on activities, citizen science, and how to work with educators. I think more opportunities for reflection/journaling may be helpful.*
- *Have us all introduce ourselves at beginning. Overall great icebreaker activities throughout, but I think there were still a few participants I didn't meet*
- *8-5:30 is rough. 3 more equal days please!*
- *Some of the training could be like an online facilitated class that you get "credit" so not everything has to be done F2F. Videotape next time you do training + use clip to put an online learning experience together + other educators could be certified - make them participate in online community*

More discussion/reflection (19%)
- *I think building in a little more flex time for when activities run over schedule would be helpful. The wrap ups and discussions were so productive I think we could have talked for hours more.*
- *Perhaps add a bit more time on day 2 for questions and open discussion*
- *More time for debriefing and reflection, both groups and individually*
- *Perhaps ask ahead of time which areas people would like to have more focus on during the training*

- *Great training time was very effectively used. It would be nice to bring one of our activities from our organization and SciGirls-ize it because we come from so many backgrounds*
- *Maybe more group brainstorming or how SciGirls training will look for all participants*

None (19%)
- *Everything was Awesome!*
- *None!*
- *This was a terrific training! Very well organized, well run and fun!*
- *I think it was very good, training space was good. Horel nice, great staff*
- *The length of the training was perfect. The resources are great and the connections and networking are fabulous*
- *No, I think that it was extraordinarily well run*

More hands on activities (16%)
- *I wanted more practice with hands-on activities, citizen science, and how to work with educators.*
- *Shorter survey, more hands on*
- *More time for activities. Maybe have one of the facilitators model part of an activity*
- *Allow more time for additional hands-on activities. It would be nice to include exposure to both season 1 + 2 AND season 3*

Streamline sessions (13%)
- *Generally, some presentations were longer than they needed to be. I needed more bathroom/water breaks.*
- *Perhaps ask ahead of time which areas people would like to have more focus on during the training*
- *Decrease the rush and the banter that ran tangential course to what really needs to be talked about.*
- *Make it a little more linear, especially when introducing activities*

Lengthen training (13%)
- *Maybe make it a 2 or 3-day training- we won't be rushed and can get through everything. I would like to have other opportunities to practice implementing adult learning strategies*
- *More time to delve more in depth.*
- *Resources permitting, being in more session 1 trainings.*

More SciGirls Seven (3%)
- *Please clarify test and create best process for explicitly outlining SG7 used during training presentations. Still unsure on best implementation there.*

Miscellaneous (16%)
- *A little bit of prep time for our activity. It'd be great if we knew ahead of time which me we'll present. The training was great overall. I was completely engaged the whole time and I know how different it is to teach curriculum in a short amount of time.*
- *A bit longer for Adult Learner stuff. Also, please clarify test and create best process for explicitly outlining SG7 used during training presentations. Still unsure on best implementation there.*
- *Time at the Science Museum*
- *Have somebody who has completed the program come and give a presentation about what they experienced. It would be nice to hear about their difficulties and successes with traveling.*

Part 2: Trainers' reports on their trainings and annual reflections

Part 2a: Trainers' reports on their trainings

Method

During Year 1, the evaluation team developed and piloted the online Trainer Workshop Reflection Form (TWRF). Beginning in Year 2, an online version was developed and subsequently made available to trainers. As introduced on page 6 (under Trainers), this form was designed to be completed by *SciGirls* trainers each time they conducted a full-day *SciGirls* training for partners and local educators.[4]

Prior to completing a TWRF, trainers were informed that the online form was hosted by the independent evaluation team from Knight Williams and that their responses would be combined with those from other participants and reported in the aggregate. They were further informed that the evaluation was funded by a grant provided by the National Science Foundation, and that their frank and honest input was appreciated and would help guide the direction that *tpt* takes in planning future training programs.

Over the course of Years 2 through 5 of the project, a total of 31 trainers submitted 56 online forms about their programs, with 12 trainers reporting on between two and five trainings each. As shown in the chart to the right, more than three-fifths (61%) of the 31 trainers submitted one TWRF. One-sixth (16%) submitted two TWRFs, a tenth each submitted three (10%) or four (10%) TWRFs, and one trainer (3%) submitted five TWRFs. For the purposes of this evaluation, multiple forms filled out by the same trainer are considered distinct TWRF submissions. As noted in the *SciGirls CONNECT* Annual Report: 2014-2015, trainers coordinated a total of 169 trainings over the grant period (with no trainings taking place in the first year); thus, one-third (33%) of trainings were reported on via TWRF submissions.
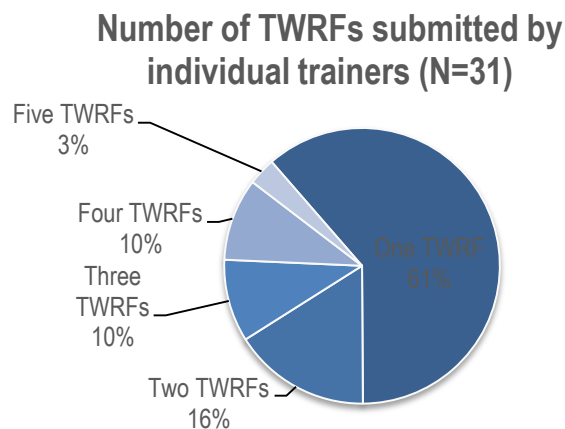
Number of TWRFs submitted by individual trainers (N=31)

- Five TWRFs 3%
- Four TWRFs 10%
- Three TWRFs 10%
- One TWRF 61%
- Two TWRFs 16%

Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[5] The analysis was both deductive, drawing on the objectives of the training program, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

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[4] In their TWRF feedback, trainers frequently use "training" and "workshop" interchangeably.
[5] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

Findings

The Part 2a findings are presented as follows: resources the trainers used in their *SciGirls* trainings, the most and least helpful resources and support identified by trainers, the highlights and challenges of the trainings, trainers' suggested revision to training timing or format, other improvements trainers suggested for future trainings, assistance trainers thought they would need from *SciGirls* staff to implement their suggested changes, and trainings with participants who needed additional support or follow-up from *SciGirls* staff.

2a.1 Elements trainers included in the *SciGirls* trainings

When asked which elements they included in their *SciGirls* training, all (100%) of the 56 trainers explained that they introduced *SciGirls* on TV, online, or on the ground, as shown in the chart below. More than nine-tenths each: gave a history of *SciGirls* (98%), screened a *SciGirls* video (either the sizzle reel or a clip from an episode) (98%), presented the *SciGirls Seven* strategies and the tips associated with each (98%), ended each activity with questions and reflection (98%), distributed curriculum resources after completing the activities (98%), used PowerPoint slides incorporating the *SciGirls* template (98%), presented research on the state of women in STEM (96%), introduced or gave a brief overview of the *SciGirls Seven* strategies (96%), engaged participants in a gender equity activity (95%), showed a *SciGirls* video clip in conjunction with an activity (95%), or gave an overview of the print pieces (93%). Slightly smaller groups indicated they did each of the following: reviewed the "Program Leader Expectations" form (89%), had participants complete the "Action Plan" form (88%), had participants complete the evaluation form (86%), incorporated the trademark/logo/funder information (84%), provided a web tour of the PBSKids site (80%), provided a web tour of the *SciGirls CONNECT* site (70%), or incorporated another element (23%). Those who indicated that they incorporated another element generally pointed to: related research, materials, and initiatives; strategies intended to address the goals of their organizations and participants; and/or elements such as games, activities, and brainstorming sessions.

Elements trainers included in their *SciGirls* workshops (N=56)

Element	Percentage of trainers
Introduced SciGirls	100%
Gave SciGirls history	98%
Screened SciGirls video	98%
Presented each of the SciGirls Seven	98%
Ended activities with questions/reflection	98%
Distributed curriculum resources	98%
Used SciGirls PowerPoint template	98%
Presented research on women in STEM	96%
Gave SciGirls Seven overview	96%
Engaged participants in a gender equity activity	95%
Showed video clip with activity	95%
Gave overview of print pieces	93%
Reviewed "Program Leader Expectations"	89%
Had participants complete "Action Plan"	88%
Had participants complete evaluation	86%
Incorporated trademark/logo/funder information	84%
Web tour of PBSKids site	80%
Web tour of SciGirls CONNECT	70%
Other	23%

Examples of trainers' comments regarding other resources used during the trainings are shared below:

- *Effective messaging research; PBS resources (PBS Learning Media) and visit from local PBS staff*
- *Also included PBS Learning Media information to the group*
- *Incorporated effective messaging research and best practices from Changing the Conversation and AAUW's Why So Few*
- *Effective messaging info; TxGCP info; role models matter info (Techbridge)*
- *Additional resources and research on exciting and engaging kids in STEM with words, images and real world connections including National Academy of Engineering Changing the Conversation, National Center for Women & Technology Report and AAUW.*
- *Mentioned Fab Fems, NCGP Program Directory, other STEM events in area that I knew about*
- *Brainstormed resources and mentors in their community. Talked about national resources esp NGCP.*
- *Provided them the Louisiana Vital Signs statistics for STEM in our state.*
- *Aligned GLOBE activities with SciGirls Seven*
- *Workshop participants modified existing lesson plans to include SciGirls Seven strategies, implemented these lessons in the classroom, and presented on experiences during the final week*
- *I included examples of SciGirls Seven application in computer programming activities with the middle and high school girls.*
- *Event was also a NGCP collaborative event - included an overview of NGCP as well as the local collaborative (Oregon) as well as speed networking during lunch.*
- *I added an improve game to the beginning of the workshop. Since there were two different groups, one from Santa Ana College and one from Girls Inc. We played an improve game to make everybody feel comfortable around each other.*
- *Intro engineering activity from a NGCP conference*
- *Led a brainstorming session where we came up with as many resources as possible for role models including businesses, organizations, non-profits, governmental groups etc.*

2a.2 Most helpful *SciGirls* resources and support

The full group of 56 trainers pointed to a range of *SciGirls* resources and support that they found most helpful. As shown in the chart to the right, the largest group, more than half (54%), explained that they thought the PowerPoint template and slides were most helpful, calling them "*an excellent resource*" and "*a HUGE time saver.*" More than a third (36%) commented on the video resources (both online and on DVD), and just under a third (30%) pointed to the activities or activity guides. About one-quarter (23%) indicated that the online resources (including *SciGirls CONNECT*, PBS's website, the Ning platform, and the online registration process) were most helpful. A fifth (20%) mentioned the organizing support provided by *SciGirls* staff, including the planning checklist, agenda template, and assistance with activity materials. About a tenth (11%) commented on something related to *SciGirls* research and methods, such as the *SciGirls Seven* strategies or the "puzzle pieces" featuring the strategies (an example of which is shown in the image to the right). Finally, just under a tenth of trainers (9%) shared miscellaneous feedback, including one response about the resources being "*great.*"

Most helpful *SciGirls* resources and support (N=56)

Percentage of trainers

PowerPoint materials	54%
Video resources	36%
Activities or activity guides	30%
Online resources	23%
Organizing support	20%
SciGirls research and methods	11%
Miscellaneous	9%
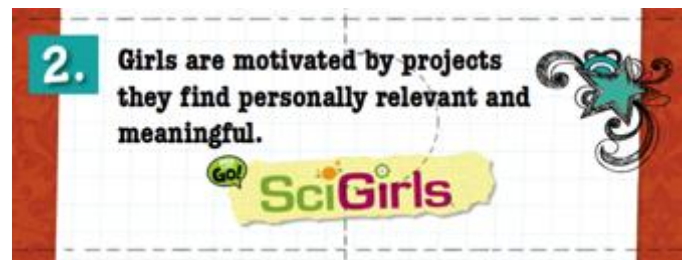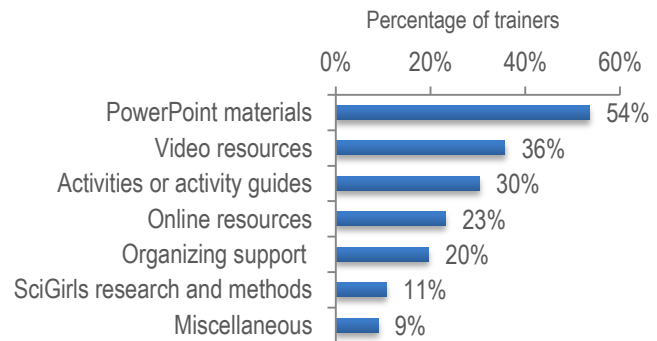
An example from the *SciGirls Seven* "puzzle pieces"

Examples of trainers' comments on these themes follow below:

PowerPoint materials (54%)
- *The SciGirls resource that was most helpful was the Trainer PowerPoint. It kept me on track and covered all necessary information.*
- *PowerPoint presentation ready to go with minimal work for trainers is a HUGE time saver.*
- *The PowerPoint that was provided for me was an excellent resource to have. I was able to modify it and use all the information that pertained to the group that I was training.*
- *The PowerPoint…[was] well organized and laid out.*
- *The PPT slides*
- *…new slides for season 2!*

Video resources (36%)
- *The most helpful resources were the suggested SciGirls video clips. It was nice to show how everything could fit together into a nice 45-minute period of time.*
- *The SciGirls DVDs came in useful at this training because there [were] no Internet capabilities.*
- *DVDs are useful to showcase the power of the content available*
- *Having the DVDs and online sizzle reels really helped out too.*
- *Having the sizzle reel available to share is great.*
- *Having videos available on the Ning site was incredibly helpful because we weren't able to plug our own computers in to the projector AND their DVD player didn't accept our DVDs. We only had the Internet to use and wouldn't have been able to show videos had they not been online.*
- *SciGirls CONNECT page and videos on the page*

- *The videos are engaging.*
- *The video clips were…wonderful.*

Activities or activity guides (30%)
- *…the activities are creative.*
- *SciGirls activities*
- *The educators appreciated the detailed lesson plans provided in SciGirls Activity Booklets.*
- *Activity books*
- *Booklets*
- *Activity guides*
- *The curriculum guides were useful to the teachers who attended.*

Online resources (23%)
- *The connect website is AWESOME- one stop shop for everything I need to make the training go smoother and less prep time for me.*
- *The SciGirls CONNECT site is excellent- once stop shop for educators.*
- *SciGirls CONNECT page and videos on the page*
- *Ability to access the activities from the scigirlsconnect.org site*
- *SciGirls CONNECT and the PBS site. They loved seeing the female scientists profiles on the Connect site*
- *The NING site is a great resource to make sure I have everything and it is up to date.*
- *Having videos available on the Ning site was incredibly helpful because we weren't able to plug our own computers in to the projector AND their DVD player didn't accept our DVDs. We only had the Internet to use and wouldn't have been able to show videos had they not been online.*
- *Website registration*

Organizing support (20%)
- *…the 'checklist before training'*
- *Having materials like a sample agenda available to modify is a great help.*
- *The…full day workshop schedule [was] well organized and laid out.*
- *Having the bag of materials organized and ready to use was also extremely helpful. I was able to spend more time preparing my presentation instead of having to worry about activity prep.*
- *The provided materials for hands on activities is also helpful.*
- *Having the supplies delivered to the site and organized.*
- *Having Niki send all the materials out to the location was great. She took care of my travel and hotel too.*
- *SciGirls support team*

SciGirls research and methods (11%)
- *I have participated in many SciGirls activities before and teach inquiry-based science so doing the activities and debriefing was familiar but I really appreciated the information about girls' science test scores and number of degrees awarded. I would not have been able to put those statistics together on my own.*
- *SciGirls Seven strategies*
- *SciGirls Seven and Research*
- *…the "puzzle pieces".*

Miscellaneous (9%)
- *All were great.*
- *Updated info for Season 3.*
- *Having something tangible to hand out after each topic was great. It helped participants stay motivated and make the connection between the activity, booklet and DVD*
- *[Print] resources*
- *TxGCP [Texas Girls Collaborative Project] has created a script use with the ppt and that is extremely helpful.*

2a.3 Least helpful *SciGirls* resources and support

Out of the 56 trainers who completed a TWRF, 48 shared a comment when asked about the *SciGirls* resources or support they found least helpful; those who left the question blank may have done so to indicate that they did not find any of the resources or support to be unhelpful. No single element stood out as least helpful to the majority of trainers who answered the question. As shown in the chart below, more than two-fifths (42%) of trainers wrote "*N/A*" or explained that everything was helpful, as in "*all helpful,*" "*nothing comes to mind,*" and "*I didn't really come across anything that didn't help me out in some way.*" Additionally, less than one-tenth (8%) of trainers explained that they were "*not sure*" which resources or forms of support had been least helpful.

Least helpful *SciGirls* resources and support
(n=48)

Percentage of trainers

Category	Percentage
Nothing or N/A	42%
Online resources	19%
Video resources	8%
Not sure	8%
Evaluation	4%
Planning checklists	4%
SciGirls Seven	4%
Miscellaneous	10%
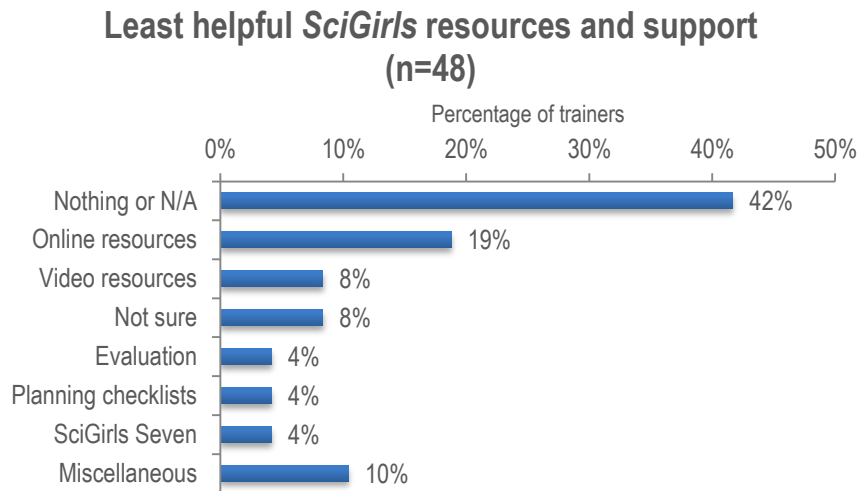
Of those who identified the least helpful resources or forms of support, the largest group, about a fifth (19%), pointed to the online resources, with some commenting on challenges they faced with the online registration sites, a few explaining that they had technical difficulties and hadn't been able to access the resources, and one noting that the PBSKids website was the "*least touched upon*" resource. Less than a tenth (8%) indicated that either the online or DVD video resources were least helpful for various reasons, and smaller groups identified the post-training evaluation (4%), planning checklists (4%), or *SciGirls Seven* (4%) as least helpful. A tenth (10%) shared miscellaneous feedback.

Examples of trainers' comments on these themes are shared below:

Online resources (19%)
- *Setting up the event on the NGCP site for us. I found it easier to do this for our own trainings, as we did last year. I was able to go in and edit the information about the training. We had to reschedule ours due to the snow, if the Sciencenter hadn't had people register through another site as Setting up the event on the NGCP site for us. I found it easier to do this for our own trainings, as we did last year. I was able to go in and edit the information about the training. We had to reschedule ours due to the snow, if the Sciencenter hadn't had people register through another site as well we would have had great difficulty getting a hold of everyone before the cancelation because we did not have access to the registration information on our own. At the very least, the password feature should be used to allow the trainers to access the information. Perhaps a standard, "SciGirls" password is used.*
- *NGCP Registration site – now that the trainers can't access or edit the events, this site isn't helpful to us directly*
- *The NGCP website was not helpful because I didn't have access to know who had signed up and what information they had received.*

- *I was unable to get to the "Trainers Group" on SciGirls CONNECT because it said I needed permission to be added. That took a long time and I was only able to get access to it the day before I left.*
- *The PBSKids site did not connect with the IPads most teachers brought.*
- *PBSKids.org and SciGirlsConnect.org was not helpful this time because of the no connectivity to the Internet.*
- *PBSKids site. While it's a fun resource and great to include in the presentation, I just find it the least touched upon and discussed resource.*

Video resources (8%)
- *It would be great to be able to download the movie clips. My laptop didn't have a DVD drive and my Internet wasn't working properly so I had problems with showing the movie clips.*
- *Unfortunately we did not have wifi in our space so I wasn't able to show much of the episode clips.*
- *SciGirls DVDs.... We had great Internet access and used all the on line clips and connections. However, I am sure they will be helpful for the people who attended.*
- *Was not able to use many episode clips this time due to room setup.*

Evaluation (4%)
- *The on-line evaluation was confusing.*
- *There were links to evaluation that were no longer active. At the end of the training people tried to fill out the participant eval form from the link and could not*

Planning checklists (4%)
- *I'm not sure if I miss read the checklist but I didn't realize SciGirls was going to include copies of the Program Leader Expectation, Program Requirements and Action Plan. I printed and also brought with me. The Contents of Training Supply Kit was helpful however I wish it included general materials (ie nametags, pens, sharpies, SciGirls 7 Cards)*
- *The Trainer Checklist was very helpful, but I think necessary technology for the workshop should be included on there as well. I knew I need a computer and projector, but forgot about items such as extension cords, speakers and Internet. Myself and the host were responsible for bringing all the technology since none was available at the site.*

SciGirls Seven (4%)
- *SciGirls 7 puzzle pieces*
- *SciGirls Seven strategies*

Miscellaneous (10%)
- *The least helpful resource was the brainstem game. I'm not exactly sure how to integrate that experience into the training.*
- *For many, they didn't have enough time to thoughtfully fill out the action plan.*
- *I did not have participants put together an action plan or go through the logo requirements because they were all participating as a requirement of their organization and will be leading SciGirls activities but not designing their own programs.*
- *Some of the add on materials such as FabFems.org and The Connectory Coasters seemed redundant since it was in the presentation. Many of the participants wrote down the information if they were interested.*
- *A lot of the small handouts like stickers and cards always seem to get left behind.*

2a.4 Greatest highlights/successes of the *SciGirls* trainings

As shown in the chart to the right, the full group of 56 trainers generally identified three main highlights or successes of their trainings. The largest group of trainers, commenting on just under half of all trainings (45%), pointed to participants' excitement, engagement, or increased comfort. At the same time, about a third (30%) identified the activities as being the greatest highlight or success, while a quarter (27%) shared feedback about the group discussions.

Additionally, one-seventh (14%) commented on networking opportunities for participants and organizers, while less than a tenth each pointed to the diversity of participants (9%) and/or large turnout (5%). Finally, more than a tenth (13%) shared miscellaneous feedback.

Greatest highlights/successes of the *SciGirls* trainings (N=56)

Percentage of trainers

Category	Percentage
Participant excitement, engagement, and/or increased comfort	45%
Activities	30%
Group discussion	27%
Networking	14%
Diversity of participants	9%
Turnout	5%
Miscellaneous	13%
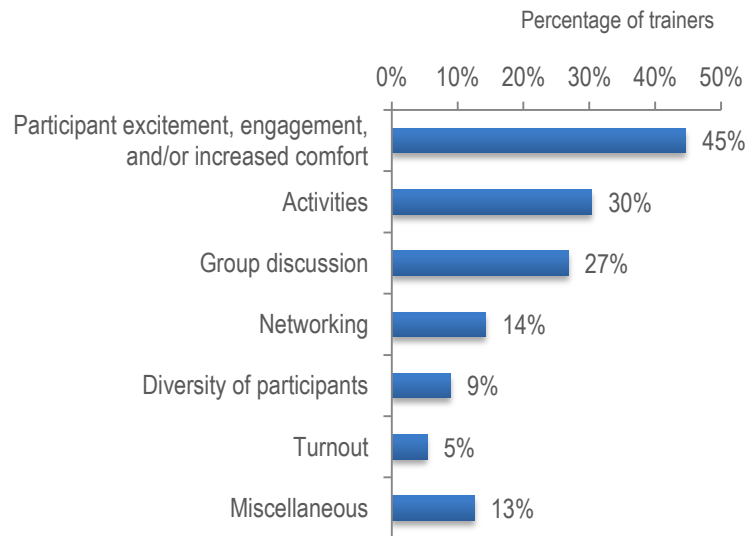
Examples of trainers' comments on these themes follow below:

Participant excitement, engagement, and/or increased comfort (45%)
- *Hearing how excited the participants were to use the techniques and activities. Many thought STEM was robotics only and did not think of applying it to other science and math fields.*
- *Everyone participated and seemed eager to use the material.*
- *The people in the room were very excited and engaged…They actively participated in all discussions and brought in outside viewpoints. They felt comfortable expressing any concerns about implementation so we could work collaboratively to find potential solutions.*
- *Everyone really enjoyed the training and stayed actively engaged the whole time!*
- *Small group, but incredibly engaged.*
- *It was interesting to see the participants make connections to other informal science trainings they had received in the past. And their creativity in addressing Strategy #2 was almost limitless!*
- *It was nice to see a change in attitudes and tone of voices doing Twirling in the Breeze after we had discussed the 7 strategies. The women were much more positive and willing to redesign than when doing the Bouncing Balloons earlier.*
- *At the beginning of the activity did an icebreaker where they raised their hands if they agreed with a statement. I asked if they knew how girls learned and enjoyed science, if they were comfortable with the scientific inquiry process and the engineering design process. Almost everyone in the room had not worked with girls, and were unfamiliar with both processes. At the end of the workshop, I did the activity again and there was a huge difference in their comfort level with all these topics.*
- *At the end of the workshop participants felt more comfortable with engineering design process and learning more about SciGirls Seven.*

Activities (30%)
- *Hands on activities were awesome!*
- *Everyone loved the activities! It was my first time doing the Super Sleuths activity during a training, and they liked it.*

- *The activities were all a hit with everyone. The participants loved doing the activities in small groups and seeing how girls would enjoy doing these same activities.*
- *The hands-on activities were a hit! The participants especially enjoyed the "Take it in Stride", "Twirling in the Breeze" and "Dough Creatures" activities.*
- *The participants were very engaged in the activities: Take it in a Stride, Dough Creatures, Blowing in the Wind.*
- *Getting the police car (putty and electricity experiment) to work like we wanted*
- *They were so creative with "Grab and Go" that I had each team demonstrate their creation in front of everyone else. It really validated that there was no "right way" to be successful. They also stated that being able to do the activities with basic, cheap materials was helpful. Most of them don't have a STEM budget.*
- *The greatest success of my workshop was probably the Deep Sea Diver activity. All the participants really enjoyed it and I had to take the supplies away from them because they were so determined to complete the activity.*
- *The highlight of my workshop was seeing the creativity that my participants brought to the activities. It was also exciting to see them verbally planning how they were going put all the activities to use during the workshop!*

Group discussion (27%)
- *Fabulous interaction and sharing of examples, ah-ha moments, etc. from the group - highly engaged group*
- *The collaboration and sharing of ideas. The attendees came from different realms of working with kids- scouts, library, educators, IT department. We were all there with one common goal and everyone was willing to share ideas, ask questions and collaborate.*
- *We heard some really great conversations going on at lunch about best practices, resource development, potential collaboration, etc.*
- *This group had good reflection/extensions after each activity leading to thoughtful conversation.*
- *The discussions! At first the group was quiet and my presentation was way ahead of schedule, but once I presented the research on the state of women in STEM, some great discussion took place and everyone was very engaged the rest of the workshop. We also had extensive discussion on the SciGirls Seven.*
- *Discussions about inquiry activities and gender equity strategies for the science classroom, CTE and informal education focused on curriculum/testing/grades challenges for classroom teachers and students' struggles with struggle. It's not ok to fail in school, so how do you teach the design process or scientific inquiry, keep things open-ended when everyone wants the right answer and no one wants to fail. How can you foster a growth mindset in a culture that isn't designed for it (like our academic college bound system)?*
- *The workshop participants were very vocal and we had GREAT conversations around the state of girls and women in STEM and what causes this gender disparity.*
- *Discussion and research presentation about women in STEM*
- *We…had a very meaningful discussion between the UIC Early Outreach staff and the Teacher Assistants for the Girls Who Code program.*
- *The people in the room were very excited and engaged. They were really thrilled with the research provided (especially the graphs) and couldn't wait to get the booklets. Nearly 100% of their students are black or Latino so they appreciated knowing which resources were applicable to those groups (both female and male). They actively participating in all discussions and brought in outside viewpoints. They felt comfortable expressing any concerns about implementation so we could work collaboratively to find potential solutions.*

Networking (14%)
- *Educators talking with each other and networking on future ways to incorporate SciGirls activities*
- *The connections the students made with each other working in the same field.*
- *…A Speed Networking at the beginning really breaks the ice with the participants and starts creating connections right out of the gate which not only strengthens the workshop, but keeps them connected and talking all day because they want to talk more and continue conversations.*
- *Incredibly diverse and engaged group from business, non-profits, K-12 schools, PBS station, museums, etc. All from the same area, but many had not met each other before so the networking was also great!*
- *The partner provided lunch, which gave people time to get to know each other and collaborate.*
- *The networking among all of the informal educators from difference backgrounds.*
- *Met many new teachers and collaborated with two new partners to hold the workshop.*

Diversity of participants (9%)

- *A highlight to this training was getting to work with such a variety of people in the training. We had PBS staff, teachers, museum educators, afterschool program facilitators. It made for great discussions and interactions amongst the group.*
- *Incredibly diverse and engaged group from business, non-profits, K-12 schools, PBS station, museums, etc. All from the same area, but many had not met each other before so the networking was also great!*
- *The attendees came from different realms of working with kids- scouts, library, educators, IT department. We were all there with one common goal and everyone was willing to share ideas, ask questions and collaborate.*
- *Number in attendance and diversity of attendees was phenomenal*

Turnout (5%)

- *We had a full workshop!*
- *Fabulous turnout from Texas State Technical College…*
- *Number in attendance and diversity of attendees was phenomenal*

Miscellaneous (13%)

- *Offering this unique resource in a new area of WSKG's coverage area*
- *Also, having a co-trainer was incredibly helpful.*
- *Sharing resources with new educators.*
- *Learned 2 new suggestions from attendees to share with others.*
- *The attendees got a lot out of it!*
- *…using San Antonio data, supporting the goal of SciGirls and to encourage all the participants to actively engage in the activities*
- *Started incorporating "Most Important Thing Learned So Far" right after lunch. Remembered doing this at my original training with Tricia Berry in 2005. Participants wrote one thing on a post it note and put on the poster paper. Very informative and great feedback.*

2a.5 Greatest challenges of the *SciGirls* trainings

Out of the 56 trainers who completed a TWRF, 53 identified training challenges; those who left the question blank may have done so to indicate that they did not experience any challenges during their trainings. When asked about the greatest challenge of the training, no single element stood out to the majority of trainers. As shown in the chart to the right, more than one-sixth each pointed to technical issues (17%), attendance (17%), communicating with participants (17%) – for example by sharing information, answering questions, and presenting the material in a dynamic way – time management/scheduling (17%), or something related to the activities (17%).

Greatest challenges of the *SciGirls* trainings (n=53)

Percentage of trainers

Technical issues	17%
Attendance	17%
Communicating with participants	17%
Time management/scheduling	17%
Activities	17%
Venue	15%
Lack of participant engagement	13%
Nothing	4%
Miscellaneous	13%

At the same time, more than one-tenth each identified the greatest challenge to be the venue (15%) or lack of participant engagement (13%). Less than a tenth (4%) indicated that they had not identified any challenges, as in, "*none - it was a great training with lots of energy throughout the entire day*" and "*none this time.*" More than a tenth (13%) identified miscellaneous challenges.
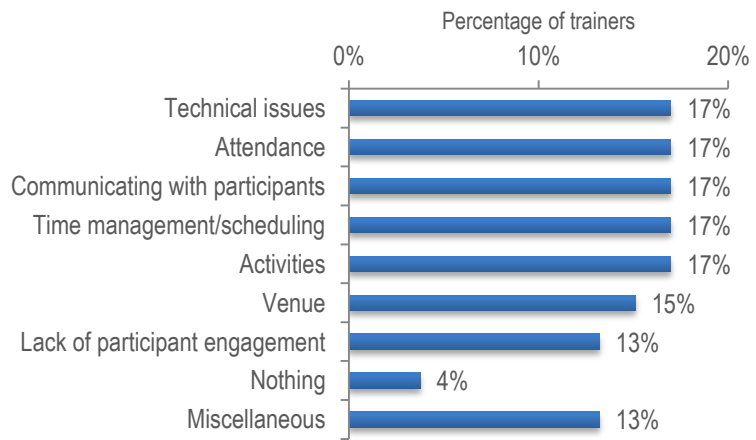
Examples of trainers' comments on these themes are shared below:

Technical issues (17%)
- *Internet trouble at the start of the training.*
- *Internet access, and video footage*
- *I had difficulties showing the video clip. It took a long time for my projector to switch from the PowerPoint mode to movie mode. I used this projector many times before but I didn't have to rely on the Internet in the past.*
- *…we had some technical difficulties with the projectors, so we got started a few minutes late.*
- *Dealing with the computer/projector technical difficulties (not the presenters fault at all!)*
- *Unfortunately my DVDs did not work however I was able to immediately login into SciGirls CONNECT and show from there.*
- *The SciGirls CONNECT website couldn't be accessed during the training and the online evaluation form wouldn't work either (they filled out a paper version).*
- *Clarifying how to submit the program evaluation sheets. We did the paper version because everyone could not access the wifi. Also there was an issue with Apple I Pads and Flash players for the sites. They're not compatible.*

Attendance (17%)
- *Getting people registered….it was slow going and we still didn't fill this one.*
- *Getting teachers to attend - we decided to have the workshop over the course of 3 Thursday evenings, rather than all at once so the teachers could incorporate activities into the classroom as part of the workshop itself but this discouraged many from the time commitment. We will hold it over a Friday-Saturday or a Thurs-Fri next summer to encourage more to attend.*
- *Because I didn't have access to NGCP, I didn't know what information the participants received. We had a handful of participants who did not know which building to go, so we didn't get as big of a turnout.*
- *Some of the people left during the session, others returned late from their breaks. The main problem was the person coordinating didn't realize the length of the program so ~1/3 of the people had to leave early to lead an after school*

program. I tried to rush through things so they got to see a majority of the materials but that was very stressful especially with this being my first full training.

- *I had a couple participants show up really late and a few that had to leave at lunch time. That made the grouping for activities a little harder.*
- *Some of the U of M participants were popping in and out which made it a little challenging as I often didn't know how many people we had in the room at any point in time.*
- *People arriving late, no shows and leaving early due to the weather.*
- *The weather. If possible, I'd recommend that the trainings not be held in winter, especially in areas where snow is expected. It made it difficult to advertise as well as affect attendance.*
- *Marketing this during the summer was difficult. This workshop was publicized widely and we had 16 sign up and 13 show.*

Communicating with participants (17%)

- *Trying to get people to understand that this training was to have them learn how to use the resources correctly and effectively, but that they could not go out and host their own PD on SciGirls.*
- *Some of them did not see the value of engaging girls in science. I did review that the curriculum applies to all children and the SciGirls 7 teaching pedagogy is good teaching to use with all students.*
- *Communication and understand what girls think*
- *Someone interrupting wanting data on the differences between New York State boys and girls math/science scores.*
- *Answering the question, "Why are so many woman in the biological and agricultural sciences field."*
- *The greatest challenge during my workshop was trying to have the participants follow the Science Inquiry Process and the Engineering Design Process. I posed the question/problem to them for every activity but during each activity they would continue to skip the planning/brainstorm phase and would immediately begin building. Even though they would build, test, and rebuild, they consistently skipped the planning piece even after several suggestions from me. They were committed to finding the answer but they all had their own way of going about finding a solution.*
- *Being sure to keep my audience engaged because there is a lot of information to give out and it can last for a while.*
- *…giving [information about online resources] in a way that was not boring*

Time management/scheduling (17%)

- *Adjusting the length of workshop to account for weather occurring in evening.*
- *Time constraints: I believe I mentioned this in my form from the CMOST training; there really is a lot of information to pack into 7.5 hours. Especially once the activities get going.*
- *Time- it ended up working out surprisingly well in the end. But some activities lasted longer than anticipated and other were shorter. It balanced, but caught me off guard at first.*
- *My greatest challenge was figuring out how to stretch some of the activities to fill the timeslots I gave myself. I think after this workshop, I'm going to make some changes to my agenda to address this issue. Also, it was exhausting to keep up my energy for the full 7.5 hours (part of this was probably dealing with the time change and they wanted to keep skipping breaks to finish it earlier).*
- *Timing was a challenge. I had so much to include and just not enough time. For example, I wanted to be able to show the participants more of both the PBSKids website and SciGirls CONNECT website, but ran out of time. I did explain the important features of each and encouraged them to explore the sites themselves. However, I was able to spend less time on certain portions when discussions ran long.*
- *Keeping everyone busy, I was hearing a lot of complaints that the full day training was too long.*
- *Keeping everyone on task and on time. It went fairly well overall, so I am grasping for a challenge here.*
- *Keeping to the agenda as this group was super talkative and had lots to share…which was GREAT!*

Activities (17%)

- *Dough Creatures conductive dough got super sticky in transit...not sure what happened but it made it really hard to make anything fun - activity still worked and got the point across but it was more challenging for them to get creative and actually create a creature*
- *Bringing in the water was a challenge and a bit messy.*
- *Staying out of the way for the exploration of activities.*

- *This group was not super excited to be hands-on with the activities themselves. I think if they had they would have seen more ways to open up the activities for their students.*
- *I had trouble getting the group to think about how they would use these activities and how they might find extensions to more closely meet their needs.*
- *Time- it ended up working out surprisingly well in the end. But some activities lasted longer than anticipated and other were shorter. It balanced, but caught me off guard at first.*
- *My greatest challenge was figuring out how to stretch some of the activities to fill the timeslots I gave myself. I think after this workshop, I'm going to make some changes to my agenda to address this issue.*

Venue (15%)
- *Getting to the workshop site*
- *The conference venue was hard to get to with all of the materials.*
- *The space was tight and I had nowhere to set up materials. I had to dig for each activity out of the suitcase while talking and I think that affected the quality of the presentation some.*
- *The greatest challenge was getting set up in the morning. The room was not unlocked until right before we were to begin and so my set up and organization caused a delay in the start of the workshop.*
- *We ended up working in a computer lab, so I couldn't make the tables more "collaborative-friendly", but we made it work.*
- *Could not run presentation is regular format due to room setup. Had to present hands-on activities in one area of the room and continue PowerPoint presentation in different area of the room.*
- *Not anything SciGirls, but school logistical issues. We held the training at a school and they were somewhat difficult to work with!*

Lack of participant engagement (13%)
- *This group was not super excited to be hands-on with the activities themselves. I think if they had they would have seen more ways to open up the activities for their students.*
- *Had a few participants who really didn't seem to want to be there…hard to keep them engaged and finally had to quit focusing on them since they were only 3 out of all the participants*
- *Working with large groups. With 5 and 6 to a group and six groups (we had some extra attendees), it was difficult to keep everyone engaged with some of the activities. We worked with teachers in this training, who tend to multi-task...*
- *Participants seemed to have trouble "getting going," ie they felt slow and sleepy and asked for coffee breaks.*
- *Some of the participants zoned out at times because they felt that the SciGirls 7 were best practices in teaching that they (as classroom teachers) already knew. I especially noticed this in some of the male participants*
- *Getting through the charts and graphs and research side of the workshop. Many of the participants already had seen and understand that side of things. This ended up becoming a down time in the workshop for some.*

Miscellaneous (13%)
- *Needed to bring a lot of materials, including my own microscope. But totally worth it.*
- *Adapting to a 9th grade level. Most of the teachers were secondary and wanted more ways to bring the content into their curriculum.*
- *Remembering all of the information about SciGirls CONNECT and the other online resources.*
- *Getting the resources and initial contacts for events will be a challenge, but we know it will get easier for the second round.*
- *Getting action plans back. Making sure everyone had done a survey...With the smaller group for the second training, it was much easier.*
- *All participants were home school parents and looking to do activities just with their kids, vs the classroom setting with breaking kids up into small groups. Also, the research piece was of little interest to the group I worked with, so they were not vocally active.*

2a.6 Suggested revisions to *SciGirls* training timing or format

The trainers were asked what revisions they would have made to each training's timing or format to improve the experience or outcome for participants. Out of the 56 trainers who completed a TWRF, 53 shared suggested changes. As shown in the chart below, more than two-fifths (43%) of these 53 trainers noted they would have changed something about the activities, with the majority in this group suggesting that the time spent on activities could be shortened and a handful each explaining that they would want to include more activities, do fewer activities, or change the format of activities, among other responses.

Suggested changes to timing or format of *SciGirls* trainings (n=53)

Percentage of trainers

Category	Percentage
Change something about activities	43%
Change overall timing or format	23%
Change presentation of research and methods	15%
Change presentation of online resources	13%
Change wrap-up or evaluation	9%
Nothing	8%
Miscellaneous	13%
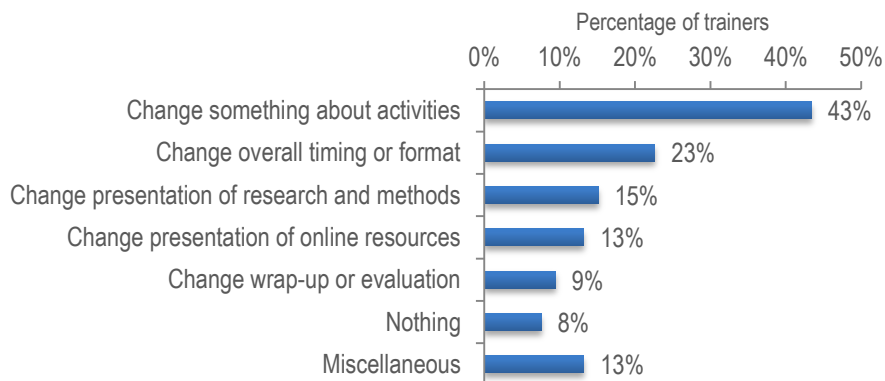
At the same time, just under one-quarter (23%) shared suggestions regarding the overall timing or format of the training, and more than a tenth each said they would change the presentation of *SciGirls* research and methods (15%) or the presentation of online resources (13%). Less than one-tenth each proposed changes to the wrap-up or evaluation portion of the training (9%) or indicated that they did not have any suggestions for changing the training timing or format (8%), as in, "*None. It is well organized and thought out*" and "*Timing worked fine – actually finished a little early.*" More than a tenth (13%) shared miscellaneous suggestions.

Examples of trainers' comments on these themes are shared below:

Change something about the activities (43%)
- *Less time for dough creatures - 30 min project + reflection.*
- *The "Sink or Swim" activity, and "BrainSTEM" game don't take a full 45 minutes each. It works out ok because participants get out about a half hour early, but it could be fun to do a different activity.*
- *I would shorten the time allotted for the super sleuth activity and the sink or float activity. I would also like to play improve games with the participants so they have more fun with the activities.*
- *The activities didn't take as long as planned on the agenda. We could move through some of them a bit quicker than planned. BUT, this group was super chatty so we just spent more time on the debrief and sharing this time.*
- *I think the format of my workshop was great. I do think that I allowed a little too much time for a few activities so next time I will make sure to have a timer on the projector so that all participants know how much time they have left for the activity.*
- *In the second half of the day, the activities seem to go faster even with the wrap up. For the morning activities, aside from the wrap-up, we're also going over the engineering design process and scientific inquiry process. For the afternoon, squishy circuits and sink or swim I feel can be done in a shorter amount of time. However, I use the extra time to go over the facilitator guides where we're not doing activities from (Engineer It, etc.).*

- *Participants really seem to want to spend more time talking about the Strategies, so I may give that portion a bit more time and shave a few minutes off the afternoon activities.*
- *Due to timing, we cut out the morning break, which was fine with my educators. We did break for an hour lunch, which may have been a bit too long. Teachers wanted as many hands on activities that can be crammed into the day as possible. Overall the flow went quite well.*
- *I would…offer more hands on activities.*
- *I've had numerous conversations with other trainers about during 4 verse 5 activities in the full day training. I did only 4 today and we ended earlier but I've heard that leading 5 you are rushing for time.*
- *I think I was able to engage participants in the activities. I decided to skip the last activity, Wetland Band, to have time for the meaningful discussion.*
- *I added the SciGirls Challenge to the slides with the materials for each activity. It helped direct the activity for the adults*
- *I want to really emphasize the SciGirls Seven during/after each of the activities, rather than just during the SciGirls Seven time of presentation.*
- *Have more research and explanation of the plastic symbols [in the Sink or Swim activity] and what types of materials are found with those symbols on it.*

Change overall timing or format (23%)
- *It might also be useful to slit the training up into two half-day trainings. This way I don't think the trainer and the participants would get so burnt out.*
- *I understand people gave up their Saturday to participate and it was an organizational requirement so I don't know if it would have been different if we had done the training in several evenings or not.*
- *I would shorten the workshop or offer more hands on activities.*
- *Participants want a 4-6 hr training- they feel a full-day training is quite long. I think shortening the training by an hour would be beneficial when working primarily with classroom teachers.*
- *We will hold the entire workshop at one time rather than spreading it out, to encourage attendance.*
- *I had it from 9am-4:30pm, but we got done around 3:30, and even had an hour for lunch. We could have shortened the agenda a little.*
- *I would start with the taking in stride activity, then move to a more complex activity, like deep sea diver. THEN move into the research piece. This gives them a bit more to talk about the SciGirls Seven then the one activity*
- *We will also hold it in the summer instead of during the school year*
- *Not have them in winter.*
- *It would be best if the person holding the event maintained the registration not the trainer.*
- *Arrive much earlier to work out technical issues, and let host institution know to be on hand early to help me set up and test the technology as well.*
- *This training had an extra half hour built in, and I think that was very beneficial at the end of the day. Usually I have to rush through the paperwork at the end of the day, and the extra time allowed me the time to thoroughly explain it, I would keep this time in there if possible in future trainings.*

Change presentation of research and methods (15%)
- *Participants really seem to want to spend more time talking about the Strategies, so I may give that portion a bit more time and shave a few minutes off the afternoon activities.*
- *I want to really emphasize the SciGirls Seven during/after each of the activities, rather than just during the SciGirls Seven time of presentation.*
- *Many of the educators serve mixed classrooms, I want to incorporate something to help them realize this can be used successfully with boys and girls.*
- *Again, I found the flow of the workshop worked very well. However, I would cut down information about the show and PBSKids site in order to have more discussion about the SciGirls Seven. My group really enjoyed discussing and hashing out the research too so there might be more time incorporated into that portion of the workshop and possible inclusion of a discussion activity like the puzzle piece activity for SciGirls Seven.*
- *Make the SciGirls Seven discussion more hands on*
- *I would spend more time aligning current activities to the SciGirls Seven*

- *I believe the workshop is structured perfectly. If I had to choose one thing though, I might add more time for discussion about women in STEM. I find this topic gets everyone engaged and excited and I hate cutting off the conversation when we have to move on.*
- *I wish we had more time to discuss the women in STEM research outcomes. This always sparks an insightful and interesting conversation.*

Change presentation of online resources (13%)
- *Use scientist profiles to show where they are and how to use them*
- *If there was access to the Internet it would be fun to make it more interactive and allow for participants to surf through the sites with you.*
- *I would spend more time on exploring the connect site and how to navigate it. Maybe bring in the search and find worksheet for the connect site.*
- *The workshop is a long day and I recognize this. I try to keep the flow on task, dynamic and on point discussion. I try to encourage discussion while keeping it relevant to the topic at hand. I shortened time for the hands on activities in the afternoon so we had time to explore the SciGirls CONNECT website and PBS Learning Media. I did this because I had educators who work with older students and thought this resource would be very useful to them.*
- *Again, I found the flow of the workshop worked very well. However, I would cut down information about the show and PBSKids site in order to have more discussion about the SciGirls Seven*
- *I would find a way to have the online information about SciGirls CONNECT and The Connectory to be more interactive. Maybe have handouts on how to use these online resources for the participants so they can explore on their own. It did seem to drain everyone at the end of a long day.*
- *I didn't have Internet connection so I had to show everything from screen shots. I would have liked to show more of the both websites...pbskids and scigirlsconnect*

Change wrap-up or evaluation (9%)
- *More shared reflection time at the end of the workshop*
- *Not hand out the remainder of DVDs and booklets until action plans and evaluations are complete. People get those last booklets and think the training is over, start rustling, talking and not taking the rest seriously.*
- *This training had an extra half hour built in, and I think that was very beneficial at the end of the day. Usually I have to rush through the paperwork at the end of the day, and the extra time allowed me the time to thoroughly explain it, I would keep this time in there if possible in future trainings.*
- *I also didn't budget enough time for the evaluations at the end. That portion took people almost 20 minutes to complete, so we ran over on time*
- *I would schedule a little more time for filling out the forms at the end. We also have the major challenge of lunch arriving an hour late so that through off my schedule and I didn't adjust as well as I could have if I had more time to think.*

Miscellaneous (13%)
- *Added "+/change" as well as "what about?" To workshop. Very valuable tool for feedback during workshop.*
- *I thought everything flowed very smoothly. I might start with a lite breakfast if possible to allow for late comers to arrive before I actually start the training.*
- *Include nametags. Haven't to date.*
- *Practice with the technology in the room, but presenter did well working around those challenges.*
- *… let host institution know to be on hand early to help me set up and test the technology as well*
- *Keep the agenda handy and on top of everything else.*
- *In filling out this survey I saw that we were supposed to talk about the Logo and other things. I would make sure to include that in the slides notes because that is what I went off of during the training.*

2a.7 Improvements to future *SciGirls* trainings

Out of the 56 trainers who completed a TWRF, 54 identified improvements they would make to future trainings. As shown in the chart below, about a third (31%) of these 54 trainers explained that they would like to change something about the activities, commenting, for example, on their use of the materials and their personal preparation, among other responses. A quarter (26%) indicated that they would increase their personal preparation in various ways, while about one-sixth each said they would like to change something about training outreach (15%) and/or the presentation of *SciGirls* research and methods (15%), including the *SciGirls Seven*. Less than a tenth each described how they would change the presentation of online resources (7%) and/or share additional resources (7%). About a tenth (11%) indicated that there was nothing else they would like to improve for their next training, as in, "*Pretty happy with it*" and "*I honestly can't think of any other improvements. Both the participants and I enjoyed the workshop very much!*" More than one-tenth (13%) pointed to miscellaneous changes, including a few trainers who mentioned that they would encourage more interaction between participants.

Improvements trainers would make to future *SciGirls* trainings (n=54)
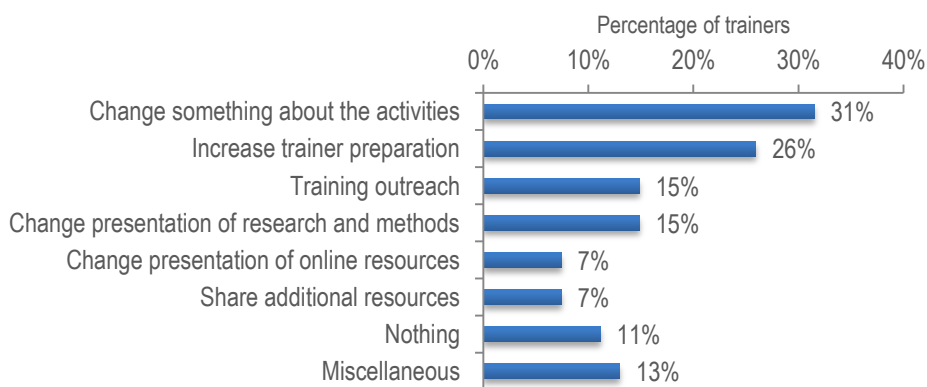
Examples of trainers' comments on these themes are shared below:

Change something about the activities (31%)
- *Using a few more materials for the deep sea diver activity; making the dough less sticky for the dough creatures (it was extra sticky this time for some reason)*
- *Figure out a way to make the insulating dough have better insulating properties. Mine often is too conductive to work correctly.*
- *Have a pre-printed card of the plastic codes, properties and what their uses are.*
- *Unfortunately my plastic samples were identical to my mystery bags (I was pressed for time when packing). I still did the activity exampling I would adjust if doing this for students*
- *I need more glitter samples that are the same color but vary some other way. Super Sleuths was too easy.*
- *More towels! Both Deep Sea Diver and Sink or Swim got way wetter than at Train-the-Trainer*
- *I might give some additional instructions on the wind activity and use of the fans – we had a couple fans this time and didn't really specify how they might use both of them in their testing. I'd incorporate that more explicitly in the instructions next time.*
- *Plan better for the introduction of the activities*
- *I would take more time to really think about who my audience is and make adjustments in the scheduling of the activities based on their needs.*

- *Maybe prepare the activities more thoroughly. Some of them didn't work out as expected, but hey...that's science!*
- *Have more prompting questions specific to each activity to get the group to talk more*
- *I wasn't quite sure what Gender Equity activity I should of used during my training. We discussed the various research data as well as tips on each SciGirls 7 but I wasn't sure if there was another activity that I may have overlooked.*
- *I may have one extra, simple activity (maybe Passion for Pixels) ready as an add-on. This group didn't spend much time with the activities, so we sped through them pretty quickly.*
- *I would add an activity to adjust using SciGirls 7. We would look at it after the SG 7 conversation.*
- *I may try giving out the activity books immediately after each activity, instead of at the end of the day. It may help the participants see how the activity is written up and point out how the Strategies are highlighted at different steps.*

Increase trainer preparation (26%)
- *Making sure there will be Internet service in the room.*
- *I would make sure I can present Internet sites like SciGirls CONNECT using my projector.*
- *I'm going to make sure the person who I am working with for leading the workshop knows exactly how long it is going to be ahead of time.*
- *I would like to better organize the materials for each project and have them ready to go before the workshop starts. Be more familiar with what season each clip is in and be able to find it faster on the site.*
- *My own personal knowledge of technology.*
- *I will plan out how I will have the adults change groups from activity to activity so they have fresh partners and men and women in each group.*
- *The trainer should share their presentation with the person/organization holding the event before hand.*
- *I would take more time to really think about who my audience is and make adjustments in the scheduling of the activities based on their needs.*
- *Plan better for the introduction of the activities*
- *I would refresh myself on the activities a little better. I read through them before, but I might practice them more in the future.*
- *…The topic of group work was discussed at length with one teacher adamant that groups should be no larger than 2 otherwise some students won't participate. I would have liked to been better prepared with research information to direct the teachers.*

Training outreach (15%)
- *Continue to work on reach - need more participants and more from the informal space - this one was mostly formal educators*
- *I'd focus on spreading the word in the region more and not depend on the host organization to do all the marketing. I want a full room!*
- *Connecting with the local PBS station ahead of time….they would help us out more if we did so.*
- *Advertise the event better. In the end, we didn't even have 10 people and for all that work I would have liked to have more people attend.*
- *Higher attendance.*
- *Attendance has been low at many of my workshops when the registration fills up weeks in advance. I'm not sure if there is anything I can do to improve this, but it is something I would like to see improvement with.*
- *We will give more lead time to teachers on info on the workshop to encourage registration and use more avenues for getting the word out.*
- *Registration was out of my control since it was with the conference. I'd like to know before hand who is coming and would have liked to have advertised it differently to have more participants.*

Change presentation of research and methods (15%)
- *I would add more modeling of the SciGirls Seven in the next training. I realized at the end of the day, that I didn't do as much of this during the training as I have in past trainings.*
- *I would like to provide more time for the SciGirls Seven, at least one hour, as it is an important topic to cover.*

- *Our group had a great discussion during the SciGirls 7 and asked some great questions of each other. The topic of group work was discussed at length with one teacher adamant that groups should be no larger than 2 otherwise some students won't participate. I would have liked to been better prepared with research information to direct the teachers.*
- *I don't know, I got a complaint that someone didn't like that I read from the SciGirls Seven guide. What else can I do to ensure that they are reading the material and that we are discussing these.*
- *I would like to add discussion of having older students mentor and work with 4-8th grade students. Teachers responded well to this idea and I think it opens the audience of SciGirls to older girls who are still at risk of dropping away from STEM and STEM careers.*
- *I think this workshop [went] very well…Several people kept suggesting SciKids instead of SciGirls. I kept reinforcing that these are good teaching principals for both.*

Change presentation of online resources (7%)
- *Make a SciGirls website log in so I can show participants the project pages instead of simply talking about them.*
- *I know educators' next steps are to lead a SciGirls programs but is there more information about getting them connected with SciGirls CONNECT.*
- *Do more with the websites for CONNECT and NGCP.*

Share additional resources (7%)
- *I would show more clips from the show. I think this is a great resource that not very many people now about.*
- *Give teachers stickers or the SciGirls Seven postcards.*
- *Provide a handout for all the research and stats that I introduce at the beginning. They were rushing to try and write everything down.*

Miscellaneous (13%)
- *Be more purposeful in changing groups so they have time for that collaboration and sharing.*
- *I will plan out how I will have the adults change groups from activity to activity so they have fresh partners and men and women in each group.*
- *More food*
- *I felt like there is so much administration stuff at the end of the workshop that the positive momentum dies.*
- *The on line end of workshop survey did not work again I will be sending them in.*
- *This was my first time leading a workshop so there are always things to change. There were some timing issues (but I don't think the participants noticed!) and once I do more SciGirls programming and workshops I will be more well versed in the activities, girls' responses and more.*
- *I would include a slightly longer mention of the requirements regarding usage of the logo.*

2a.8 Assistance needed from *SciGirls* staff to implement changes

Out of the 56 trainers who completed a TWRF, 50 responded when asked if they would need assistance from *SciGirls* staff to implement their suggested changes. As shown in the chart below, nearly half (46%) of these 50 trainers said this would not be the case. More than a tenth each indicated they would like additional resources and information (12%), support in training preparation or follow-up (12%), and/or additional guidance with the activities (12%), including two trainers who made recommendations about activity strategies they thought *SciGirls* might share with others. A tenth (10%) said the trainers needed to do more, and less than a tenth (8%) explained that they would appreciate help from *SciGirls* staff with training outreach. About one-sixth (16%) shared miscellaneous feedback, commenting on needing help from local partners and making changes to training timing, among other responses.

Assistance needed from *SciGirls* staff to implement changes (n=50)

Percentage of trainers

Category	Percentage
None	46%
Additional resources and information	12%
Support in training prep or follow-up	12%
Guidance with activities	12%
Trainers need to do more	10%
Help with outreach	8%
Miscellaneous	16%
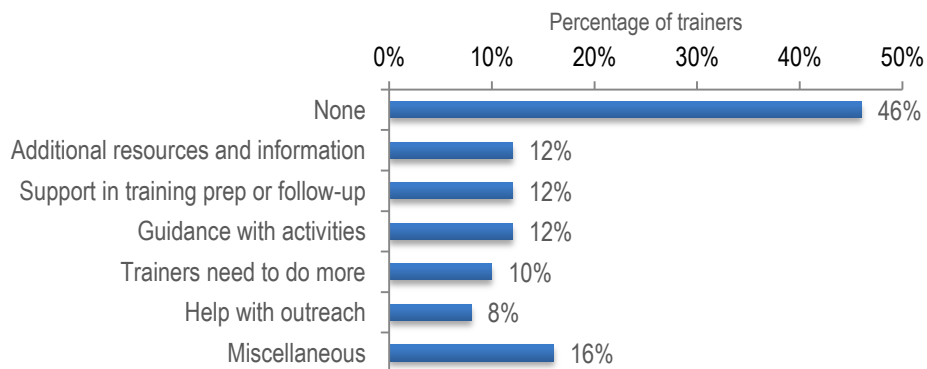
Examples of trainers' comments on these themes follow below:

Additional resources and information (12%)
- *Perhaps the staff could design a slide that includes the scientist profiles; the role models strategy is an important one, and having the profiles is a great resource.*
- *It would be helpful to have a slide created which has the basic info about when/how the logo should be used.*
- *Send stickers and postcards with the kits.*
- *A sample article to distribute to the participants discussing aspects of the SciGirls 7, outlining girls confidence and group work or some other aspect of the SciGirls 7. We could download this from the training group on SciGirls CONNECT. Otherwise, it was a great workshop.*
- *Maybe some research or best practices on having teens mentor younger students. Maybe something to the SciGirls mentoring 7 but really focused on teens mentoring younger students. It would be a combination of the SciGirls 7 and the mentoring 7.*

Support in training preparation or follow-up (12%)
- *Including Internet service as a planning item for partners. Including a request to the participants to bring their own devices. This is especially helpful for evaluation.*
- *I don't like the on-line registration and evaluation process, but understand that it's necessary to track the data.*
- *Perhaps when the event is initially scheduled and the first email is sent out connection the site with the trainer, a reminder sentence that the training will take ~8 hours could be included.*
- *Not sure? Maybe I could send out a reminder email before the training. That might already happen though through NGCP.*

- *Overall they training went really well and my feet are really tired. However it would be helpful to have a checklist for next steps for trained educators. For example, what happens to their action plans? They took time to fill them out but turned them back to me. Would it be possible to have a follow up email template that you should include x, y, z?*
- *Would like to get the results of the online surveys back as a trainer to know what went well and what didn't. Don't know what to improve on or modify if I don't know those results.*

Guidance with the activities (12%)
- *A website of where to buy the glitter they recommend in the activity guide.*
- *An alternative to making the sugar dough. I am experimenting trying to find a better pre-made dough for the dough creatures segment of the workshop.*
- *It would be great to get some assistance on a Gender Equity activity I can incorporate into my workshop.*
- *Where to find a good example of an activity than can easily be altered to incorporate SG 7.*
- *Scavenging office for misc. supplies to add in to the diver activity and adding LOTS of flour to the dough to make it not so sticky*
- *I am going to put each activity in a container and label it with its name and write in my notes which season the activity is under.*

Trainers need to do more (10%)
- *None, I need to think to be prepared for alternate situations*
- *I think I just need to find a little more time to concentrate on the activities before leading them.*
- *I think I just need more time to practice and more time to get a few more SciGirls programs under my belt.*
- *I think my goal is a personal one and one that I will need to work on my own.*
- *I think the scheduling of the full day workshops just means that every time you do one, you need to review the presentation and perhaps jot down some reflection questions at the end. I think it's easy to forget how mentally draining for everyone a full day training can be. If the audience doesn't naturally ask questions at the end, then the trainer can certainly guide them.*

Help with outreach (8%)
- *[Our local partners] did mention if we had an engaging flyer or something that actually described in exciting detail what was going to happen in the workshop, that might grab more people's attention....a snazzy generic workshop flyer that we could add in dates, times, locations and local host info would be helpful*
- *Connections to the PBS stations in the area would be helpful so we can reach out to them and use their networks in addition to our networks.*
- *More ways to spread the word about the workshop*

Miscellaneous (16%)
- *Need more help from local host and local participants to spread the word*
- *…those changes fall on the facilitators*
- *Consideration of shaving an hour from the full day training.*
- *The timeline is hard with trainings starting in January but not sure how else to arrange them. Push the RFP back to before the end of school?*
- *It might be helpful to hear about some of the successes and challenges of the other trainers to see if there is something great I could be adding or changing to my trainings.*
- *Allow the videos to work on iPads.*
- *Budget*

2a.9 Trainings with participants needing additional support or follow-up

Out of the 56 trainers who completed a TWRF, 48 responded when asked if they had training participants who might need additional support or follow-up from *SciGirls* staff. As shown in the chart below, nearly two-thirds (60%) of these 48 trainers indicated that they did not think this was the case at the time they completed the TWRF.

Trainers whose trainings had participants needing additional support or follow-up (n=48)
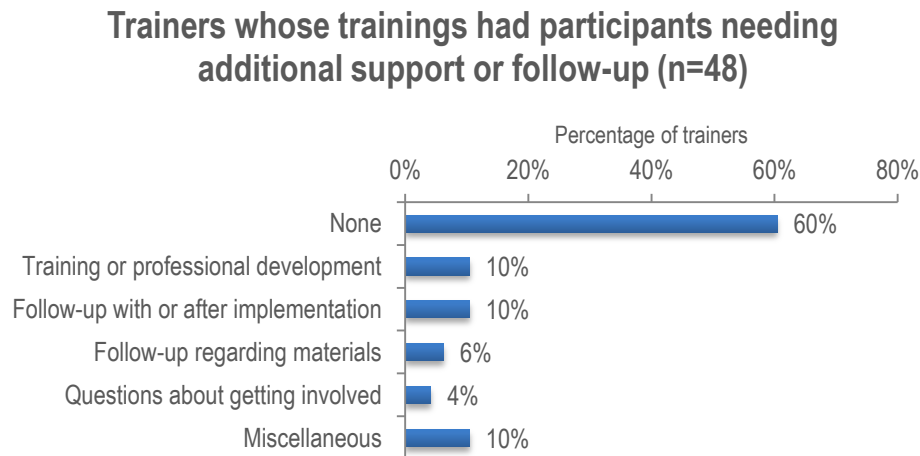
Of those trainers who identified participants who might be in need of additional support or follow-up from *SciGirls* staff, a tenth each pointed to attendees with questions about training qualifications or professional development (10%) and/or attendees in need of follow-up with or after the implementation of their *SciGirls* program (10%). Less than a tenth each commented on the need for follow-up regarding *SciGirls* materials (6%) and/or had questions about getting more involved (4%). A tenth (10%) shared miscellaneous responses.

Examples of trainers' comments on these themes follow below:

Questions about training qualification or professional development (10%)
- *There was one woman you expressed interested in doing professional development for other teachers that she works with, and thought that she could do that after being part of this one day training. I expressed that was not the purpose of the training she had participated in. I don't remember the name of the participant, but if Nancy Coddington is selected as the next group of SciGirls trainers, perhaps she could notify the group that she could come do PD for teachers/other groups after her training is completed. I think it would be good to find a way to make this a little clearer to participants, I only thought to mention it because someone brought it up when they were completing their Action Plans.*
- *Several educators wanted to know if they can train their staff/teachers. I said technically no, right? However they could join SciGirls CONNECT and get all the information.*
- *The group was staff from the Girl Scouts River Valleys Council. Some were troop support staff members and some were mobile staff members who lead Girl Scout programming within schools during school hours. I think perhaps a few may like to have additional training, though I think they loved the activities and SciGirls Seven Strategies. They were very impressed and already were coming up with ways to improve their programs based on these!*
- *One of the participants was interested in doing trainings for teachers and provide professional development credits. She wanted to do an in-depth training for each curriculum and wondered the process for getting permission or becoming a trainer.*
- *A lot of the participants asked for confirmation or a certificate saying they attended so they could use it for PDPs. It would be nice to be able to offer this.*

Follow-up with or after implementation (10%)

- *Yes, I think that the UTSA PREP summer program will incorporate SciGirls activities during the course of the summer, and the educators needed help in figuring out how to follow the template for registering their programs w the NGCP. Hilda Guajardo who is with UTSA PREP and is a new trainer, will coordinate with them.*
- *I would suggest reaching out to the administrators to make sure they realize that they are expected to be actively involved in their organization's SciGirls events. Some of them (especially some of the males) seemed to think that they were going to play a hands-off role in these events. You can tell who these people were based on what they wrote on their plan sheets.*
- *Yes, we discussed several different opportunities to use SciGirls to partner together in our community. We may need support from SciGirls to offer joint programming.*
- *I think many of the participants would be interested in using the SciGirls staff for their programs. Also one participant would like to get her daughters more involved in SciGirls.*
- *One participant suggested a follow up after they had a chance to implement SciGirls activities in the classroom.*

Follow-up regarding SciGirls materials (6%)

- *[There were] logo/branding questions. I also gave those participants Nikki's email address.*
- *There were a few last minute registrations so we were short a few print materials. Bonnie at SELF International would like a few more booklets to hand out to staff.*
- *They had questions about where to purchase materials.*

Questions about getting involved (4%)

- *David Lockett was interested to know if his school or teachers could be featured in SciGirls. His email is lockettd@rcschools.net*
- *Yes! I had several college students in my training interested in getting more involved with SciGirls, either volunteering with other partner sites or becoming trainers. I told them to get in contact through the SciGirls CONNECT site or directly with Niki or Sarah.*

Miscellaneous (10%)

- *Yes, many of the participants worked with lower income groups and were wondering if SciGirls offered any financial assistance for offering programs. I referred them to NGCP, but information about grants and assistance might be beneficial.*
- *Yes. I had a question from one participant (I gave her Nikki's email address) about SciGirls and title 9. She had tried to do all girl programs before but was told she could not. I informed her that SciGirls does not say that boys cannot attend, but many of the activities are geared towards girls, so I have not had much interest from boys, personally.*
- *Not really, classroom teachers wanted activities not to start programs, the science org staff was all there and is going to do a few programs with girl scouts. They were told by the town however they CANNOT offer an informal afterschool camp just for girls! So they are going to call that one kitchen science. But they are so upset that all their programs and camps are boys boys boys. It's a huge challenge just to offer something for girls!*
- *We may reach out as we get initial materials together and make sure we have the right requirements met for our event.*

Part 2b: Trainers' annual reflections

Method

Beginning in Year 2, the evaluation team developed, piloted, and then implemented use of the online Trainer Annual Reflection Form (TARF). As introduced on page 6 (under Trainers), the TARF was completed by *SciGirls CONNECT* trainers at the end of each year that they worked as a trainer. The form gave trainers an opportunity to look back on the year and reflect on their experience as a trainer through a series of open-ended questions.

Prior to completing the TARF, trainers were informed that the form was hosted by the independent evaluation team from Knight Williams and that their responses would be combined with those from other participants and reported in the aggregate. They were further informed that the evaluation was funded by a grant provided by the National Science Foundation, and that their frank and honest input was appreciated and would help guide the direction that *tpt* takes in planning future training programs.

During Years 2- 5 the evaluation team analyzed the TARF submissions and prepared a compilation report of the survey responses at the end of each year. Over the course of the grant period, 25 trainers submitted 38 forms, with some trainers filling out forms in multiple years. As shown in the chart to the right, more than half of the trainers (52%) filled out one TARF, just under half (44%) filled out two TARFs, and less than a tenth (4%) filled out three TARFs. For the purposes of this evaluation, forms filled out in different years by the same trainer are considered distinct TARF submissions. As noted in the *SciGirls CONNECT Annual Report: 2014-2015*, there were 45 active *SciGirls* trainers working over the grant period, for a TARF response rate of just over one-half (55%).

Number of TARFs submitted by individual trainers (N=25)
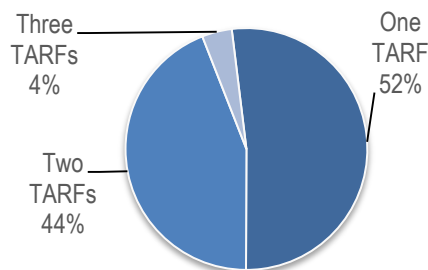
Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[6] The analysis was both deductive, drawing on the objectives of the training program, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

Findings

The Part 2b findings are presented as follows: the highlights of being a *SciGirls CONNECT* trainer, the trainers' accomplishments, factors that facilitated their success, trainer feedback about the *SciGirls* training resources and how they could be improved, the extent to which prior experience training adults helped the trainers, the trainers' schedule flexibility and support from supervisor(s), the impact of working as a *SciGirls* trainer on passion for inspiring girls in STEM and attitude toward STEM learning and girls, challenges faced by the trainers in meeting their goals and *tpt*'s expectations, the factors creating or contributing to these challenges, and additional feedback about the *SciGirls CONNECT* training program.

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[6] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

2b.1 Highlights of being a *SciGirls CONNECT* trainer

When asked about the highlights of their experience as a *SciGirls CONNECT* trainer, half (50%) of the 38 trainers noted that they had enjoyed sharing *SciGirls* with others, as shown in the chart below. Slightly less than half (45%) explained that they appreciated the opportunity to make connections and work with other people and organizations. About one-fifth (18%) pointed to the positive impact *SciGirls* had on others. More than a tenth (13%) commented on the *SciGirls* Reflect meeting in Seattle in December 2015; this meeting was mentioned by five of the twelve trainers who filled out a TARF about their work in 2015. A tenth (11%) of the trainers described the personal impact of being a *SciGirls CONNECT* trainer. Just over a tenth (13%) shared miscellaneous feedback, including a handful who explained that they appreciated the opportunity to travel.

SciGirls Reflect meeting, image provided by *tpt*

Highlights of being a *SciGirls CONNECT* trainer (N=38)

Percentage of trainers

Sharing SciGirls	50%
Working with others and making connections	45%
Impact on others	18%
SciGirls Reflect	13%
Personal impact	11%
Miscellaneous	13%
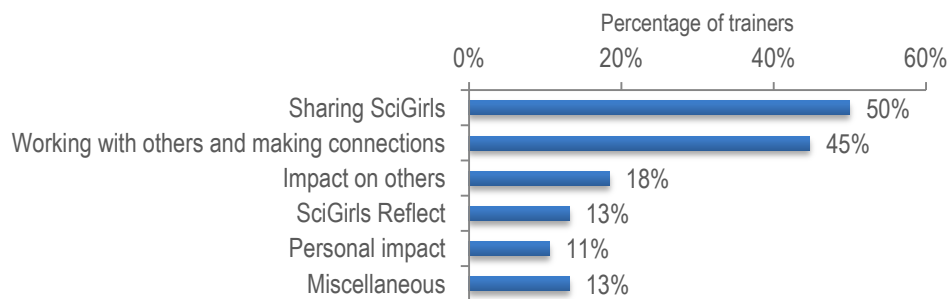
Examples of trainers' comments on these themes follow below:

Sharing SciGirls (50%)
- *The highlights for me have been to encourage other to become engaged and excited about the SciGirls program and resources*
- *I really enjoy connecting people with resources. When educators are able to collaborate and share ideas with each other at trainings, I think it really empowers them. When we provide relevant research that they can go back and share with their superiors and the activity guides to do the activities in their classrooms or informal settings, they are inspired to take it all and act with it.*
- *Continuing to share the excitement of SciGirls with our educator community across Texas - people are just thrilled with the activities (as are the kids!)*
- *Leading the trainings around the state has been great. Great energy from participants and a wide range of organizations involved.*
- *Providing an all day training for educators - it was great to be able to give them so may hands-on activities and to connect them to current gender equity in STEM research.*
- *I really have enjoyed providing trainings that have mixed SciGirls and Techbridge Resources, especially for faculty and staff at the University of Montana. I also greatly enjoyed training Exploration Works in Helena.*

- *The main highlight this past year was presenting at the CAST (Conference for the Advancement of Science Teaching) conference. We got to present to around 800 educators and I love being able to share such great curriculum to them and then tell them it's free.*

Working with others and making connections (45%)
- *Working with other informal educators has been great.*
- *It was great working with other educators and discussing ways to improve our work with girls*
- *…getting to know new participants*
- *…networking and working with new people.*
- *Meeting a wide array of educators providing informal STEM learning to diverse audiences*
- *Meeting all the wonderful people and connecting with organizations whose missions are to increase girls' interest and participation in STEM!*
- *Connecting with other museums that focus on STEM education specifically including girls*
- *I enjoyed meeting with the Girl Scouts in Wyoming. They came from all over and were very excited.*

Impact on others (18%)
- *I implemented a quick game at the beginning and end of the training. I grabbed a couple of the questions from the SciGirls survey (I know a lot about how girls learn, enjoy and experience science, I feel incorporating the Engineering Design Process/Scientific Process) and we ask that they raise their hands (or leave their hands down) depending on whether or not they agree with the statements. At the beginning of the training, many if not all, leave their hands down (because they feel they don't know enough) but when we ask them again at the end of the training you can see their confidence level has gone way up and they feel they understand theses concepts a lot better (including how to explain the SciGirls Seven).*
- *Also to see individual's views change over the course of the training day.*
- *Seeing how excited participants are to get SciGirls training and activities to use with kids*
- *Seeing the aha moments from teachers during the trainings, especially on how girls learn differently than boys.*
- *To see the teachers gain insights to how they may be stereotyping girls in science. To also see them get excited about teaching again.*
- *Seeing young women get excited about science and engineering!*
- *I know the impact on Texas classrooms of using SciGirls is enormous and I love it. :)*

SciGirls Reflect (13%)
- *Definitely the SciGirls meeting in Seattle.*
- *The absolute highlight was participating in the SciGirls Reflect meeting with other trainers from across the nation.*
- *SciGirls Reflect at NGCP*
- *Traveling to Seattle is an EXTREMELY close second!!*
- *Being able to participate in the SciGirls Reflect conference. It was beneficial and enlightening to 'connect' with other trainers and reflect on our practices and experiences to date.*

Personal impact (11%)
- *My main highlight has been being chosen to be trained as a trainer. I pride myself on making connections and being a conduit or catalyst for things I'm passionate about. Gender equity issues, getting girls into STEM careers to help create the tipping point are my passions. SciGirls has been the crown jewel for everything I've done to date that has helped me truly feel like I'm beginning to make a difference.*
- *The training events have been most valuable in gaining confidence for working with the SciGirls material.*
- *Participating in the training to be a trainer was great - hearing some of the information first hand was useful.*

Miscellaneous (13%)
- *… the regular webinars are a good way to stay on top of things through the year.*
- *I have enjoyed being able to travel and share the resources nationally as well.*
- *Getting to travel to multiple locations…*

2b.2 Accomplishments of the *SciGirls CONNECT* trainers

Main accomplishments as trainers

Considering the overall goals of *SciGirls CONNECT*, the trainers were asked to comment on their main accomplishments as trainers. As shown in the chart below, the majority (82%) of the 38 trainers pointed to the accomplishment of sharing *SciGirls* with educators and organizations, primarily through trainings. About a fifth (18%) described some of their personal accomplishments, such as feeling more comfortable, confident, knowledgeable, or connected to members of their community. Just over a tenth each commented on reaching girls (13%) and/or other ways they had been involved with *SciGirls* (11%). Less than a tenth (8%) explained that helping start or expand a *SciGirls* program had been one of their main accomplishments.

***SciGirls* in action, from the**
[***SciGirls* CONNECT Annual Report: 2014-2015**](#)

Trainers' main accomplishments (N=38)
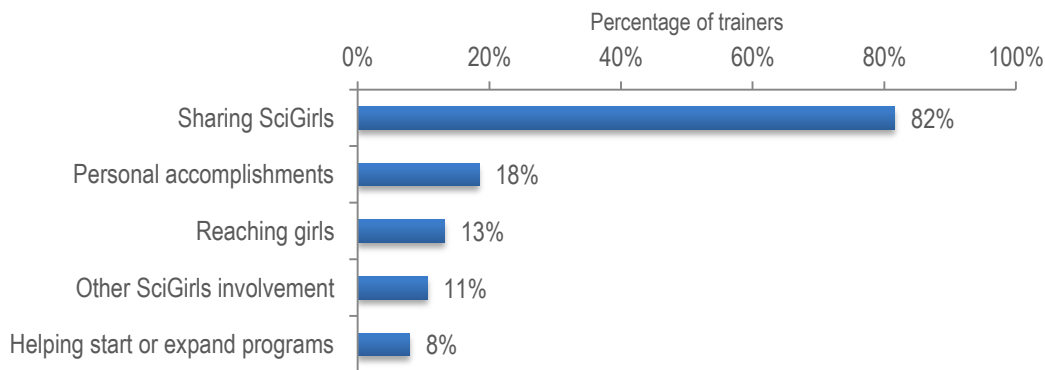
Examples of trainers' comments on these themes follow below:

Sharing SciGirls (82%)
- *Expose educators to the SciGirls Seven and how to use the activities provided.*
- *Performing trainings for diverse audiences and modifying the content for that diversity (informal educators, teachers, senior volunteers, etc)*
- *The training went very well. The most eye-opening thing for participants were the presentation on gender-equity research as well as the SciGirls Seven strategies. An accomplishment was to expose educators to that work and to connect them to the SciGirls CONNECT community.*
- *Most of the educators I trained had some kind of background in informal education, but I feel these trainings elucidate their techniques and cement them as best practices.*
- *At the full day training, I worked with people who train or work with hundreds of students and teachers each year. Knowing that the principles of SciGirls is going to spread was great.*
- *I have had less formal educators in my trainings than I expected. I think providing practice and resources for people not familiar with educating girls in the fields of STEM is very powerful. When we share with the people in the girls'*

lives that you don't have to be an expert in STEM to facilitate it, we are, in turn, telling the girls that you don't have to excel in Math and Science in order to become a scientist or engineer.

- *My main accomplishment is just continuing to spread the curriculum. I've reached a lot of educators and our students who are doing outreach and have really emphasized the great SciGirls resources to all of them.*
- *Also, by becoming a spokesperson for SciGirls, anywhere I go when gender is discussed I refer people to the SciGirls resources.*
- *I feel like I've been able to grow TREMENDOUSLY this year in my ability…to provide informal STEM educators with training, video resources and complementary materials (some print) modeling authentic explorations…*

Personal accomplishments (18%)

- *Being a facilitator of activities and not a leader or expert. Not being intimidated in trying out new activities (or areas of science) as a result of being a facilitator.*
- *I think my main accomplishment has been to improve as a trainer. I learned from the mistakes made, and built on those to improve over the course of the different trainings I have lead*
- *Feeling confident and comfortable incorporating the values into curriculum.*
- *Improving my own understanding of the SciGirls activities…*
- *I moved and am finally starting to make some connections locally.*
- *I feel like I've been able to grow TREMENDOUSLY this year in my ability to maximize and foster a greater interest in science and engineering among girls ages 8-13, to provide informal STEM educators with training, video resources and complementary materials (some print) modeling authentic explorations, and to increase both the quantity and quality of girls' STEM programs through out my region and the US, by partnering with diverse girl-serving organizations and teaching them how to do so as well.*

Reaching girls (13%)

- *Seeing the girls be completely thrilled about their activities*
- *I feel like I've been able to grow TREMENDOUSLY this year in my ability to maximize and foster a greater interest in science and engineering among girls ages 8-13…*
- *Introducing young women who haven't had much exposure to engineering & giving them the confidence that girls can do anything!*
- *Reaching more girls and seeing their successes through SciGirls*
- *When we share with the people in the girls' lives that you don't have to be an expert in STEM to facilitate it, we are, in turn, telling the girls that you don't have to excel in Math and Science in order to become a scientist or engineer.*

Other SciGirls involvement (11%)

- *Leading a webinar.*
- *Led monthly conference call on SciGirls Afterschool programs.*
- *I participated in ASTC talking about an event that used SciGirls activities and NGCP mini grant funding.*
- *I think I have grown closer to the SciGirls team and have helped them connect with other organizations like Portal to the Public.*

Helping start or expand programs (8%)

- *My main accomplishments would include working with various afterschool programs to get SciGirls started.*
- *The expansion of SciGirls into more afterschool programs and the building of new partnerships.*
- *I feel like I've been able to grow TREMENDOUSLY this year in my ability…to increase both the quantity and quality of girls' STEM programs through out my region and the US, by partnering with diverse girl-serving organizations and teaching them how to do so as well.*

Personal accomplishments of *SciGirls CONNECT* trainers

When asked which personal accomplishments they were most proud of, the trainers generally pointed to three main achievements. As shown in the chart to the right, just under half (45%) of the 38 trainers explained that they were proud to have shared *SciGirls* in some way, for example through their day-to-day work, outreach, trainings, programs, and presentations. At the same time, about a third (34%) were proud of having learned to lead trainings, and roughly a quarter (24%) were proud of the knowledge they had gained. One-sixth (16%) of the trainers shared miscellaneous responses.

Trainers' personal accomplishments (N=38)

Percentage of trainers

Sharing SciGirls	45%
Learning to lead trainings	34%
Gaining knowledge	24%
Miscellaneous	16%
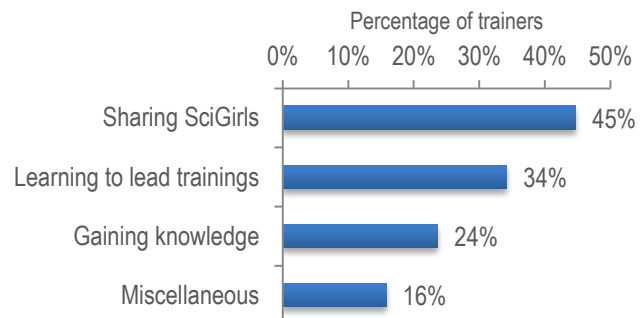
Examples of their comments on these themes are shared below:

Sharing SciGirls (45%)
- *I have been able to share my training in the SciGirls 7 in many informal ways through conversations with colleagues, teachers, and students.*
- *I OOZED the SciGirls Seven Strategies at my museum. I held a training for my educators, and I have continued to check in with them on how they use the SciGirls Seven.*
- *I was really excited to have a full house of educators for my "teacher workshop" event for the Philadelphia Science Festival.[7]*
- *I'm most proud that I have been asked to be one of 2 trainers to do an extended training for Missouri SciGirls educators. I am also proud that I get personal calls asking me to be their area trainer. It makes me feel that I'm a resource that is needed and desired (which is what I love to do and be). Finally, being asked to be an Advisory Board member for the (hopefully funded) SciGirls Latina project is one of my personal highs! I feel honored and humbled, but proud to represent and work hard to do my part to make this project a success.*
- *I love that I have been successfully adapting SciGirls activities for Kindergarten girls. It has been challenging, but very rewarding.*
- *I have been most proud to join an organization called "We Are Montana in the Classroom" and to be able to bring my SciGirls knowledge to share that with UM Faculty and Staff.*
- *I am proud to have been an integral part of creating an after school program in an underserved school. The program grew from 13 to 60 over the past year. I am proud of motivating educators to share their passion about STEM and connecting them with scientists in our area.*
- *I'm most proud of encouraging a Title 1 district to expand its SciGirls after school program into five of its elementary school reaching 65 girls. These girls would not have had this type of mentoring, hands on exposure or encouragement in STEM without this program.*
- *…presenting the SciGirls 7 to my University classmates in one of my masters classes (in education). It was very well-received, and the men especially had not considered gender differences in thinking about how they will approach instructional strategies. They really had something to think about after the presentation and were very glad to have received the information. The professor was also surprised at the richness of the research behind the strategies and impressed by how well the SciGirls approach matches the instructional strategies that promote problem-solving and success in formal education.*
- *Presenting at ASTC with other wonderful people showcasing some great events.*

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[7] In their TARF responses, trainers occasionally used "training" and "workshop" interchangeably.

Learning to lead trainings (34%)
- *Completing my first training was a big deal for me.*
- *Learning how to do trainings for adults and how to make a training that engages them (adding learning games, figuring out pacing, etc.).*
- *I learned much about facilitating the training from the design, and I learned about the process for managing every aspect. Those were all implemented successfully.*
- *Becoming a trainer*
- *Leading the training by myself - had originally only done it in pairs but it is manageable by myself as well.*
- *I am most proud of refining my presentation skills and working to improve the ppt I present*
- *I feel that I am able to facilitate conversations well, both in small and large groups. I've improved my facilitation skills, which is an area I needed work before I became a trainer.*

Gaining knowledge (24%)
- *Gaining an expertise in a topic that I'm passionate about*
- *Learning the SciGirls 7 has increased my ability to deliver STEM education in the most influential way to girls.*
- *That I feel like an expert in how to engage girls in STEM informal education activities.*
- *Feeling more comfortable and confident in my abilities as an expert for girls in STEM.*
- *I have become more familiar with SciGirls strategies since I need to live and breathe them when I present!*
- *Continuing to learn about ways to increase the number of girls in STEM.*
- *I'm proud of getting to know more episodes and activities outside of my usual (parachute parade, dough creatures, etc). Sometimes it feels like I don't have the time to sit down to watch episodes or to look through the activity guides, but I'm always so happy that I did and happy to know more activities to share with other educators.*

Miscellaneous (16%)
- *It was also really great to be complimented by Lisa Regalla on a job well done after our ASTC session.*
- *I think being recognized as a serious player in STEM education, outreach in my community.*
- *Continuing to stay actively involved even though I wasn't with a SciGirls museum anymore or leading SciGirls events for youth.*
- *Growing our non-profit to a new location (Caltech) and serving over 700 girls last year.*
- *I have been promoted to Camp Director, and I am now busier and happier than ever.*
- *Starting my MBA*

2b.3 Factors that facilitated success

The trainers were asked about the main factors that facilitated or helped them succeed over the course of the year. As shown in the chart below, more than half (55%) of the 38 trainers pointed to the trainer resources that were provided online and in physical form. Slightly less than half (45%) commented on the training, follow-up (including quarterly calls and webinars), and general support provided by *tpt*. Three-tenths (29%) explained that their success had been facilitated or helped by peer group support of some kind, and more than one-tenth (13%) attributed their success – at least in part – to their personal experience. About a fifth (18%) of trainers shared miscellaneous feedback.

Factors that facilitated the trainers' success (N=38)

Percentage of trainers

Trainer resources	55%
Training, follow-up, and support from tpt	45%
Peer group support	29%
Experience	13%
Miscellaneous	18%
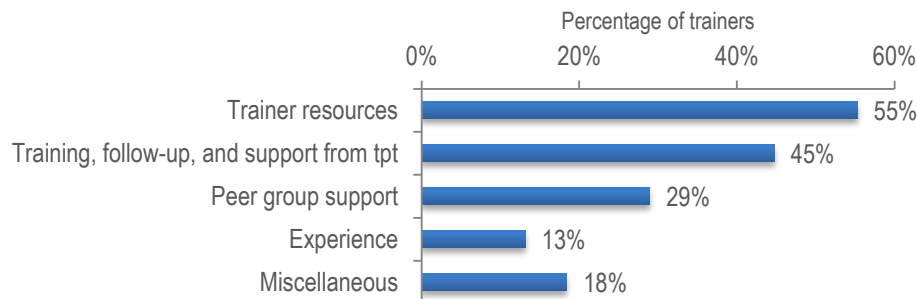
Examples of trainers' comments on these themes are shared below:

Trainer resources (55%)
- *…all the physical resources provided (ppt templates, documents, supplies)*
- *The resources (hand-outs, sizzle reels, etc.) plus the original training at tpt*
- *Walking away with so many resources materials*
- *The resources on the Ning site have been the most useful in allowing me to complete a training successfully. I liked the prepared PowerPoint that I could easily customize to fit my training.*
- *Having a detailed script to follow that includes when to put in DVD's and what to prep for the next activity in the agenda.*
- *The SciGirls Trainer materials (binder) and Ning network- we were given every resource to succeed and easy access to them.*
- *The SciGirls CONNECT website. It's a fantastic resource as a trainer and just in general. I think it is organized well. I like that they try hard to update the Trainer info and materials as they are improved/tweaked. Having the date next to it allows me to make sure that I have the most up to date materials for my upcoming workshops.*
- *The new season 3 was fantastic timing for keeping educators who were previously trained eager to include new activities.*
- *The presentation helped keep training on schedule. The updates to the presentation were also really helpful.*

Training, follow-up, and support from tpt (45%)
- *Attending the train-the-trainer workshop*
- *…our original training*
- *Quarterly Trainers calls are a GREAT way to stay connected and use other trainers as resources.*
- *Webinars (particularly the quarterly trainers webinar)*
- *Personally, the webinars yield development and connections that allow me to connect to partners even in my own area, but also to keep me current on trends, stats, etc.*

- *I think the people that helped me the most were Lisa and Adine. I conducted the first two trainings, so having them commit to talking with me and listening to my needs, and then fulfilling those needs was extremely helpful. Without their support, I think the trains would have been much more difficult being the first one.*
- *Have easy communication with Niki and the SciGirls staff. I know I can always count on them for any answers I need promptly.*
- *The support from the staff in arranging the trainings and travel*
- *The support of the SciGirls team members first and foremost! They are always there when you need them no matter what silly question you might have.*
- *I also really appreciated visiting the SciGirls Reflect workshop.*

Peer group support (29%)
- *Having the opportunity to practice in person with colleagues that gave useful feedback.*
- *I am also lucky enough that the other lead for our organization is very familiar with SciGirls and the curriculum so there's (almost) all the time two of us doing the actual trainings. It helps avoid the drain of just one person presenting*
- *Connections to other mentors/trainers/educators*
- *The sharing of strategies from other trainers during the webinars*
- *Quarterly Trainers calls are a GREAT way to stay connected and use other trainers as resources.*
- *SciGirls trainer message board.*
- *Support of a peer group in informal education.*
- *Trainers need to be up to date with the landscape of girls in STEM careers on the national level…involvement with AAUW has been useful for this.*

Experience (13%)
- *Having a science background has been useful when explaining the activities to educators.*
- *…and my background in inquiry-based training from great museum educators.*
- *…the experience having facilitated many trainings and having used the materials.*
- *The fact that I've trained people from many different realms (formal, informal, industry) and the fact that I have experience with all three realms personally is extremely useful for me. It helps me connect with the people I'm training and adjust based on what their particular organization needs.*
- *Seeing how girls react in SMMs programs for kids helps me to have authentic conversations in the trainings and workshops*

Miscellaneous (18%)
- *I really enjoy trainings because I like connecting with people and connecting to each other. I am an enthusiastic person, which I think helps people get comfortable in the setting.*
- *I love the program and am willing to work extra hours to do SciGirls*
- *Practice, practice, practice [and] adjusting the presentation based on my audience (MS/HS teachers vs scientists vs elementary teachers)*
- *…utilizing my teachers in the training who have used the curriculum.*
- *My organization allowing me to spend time doing SciGirls trainings has been invaluable. While we have a STEM initiative, I am traveling out of our coverage area to implement these trainings. They have been very accommodating to this.*
- *For workshops, word of mouth from my past workshops and Enewsletters throughout the state.*

2b.4 Feedback regarding the *SciGirls* training resources

Helpfulness of the *SciGirls* training resources

The trainers were asked if they found the *SciGirls* training resources helpful, and to explain why or why not. As shown in the chart to the right, nearly all (97%) of the 38 trainers noted that they found at least some of the resources helpful, with many saying that they found the materials in general to be useful (as in, "*It's all been beneficial in different ways*" and "*They're very clear as well as flexible*"). One trainer (3%) described him or herself as "*indifferent*" about the helpfulness of the resources.

As shown in the chart to the right, those in the group of 38 who commented on the value of specific resources generally pointed to either the webinars (45%) or web resources (39%). This was likely because the TARF question drew their attention to those specific resources, as follows: "*Have you found the SciGirls training resources that you received to be helpful? (e.g. Ning, webinars, other resources) Please explain why or why not.*" A fifth of trainers (21%) described various resources they felt could be improved, and just under a fifth (18%) shared miscellaneous responses.

Trainers who found the *SciGirls* training resources helpful (N=38)

Found the resources helpful 97%

"Indifferent" about the resources 3%

Trainer feedback about the helpfulness of the resources (N=38)

Percentage of trainers

Webinars were helpful	45%
Web resources were helpful	39%
Resources could be improved	21%
Miscellaneous	18%
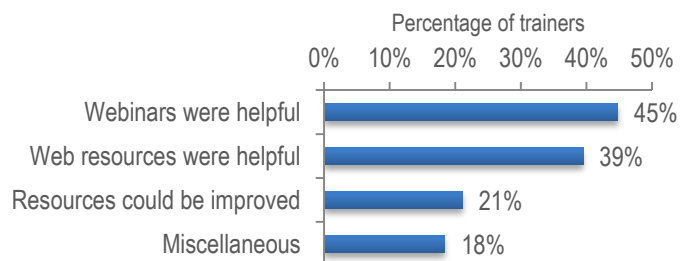
Examples of trainers' feedback on these themes are shared below:

Webinars were helpful (45%)
- *I have appreciated the webinars, though I cannot always attend them all. I especially appreciated the webinar on using social media.*
- *Webinars are useful for hearing from others and learning what's going on.*
- *The webinars have been great…[they] are very interesting because they showcase best practices not only in SciGirls activities but in institutional approaches, audience engagement, and funding ideas. It is instructive to hear about how other parts of the country look at these issues.*
- *Webinars are an excellent way to share ideas and bring national attention to localized programs.*
- *The webinars are helpful in the point that they expose me to things and ideas that are happening across the country to keep girls engaged in STEM.*
- *The webinars have been great and have been an excellent way to connect nationally with the science outreach/education folks.*
- *The webinars are helpful both to bring best practices out to everyone and also to connect with people I don't talk too often. Sometimes seeing someone make a comment prompts me to send them an e-mail afterwards.*
- *Yes! I will say that not all of the webinars IMMEDIATELY feel like they relate, but they can relate to some part of what I do. For example, the bird webinar didn't feel like it related because in my work I wouldn't ever be able to incorporate that, BUT I present SciGirls every year at an informal science educators conference and they would LOVE that. So some of them take a little more stretching of my network. :)*

Web resources were helpful (39%)

- *Yes! The NING site and having resources to download when I need (or think) of them has been great.*
- *The Ning is a great place to direct others and refer back to time and time again.*
- *Absolutely! I am so disorganized, so having everything I need for a training in one comprehensive place (the NING site) is great!*
- *Ning site is very useful as a follow up tool for the people I've trained. Trainers group has been useful as a repository of where to get handouts, etc.*
- *The Ning is a great resource source…[it] is very helpful; when I'm getting ready for a training, I refer to the site often to check on the agenda and update my PowerPoint. I've also found the site easy to navigate to download individual activities and distribute them. When talking to teachers, during my work as a teacher trainer, I can direct people to a site where all the information is easily available.*
- *Yes. When I get one the Ning, it is helpful. I still struggle with getting on there regularly and I think others do too seeing how much the postings have slowed down.*
- *It's all been beneficial in different ways. I find myself on the Ning site several times a week- sometimes as an educator to pull copies of the activities for my programs. I always have my training binder close- for printed activity guides, as well as training notes and preparation. I always get at least one great idea or takeaway from the webinars that inspire me to act outside the webinars. Holistically, I think we've been provided great resources.*
- *Yes, I go to the CONNECT website to access print resources and see what folks are discussing*
- *I love the scigirlsconnect.org page*

Resources could be improved (21%)

- *Webinars not so much. I'm dealing with a different audience than the rest of the grant so most of the time, I feel the rules or resources do not necessarily cover what I'm doing.*
- *Webinars have been marginally useful, simply because some topics are not relevant to me.*
- *The webinars are informative but my training was so long after that I forgot a lot of the stuff.*
- *I have found the monthly program webinars fine, but not super helpful as a trainer*
- *Yes. When I get one the Ning, it is helpful. I still struggle with getting on there regularly and I think others do too seeing how much the postings have slowed down.*
- *Generally yes. I do find that some of the resources on Ning as still difficult to find and things like ppt presentations and forms aren't always up-to-date.*
- *Yes, but I feel like they could be improved. Better PowerPoint presentations with scripts and videos embedded.*
- *Indifferent-enjoy that the resources are available (and logged if scheduling doesn't always allow for real time participation), but feel a lot of the information is redundant in themes.*

Miscellaneous (18%)

- *The conference calls are a good way to share information, but I would say the webinar format is equally as helpful as the conference calls. Archiving the calls is definitely helpful though.*
- *The training in Minnesota was extremely helpful in preparing to be a trainer with SciGirls….the trainer calls are always good.*
- *Yes, the PowerPoint are really helpful.*
- *I love all the printed materials we get to hand out at trainings. The participants love them!*
- *Having the videos available in iTunes is also helpful for families to view the series. We do have some teachers and families who don't have access to broadband connection, so the hard copies of the DVDs are still useful.*
- *I also feel the staff has been a great resource, always there to support whenever needed.*

How the resources could be improved

Next, the trainers were asked how any of these resources could be improved and what else *SciGirls CONNECT* could give them that would be helpful. Out of the 38 trainers who were surveyed, 35 answered the question. As shown in the chart below, no one improvement stood out to the majority of these 35 trainers. The largest group, a fifth (20%), said no improvements were needed. Of those trainers who pointed to specific improvements, another fifth (20%) explained that the web resources could be improved in some way. Just over a tenth each commented on the video resources (14%), opportunities for trainers to learn (11%), or suggested various ways they thought the program should continue as before (11%). Less than one-tenth each pointed to the training resources (9%), webinars (6%), or were "*not sure*" (3%). Finally, a fifth (20%) shared miscellaneous feedback.

Resources the trainers thought could be improved (n=35)

Percentage of trainers

None	20%
Web resources	20%
Video resources	14%
Opportunities for trainers to learn	11%
Continue as before	11%
Training resources	9%
Webinars	6%
Not sure	3%
Miscellaneous	20%
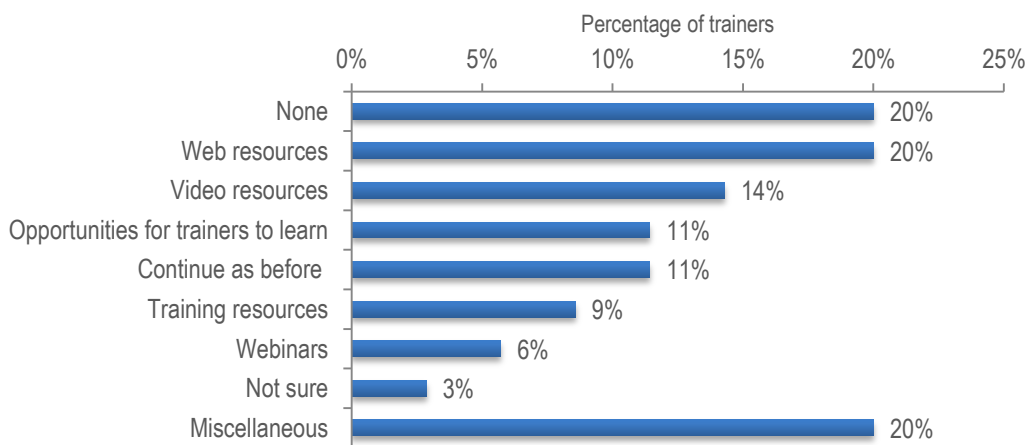
Examples of trainers' comments on these themes are shared below:

Web resources (20%)
- *I love the Ning site, however as the days get busy I am often remiss in checking it. I would like notification of new content.*
- *I sometimes forget to check the Ning Site, so if it were possible to get emails when someone posts something new on the Trainer page, that would be helpful.*
- *I would love it if there were a way for the NIng to send an e-mail when new material is posted.*
- *I think a dropbox folder with everything would be easier for me to refer to than the connect webpage.*
- *I think the constant chatter on SciGirls CONNECT would be helpful.*
- *Looking forward to the updated SciGirls CONNECT web portal!*

Video resources (14%)
- *Video clips that give real examples of teachers/girls engaging in each SciGirls 7 strategy.*
- *Maybe having downloadable clips? Although I now know that we can download off iTunes.*
- *Downloadable video clips for times when I know I will not be connected to the Internet, but I don't want to show the whole video.*
- *Also changing the website videos to state English or Spanish first instead of flip flopping between the two seasons.*
- *I would encourage still having access to the DVDs for those that can't access the videos online. There are areas in our state that don't have broadband coverage and the DVDs are very useful for this.*

Opportunities for trainers to learn (11%)

- *Love the checklists! Would like to see more of what other trainers are doing and individuals feedback and suggestions from each training.*
- *Maybe just a little more time during the trainer calls for trainers to share their best tips and tricks with everyone else. Or maybe there is a place for that on the NING trainer page?*
- *The connections SciGirls is making with the NGCP, the Fabfems, the Girl Scouts, etc., speaks to the understanding of the power of collaboration, the work it takes to make it successful, and the power of multiplying efforts to make a larger-scale impact. That said, I think the "connect" of SciGirls CONNECT would imply face-to-face training for trainers, perhaps by hosting them at partner sites across the nation -- if money were no object, of course!*
- *Even more direct ideas of how to incorporate SciGirls stuff into our work.*

Continue as before (11%)

- *At this point, there's a wealth of high quality information and resources. I think we could continue to draw from the expertise of the trainers and also continue to strive to create inclusion for underrepresented and ethnic minority girls.*
- *I just hope SciGirls CONNECT continues to provide new, innovative activities and approaches to sharing the joy and importance of STEM*
- *Keep updating the website, keep research and results coming and fresh!*
- *Keep the level of support for trainers that is currently being offered. The SciGirls team at tpt is AMAZING*

Training resources (9%)

- *More resources that we can just print in black and white without having to wait for materials. The SciGirls Seven cards are great but I would like to have the convenience of having a size where several fit in a page that can be easily cut and printed in our offices. That's a resource that anyone can use without having to wait for SciGirls to send the materials.*
- *I need a better alternative for the non conductive dough... Please help!*
- *More experiments that require more affordable/less supplies.*

Webinars (6%)

- *An email immediately following webinars that included all of the links and email addresses from the webinar would be a nice bonus.*
- *Our group is in such a strange category that the webinars will not be useful until there are enough of us who'll benefit from it. There are many lessons I've learned that I'm willing to share but they don't apply to anyone else yet.*

Miscellaneous (20%)

- *The connections SciGirls is making with the NGCP, the Fabfems, the Girl Scouts, etc., speaks to the understanding of the power of collaboration, the work it takes to make it successful, and the power of multiplying efforts to make a larger-scale impact.*
- *Gotta tell you, the recent addition of CC at the bottom of the SciGirls and NGCP webinars is HUGE! I (as many of us do) have multiple ways that I learn. Listening has been one of my worst abilities and the CC actually helps me retain more of what I've heard and internalize more.*
- *Variety of topics; professional development series that dives deeper into topics or goes into specific logistical applications of themes (i.e. event planning series, guest speakers, etc.).*
- *Help finding good groups that want training and help with funding for training expenses.*
- *I think it would be nice to have an outline of the goals for each year of the grant, this would allow the trainers to see where the project is going long term. Perhaps this doesn't need to be public, but in the resources of the closed trainer group.*
- *We've had issues with the survey site that teachers need to do at the end of training.*
- *I would appreciate yearly emails reminding me about this survey (and including the link) as well as a follow up email after each training with the link for me to fill out the trainer survey. If there was a way to check and see what surveys I have and haven't filled out, that would be wonderful too.*

2b.5 Extent to which prior experience training adults helped with their work as *SciGirls* trainers

As shown in the chart to the right, when asked if they trained adults as part of their regular job, roughly four-fifths (81%) of the 38 trainers said they did or used to do this work (as in, "*I have has experience working with educators and parents and child care providers for providing information science experiences in the past*" and "*I do offer professional development to adults as part of my job and have been training adults for many years. I enjoy sharing resources and ideas with adults and am very comfortable working with this group.*"). About one-sixth (16%) indicated they had little or no experience training adults other than the trainings they did with

Trainers' experience training adults (N=38)

Have experience training adults 81%

Little or no experience other than SciGirls 16%

N/A 3%

SciGirls (as in, "*I do the majority of my work with kids*" and "*This is new for me*"). Finally, one trainer (3%) answered "*N/A*" in response to the question.
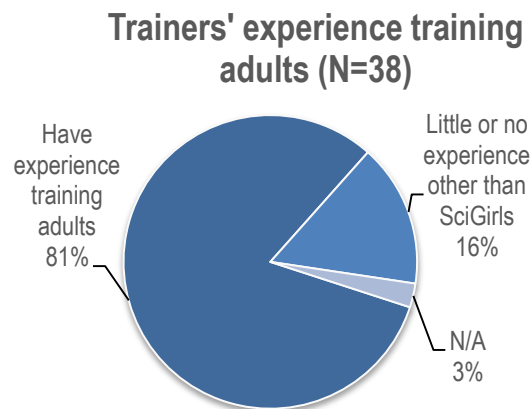
Next, the 31 trainers who indicated that they had previously trained adults were asked about the extent to which this experience helped in their work as a *SciGirls* trainer. As shown in the chart below, about half (45%) of these 31 trainers explained that their experience training adults gave them a sense of comfort, confidence, or familiarity in their *SciGirls* trainings. Nearly two-fifths (39%) indicated that the experience helped them better understand adult audiences, for example helping them "read" adults and understand how adults learn. A tenth each said the experience made them more knowledgeable (with two trainers pointing specifically to educational pedagogy) (10%) and/or that it facilitated their outreach efforts (10%). Finally, about a sixth (16%) shared miscellaneous responses.

How experience training adults helped their work as *SciGirls* trainers (n=31)

Percentage of trainers

Category	Percentage
Increased comfort/confidence/familiarity	45%
Helped understand adult audiences	39%
More knowledgeable	10%
Facilitated outreach	10%
Miscellaneous	16%
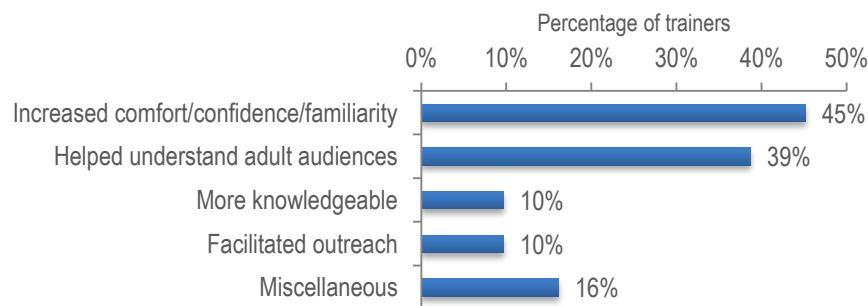
Examples of trainers' comments on these themes are shared below:

Increased comfort/confidence/familiarity (45%)
- *It has helped because I had a little previous experience with it, so I felt comfortable training adults.*
- *Experience educating - whether adults or children - has been an immense help. I feel comfortable in front of any size group of people of any age or any gender. With the nervousness out of the way, all I really have to focus on is the content I am trying to share.*

- *Again, it is extremely valuable to feel comfortable in front of a group of adults and to have a strong background in facilitation of conversations and reflection as well as doing hands-on activities.*
- *It has made me more comfortable in hosting trainings with large groups of adults learners.*
- *It helps greatly, to feel confident in training.*
- *Confidence in front of adults is a benefit of my experience.*
- *Knowledge of organization and logistics, I have learned that these aspects of training are crucial and contribute to the ease of training. They supply the trainer with the necessary confidence and make participants comfortable and ready to take in new information.*
- *I'm familiar with leading training sessions*
- *Has helped having experience - makes it easier if you have done it before.*

Helped understand adult audiences (39%)
- *Being able to read groups and know when they need play dough, when they need a break, and when the research is too overwhelming has been incredibly helpful. Every group is so different, that there is no way to formulaically prepare to "read a crowd".*
- *I'm good at reading an audience and making adjustments on the fly.*
- *Already knew places to plug in and adult learning strategies to engage the audience. Still continuing to learn them through SciGirls efforts.*
- *I have been doing this a long time and my toolbox of tools needs fresh and relevant tools for today. The SciGirls trainings are very well thought out and I can apply tried and true techniques for the different ways adults learn, accommodating auditory, visual, or kinesthetic learning.*
- *It helped me have realistic expectations of what training adults is like. (ie, attention spans, enthusiasm levels)*
- *I think I am more ready for the desire of adults to make real-world connections to programs/students/events.*
- *It has been mutually beneficial. Knowing SciGirls has made me more of an expert in my field and working with adults regularly has made me understand how to train best and to allow them incorporate it.*

More knowledgeable (10%)
- *Exposure to informal science education pedagogy*
- *I have had training and experience in educational pedagogy that helps with reaching all sorts of learners.*
- *…real time knowledge [and] practices that work!*

Facilitated outreach (10%)
- *Through the work I already do, I have an interested audience. I work with educators and support them in my daily job.*
- *It has definitely helped - I've been able to reach our community and share tips on ways to modify activities to reflect the SciGirls 7.*
- *It has allowed me to make those partnerships across the state with organizations that want to hold SciGirls trainings, ex, Teacher Centers, BOCES, teacher professional development organizations.*

Miscellaneous (16%)
- *HUGELY, however it needs to be said that I still continually learn new ways to work with adults. Our SciGirls training had a great portion on working with adults and, just when you think you have it all down, BAM, I learn something new.*
- *Having experience certainly helps. However, I don't think that it is necessary to be a good SciGirls trainer.*
- *It has given me more experience with technology and hands on activities in presentations.*
- *…experience working with underrepresented populations.*

2b.6 Schedule flexibility and supervisor support

Schedule flexibility

When asked about the flexibility of their regular work schedules in terms of fitting in their *SciGirls CONNECT* work, the majority of the 38 trainers said their schedules were flexible or fairly flexible. As shown in the chart to the right, half (50%) of the trainers described having flexible schedules and a quarter (26%) explained that their schedules were fairly flexible. One-sixth (16%) said it depended on the day or the time of year, and less than one-tenth (8%) said their schedules were at least somewhat inflexible.

Trainers' schedule flexibility (N=38)
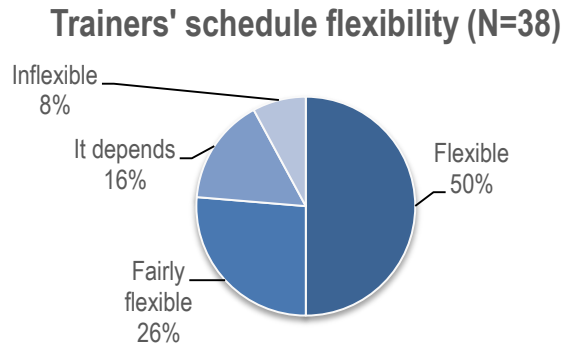
Examples of trainers' comments regarding schedule flexibility are shared below:

Flexible (50%)
- *My schedule is incredibly flexible. I am a salaried employee in a position which doesn't accomplish a workweek in the 8-5 sense. We work a lot of nights, a lot of weekends and travel a lot. My job is already used to me accomplishing my workload with these factors, so adding SciGirls to it hasn't been an issue at all.*
- *Overall, it is very flexible. I am able to choose most any time (except before a few large events) to work on SciGirls CONNECT work.*
- *Very flexible and encouraging as the ideas align with our mission statement.*
- *My schedule is quite flexible, so it is usually easy to fit SciGirls in my regular schedule. Some exceptions would be when we have field trip programs scheduled at the same time as webinars.*
- *I am currently not employed, so my time is only limited by my commitments to my family and community. When I was employed, my schedule was completely my own. SciGirls was a priority and I was able to work on it whenever I needed to. I believe that to be able to work well in the SciGirls community, having a flexible schedule with the ability to self direct is necessary.*

Fairly flexible (26%)
- *I have a fairly flexible schedule, so SciGirls work has been pretty manageable.*
- *I have freedom to structure most of my own work but have a heavy work-load so it requires a lot of self-organization around tasks and timelines. There is some restriction in terms of the amount of time I can spend on SciGirls, both budget-wise and in term of projects that require attention but I am able to manage it with organization.*
- *My time is fairly restricted in term of number of hours I can commit. However, it is fairly free in terms of WHEN I choose to do SciGirls work as long as I have a good lead time to plan on it.*
- *My regular work schedule is fairly flexible. I run many on-site programs where I must be in the building, but I am free to work any days around those programs.*

It depends (16%)
- *Depends on the day :) The biggest issue with getting to do SciGirls is the budget, not the time (although time is a big factor as well).*
- *This depends on the time of year. My schedule is rigid in the summer months, during spring break and a few weeks out of the rest of the year do to museum programs. The fall and winter months are more flexible.*
- *It varies tremendously by time of year. Being in a Science Center has its ebbs and flows. Often time, I have some flexibility for my schedule and my Center is willing to work with me as well which goes a long way to help.*
- *Somewhere in the middle. I choose a lot of the activities I do but certain times are designated for specific activities throughout the year.*
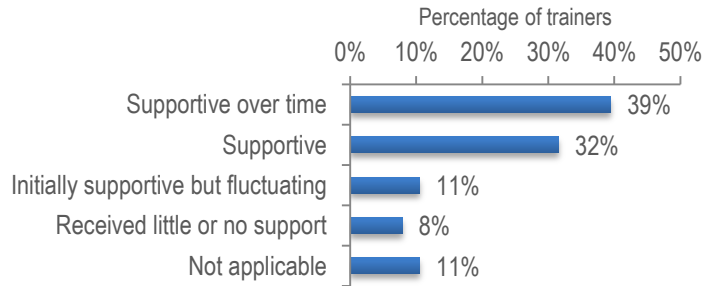
Inflexible (8%)
- *My time is somewhat restricted with our own scheduled outreach and programming. I work with my calendar and my supervisor to schedule SciGirls trainings.*
- *My time is very restrictive. Since SMM does not receive any monies for my time with SciGirls, it is difficult to work the time into my daily schedule and budget*
- *Over time, my time has become less and less flexible because of increased job responsibility*

Supervisor support

Next, the trainers were asked to reflect on the level of support they received from their supervisors while completing their *SciGirls CONNECT* training responsibilities, and to explain if and how this level of support had changed over time. As shown in the chart to the right, about two-fifths (39%) of the 38 trainers explained that their supervisors were supportive and constant with this support over time. The next largest group, a third (32%), indicated that their supervisors were supportive but didn't comment on if and how this support had changed over time. Though

Support over time from trainers' supervisors (N=38)

Percentage of trainers

Supportive over time	39%
Supportive	32%
Initially supportive but fluctuating	11%
Received little or no support	8%
Not applicable	11%

the reasons for this omission are unknown, it is possible that the second part of the TARF question was simply overlooked by these trainers. About a tenth (11%) of the trainers indicated that their supervisors were supportive but that their support had fluctuated in some way, and less than a tenth (8%) said they received little or no support from their supervisors. About one-tenth (11%) explained that the question didn't apply to them, for various reasons. In general, there were no changes in response rates over the course of the grant period.

Examples of trainers' comments on these themes are shared below:

Supportive over time (39%)
- *My supervisor had been very supportive from the beginning. She has even incorporated this work into my annual goals.*
- *I do have complete support from my direct supervisor and it hasn't changed since the beginning.*
- *I have always had support from my supervisor in that she allows me the freedom to do/plan/train as I see fit. I don't get much assistance or feedback, but I haven't asked for that either.*
- *My direct supervisor encourages me to arrange my own trainings and to facilitate trainings for SciGirls. So far, in the few months I have been a trainer, she has been very open and encouraging.*
- *Consistent support and (mostly) trust; autonomous at planning trainings (1 hour + full days) and reporting. Would keep her updated and she would input information, as needed.*
- *I have support to finish any and all requirements for each training. This level of support has stayed consistent over the two years I have been a trainer.*
- *The level of support has stayed the same, my supervisor would like to see more SciGirls involvement in our community. The limiting factor is resources- money and staff time to implement it. We have looked for local funding for this programming, but the landscape is competitive, as it is everywhere.*
- *I have good support even though my direct supervisor has changed over time*

Supportive (32%)
- *My direct supervisor supports me to do what I need to do. She does not micromanage nor most of the time know exactly what I do.*
- *I have a lot of support from my Executive Director. Two years ago our Center redid our strategic plan and made gender equity and boosting the number of girls going into STEM careers one of the educational goals. This has helped a lot, but in general, my Exec Dir is very supportive.*
- *My direct supervisor supports my efforts. Not sure she completely understands what I do in this space, but she's ok with knowing that I'm doing things that make sense and support my program's efforts.*
- *As long as my SciGirls work didn't take me away from my normal responsibilities, my supervisor was fine with what I was doing.*

Initially supportive but fluctuating (11%)
- *As I mentioned previous it went from 100% support to almost no support, and now I have no supervisor.*
- *My supervisor is supportive of the work I do, allowing me to do trainings during work days and asking how the SciGirls work is coming, but over the years the support has waned a bit due to and increased demand to support our time directly in our budgets.*
- *My direct supervisor is very supportive. It has changed slightly as she is now directing other projects as well, but is still interested in my involvement with SciGirls.*
- *My supervisor has changed twice since becoming a trainer. My first supervisor was pretty supportive, my second very supportive, and my most recent doesn't see where it fits into my position any longer.*

Received little or no support (8%)
- *I have no support anymore from my direct supervisor. In the beginning I had a different supervisor and different job but now that has changed.*
- *Prior to my position with the middle school I worked for Project LIFTOFF. I had little support from my supervisors for implementing SciGirls.*
- *I have no direct support from my supervisor, nor do I need it.*

Not applicable (11%)
- *I'm the supervisor*
- *I am pretty much my own supervisor*
- *I, personally and individually take on all of my responsibilities associated with SciGirls CONNECT.*
- *NA (I had great support when I originally applied and worked at the Science Center of Iowa though)*

2b.7 Impact of working as a *SciGirls* trainer

Passion for inspiring girls in STEM before working as a *SciGirls* trainer

The trainers were asked to comment on the extent to which they had a passion for inspiring girls' interest in STEM and STEM careers before they began working as a *SciGirls* trainer. For trainers who submitted multiple TARFs over the evaluation period, only their first submissions were considered in response to this question, for a total of 25 trainers. As shown in the chart to the right, the majority (76%) of this group of 25 were passionate about inspiring girls in STEM before becoming a *SciGirls* trainer. A fifth (20%) explained that they were at least somewhat passionate – with many in this group commenting on the impact *SciGirls* had on them – and a handful (4%) noted that their passion grew only after they began working as a trainer.

Trainers' passion for inspiring girls in STEM prior to working as a *SciGirls* trainer (n=25)
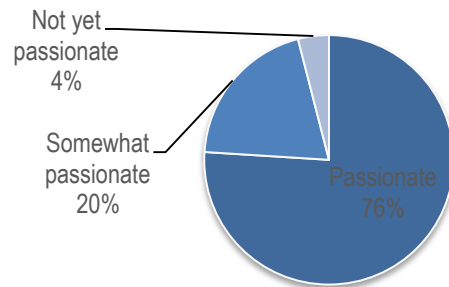
Examples of trainers' comments on this subject are shared below:

Passionate (76%)
- *I was hugely passionate and committed to involving girls with STEM.*
- *I definitely already had a passion for girls in STEM prior to SciGirls.*
- *For about 10 years, I have aspired to teach girls (and boys) STEM. And for the last 4 years, my interest has become extremely focused on empowering girls through education.*
- *I came to SciGirls with a built in passion for inspiring girl's interest in STEM and STEM careers. Two years prior, we had been through extensive training through the Girls RISE Museum Network and been directly involved in starting up the Louisiana STEM Girls Collaborative Project.*
- *I have been passionate about girls in STEM for many years. I started Project Scientist for girls in STEM 5 years ago.*
- *The reason I applied to be a SciGirls trainer is because of this! As a female scientist, I have experienced firsthand how STEM can be very not appealing...*
- *Being a minority female who was discouraged from STEM fields as a child because of the stereotypes and interactions, very much a personal passion. At least make these interests available and accessible, and then let the decision be made, not forced to avoid these important disciplines because "I'm a girl"*

Somewhat passionate (20%)
- *I did not realize the full extent of the need for inspiring girls' interest in STEM and STEM careers, though I myself have always been passionate about science and have been aware of the women of my own generation's lack of interest in STEM.*
- *I had a passion for inspiring students in science and STEM, and STEM careers, but it was not until SciGirls that I fully understood the impact that we can have on girls. Before SciGirls, I had previously implemented some girl-only programs, and had enjoyed it.*
- *I have a great passion for STEM and working with educators. I did not have a focus on just girls, so this focus was new to me. I have embraced it and am very much a voice for engaging girls in STEM activities and careers.*
- *I actually was building that passion, but was having trouble since I am male. My previous training/development was extensive, but focused more on the research and best practices. It was example/activity poor and difficult for me to translate to educators, etc.*

Not yet passionate (4%)
- *My background is neither in STEM nor education, so I'm fairly new to the world of gender equity in STEM. I think because I wasn't exposed to the movement, I had no reason to be invested, but had someone pointed the goal out, I would have fully supported it.*

## Impact of working as a trainer on passion for inspiring girls in STEM

All of the 38 trainers (100%) explained that working as a *SciGirls* trainer helped to create or reinforce their passion for inspiring girls' interest in STEM and STEM careers. Examples of their comments on the matter are shared below:

- *In the many years I have had the privilege to work with SciGirls, my passion has increased. Now, as a SciGirls trainer, I am able to share that passion with others.*
- *Yes. The more I show others how to make a positive impact on young women's lives the more it reaffirms my passion about this goal.*
- *Working as a SciGirls Trainer has increased my passion immensely! It has changed the way I think about myself and girls/women in STEM. it has made me more aware of stereotypes and ways to turn stereotypes around.*
- *My passion has greatly increased in this area since working with SciGirls. Working with SciGirls has elevated some of my misconceptions and has given me the tools to help promote girls in STEM, making it easier to encourage girls in these areas.*
- *For sure. I did not have an outlet for that passion in my previous work, but being a part of SciGirls has now become part of my job description and annual goals.*
- *Yes, not only has it reinforced my passion, but it's given me the perfect resources for the hands-on activities that I needed to compliment my previous training. I had the whys, strategies, research, etc. but not solid tried and true activities that could be done easily with maximum impact.*
- *Most definitely! In fact, I'm even looking at doing my graduate capstone paper on the topic potentially.*
- *SciGirls has definitely reinforced this passion and made me more conscientious of messaging for girls in particular. As a mother of three girls, I have also taken the core message of SciGirls to heart. As a museum educator, I have found ample opportunity to observe girls in isolation and with boys to see the proof of the research in action. It is impressive and substantiates the need for the SciGirls 7 approach.*
- *SciGirls has created a passion and over the years reinforced it. Sharing successes with the SciGirls community helps keep me motivated and focused on this important part of what I do.*
- *Absolutely. Being a trainer has given me access to amazing people across the country who share the passion of encouraging girls in stem. This network is very encouraging and they are all doing great things. Having the opportunity to share and learn from each other is crucial to this type of programming.*

Impact of working as a trainer on attitude toward STEM learning and girls

As shown in the chart to the right, when asked if their work as a *SciGirls* trainer had influenced or changed their attitudes about STEM learning and girls in any way, two-thirds (66%) of the trainers said *yes* and explained that their experience as a trainer had a positive impact on their attitude, for example correcting misconceptions and strengthening commitments, among other impacts. Though the remaining third of trainers (34%) said *no*, they generally indicated that this was because they had experience with STEM learning and girls prior to becoming a *SciGirls* trainer.

Whether working as a trainer impacted trainers' attitudes about STEM learning and girls (N=38)

No, it did not have an impact 34%

Yes, it had a positive impact 66%
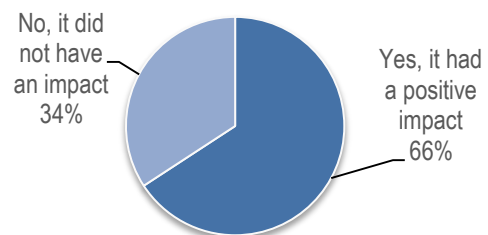
Examples of trainers' comments on these themes are shared below:

Yes, it had a positive impact (66%)

- *Yes. My attitude has changed from frustration to excitement. While I have long been frustrated with the gender gap in STEM, I now feel empowered to do something that can make a difference.*
- *Working as a SciGirls trainer has changed my attitude about STEM learning. I never really thought that STEM learning was affected by gender, but I did think that there were some people who could learn math and math related subjects more easily than others. I had always thought that I was not good at math. I have taken remedial courses since high school due to a learning disability. The whole mission of SciGirls has changed the way I think about myself, girls in STEM and those with learning disabilities. I really think that this is due to the positive atmosphere that surrounds SciGirls and the open-ended, hands-on activities.*
- *In so many ways. I can apply my experiences growing up as a non-STEM-loving young girl to working with educators and girls. I was that girl that growing up said "I suck at math and I hate science." Now that I can see (the elements of the SciGirls Seven) the personal relevance, the hands-on capabilities, and the way STEM fields solve world problems, I can put up with the "math and science" portions.*
- *Yes, I have been converted from believing in equality to supporting equity. Understanding that opportunities are created when girls can hear the information in ways that appeal to their interests and include their own life's goals means that the message has to be different. Opportunities might not always be pursued, but it is our obligation to offer these opportunities as equitably as possible. For girls, this means couching the language to counteract popular culture that does not support girls in STEM so that they understand that STEM truly is for everyone and needs smart minds to continue to progress in the future.*
- *It has made me more aware of the needs to engage girls in STEM. It has made me more involved and passionate about inspiring girls in STEM. I always want to stay involved with STEM education.*
- *It has continued to strengthen my commitment more and has allowed some of my professional time to be dedicated to this work.*
- *I am better able to establish communication with girls, especially older girls. I also model this more consistently for other educators. I am better able to communicate that I am interested in establishing equity which a lot of people can respect.*
- *Yes - it's given me something to point towards that is research-based and to validate what I do.*
- *I have certainly learned new things about STEM learning and girls from the SciGirls 7 and Role Model Strategies. I find that I learn new things at every training I go to.*
- *The SciGirls Seven strategies have been particularly influential in understanding how girls learn and experience STEM. Being a trainer has allowed me to fully immerse myself in the SciGirls Seven.*
- *Yes. It has helped me to seek out tools and to be more confident in advocating for girls in STEM.*

No impact (34%)

- *No it has reinforced what I already knew, Girls are struggling for identity at this age. I did and I still do with math. However, inquiry based learning and the seven strategies are perfect for all kids, because it builds confidence in any learner.*
- *Not really. I have always had this passion. That being said, I love the resources available & it's a great resource to show to parents.*
- *No, I want to continue to work in this field - I had and still have a huge passion for getting girls involved in STEM learning!*
- *No. I have always felt this strongly about increasing girls participation in STEM. I guess SciGirls has increased my awareness that we need to connect more as educators*
- *No, it hasn't changed my attitudes, just influenced my techniques and strategies.*
- *No, I really love working with girls and STEM, so it is a win-win*

2b.8 Challenges faced by the *SciGirls CONNECT* trainers

Challenges faced in accomplishing their goals

The *SciGirls CONNECT* trainers were asked to comment on any challenges they may have faced in accomplishing their goals as trainers. As shown in the chart below, about a third (34%) of the 38 trainers identified time as the biggest barrier to their personal training goals. Just under a fifth (18%) commented on budget-related barriers. More than a tenth each shared feedback about the challenges they faced finding training participants (13%), explained they would have liked to do more (13%), said they hadn't experienced any challenges or barriers in accomplishing their goals as trainers (13%), commented on personal issues they encountered (including one trainer who twice shared feedback about the challenges of having moved) (11%), and/or mentioned challenges related to travel (11%). About a quarter (24%) shared miscellaneous challenges, including a handful each who commented on technical issues and difficulties with the post-training evaluation.

Challenges trainers faced in accomplishing their goals (N=38)
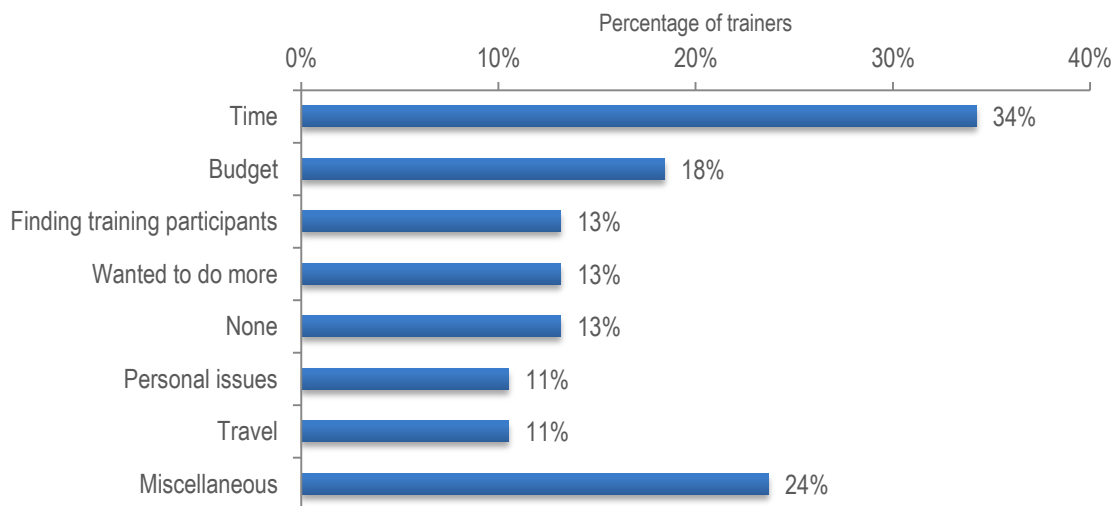
Examples of trainers' feedback on these themes are shared below:

Time (34%)
- *I would have liked to do a few more trainings, but as usual, time restraints prevented that.*
- *No major challenges - time is always the biggest challenge*
- *Time constraints. Due to school and public programming in our museum, I have a limited amount of time to train new organizations. I have not been able to do as much as I would like.*
- *It is sometimes difficult to find time within my other job duties to focus on a SciGirls training.*
- *For my first training, I think the one challenge I had was not providing myself enough for preparation and time to review all the materials. I think I learned from that before the second training, allowing more time.*
- *Very few, mostly just giving myself time to think and prepare before trainings.*
- *Finding time for new staff to be trained (internal challenge we're currently addressing).*
- *Many people across the state want trainings and it is hard balancing workload, money to support my travel for these trainings.*

Budget (18%)
- *And funding for implementing a training in my own community is challenging.*
- *Funding is always a concern, but hasn't proven to be a huge barrier due to the SciGirls CONNECT grant. But there are always ways to create sustainability. They just have to be looked for.*
- *I have a very supportive supervisor and feel that I am very supported in the work that I do. If I had to pick a challenge it would be fiscal resources. In a perfect world I would have a bigger budget.*
- *Many people across the state want trainings and it is hard balancing workload, money to support my travel for these trainings.*
- *Funding - it is hard to allocate time and resources needed for training and activities*

Finding training participants (13%)
- *I have yet to have enough people sign-up for a training I've arranged, and I have yet to be scheduled to facilitate a training. So, I have not been able to fulfill my goal of sharing these resources with very many educators. I will soon, I hope!*
- *Some of my trainings have not filled to capacity and have had slow/low attendance. I'm prepared and good to go in the actual training, but I feel like my regional trainings were slightly disappointing. I could have been much better at recruiting people to get to the trainings. I have a hard time "elevator speech"ing the SciGirls program when I meet people at conferences, etc to invite them.*
- *The registration has been tough. I think the organizer of the event should handle all registration. Then the trainer only has to show up and bring the appropriate materials.*
- *Recruitment…through the NGCP Website has been a challenge.*
- *8 hour trainings - it is also hard to find people who want to do the longer trainings. The shorter ones are super popular!*

Wanted to do more (13%)
- *I would have liked to do a few more trainings, but as usual, time restraints prevented that.*
- *I have yet to have enough people sign-up for a training I've arranged, and I have yet to be scheduled to facilitate a training. So, I have not been able to fulfill my goal of sharing these resources with very many educators. I will soon, I hope!*
- *I would have loved to do more trainings but only was asked to do 1.*
- *I'd actually love to do even more training session but I know that there are only so many and other people deserve a chance.*
- *I have not been able to do as much as I would like.*

None (13%)
- *I didn't run into any. I've direct support from my supervisor and it fits well into my job duties.*
- *Being a SciGirls trainer has helped further me in the work that I do, I don't believe it has caused any problems accomplishing my own goals.*
- *I believe I was well-supported as a trainer (through the initial training, binder materials, meetings, the website, etc.) to accomplish my own goals (which were to deliver the required trainings successfully). I didn't feel there was a barrier to my ability to meet the expectations.*

Personal issues (11%)
- *Now I have moved, and so this year I am limited in my ability to do trainings only on weekends because of the lack of childcare. Just another example of women having more challenges in moving ahead in their careers.*
- *Moving has made this year a challenge. I miss having the connections that I had and the comfort of working with a community that I know. I am slowly starting over here.*
- *The change in jobs has made it difficult for me to be as committed as I once was and as I want to be.*
- *I'm still working on commanding attention in the room when doing a training. I look very young and have to remind myself that I really do know what I'm talking about and am an expert in SciGirls!*

Travel (11%)
- *Just travel barriers*
- *Being in a desolate state, there aren't as many people to reach with the training and there's a lot more distance to cover*
- *Many people across the state want trainings and it is hard balancing workload, money to support my travel for these trainings.*

Miscellaneous (24%)
- *I've…struggled with technical issues at almost all of the trainings (most related to trying to play the DVDs). I also have a goal of ending a training early someday (which still hasn't happened in part because of technical issues).*
- *I believe our presentations could be better with more technology and updated presentations and videos.*
- *Reporting about the training experience has always been a challenge. The time in-between trainings is also challenging.*
- *…Evaluation through the NGCP Website has been a challenge. I have heard the evaluation is not for those who have just attended the training.*
- *It has also been a bit more complicated than I hoped to organize my own groups of participants.*
- *My museum cancelled and decided not to pursue the partnership when their champion left the museum.*
- *I had one session where participants challenged the research I presented. I felt like I was defending a thesis on research and it was difficult to bring the conversation back from that.*
- *Remembering what to do when. There is a checklist, but I often get caught up in my day to day that I can forget things (self evals, posting to SciGirls CONNECT, etc.).*
- *I'm not totally clear on my responsibilities beyond holding 2 training sessions. Feedback on what else I need to do would be good...*
- *Modeling best practices consistently.*

Challenges faced in meeting *tpt*'s expectations

Next, the *SciGirls CONNECT* trainers were asked to reflect on any challenges or barriers faced in meeting the expectations *tpt* established for them as a trainer. Out of the 38 trainers who completed the TARF survey, 37 responded to the question. As shown in the chart to the right, just under half (46%) of these 37 trainers said that they hadn't experienced difficulty meeting *tpt*'s expectations. A quarter (24%) pointed to time being a challenge, and about a fifth (19%) explained that they had trouble coordinating trainings, either in planning the event or

Challenges trainers faced in meeting *tpt*'s expectations (n=37)

Percentage of trainers

None	46%
Time	24%
Coordinating trainings	19%
Miscellaneous	19%

finding enough attendees. Finally, another fifth (19%) shared miscellaneous responses, including a handful who commented on travel barriers.
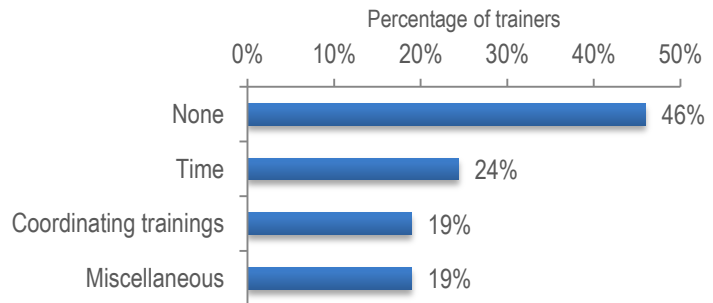
Examples of trainers' feedback on these themes are shared below:

None (46%)
- *I feel those expectations have been pretty reasonable.*
- *None. They've always been reasonable and provide the people to ask questions to or the resources to do the work. Not to mention the support you get from the Connect website.*
- *None really. Once the word is out on what I have to offer, I've found no problem meeting and exceeding the expectations.*
- *I don't know that I have had any. I did forget the timeline in which we had to do a full-day training so I was a little last-minute to plan it, but it all worked out really well and we had a full house!*
- *None, feel like they were clearly explained and provided a generous time frame.*
- *None. I just wish they were a little more clear and straight forward.*

Time (24%)
- *It is sometimes difficult to find time within my other job duties to focus on a SciGirls training.*
- *Main challenge has been finding time. The first year it was a bit of a challenge to make sure the work aligned logistically with tpt's needs (when to make flights etc). This seems better now that Niki is onboard and can help with arrangements!*
- *I have found it difficult to come up with a topic and time to prep for hosting a webinar*
- *Travel timing has only recently become an issue. Because of my family demands this year, finding a training date has been a challenge.*
- *Really timing - I have a lot scheduled for March since that is when schedules allowed for it!*
- *Just timing to make sure I follow through on all requirements.*
- *Paperwork - making time for prep and follow-up procedures.*

Trouble coordinating trainings (19%)
- *I was unable to do my one required museum training last year because they cancelled. I hope to do more this year.*
- *I feel like there was expectation that we would be doing trainings in our own communities, but I have not been able to do any, because of the types of partnerships we have. However, I have done trainings for staff and volunteers in the building, and feel that moving forward there will be more opportunities for community trainings.*
- *I've struggled a little bit making sure that people who attended the trainings completely understood the expectations for what they needed to complete as part of the grant. The organizations have also always tried to run their events for less time than tpt suggests which means I'm not able to get to everything I'm supposed to cover.*

- *Since our organization did not host a training in collaboration with a museum, the biggest challenge was promoting the event to a general audience or practitioners. I was able to recruit 11 people registered which brought me to the minimum required. Although I hoped for at least 20. In retrospect, I was glad the number was small since it made the training workshop more manageable.*
- *I have yet to have enough people sign-up for a training I've arranged, and I have yet to be scheduled to facilitate a training. So, I have not been able to fulfill my goal of sharing these resources with very many educators. I will soon, I hope!*
- *Scheduling. Often there are not 10 or more people interested.*
- *It's hard for me to set up a training with at least 10 people because people have to travel far and there aren't that many people around.*

Miscellaneous (19%)
- *My location makes travel much harder than it was.*
- *Travel timing has only recently become an issue. Because of my family demands this year, finding a training date has been a challenge. And reporting has been a challenge.*
- *Because of the amount of trainings - materials are becoming an issue. We'd like to offer the booklets, DVDs, etc. to everyone who attends but we can't even print our own because the format (too many colors) does not make it feasible or affordable. Also, expectations for people attending full day trainings have been confusing at times especially for the groups that we focus on.*
- *I have had more of a challenge with mentoring…I would like to know what tips and stories other Trainers have about their experiences training new affiliate organizations.*
- *I have found it difficult to come up with a topic and time to prep for hosting a webinar*
- *Sometimes it is hard to get copies of the Action plans to send back. Also, the one full day of training can be long. Groups have asked for a shorter training versus the 7 hour training.*

Factors creating or contributing to these challenges

Next, the *SciGirls CONNECT* trainers were asked to reflect on the challenges they had identified and to comment on any factors they thought might have played a role in creating or contributing to these challenges. Out of the 38 trainers who completed the survey, 34 responded to the question. As shown in the chart below, more than a quarter (26%) of these 34 trainers pointed to time constraints or competing priorities, while about a fifth (21%) explained that there were no contributing factors or answered "*N/A.*" More than a tenth each explained that outreach barriers (15%) and/or confusion about an aspect of the project (12%) contributed to the challenges they faced. Just under a tenth (9%) explained that the barriers they faced were related to personal issues, and one trainer (3%) expressed uncertainty, responding, "*I am not sure.*" One-fifth (21%) of trainers shared miscellaneous feedback.

Factors contributing to challenges faced by trainers (n=34)

Percentage of trainers

Factor	Percentage
Time constraints or competing priorities	26%
None or N/A	21%
Outreach barriers	15%
Confusion about an aspect of the project	12%
Personal issues	9%
Unsure	3%
Miscellaneous	21%
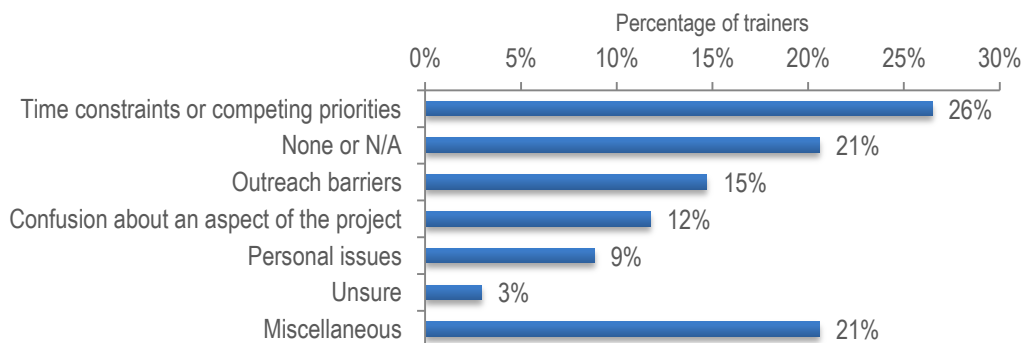
Examples of trainers' feedback on these themes are shared below:

Time constraints or competing priorities (26%)
- *Time constraints.*
- *Time management*
- *My regular job usually needs to take priority.*
- *Work load*
- *Other responsibilities*
- *My "real" job. I need to hit the lottery and quit so I can go crazy on boosting those girls in STEM numbers. :)*
- *Over scheduling myself.*

Outreach barriers (15%)
- *In recruiting unorganized groups of participants, this kind of training is not necessary for them, only nice to have. It has been tricky to prove that the training will be productive enough to spend their time on.*
- *There is currently not a culture of sharing community partners in our building, making the process of trying to conduct trainings for these groups difficult.*
- *For me it was a change in Director at my original museum [and] a change in commitment by the new partner museum*
- *The main factor that contributed to the low recruitment numbers was that we did not partner with another organization.*
- *I think the registration is difficult for people.*

Confusion about an aspect of the project (12%)
- *The idea that we're a hybrid group. This is a great program that has a lot to offer our organization and we want to disseminate. However, because we're a strange group (not really part of the original intent and focus) there's a lot of new issues and questions that arise that sometimes there are no clear answers to. That can lead to delays and can cause some confusion on both ends.*
- *Communication is a big one. As I stated earlier, the checklists are nice, and the time frames are good in helping out.*
- *I feel like there isn't a place to easily find on the Ning site which has the list of the extra responsibilities so I can refresh my memory. I went through training multiple years ago so it's hard to remember.*
- *Slight confusion between last seasons trainers and this seasons.*

Personal issues (9%)
- *A move because of my husband's career.*
- *Moving was beyond my control.*
- *Most are personal; I don't think they will prevent me from meeting my obligations.*

Miscellaneous (21%)
- *I guess there are a lot of trainers out there who live in bigger towns and near bigger airports who have easier access to people and to cheaper travel to training locations.*
- *I have already presented (or others have) on my expertise.*
- *Not having a copier available for the action plans.*
- *The NGCP Website is not easy to navigate. I really don't like the Connectory either.*
- *One of the biggest challenges is that there always seem to be people who leave early. I leave behind copies of the forms they are supposed to fill out but it is hard to make sure that they are getting the message about the expectations for them.*

2b.9 Additional feedback about the *SciGirls CONNECT* training program

Finally, the trainers were asked if they had additional feedback about the *SciGirls CONNECT* training program and how the *SciGirls* team could help improve upon their experience for the future. Out of the 38 trainers, 26 opted to answer the question; in this case, it's possible that the remaining 12 trainers left the question blank because they didn't have anything to share. As shown in the chart below, nearly three-fifths (58%) of this group of 26 trainers explained that they had nothing to add, with the majority going on to praise the program and/or thank the *SciGirls* staff. Nearly a fifth (19%) commented on the importance of continued trainer education, and less than a tenth (8%) had questions about adding trainers to their region (shared by two different trainers in two different years). About a fifth (19%) shared miscellaneous feedback.

Additional feedback about the *SciGirls* training program and how it might be improved (n=26)

Percentage of trainers

Nothing	58%
Continued trainer education	19%
Questions about adding trainers	8%
Miscellaneous	19%
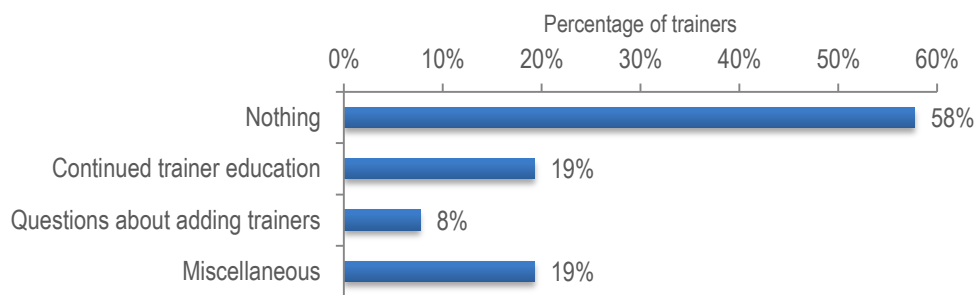
Examples of trainers' comments on these themes follow below:

None (58%)
- *Not really. It's a very well-developed and robust program - thank you!*
- *I really love working with SciGirls and am so happy I get to do it! I look forward to doing more trainings and more activities!*
- *All great! We hope the funding continues because we love the curriculum.*
- *Just keep up the GREAT work! Seriously.*
- *Overall, everything is great. I really love the people, the program, and the mission. I'm glad I get to be a part of SciGirls!*
- *Just that it's been really incredible working with SciGirls. I've gained so much confidence in working with educators both formal and informal in the many ways to help boost the numbers of our girls going into STEM. And, now, with the SciGirls Latina and SciGirls code in the pipeline, I feel like I'm getting access to resources that are helping me make a real difference. Thank you for all you are doing. I literally couldn't have done it without you.*

Continued trainer education (19%)
- *I love the webinars because I can attend from anywhere. I now live in a more remote town and am concerned about travel for future trainings.*
- *Talk about specific areas of training or focus on specific questions during quarterly trainer calls. Mentoring. How are other trainers tailoring their trainings/ training agendas? (or, do they stick strictly to the template?)*
- *The camaraderie the SciGirls team has worked to create between trainers is great. When trainers share their experiences, it sparks ideas on how to improve my own training (mostly through the webinars). I know it is not very practical, but hosting another face-to-face training would be helpful (in my opinion). When there is a conference meet-up, many ideas are generated and shared. It's be great to meet at a partner site and create an event there.*
- *I think the training program is working well. I would like to see continued education for current trainers. Maybe a webinar on new statistics on women in STEM fields or updated info that is being shared out to new trainers. We*

were encouraged to read an article about girls or women in STEM before we attended training at tpt, it would be nice to revisit this model for current trainers. Maybe find something current or has pertinent information and share it out with the team. Then we could have a webinar or call, with discussion on the article and how we can use the information in our work.

- I think the team is doing a great job. I would encourage holding additional updates for trainers like the SciGirls reflect meeting. This gives trainers the opportunity to come face to face to share best practices, lessons learned and to collaborate…and continue offering engaging webinars. Thank you SciGirls for all that you do!!

Questions about adding trainers to their region (8%)

- I'd love to have a conversation about the strategy on selecting and training SciGirls trainers. We have 4 in Texas and are coordinating across the state our efforts. We've had others express interest in becoming a SciGirls trainer and there is a concern that we all are in the same spaces and thus having more won't really get more people engaged in SciGirls. Anyway, I think since we are collaborating as a team in Texas, we'd like to be sure that before more trainers get added in Texas, we have a conversation. We also have at least one who has indicated she'd like to be a trainer that works for an organization that charges for trainings...and that would be an issue.
- It's wonderful! We could use an East or West Texas trainer, but no more from Austin/Dallas/San Antonio!

Miscellaneous (19%)

- It might be nice to have a structured way to follow up with past trainees to see how they have used their training or the activities.
- The change of staff has been a little confusing, but everyone seems to be settling in now. I hope that SciGirls will keep the current staff happy enough that they will stay a long time.
- I don't think there is anything that isn't working. I just think that for improvement there could be a little more contact and reminders for upcoming survey due dates and reminders of expectations/maybe an online check sheet to make sure all the expectations are met for the cycle of training.
- Keep the NING site up to date…
- I know a lot of organizations would like shorter or incremental training. I think there is opportunity here, but I realize we also want to maintain a standard in the curriculum.

Part 3: Educator feedback and reports on their *SciGirls* training and program implementation

Part 3a: Educator feedback on training

Method

During Year 1, the evaluation team developed and piloted a paper version of the [Educator Training Feedback Form (ETFF)](). As introduced on page 6 (under Educators) the ETFF asked educators who attended a *SciGirls* training about their experience at the training and their expectations for implementing *SciGirls* programs within the next 12 months.

Prior to completing the ETFF, educators were informed that the form was hosted by the independent evaluation team from Knight Williams and that their responses would be combined with those from other participants and reported in the aggregate. They were further informed that the evaluation was funded by a grant provided by the National Science Foundation, and that their frank and honest input was appreciated and would help guide the direction that *tpt* takes in planning future training programs.

In Year 2, the evaluation team made the ETFF available for online completion, while *tpt* was responsible for sending educators who participated in trainings an email with the link to the online form. To help monitor completions and the nature of the feedback, the evaluation team then provided *tpt* with database updates of the educators' ETFF submissions on a monthly basis and prepared bi-annual compilation reports of the survey responses. In all, 1070 educators participated in trainings and completed an online evaluation form during Years 2 - 5 of the project. These educators represented a wide range of organizations, including K-12 schools, science centers, girl-serving organizations, and other non-profit organizations. In interpreting these educators' responses, it is important to note that the information summarized in the report only applies to educators who submitted training evaluation forms in this timeframe, and does not necessarily reflect the total sum of educator feedback during the grant period. As noted in the [*SciGirls CONNECT* Annual Report: 2014-2015](), since 2011, 2,500 educators were trained. Therefore, a little under half (43%) of the educators who were trained completed an ETFF over the course of the grant.

Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[8] The analysis was both deductive, drawing on the objectives of the training program, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

Findings

The Part 3a 1 findings are presented as follows: what educators perceived to be the most and least valuable aspects of the training, the most valuable things they learned, how valuable they found the individual training sessions, their overall satisfaction with the training, what they perceived to be the impact of the training on their skill levels, whether the training impacted their thinking about girls in STEM, whether the training omitted important topics, how they expected to apply what they learned, their readiness for implementing programs,

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[8] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

their expected timeline for using what they learned at the training, how many girls they expected to reach with the *SciGirls* resources, the number of girls they typically serve annually, whether they were interested in becoming a *SciGirls* trainer, whether they expected to share something about the training with other educators, and their suggestions for improving future *SciGirls* trainings.

3a.1 Most valuable aspects of the training

Educators were asked to describe the most valuable aspect of the training. As shown in the chart below, among the 1060 educators who answered the question, the largest group (42%) pointed to the hands-on activities. One-fifth (20%) pointed to other *SciGirls* resources, most often the *SciGirls* websites, booklets, videos, games, and CDs, while another fifth (20%) pointed to the information about how girls learn STEM, three-quarters of whom mentioned the *SciGirls Seven*. Less than one-tenth each pointed to general teaching ideas or tips they picked up from the training (5%) or everything (2%). About a tenth (9%) shared miscellaneous feedback.

What educators found most valuable about the training (n=1060)
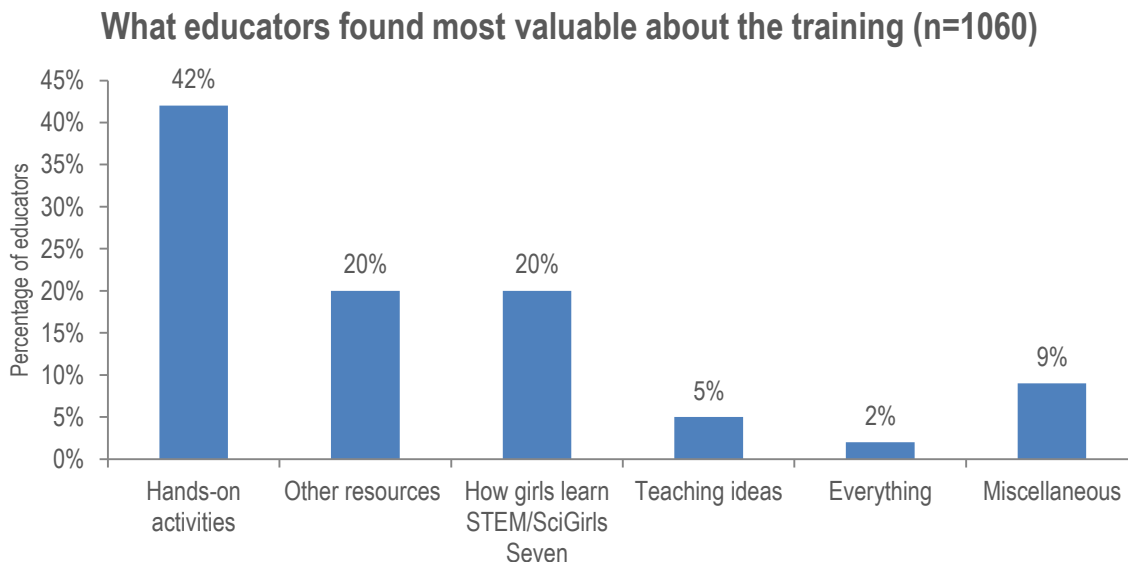
Examples of educators' comments on these themes follow below:

Hands-on activities (42%)
- *Hands-on activities. My exposure to activities brings me knowledge and the confidence I need to engage students.*
- *I absolutely fell in love with the conductive play dough! I don't know why it was so exciting to me, but I have already shared this project with two others including an electrical engineer! Actually experiencing each of the projects is very helpful when determining how and when they will fit within our programs.*
- *The most valuable aspect of the training was the hands-on activities. I am a multisensory learner and the kinestic approach allowed me to participate without reluctance because my scientific skills and knowledge is not strong. The directions were simple and understandable.*
- *The hands-on activities in the event and then receiving the information on/about it. It really stimulating thinking outside the box and gave those "light bulb" moments*

Other SciGirls resources (20%)
- *Additional resources: I am constantly researching and looking for resources*
- *Resources - online contacts for ideas and support*
- *Intro to SciGirls resources - such as website, PBS, videos, etc. It will benefit my research for instructional purposes - BUT also provide me with a resource to share with my students and my families.*

How girls learn STEM/SciGirls Seven (20%)
- *Learning the 7 ways to keep girls engaged. That's priceless. And the hands on activities.*
- *Learning new techniques to engage and communicate with girls about STEM. Enjoyed the hands on inquiries and including SciGirls 7.*
- *Thinking about styles of teaching that may resonate with girls. Seeing examples of inquiry that worked well and were engaging.*

Teaching ideas (5%)
- *It gave me ideas and lessons that I can immediately implement in my classroom*
- *Good exposure to new ideas.*

Miscellaneous (9%)
- *The involvement the trainer had with us in doing the activities.*
- *Meeting other women in science in my city.*

3a.2 Least valuable aspects of the training

Educators were asked to describe the least valuable aspect of the training. As shown in the chart below, no one aspect stood out for the majority of the 831 educators who answered the question, as more than half (56%) said *nothing* was least valuable. Less than a tenth (8%) of educators pointed to some aspect of the training conditions, typically the facilities used, the length of the training, the time of day, the room temperature, or the training setting. Smaller groups commented that the training featured too much focus on either the *SciGirls Seven* (5%), projects (4%), and/or the website (2%), or said they already knew the material presented at the training (2%). More than a fifth (23%) shared miscellaneous feedback not mentioned by the other educators.

What educators found least valuable about the training (n=831)

Percentage of educators

Nothing	Training conditions	Too much on SciGirls Seven	Too much on projects	Too much on website	Already knew	Miscelllaneous
56%	8%	5%	4%	2%	2%	23%
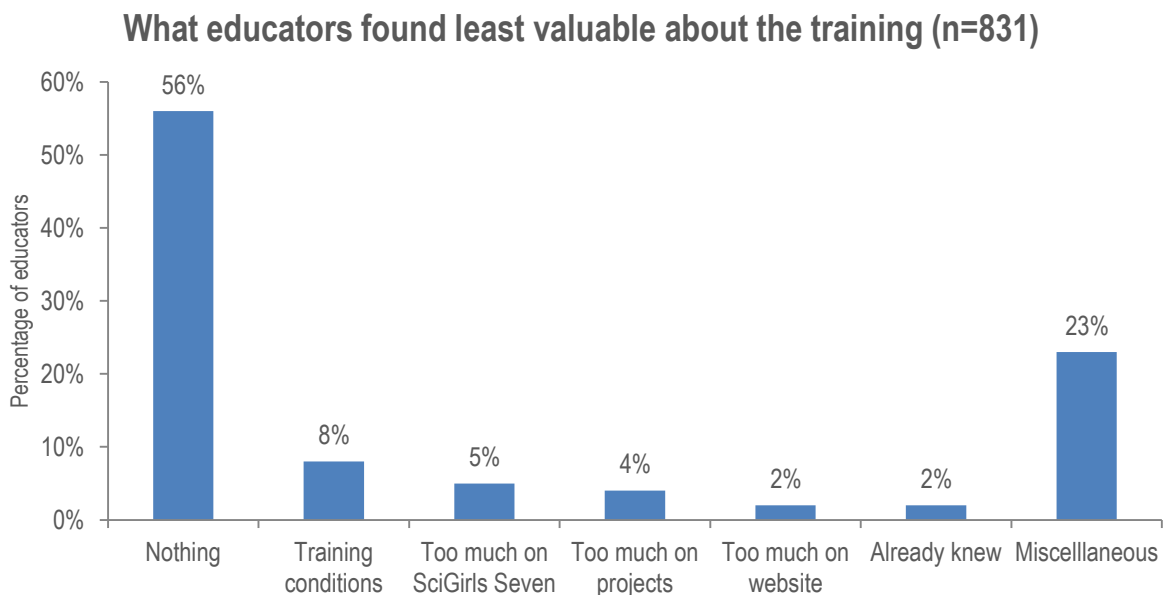
Examples of educators' comments on these themes follow below:

Nothing (56%)

- *There really wasn't anything that wasn't useful. It is always important to gain new ways of learning different ways to teach children things.*
- *I honestly found all the information and activities very useful for what I do at the Boys & Girls Club.*
- *I really don't have anything that was taught today that I would consider not valuable.*
- *I honestly cannot think of one. I really enjoyed the class, the instructor and activities. It opened my eyes on how I can get my young girls in the program to become more involved with SciGirls.*
- *Everything was valuable and not a minute was wasted*

Training conditions (8%)

- *time frame; afternoon dropped; room temp*
- *Sitting in one place too long.*

Too much on SciGirls Seven (5%)

- *Too much discussion of each of the seven strategies. The people who had discussed them had the most to offer, but there were others who had to talk for every one of the seven.*
- *SciGirls 7 strategies -> that part of the presentation was a little long, could have been broken up and integrated throughout, nice refresher though!*

Too much on projects (4%)

- *I don't get much out of spending a lot of time on actually doing projects. I just need to know how it works. I really don't need to do the entire project to get it. I know I may be alone in this.*
- *I enjoyed all of the workshop but I felt less time could have been spent on the individual projects. For example, maybe give us 5 minutes to try and figure it out and then move on.*

Too much on website (2%)

- *Website walkthrough- would rather have a handout describing its contents so that I can access and explore later*
- *Too much time spent on going through different websites/how to navigate those websites. That could really be a hand out sheet. It was really disengaging to watch so many power point slides about websites that may be helpful. I'd rather focus on tools that would be helpful while we're all in the room together. It felt patchy and my interest wasn't kept well.*

Already knew (2%)

- *Safety training... already know.*
- *The research, knew most of it.*
- *Review of who SciGirls is. I knew most of it and, while it is important, it doesn't impact my practice.*

Miscellaneous (23%)

- *Anything dealing with boys.*
- *PBS connection. some teachers may have difficulty showing programs at school because of limited internet access*
- *Videos, there are so many already out there.*

3a.3 Most valuable things learned

Educators were asked to describe the most valuable thing they learned from the training. As shown in the chart below, among the 1000 educators who answered the question, the largest group, just over one-third (36%), focused on the information provided about how girls learn STEM, two-fifths of whom referenced the *SciGirls Seven*. A slightly smaller group (32%) focused on the information or skills they gained relating to the activities demonstrated at the training. Smaller groups of educators pointed to other valuable things learned, including: teaching ideas that were applicable to their educational setting (15%), access to the *SciGirls* resources (13%), the STEM content featured (12%), the flexibility of the *SciGirls* program (3%), and the value of mentors (2%). Nearly one-fifth (18%) pointed to miscellaneous elements not mentioned by other educators.

Most valuable things educators learned from the training (n=1000)
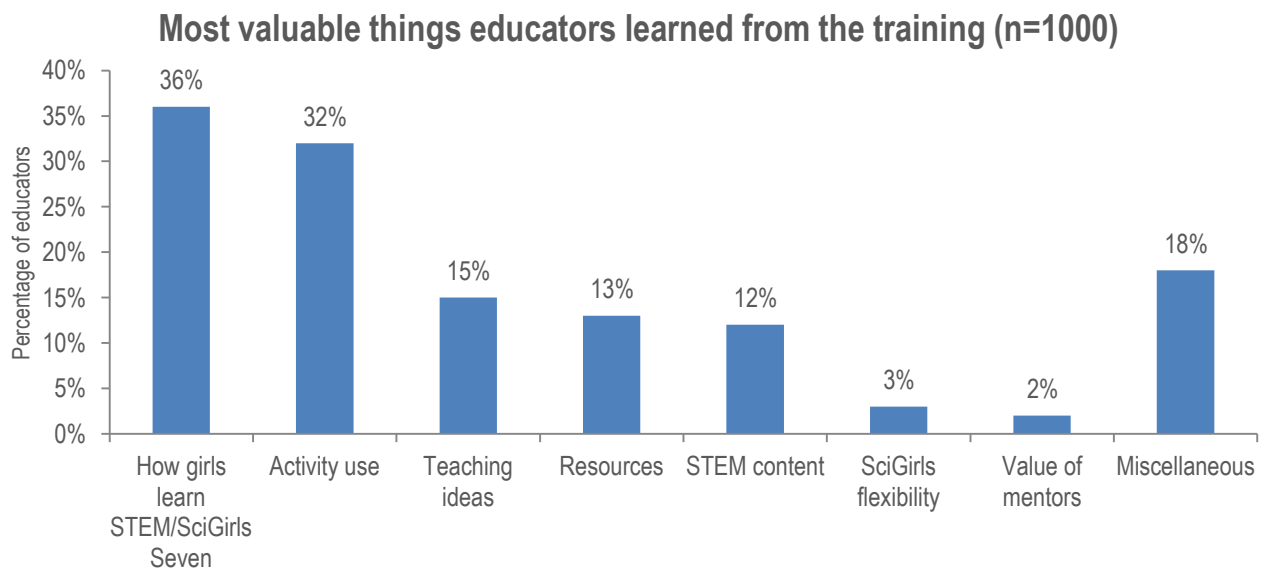
Examples of educators' comments on these themes follow below:

How girls learn STEM /SciGirls Seven (36%)
- *How to encourage girls to be creative and engineer an idea through hands-on-activity i.e. create creative dough. How to pass or teach the information at STEM (i.e. why it is important to the young girls)*
- *I learned that as a society we often stereotype people who have careers in math and science as "Nerds" or "Geeks". When conducting SciGirls activities, you have to show the girls that Engineering, Science, and Math are all creative.*
- *The facts and research that is currently out about the learning strategies for girls and the gender gaps in the STEM professions was very interesting and valuable.*
- *The SciGirls 7- I really appreciated learning the pillars behind SciGirls lessons to differentiate these 'activities' from just any student science engagements.*

Activity use (32%)
- *To present STEM activities in an engaging method where hands on activities are used to send a message to girls. Before, I was doubtful of my abilities to implement STEM activities, now I feel more confident and prepared to do so.*
- *The ability to bring this into the classroom as a part of the STEM curriculum. Provide a variety of methods to explore activities to use.*
- *I learned many different activities that would be relevant to my grade level. I also learned a lot about circuits and how to use LED lights in a simple way that can help students to grasp complex ideas.*
- *I'm so glad I came. The activities will work well with our curriculum and my STEM library centers. I can see how these activities will be beneficial to encourage girls in STEM careers.*
- *The activities! Some had extensions I've never thought of before but will use but will use from now on.*

Teaching ideas (15%)
- *The project ideas and their execution in the classroom*
- *How to better interact with girls and lead an after school program better.*
- *I learned some foundational pieces from which we can build/add on to our curriculum models and program offerings.*

Access to resources (13%)
- *Using the SciGirls books and videos to give the girls examples of each project.*
- *The combination of available resources connected to STEM activities in the SciGirls curriculum was extremely valuable.*
- *All the online resources for activities and funding.*

STEM content featured (12%)
- *I am now not afraid of STEM and introducing it in our afterschool program. It was very helpful when they said you don't have to be an expert in math and science to do these activities in a classroom.*
- *How we can use all of the STEM in everyday life, become comfortable with science and engineering*
- *Dough conducts electricity.*

SciGirls flexibility (3%)
- *Easy to use science activities, easy to get at low cost materials can be easily integrated into other academic areas*
- *You can use everyday items. No expensive equipment needed!*

Value of mentors (2%)
- *That the mentoring is very important*
- *Fabfems and other locations to find mentors.*

Miscellaneous (18%)
- *The mix of backgrounds of attendees*
- *Intelligence can be developed*
- *Growth mindset*

3a.4 Value of the individual training sessions

Overall, the educators found all of the training sessions valuable. As shown in the table below, while there were some differences of opinion as evidenced by the range of ratings in each case, in general, the gender equity/*SciGirls Seven* and *SciGirls* activity sessions were both rated as *extremely valuable* (median rating 5.0) on a scale of 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*). The introductions/overview to *SciGirls* mission and program elements session and the wrap-up/reflections session were each rated as *very valuable* (median rating 4.0).

Median educator ratings of value of training sessions (N=1070)						
Training sessions	**Not at all valuable 1.0**	**Slightly valuable 2.0**	**Moderately valuable 3.0**	**Very valuable 4.0**	**Extremely valuable 5.0**	**Not applicable** *(if the training didn't address it)*
Introductions and overview to *SciGirls* mission and program elements	4.0 RANGE 1.0-5.0					
Gender equity/*SciGirls Seven* session	5.0 RANGE 1.0-5.0					
SciGirls activity session	5.0 RANGE 1.0-5.0					
Wrap-up/reflections	4.0 RANGE 1.0-5.0					

3a.5 Overall satisfaction with training

When the educators were asked for their level of agreement with four statements about their satisfaction with the training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*), overall they indicated they were satisfied. As shown in the table below, while there were some differences of opinion as evidenced by the range of ratings in each case, the educators *strongly agreed* (median rating 7.0) that the training was well run and organized, that they found the training to be a good use of their time, and that they had fun at the training. The educators generally *agreed* (median rating 6.0) that they learned a lot about how girls learn, experience, and enjoy science, and were *neutral* (median rating 4.0) about whether they would have liked more information about the agenda before they arrived.

Median educator ratings of training conditions (N=1070)							
	Strongly disagree 1.0	Disagree 2.0	Somewhat disagree 3.0	Neutral 4.0	Somewhat agree 5.0	Agree 6.0	Strongly agree 7.0
The training was well run and organized.							7.0 RANGE 1.0-7.0
I would have liked more information about the training agenda before I arrived.				4.0 RANGE 1.0-7.0			
I found the training to be a good use of my time.							7.0 RANGE 1.0-7.0
I had fun at the training.							7.0 RANGE 1.0-7.0
I learned a lot about how girls learn, experience, and enjoy science.						6.0 RANGE 1.0-7.0	

3a.6 Training impact on skill levels

Educators were asked to reflect on their skill level in implementing the *SciGirls* activities covered at the training before vs. after the training, using a scale from 1.0 (*no skill*) to 5.0 (*advanced skill*). As shown in the median ratings in the table below, while there were some differences of opinion, the educators generally reflected that they had *medium skill* (median rating 3.0) prior to the training and *above medium skill* (median rating 4.0) after.

| | | **1 = No skill** | | | | **3 = Medium level skill** | | | **5 = Advanced skill** | |

Before training					**My skill level in….**	**After training**				
1	2	3	4	5	implementing the *SciGirls* activities covered at the training	1	2	3	4	5
3.0 RANGE 1.0-5.0						**4.0** RANGE 1.0-5.0				

Educators were also asked to reflect on their skill incorporating the three strategies or processes listed in the table below when implementing the *SciGirls* activities covered at the training. As shown in the median ratings below, while there were again differences of opinion, the educators generally reflected that they had *little skill* (median rating 2.0) incorporating the *SciGirls Seven* strategies prior to the training but *above medium skill* (median rating 4.0) after. They further indicated that previously they had *little skill* (median rating 2.0) incorporating the engineering design process but after the training had *above medium skill* (median rating 4.0). Finally, they indicated that they had *medium skill* (median rating 3.0) incorporating the science inquiry process prior to the training, and after the training had *above medium skill* (median rating 4.0).

1 = No skill   **3 = Medium level skill**   **5 = Advanced skill**

Before training					**My skill level in…**	**After training**				
1	2	3	4	5	incorporating the *SciGirls Seven* strategies	1	2	3	4	5
2.0 RANGE 1.0-5.0						**4.0** RANGE 1.0-5.0				
1	2	3	4	5	incorporating the engineering design process	1	2	3	4	5
2.0 RANGE 1.0-5.0						**4.0** RANGE 1.0-5.0				
1	2	3	4	5	incorporating the science inquiry process	1	2	3	4	5
3.0 RANGE 1.0-5.0						**4.0** RANGE 1.0-5.0				

3a.7 Whether the training changed educators' thinking about girls in STEM

Educators were asked to consider whether the training changed their thinking about girls in STEM. As shown in the chart below, more than four-fifths (81%) of the 1022 educators who answered this question indicated that the training *did* change their thinking in some way. The remaining educators indicated that the training *reinforce*d their thinking or that they *already knew* the material presented (19%), with a small group of educators indicating that the question *wasn't applicable* (1%).

Whether educators felt the training changed their thinking about girls in STEM (n=1022)
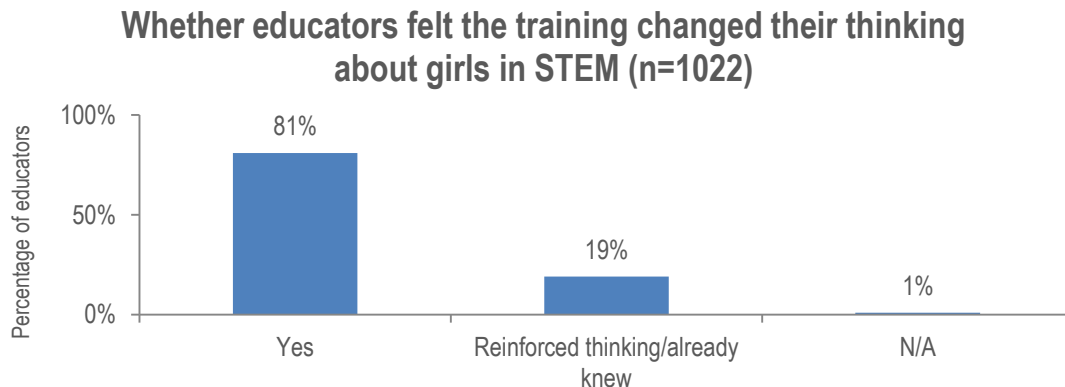
Examples of educators' explanations of how the training changed or reinforced their thinking follow below.

Changed thinking (81%)
- *Yes! This is an incredible program and I look forward to see how things change culturally with us better encouraging females into science and anything STEM*
- *A lot. It is the first time I have seen the research*
- *It has made me more aware.*
- *I will present more collaborative projects with girls or separate girls and boys in doing science based learning.*
- *I will be more careful how I encourage girls to develop their interest in science. Praising the effort and not the girl is important and more meaningful. Girls are creative and have a great deal to contribute to the world of science.*
- *I learned that I could be an important part of how girls make decisions based on how or what they perceive from me and also based on what I ask. Examples of what not to do or say was discussed.*
- *Even though I have 2 daughters, I hadn't thought of how they communicate could play such a big part in learning.*
- *Yes, I am now a little more comfortable with inviting a slew of girls for this type of specific session.*
- *It had not occurred to me that the collaborative, meaningful, contributory aspects of science are what draw girls in - and to use these aspects to promote programs. Thank you for sharing that!*

Reinforced thinking (19%)
- *The Seven principles were good reinforcement of approaches we use*
- *It just reminded me that we still have work to do and to re-focus and engage young girls in science*
- *I was fairly familiar prior, but it was nice review and wonderful to see inspiring efforts in youth education.*
- *It has merely re-enforced and validated the work we are already dedicated to doing. Thank you*
- *It has renewed my passion for showing the world of science to the girls and encouraging them to believe in themselves.*
- *No - I have heard this before but the refresher is welcomed and I love that you are sending me home with materials*
1% said N/A

Not applicable (1%)
- *We didn't really talk about why girls find the science experience to be negative*
- *I may have missed this part, I was late.*

3a.8 Whether the training omitted or covered topics in insufficient depth

Educators were asked if they felt the training omitted a topic they wish had been covered, or did not cover a topic in as much depth as they would have liked. As shown in the chart below, the majority of the 794 educators who answered the question indicated that nothing was omitted or covered in insufficient depth (67%). Small groups of educators indicated there were some topics or activities they would have liked to see covered or addressed more fully, including: gender issues (5%), STEM content other than math or biology (4%), math content (2%), biology content (1%), or reaching diverse audiences (1%). About one-fifth of educators shared miscellaneous comments (20%).

Topics the educators felt the training omitted or covered in insufficient depth (n=794)
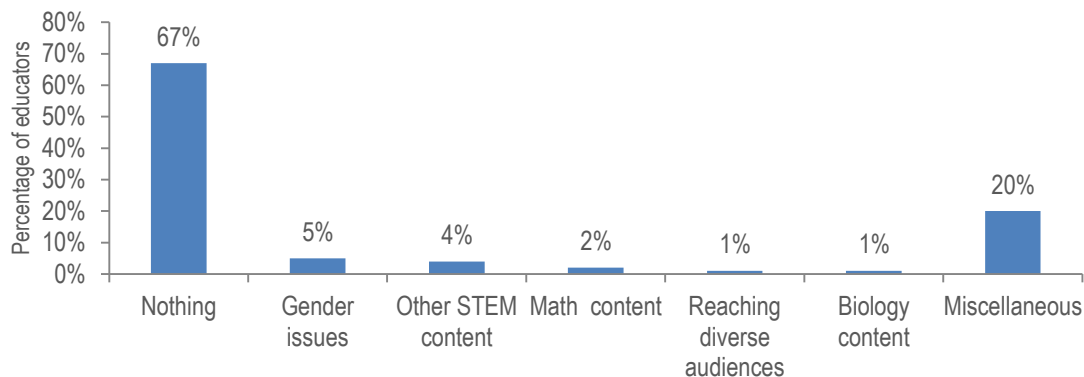
Examples of educators' comments on these themes follow below:

Nothing (67%)
- *Not sure if anything was skipped. Q&A was available afterwards.*
- *It was great, covered a wide range of things.*
- *The instructor went over every topic into depth and it was explained very well.*

Gender issues (5%)
- *Maybe more historical context of how women were largely denied opportunities educationally/professionally in STEM*
- *Women and gender equality in the work force. Although science is already a broad topic to cover, I think girls of middle school age definitely start to feel society/peer pressures (and even sexual pressures) among their peers and it is worth addressing -- NOT trivial or unconnected to the SciGirls mission!!*

Other STEM content (4%)
- *When you ask the question "What is Technology?" answers vary. I would like to have to talk briefly about the different sciences.*
- *More environmental education. Most of those in attendance had heard about the training via the UT Gardens and Knoxville's Every Child Outdoors youth garden program. I think a lot of us assumed there would be at least some outdoors / garden / environmental ed aspect to the training.*

Math content (2%)
- *Most of what we covered is science related. How do we help girls understand how important math is and to encourage them to overcome the stereotypes that keep them from doing well in it.*

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Reaching diverse audiences (1%)
- *Could have used more economically disadvantage topics*

Biology content (1%)
- *Most of the activities involved engineering and building. I would have appreciated at least one activity that related to biology.*

Miscellaneous (20%)
- *I would have liked to see more activities for younger students in STEM but I understand this is an area which is not highly developed and not the specialty of SciGirls.*
- *I would have liked to see how these strategies are implemented in a more science based curriculum.*
- *Ideas for how to start a program.*

3a.9 How educators expected to apply what they learned at the training

Educators were asked to identify how they expected to use or apply what they learned at the training when they returned to their educational settings. As shown in the chart below, among the 902 educators who answered the question, the largest group (32%) pointed to miscellaneous applications not mentioned by other educators. The remaining educators pointed to specific program types or ways that they planned to use what they learned. Program types included classroom-based programs (22%), after-school programs (11%), summer programs (6%), or other program types that didn't fit into these program types (21%) The remaining ways educators planned to apply what they learned involved directly using or sharing either the *SciGirls* resources (10%) or the *SciGirls Seven* (7%).

How educators expected to apply what they learned at the training (n=902)
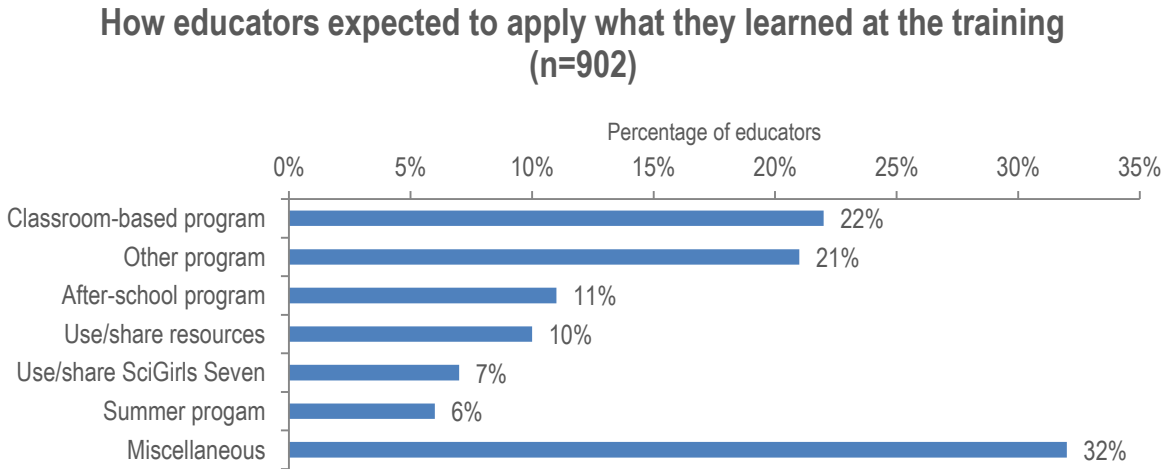
Examples of educators' expected training applications follow below:

Classroom-based program (22%)
- *I will continue working with a non-profit, STEM chicks, to ensure that I apply what I have learned. Additionally, as an educator, I will instill all of the lessons where appropriate within my lessons.*
- *Some of them I can use as introductions to concepts in my classes. I think SciGirls would make a great after school program for girls or for Girl Scouts or other girl organizations.*
- *I plan to incorporate the activities into an upcoming program and use the strategies to guide the class.*
- *I can use the ideas behind activities in my classroom with my curriculum, I plan on using activities at STEM night, I plan on thinking about having an after school program*

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- *I plan to utilize this information to better recruit females into our Technical college and to help better retain the females we have.*
- *I am going to pick a project and work on it with my class. That will give me a chance to play around with it and experiment different ways to present it and teach it in an allotted time.*

Other program (21%)
- *One of my responsibilities as a community development manager is to provide series training to junior and cadette level girls. I believe this training will be beneficial.*
- *I'll contact the dean at my daughter's school to find out about various opportunities*
- *Other jobs I have, not to mention when I run away to college*
- *Mostly it has given me ways to help me be more of a mentor/guider and less of a teller type teacher.*
- *Think about how to increase opportunities for open-ended STEM projects to be implemented; Begin using activities introduced; Possibly initiate an after-school SciGirls/STEM "club"*
- *Will focus on more open-coded projects*

After-school program (11%)
- *We are starting an after school science program where these strategies can be implemented, in addition to regular classroom practices.*
- *I am going to review the resources we received and decide which lessons to use in my science classes and which ones I can use in my after school enrichment classes.*
- *We are currently in our Energy Unit and I plan to use the Dough Creatures with all of my 6th grade students. I also have a Girls In Science Club and we will use the Website and the Activity Guides to explore and have fun in our after-school meetings.*
- *We will be implementing SciGirls in our after-school program, family STEM night and Exploration classes in May.*

Use/share SciGirls resources (10%)
- *I will look over and share materials with my team of teachers at school, and discuss how we can use this in our upcoming lessons.*
- *I will use the SciGirls DVDs and activities in my classroom during my science lessons.*
- *I will not only implement some of this information into my reading classroom, but share all this info with my science teachers*
- *I will link to the SciGirls website from my PBS Station website, featuring it as a Highlight within 2 weeks. I will distribute information at an upcoming parent training and the NC Synergy Conference. I will share this information through distributions of materials in schools, at trainings, family engagement sessions, and afterschool or summer school leaders.*

Use/share /SciGirls Seven (7%)
- *I will try to implement the 7 strategies and the tips*
- *I'll be using the SciGirls 7 Strategies with the children I work with*
- *Reevaluate programs to ensure Seven Strategies are incorporated*

Summer program (6%)
- *In summer reading club activities*
- *Summer camp*

Miscellaneous (32%)
- *District training initiatives*
- *By considering other people's learning styles.*
- *I will use this program in my job as an opportunity for my Girl Scouts to learn about STEM.*
- *Being the manager of my department I'll be presenting this to my department head.*
- *By getting myself familiar with the material and implementing a lot of characteristics of SciGirls in other area of the Boys and Girls Club.*

3a.10 Readiness for training utilization

The educators were asked to rate how strongly they agreed or disagreed with five statements about their readiness for applying information learned at the training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*). As shown in the table below, while there were some differences of opinion, overall, the educators *agreed* (median rating 6.0) that they: could clearly describe the *SciGirls Seven* strategies to a colleague, felt well prepared to implement the *SciGirls* activities in girls-only settings, felt well prepared to implement the *SciGirls* activities in mixed-gender settings, and planned to incorporate the *SciGirls Seven* strategies throughout other areas of their work. The educators were generally *neutral* (median rating 4.0) about preferring more opportunities to relate the training material to their own situations.

| Median educator ratings of readiness for training utilization (N=1070)							
Readiness for training utilization	**Strongly disagree 1.0**	**Disagree 2.0**	**Somewhat disagree 3.0**	**Neutral 4.0**	**Somewhat agree 5.0**	**Agree 6.0**	**Strongly agree 7.0**
I can clearly describe the *SciGirls Seven* strategies to a colleague.						6.0 RANGE 1.0-7.0	
I feel well prepared to implement the *SciGirls* activities in girls-only settings						6.0 RANGE 1.0-7.0	
I feel well prepared to implement the *SciGirls* activities in mixed-gender settings						6.0 RANGE 1.0-7.0	
I would have preferred more opportunities to relate the training material to my own situation.				4.0 RANGE 1.0-7.0			
I plan to incorporate the *SciGirls Seven* strategies throughout other areas of my work.						6.0 RANGE 1.0-7.0	

3a.11 Expected timeframe for using what was learned at training

Educators were asked: *If we were to follow-up with you as to how you used or applied what you learned from the training, what timeframe would make the most sense for your plans?* Response options included: *Ask me in 3 months, I plan to use or apply aspects immediately*; *Ask me in 6 months, I plan to use or apply aspects sometime during the next few months*; and *Ask me in 1 year, my professional circumstances will not allow me to use or apply aspects until then*. As the chart below shows, 911 educators responded to the question. Of this group, one-half (51%) expected to use or apply what they learned in 6 months, while one-third (33%) pointed to 3 months, more than one-tenth (14%) to 1 year, and a handful (3%) shared another type of response (saying, for example, "*anytime*" or "*I do not want to be contacted regarding this*").

Expected timeframe for using what was learned at training (n=911)
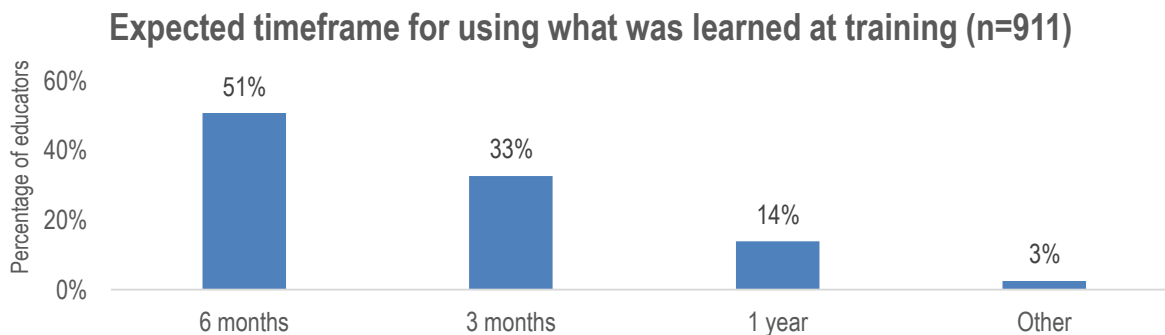
3a.12 Expectations of sharing something about the training with other educators

Educators were asked whether they expected to share something relating to the training with other educators. As shown in the chart below, more than three-quarters (77%) of the 515 educators who answered this question said they planned to share something with one or more educators, with most of these educators listing names of personal contacts, often colleagues. One-fifth (20%) said they did not currently plan to share about the training with others, most often stating "*not applicable*" or "*I do not know*," and a few (2%) gave other answers that related to an aspect of the training.
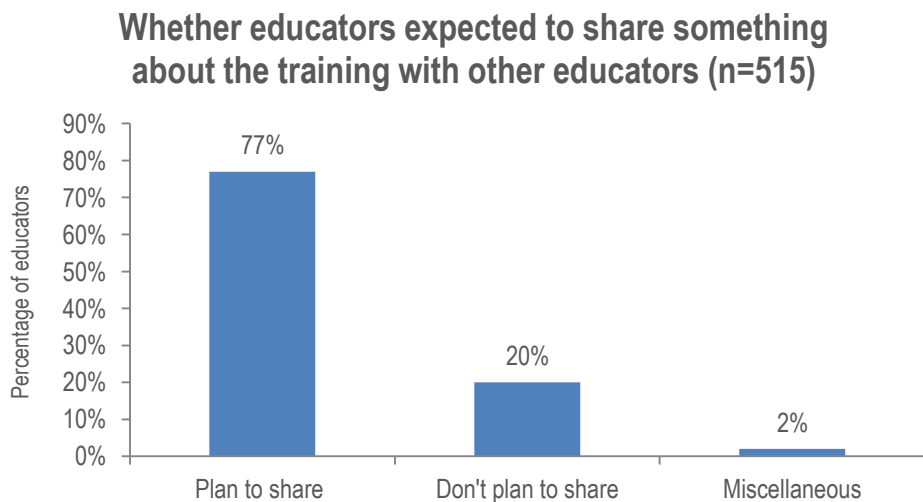
Whether educators expected to share something about the training with other educators (n=515)

3a.13 Interest in becoming a *SciGirls* trainer

Based on their experience at the training, educators were asked to indicate how interested they were in becoming a *SciGirls* trainer on a scale from 1.0 (*not at all interested*) to 5.0 (*extremely interested*). Generally speaking, the educators were *moderately interested* (median rating 3.0), although their individual ratings ranged from a low of 1.0 to a high of 5.0.

3a.14 Suggestions for improving *SciGirls* training

Based on their experience at the training, educators were invited to provide any suggestions for improving future *SciGirls* trainings. As shown in the chart below, nearly two-thirds (59%) of the 676 educators who answered the question indicated that no improvements were needed, while small groups of educators made suggestions that related to the training logistics (12%), activities (9%), or resources (4%). Just over a tenth (12%) of educators shared miscellaneous feedback.

Educators' suggestions for improving future trainings (n=676)
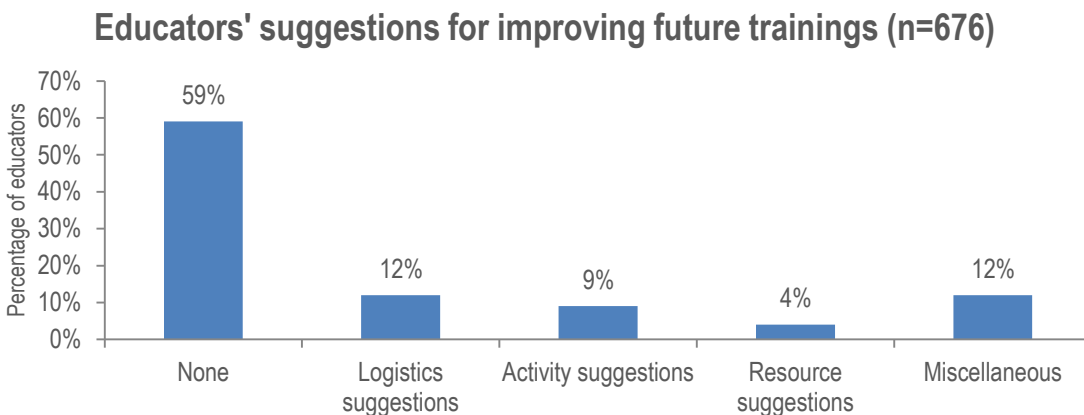
Examples of educators' suggestions follow below.

None (59%)
- *Love the entire training and I think we can really use all the information.*
- *No it was great, learned a lot, very engaging.*
- *N/A, everything was well explained.*
- *Good information and very engaging. My staff stayed focused, some were not happy about attending but left with a smile*
- *No. I received a ton of resources to help me incorporate SciGirls programming.*

Logistics (12%)
- *Send out an itinerary before we come to the session*
- *too many questions to answer for wrap up session; therefore, have fewer questions since it's been a very long day*
- *less breaks, try to compact the training in as little time as possible, get through it quickly.*
- *Come with all the materials for people to leave with so they can get started.*
- *Having an agenda of topics before training would've been nice, just to know what was coming.*
- *Skip or drastically shorten the website walkthrough., make sure lunch happens before 12:50, very hard to focus when we're all hungry*
- *I would manage time better either add to the training maybe time for more sharing of our experiences or lessen the lengths of this session*

Activity suggestions (9%)
- *Spend less time on the activities, so that more can be presented*
- *I would maximize the hands on activity time and incorporate as many content areas as possible.*
- *We could probably do more in the way of activities and maybe spend a bit more time discussing how we could adapt them for our specific situation.*

Resource suggestions (4%)
- *Use the resources more - both online + print materials*
- *Better materials (conductive vs insulating dough), microscopes vs magnifying glass, more time exploring the site*

Miscellaneous (12%)
- *Add recruitment ideas. I can deliver activities, I need advice and tips for getting the girls in the stats.*
- *Panel of youth that participated in SciGirls*
- *Send out the notification to more participants...*

# Part 3b: Educator reflections on their programs

Method

During Year 2, the evaluation team developed and piloted the Educator Program Report and Reflection Form (EPRR), an online form to be completed by educators who finished their *SciGirls* training and began to implement local *SciGirls* programs. As introduced on page 6 (under Educators), the purpose of the EPRR was to capture information about the kinds of programs educators implemented, the highlights and challenges encountered, and the extent to which *SciGirls* strategies and resources were used.

Prior to completing an EPRR, the educators were informed that the online form was hosted by the independent evaluation team from Knight Williams and that their responses would be combined with those from other participants and reported in the aggregate. They were further informed that the evaluation was funded by a grant provided by the National Science Foundation, and that their frank and honest input was appreciated and would help guide the direction that *tpt* takes in planning future programs.

Part 3b presents the findings from the program report forms completed by educators who implemented *SciGirls* programs between 2012 and 2015 and subsequently completed the EPRR. Though their programs took place between 2012 and 2015, Part 3b accounts for the program reports submitted between February 6, 2013 and July 2, 2015. In interpreting the educators' responses, it is important to note that these numbers only apply to forms submitted during this 29-month period, and do not necessarily reflect the total sum of *SciGirls* activity as a whole. As reported in the SciGirls CONNECT Annual Report: 2014-2015, since 2011, more than 800 *SciGirls* programs took place. This estimate was calculated by *tpt* from EPRR feedback and responses to a separate form, the Partner Yearly Report (PYR). Given the relative uncertainty of the estimate, and that this evaluation only looked at EPRRs submitted between 2013 and 2015, the overall response rate of educators who coordinated *SciGirls* programs is unknown.

During the 2013-2015 evaluation timeframe, 111 educators submitted 143 forms about their programs, with 20 educators reporting on two or more programs. As shown in the chart to the right, more than four-fifths (82%) of these 111 educators filled out one EPRR. About a tenth (11%) submitted two EPRRs, and less than a tenth each submitted three (3%) or four (4%) EPRRs. For the purposes of this evaluation, multiple forms filled out by the same educator are considered distinct EPRR submissions.

Number of EPRRs submitted by individual educators (N=111)
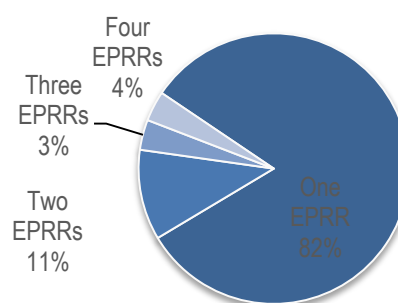
Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[9] The analysis was both deductive, drawing on the program objectives, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

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[9] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

Findings

Part 3b provides an overview of the educators' reports on: the year of their programs, the types of programs held, the setting and length of their programs, how youth participated in their programs, the highlights and challenges of their programs, and their efforts to evaluate their programs. Part 3b also provides an overview of *SciGirls* program participants according to the educators, including: the estimated number of youth who attended their programs, the community types in which the youth lived, the grade levels, gender, and racial/ethnic backgrounds of the youth, and the extent to which other individuals were present during the programs.[10]
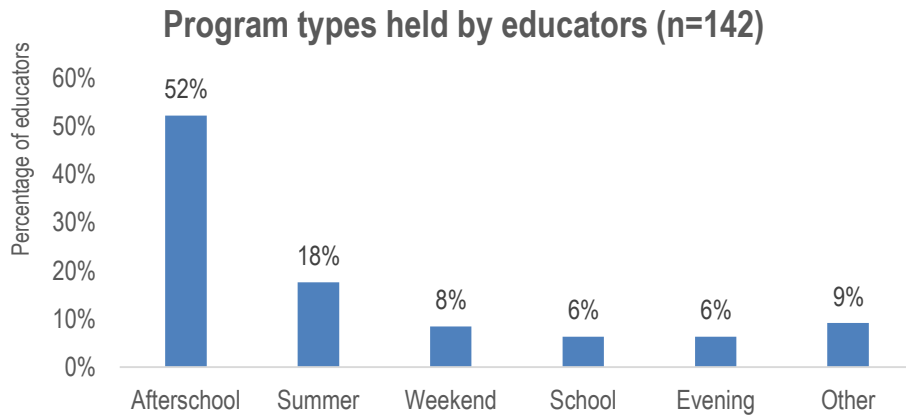
3b.1 Years programs were held

Out of the 143 EPRR respondents, 134 shared information about the years their programs were held. Of this group, the largest number of educators held their programs in 2014, as shown in the chart below. Nearly half (49%) of the educators indicated that their programs were held in 2014, while more than two-fifths (43%) noted their programs were held in 2013. The least active years, each with less than one-tenth of educators' reported program offerings per year, were 2012 (5%) and 2015 (3%).

Years programs were held (n=134)

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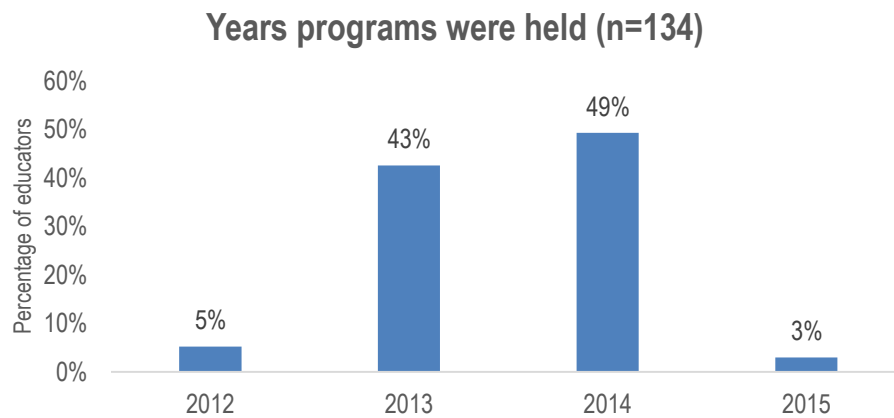
[10] Please see Appendix 2 for findings regarding educators' use of *SciGirls* resources, gathered from a group of 49 educators who submitted EPRRs between October 1, 2013 and May 31, 2014. This information was collected to assess the extent to which educators used resources relevant to Season 2, the data for which was originally shared in the *SciGirls Season Two* Outreach Program evaluation report (Knight Williams, September 2014).
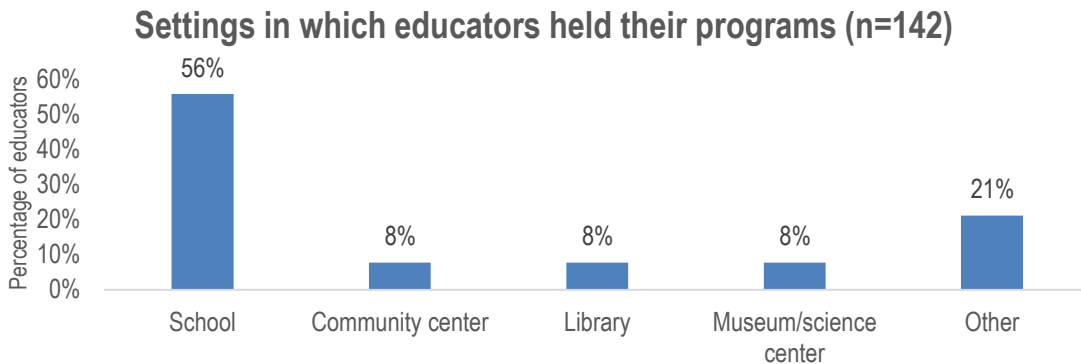
3b.2 Program types

Out of the 143 EPRR respondents, 142 shared information about the type of program they held. Of this group, as shown in the chart below, more than half (52%) explained that their programs were held after school, and nearly two-fifths (18%) said they were held during the summer. Less than one-tenth each had programs that were held on a weekend (8%), during school (6%), or in the evening (6%). Around one-tenth (9%) of educators' programs were a type other than those listed. Examples of these other programs include: "*community-based event*," "*university-based outreach program*," "*before school program*," "*monthly SciGirls club*," "*professional development*," and "*conference session at the Conference for the Advancement of Science Teaching (CAST) in TX*," among other responses shared by the educators.

Program types held by educators (n=142)

| Program type	Percentage
Afterschool	52%
Summer	18%
Weekend	8%
School	6%
Evening	6%
Other	9%

3b.3 Program settings

Out of the 143 EPRR respondents, 142 shared information about the settings in which they held their programs. Of this group, as shown in the chart below, more than half (56%) explained that their programs were held at a school. Less than a tenth each said their programs were held at a community center (8%), library (8%), or a museum or science center (8%). About one-fifth (21%) of the educators said their programs were held at other locations, such as: "*YMCA National Capital Branch*," "*National Guard Armory*," "*Girls Inc. facility*," "*4-H office*," "*WPBS station-community room*," "*PBS studio*," "*resident camp*," "*afterschool program facility*," "*church*," and a "*public garden*," among other settings.

Settings in which educators held their programs (n=142)

Setting	Percentage
School	56%
Community center	8%
Library	8%
Museum/science center	8%
Other	21%

3b.4 Program lengths

All of the 143 educators responded to the survey question about program length. The majority explained that they held ongoing programs or one-time programs that lasted between 1 and 3 hours, as shown in the chart below. Two-fifths (41%) of the educators identified their programs as ongoing, more than a fifth (22%) said their programs were about 1 hour in duration, and a fifth (20%) noted their programs were 2 to 3 hours long. More than one-tenth (14%) of the educators held programs more than 3 hours long, and a handful each said their programs were less than 1 hour (1%) or overnight (1%).
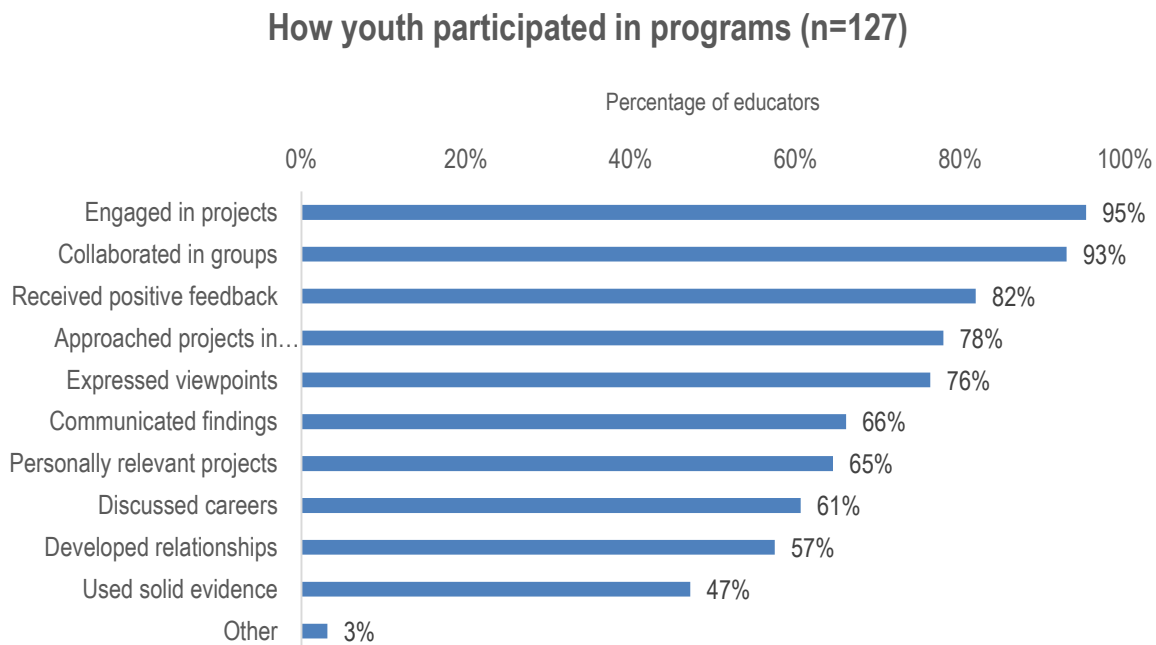
Length of programs (N=143)
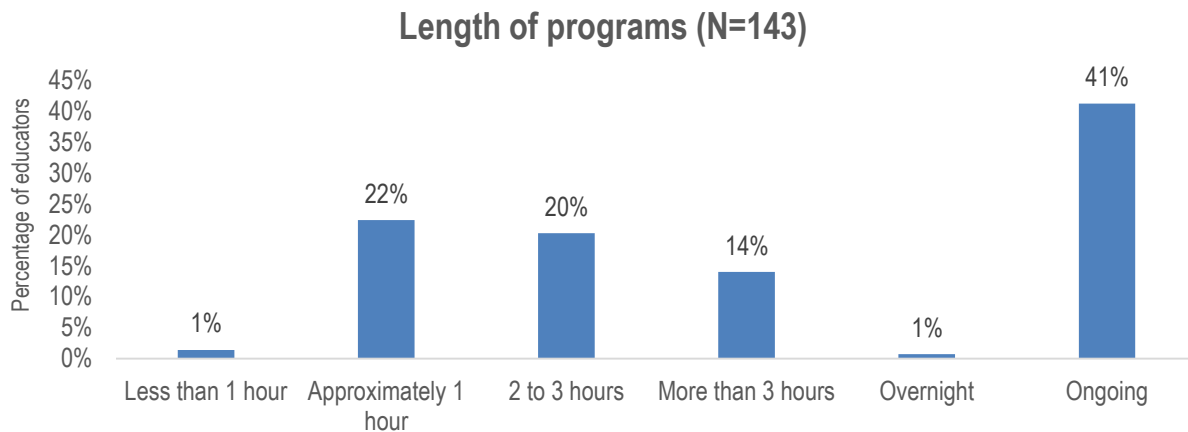
Educators described their ongoing programs in various ways, as shown in the following examples:

- *Afterschool program runs once a week from September-May.*
- *One hour year round, do SciGirls Periodically*
- *We did a once a week for 3 weeks.*
- *Sessions were once a week for 26 weeks from September-April. Each session was an hour and a half.*
- *8 days, 1 1/2 hours each session during the intersession period at our year-round elementary*
- *This program was from June 23-28, 2013 as an overnight camp.*
- *We held a four day summer camp and used each day as a theme to coincide with the SciGirls materials given at the training. One day was Engineer It, one day was Live Healthy, etc. Each day was held from 9-3 p.m. with an hour long lunch break at noon.*
- *2 hour sessions once per month September-May*
- *We have a summer program for 6 weeks.*
- *Program is 3 or 4 days a week from 4:15 to 5:15. It involves both girls and boys.*
- *Back to back sessions, 2 in total, same topic*
- *One hour and twenty minutes (80 minutes), 11 sessions*
- *We started meeting at the beginning of this past school year. I was not leading the program at this time, so I don't know the exact start date. I began leading in mid-October. We meet twice a week, on Mondays and Wednesdays. And we just finished yesterday, May 21st. We met a total of around 65 times.*

3b.5 How youth participated in programs

Educators were asked to check off which of the ways listed in the chart below that youth participated in their programs. These 10 activity strategies are reflected in the *SciGirls Seven.* Out of the 143 EPRR respondents, 127 shared information about how youth participated in their programs. Of this group, as shown in the chart below, three-quarters or more of the educators indicated that their youth engaged in hands-on, open-ended projects and investigations (95%), collaborated in groups (93%), received specific, positive feedback on their effort, strategies, and/or behaviors (82%), approached projects in their own way (78%), and expressed their individual viewpoints within a group setting (76%).

How youth participated in programs (n=127)

Percentage of educators

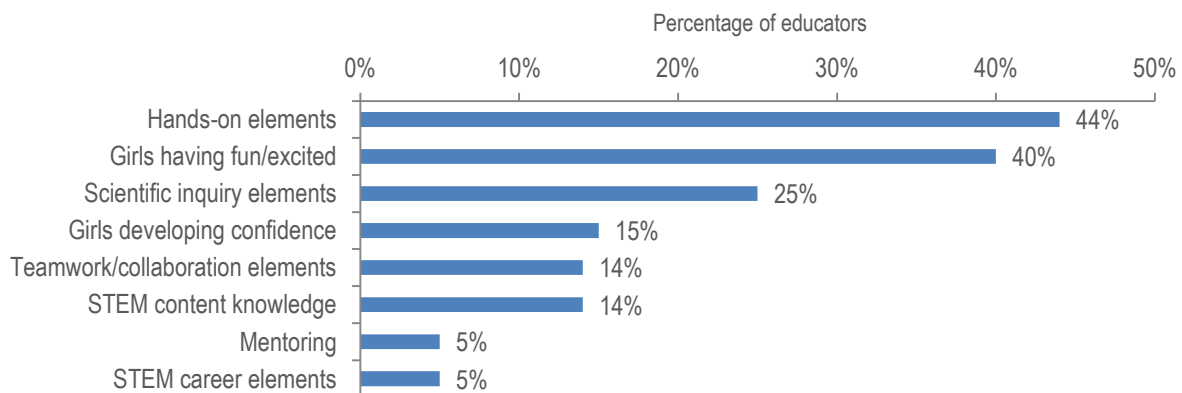| Category	Percentage
Engaged in projects	95%
Collaborated in groups	93%
Received positive feedback	82%
Approached projects in…	78%
Expressed viewpoints	76%
Communicated findings	66%
Personally relevant projects	65%
Discussed careers	61%
Developed relationships	57%
Used solid evidence	47%
Other	3%

More than three-fifths each reported that their youth communicated findings to the group using a variety of techniques (66%), that the youth worked on a project designed to be personally relevant and meaningful to them (65%), and/or that they discussed STEM careers (61%). More than half noted that the youth developed relationships with role models or mentors (57%) and less than half (47%) indicated their youth used solid evidence to support claims when communicating findings. Less than one-tenth (3%) described other kinds of participation, including two educators who explained that their programs were primarily for adults, as in: "*Discussed STEM opportunities in/out of school for girls their age*," "*Only teachers participated in these sessions*," and "*Training.*"

3b.6 Program highlights

Educators were asked to describe the highlights of their *SciGirls* programs. As shown in the chart below, the 113 educators who identified a highlight most often pointed to the hands-on elements of their programs (44%) or to the *fun* or *excitement* they observed in their girls as they participated (40%). One-quarter (25%) of the educators pointed to the scientific inquiry/investigative elements of their programs while smaller groups pointed to the development of confidence they observed in their participating girls (15%), the teamwork and collaborative elements of their programs (14%), and/or to the STEM content featured (14%). A small number of educators pointed to the mentoring (5%) and/or STEM career (5%) elements of their programs.

What educators identified as the main program highlights (n=113)

Percentage of educators

Highlight	Percentage
Hands-on elements	44%
Girls having fun/excited	40%
Scientific inquiry elements	25%
Girls developing confidence	15%
Teamwork/collaboration elements	14%
STEM content knowledge	14%
Mentoring	5%
STEM career elements	5%

Examples of educators' comments on these themes follow below:

Hands-on elements (44%)
- *Having the girls create their own explorations.*
- *Watching the girls complete their projects. They did Breathing Room and Twirling in the Breeze.*
- *Hmm. What would the kids say? Learning to work with Arduino and compressed air rockets, I think.*
- *The hands on activities.*
- *We made puppets using some of the techniques from the SciGirls activity book and then wrote our own play to perform.*
- *Students really got into the hands-on projects. Favorite activities were the Genetics of Taste and windmill sessions.*
- *Hands-on projects; learning about the human body*
- *Getting messy with lots of hands-on activities*
- *Eleven girls, grades 5 – 7, participated in hands-on science activities on topics from honeybees to air pressure to electricity. Even the initially squeamish got excited and engaged in dissecting owl pellets for bones, and in examining insects and plants on the library grounds with a Cleveland Metroparks naturalist. They were challenged to design windmills and parachutes. They persisted through a tough high-tech fashion activity that taught them about circuits and LEDs. Feedback was very positive, girls showed signs of a more positive attitude toward STEM, and both girls and parents reported they had fun and were excited about the topics.*
- *The hands on learning of the simple circuits and the prototype, the research and design of their own accessories, the pattern and prep of the accessory, and of course the fashion show.*
- *The girls tested different areas of our playground for the difference in UV rays using both a light scale and UV beads that changed colors depending on the light/shade variable. The group loved seeing the difference in the beads depending on where they stood, as well as testing them using sunglasses, different types of sunscreen, using a worksheet the group made hypothesis about what would happen to the UV beads depending on UV variation. The participants also learned about sun safety sunscreen and the difference in types of sunglasses.*

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Girls having fun/excited (40%)
- *I always have girls thanking me for having so much fun! Can't beat that.*
- *The enthusiasm and energetic response from the participants.*
- *The highlight of the program was just hearing the girls talking about Science and math. Seeing them get excited about learning about STEM. They actually looked forward to these activities. They felt like a part of a cool group. It was very amazing. There was this one particular girl who has been in the after school program since the 1st grade. She has always been a girly, girl and she once stated that her goal was to get married. That was all she aspired to do. She did not express an interest in anything. One day due to bad weather we had to cancel the SciGirls class and she came to my office in tears because she didn't want to miss it. I asked her why she liked the class so much and she stated that she liked doing Math and Science and went on to tell me all the exciting activities she participated in. She then told me that she wanted to be an astronaut when she grows up. Hearing her speak like that made me feel that this program was well worth it!*
- *The girls getting excited when their ideas worked!*
- *Children's excitement for the project and participation.*
- *Excited group of 6th graders- first question asked in the wrap up was "when can we do this again"*
- *The girls building relationships while being engaged in STEM related activities. I can see them becoming more confident in their abilities.*
- *Girls are interested in science and excited about SciGirls*
- *The girls enthusiasm with the program, their energy and determination to keep meeting.*
- *Watching the girls get excited about science and female science role models.*
- *The girls were so excited to attend every day, and they couldn't wait to come back! They loved the high-tech fashion and loved the freedom to approach every experiment in their own way.*
- *The excitement that students had by the end of the week was wonderful. They could not wait to come to class and work on the next test to gather information on solving the mystery.*
- *Seeing the girls' smiles and creativity as they completed the activities.*
- *Seeing the girls interested and engaged.*

Scientific inquiry elements (25%)
- *Eleven girls, grades 5 – 7, participated in hands-on science activities on topics from honeybees to air pressure to electricity. Even the initially squeamish got excited and engaged in dissecting owl pellets for bones, and in examining insects and plants on the library grounds with a Cleveland Metroparks naturalist. They were challenged to design windmills and parachutes. They persisted through a tough high-tech fashion activity that taught them about circuits and LEDs. Feedback was very positive, girls showed signs of a more positive attitude toward STEM, and both girls and parents reported they had fun and were excited about the topics.*
- *As participants experienced hands-on projects of their own design, they better understood their relationship to the natural world and toward each other. In the end, the students grew to appreciate the differences in learning styles and what each could bring forth as they worked toward success. Their increased confidence empowered them to be more proactive in committing themselves toward positive learning at home and school and to respect what every person, regardless of gender can bring to the table.*
- *The programs developed by SciGirls encourage girls to explore science concepts, complete the process of doing science experiments, and work in groups. The girls often had to learn to communicate. If there was a lack of communication in a group I would suggest talking with each other for solutions to the task. This was challenging for some of the younger children, but the experience of working in groups helped them to keep developing their team work skill.*
- *The girls tested different areas of our playground for the difference in UV rays using both a light scale and UV beads that changed colors depending on the light/shade variable. The group loved seeing the difference in the beads depending on where they stood, as well as testing them using sunglasses, different types of sunscreen, using a worksheet the group made hypothesis about what would happen to the UV beads depending on UV variation. The participants also learned about sun safety sunscreen and the difference in types of sunglasses.*
- *Having the students use their own ideas to solve problems.*
- *The girls really liked open-ended challenges that they could work on as in groups*

- *Seeing the girls use the information presented and putting it to work through creatures from their imagination and a back story of each creature.*
- *The girls enjoyed the "insulation station" activity the most by far, creating and investigating which materials would work the best. In fact, they were so enthused about the process that when it ended, they started shouting questions like, "What if we did it longer? What if we added x, y, z?" and I threw the lesson plan out the window and went with the flow, saying, "Hey, why don't we test that out?" and we did! They loved it*

Girls developing confidence (15%)
- *Kids were excited when they succeeded in creating a circuit that caused the light to shine. They felt successful.*
- *Watching the girls speak with confidence about the outcomes and findings of their projects*
- *In the end, the students grew to appreciate the differences in learning styles and what each could bring forth as they worked toward success. Their increased confidence empowered them to be more proactive in committing themselves toward positive learning at home and school and to respect what every person, regardless of gender can bring to the table.*
- *The girls had a great time, met new people, learned about new careers, and gained confidence in these fields.*
- *I had one girl keep telling me she was not creative and could not make a shadow puppet that moved. In the end she was the most successful one in her group do to her attention to detail. She just needed more encouragement than others.*

Teamwork/collaboration elements (14%)
- *The Girls were enthusiastic about the build. They followed instructions they were creative. They collaborated. They were anxious to return for the next meetings.*
- *The girls worked in groups, listened to each other's ideas and problem solved together. Working in a group was often challenging for some of the younger children, but the experience of working in groups will help them to build and develop team skills.*
- *The programs developed by SciGirls encourage girls to…work in groups. The girls often had to learn to communicate. If there was a lack of communication in a group I would suggest talking with each other for solutions to the task. This was challenging for some of the younger children, but the experience of working in groups helped them to keep developing their team work skill.*
- *Seeing change in how the girls approach challenges and work together.*
- *The group interaction was fun because of the age of the participants and the open minds on how to approach the questions.*

STEM content knowledge (14%)
- *The programs developed by SciGirls encourage girls to explore science concepts…*
- *….The participants also learned about sun safety sunscreen and the difference in types of sunglasses.*
- *Genetics of Taste activity Forensics*
- *Weather related issues focusing on natural disasters*

Mentoring (5%)
- *seeing the girls develop meaningful relationships with mentors through hands on programing*
- *Watching the girls get excited about science and female science role models.*
- *We allowed the girls to interact with female mentors including live Skype sessions with a Mission Planning Lead for the Orion Vehicle in Houston and ISS Flight Operations Engineer at the European Space Agency office in Germany. We also had a live mentor meet with our girls-the Director of the Green Institute here at our college. Our space mission is always a highlight with the girls as they take on immersive roles in our space simulator. Finally, the SciGirls activities.*

STEM career elements (5%)
- *showing girls/boys the careers in Science and Engineering*
- *In this program students were able to learn about 4 types of engineering and became excited about a future STEM career.*

3b.7 Program challenges

Educators were asked to describe any challenges they faced in implementing their *SciGirls* programs. As shown in the chart below, no one element stood out among the 109 educators who responded to the question. Most often these educators pointed to challenges they experienced in either recruiting girls to attend or stay in their programs (19%) or in managing participant dynamics during their programs (19%). Somewhat smaller groups of educators pointed to time constraints (17%), coordination and management of staff (14%), supply and material issues (13%), facility/equipment issues (11%), and/or money and funding constraints (8%). Just under one-tenth (9%) stated they did not face any challenges in implementing their programs. More than a tenth (13%) of educators pointed to miscellaneous challenges.

What educators pointed to as the main program challenges (n=109)

Percentage of educators

Category	Percentage
Recruiting girls to attend/stay	19%
Managing participant…	19%
Time constraints	17%
Coordination/managing staff	14%
Supplies/materials issues	13%
Facility/equipment issues	11%
None	9%
Money/funding constraints	8%
Miscellaneous	13%
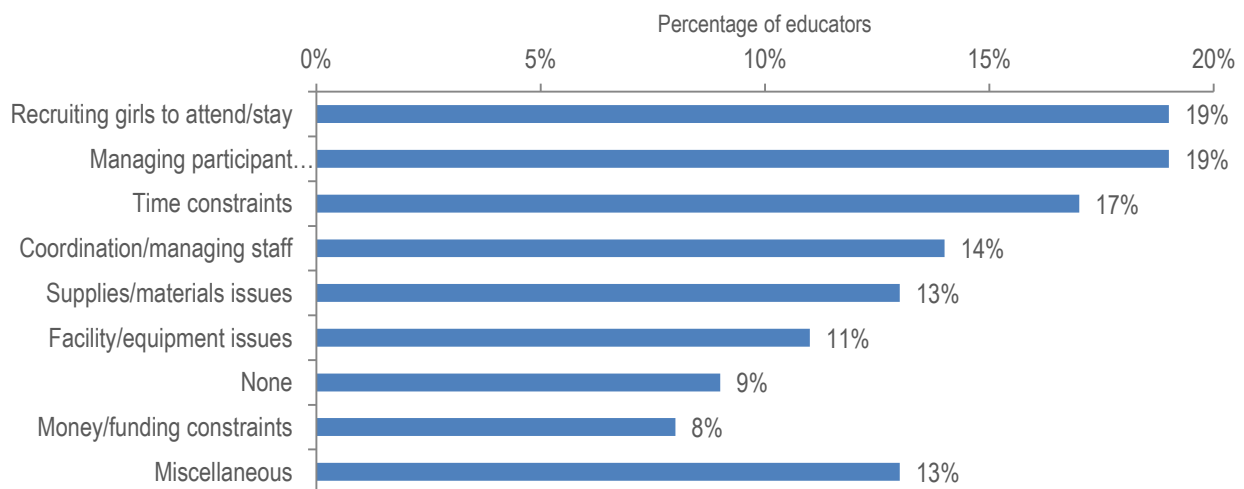
Examples of educators' comments on these themes follow below:

Engage girls to attend/involved (19%)
- *Initially it was difficult recruiting girls, in April we relaunched and more than doubled the number of participants*
- *We had some trouble recruiting campers for the program and communicating with adults. In the end we were able to get our target of 20 campers but had to seek out a second area to recruit from to meet this number.*
- *Need to have a good and dedicated teacher/liaison and the school needs to understand their responsibilities going into the program. Middle school girls are too busy with sports; if you don't partner a middle school with an elementary school you don't get enough attendees. The more time the better; afterschool is a problem in that regard - energy can be low and time can be too short.*
- *Getting the girls to stay after school.*
- *Attendance is low unless the girls are bribed. The amount of time is a long afternoon, and they want free time to just hang out. The greatest challenge by far for me as the ED of the science center was convincing the facilitators not to deviate from the plan to use SciGirls curriculum. They dragged the projects out and failed to line up interesting role model presenters. Many of the girls who initially came lost interest. We made major changes and have restarted in 2014.*
- *We struggled to compete with the sports programs offered at the same times. We hope to have better attendance at the next program.*
- *We would have girls come one day, but not the next. When projects took more than one day, some girls did not get to finish or were not there to start in the beginning.*
- *Many of the students who filled out and handed in their permission slips to participate, did not attend*

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Managing girl dynamics (19%)

- *With the small number of girls attending, it is a challenge sometimes for them to work with others. They like to work within their comfort groups.*
- *The girls had difficulty collaborating which I did not anticipate.*
- *The biggest challenge I faced was not giving in to frustrated participate. Some of the students got upset if they couldn't get their experiment to work and came to me for answers. I had to hold back from doing it for them and would just give them several suggestions and ideas, so they could complete the task on their own. I emphasized that it's okay to make mistakes to keep trying. Positive feedback from their peers and instructors motivated them to keep trying.*
- *Behavior with a few of the girls: we had a young lady fall asleep during a presentation. We had a young lady behave disrespectfully with our horse-instructor. Otherwise, things went smoothly.*
- *Managing the different approaches the different groups of students took to solve the problem: some were very straight forward and fast, others more meandering. It was a challenge to coach those kids who clearly didn't "get" how to solve the problems effectively while other students were creating/solving more efficiently. I did my best to teach/model that we all go about learning our own way and what one person may see as a solution is different from what another may see. These are big concepts for 5th graders to understand at times.*
- *Girls with preconceived ideas of science and thinking it has no relevance to them. Attitude issues.*
- *The mass chaos of having groups working independently. Also, we had some difficulties cooperating. Many strong personalities.*

Time constraints (17%)

- *Lack of time to constructively engage in activities. They often have so much homework that is required to be done first that the time is limited to work exclusively on science and engineering*
- *time for planning and materials*
- *time and money*
- *As always, the complaints by teachers that they do not have time in their classes to run these activities. Discussion ensued with ideas focusing on how to get it done.*
- *Needed more time to complete the activities. Two hours was not enough.*
- *Time and prep work needed ahead of time to make the time with the girls well spent. I appreciated the material lists and things to do ahead of time mentioned in the SciGirls plans.*
- *More time for more activities.*
- *Time, not enough of it.*

Coordination/managing staff (14%)

- *We also ran this program in four schools at once. It was difficult to get mentors to commit to visiting four different times.*
- *Mainly younger girls attended. Couldn't get any mentors to participate with us during the week it was held.*
- *The greatest challenge by far for me as the ED of the science center was convincing the facilitators not to deviate from the plan to use SciGirls curriculum. They dragged the projects out and failed to line up interesting role model presenters.*
- *Finding outside camp mentors or experts to share their careers or skills with the girls.*
- *This was our first year at having the camp so just the logistics and organization were the main challenges.*

Supplies/materials issues (13%)

- *Coordinating and sharing resources*
- *IT took some time to get the materials together.*
- *One of the biggest challenges was buying supplies. Another was parents coming late to pick up their children.*
- *The main challenges were affording the materials for the activities and trying to find role models or mentors to come and speak to the girls.*
- *Gathering the material and , making enough dough for the class.*

- *Actually working to get the straw to produce sound. It is hard work and sometimes required several tries and several new straws.*
- *The only challenges is getting all the resources needed for the science projects. We have been fortune to get our material from our organization.*

Facility/equipment issues (11%)
- *Space*
- *Room was good location but warm(that issue has been addressed)*
- *Technology at the facility we use is very limited. We are unable to use video equipment to show SciGirls episodes or access computers to visit the SciGirls site.*
- *not having electricity and access to computers to support learning and set the stage for the projects we were doing.*
- *Having sound for the computer so the girls could hear what was being said and the dvd player not working.*
- *Overall, it went great. But, it would be nice to be able to download clips from the web page. Like I said earlier, I don't have a DVD player in my laptop and the Internet connection is spotty if at all available. So, I had to borrow a laptop with a DVD player.*
- *Finding locations that would host us. We used libraries mostly, but it was really hard to find a dependable location.*

None (9%)
- *None - this was an ideal group (kids had opted in and were very engaged and well behaved) and took place in a terrific setting.*
- *None*

Money/funding constraints (8%)
- *Number one challenge was funding, in order to efficiently complete the program we needed the materials and sometimes "equipment" to complete the project. We made due with what we had, however, we are in the process of receiving more funding from local institutions for our STEAM Summer Program.*
- *Lack of funding for projects.(now that we are beginning the SciGirls program, I think we may be able to get additional funding. I am hopeful. Everyone is starting to take girls ore seriously. That is the first step.*
- *Funding*
- *There would have been fairly significant expenses for the project for a small group, but by building a kit to be shared by a variety of groups and used repeatedly, we diffused the expense per child.*
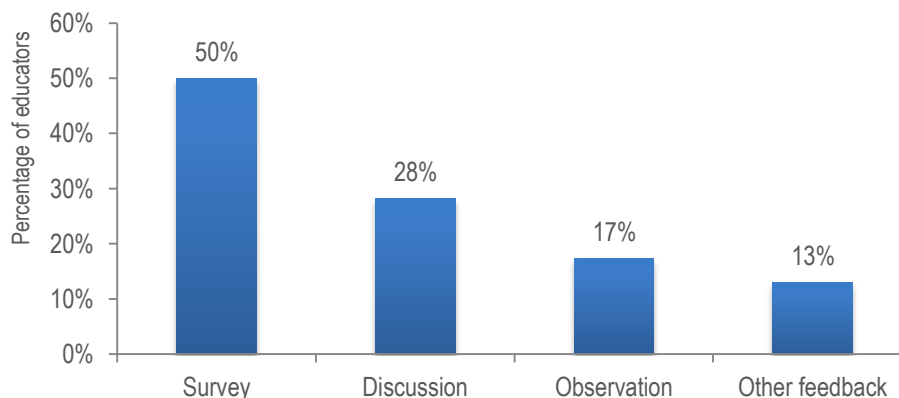- *Funding*

Miscellaneous (13%)
- *The activities that were appropriate for the targeted girls were not appropriate for the museum visitors as a whole,*
- *Keeping on schedule, playing video on computer difficult for everyone to see/hear*
- *Girls wanted more direct connection to SciGirls and computer programing. Also folks were late so we had to shift the timing a bit. No insurmountable challenges*
- *Sometimes activities did not work out as plan and we had to re-adjust. Other times the activities were above the students heads.*
- *Science fair projects*
- *The girls didn't know how to sew very well.*

3b.8 Efforts to evaluate programs

Nearly two-fifth (38%) of the 143 educators surveyed indicated that they had an opportunity to evaluate how their programs impacted their youth. Of this subgroup of educators, 46 shared feedback about their methods of evaluation. As shown in the chart below, half (50%) of the educators who commented on how they evaluated their programs offered some kind of survey as a means of evaluating impact, as in, "*We used a survey that the girls filled out both at the beginning of the year and at the end to see if their expectations were met for the program*" and "*We had the students fill out a survey at the end of the program day.*" More than a quarter (28%) indicated that they used discussion to gauge impact, as in, "*I asked the group if they like the activities or if they wanted to do something different. Their response was we want to keep doing STEM activities*" and "*Group Feedback (dialogue and conversation)."* Less than a fifth (17%) explained that they relied on observation to evaluate their youth, as in, "*By working with them and observing their reactions*" and "*My evaluation was purely anecdotal, not an official quiz. Girls left telling their parents (and me) how cool the projects were, and a couple said, "I like science even more now"! Parents also provided very positive feedback about their girls' attitudes towards STEM and how programs like mine enhanced them. I was asked repeatedly if I'd be running more girls weekend clubs."* More than one-tenth (13%) of educators gathered feedback through other means, as in: "*Girls took written communication home. Have not tallied them yet*" and "*The participants kept a journal. After every activity they were asked to answer the following questions: What did you learn today? What did you learn that you could utilize in your everyday life? How will what you learned help you in your future?"*
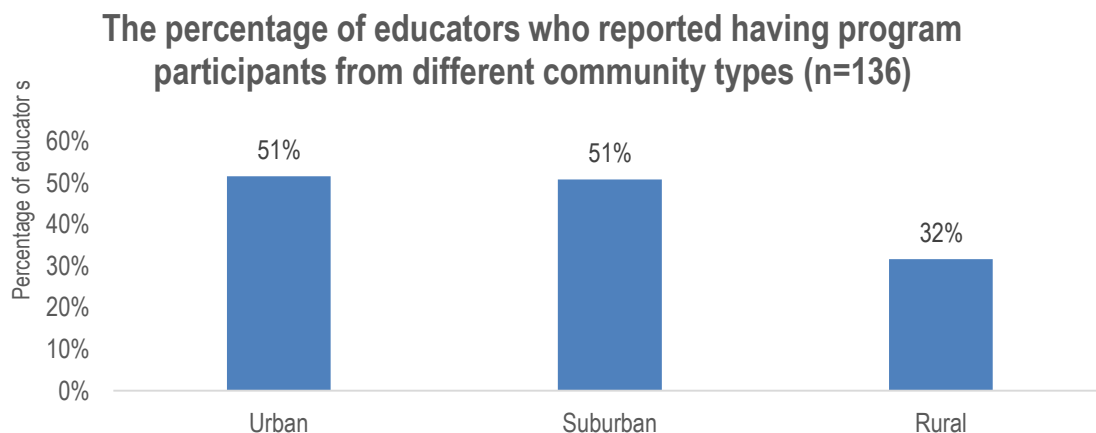

Methods of evaluation (n=46)

3b.9 Number of youth who attended the programs

Overall, 134 educators estimated the number of youth participants who attended their programs. Here and in the sections below, in cases where educators provided estimated ranges (for example, "*6-12*"), the median value of the provided range was used in estimating total attendance. Additionally, among educators who reported on the number of attendees at each session (as in, "*8-14 each session, average = 11*"), the reported average for a single session was used to determine a conservative attendance calculation, so as not to count repeat attendees more than once.

With these notes in mind, the educators' estimates ranged from a low of 2 to a high of 2000. On average there were 45 youth per program, with a total of 5998 youth attending across the 134 programs.

3b.10 Community types where youth resided

In all, 136 of the 143 educators shared information about the communities where youth who attended their programs resided. These educators most often indicated that they served youth from urban (51%) or suburban communities (51%), as shown in the chart below, with rural communities being less frequently cited (32%).[11]

The percentage of educators who reported having program participants from different community types (n=136)

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[11] Note: These percentages do not represent the actual percentages of youth that came from each type of community. They represent the percentages of educators who reported having program participants from that type of community.

3b.11 Grade level

Out of the 143 surveyed educators, 135 shared information about the number of youth they reached in the following grade ranges: kindergarten through 2nd grade, 3rd through 5th, 6th through 8th, and 9th through 12th. In total, the subgroup of 135 educators reported reaching 6044 youth in kindergarten through 12th grade. This estimate was slightly larger than the 5998 youth estimated by the 134 educators who shared youth attendance in Part 3b.9, perhaps (but possibly not entirely) due to the information reported by an additional educator.

The 135 educators who estimated grade level indicated that the majority of the youth who participated in their programs were in upper elementary school or middle school, as shown in the chart below. Just over two-fifths (42%) of youth were in grades 6 through 8, while 3rd through 5th graders made up one-third (33%) of youth. Nearly a fifth (18%) were in 9th through 12th grade, and less than a tenth (7%) were in kindergarten through 2nd grade.

Grade level of youth participants (n=6044)
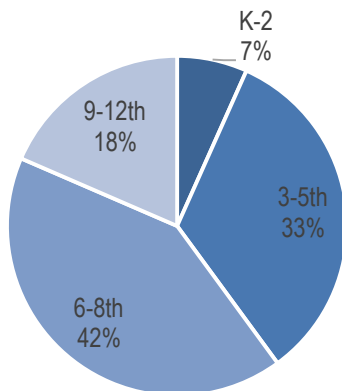
- K-2 — 7%
- 3-5th — 33%
- 6-8th — 42%
- 9-12th — 18%

3b.12 Gender

Out of the 143 educators, 135 shared estimates of the number of girls and boys reached, for a total of 6015 youth. For unknown reasons, this total estimate differed slightly from previous total estimates shared in elsewhere in Part 3b. The 135 educators indicated that the majority of the youth who participated in their programs were girls, as shown in the chart below. Nearly three-fourths (72%) were girls, compared to just over a quarter (28%) boys.

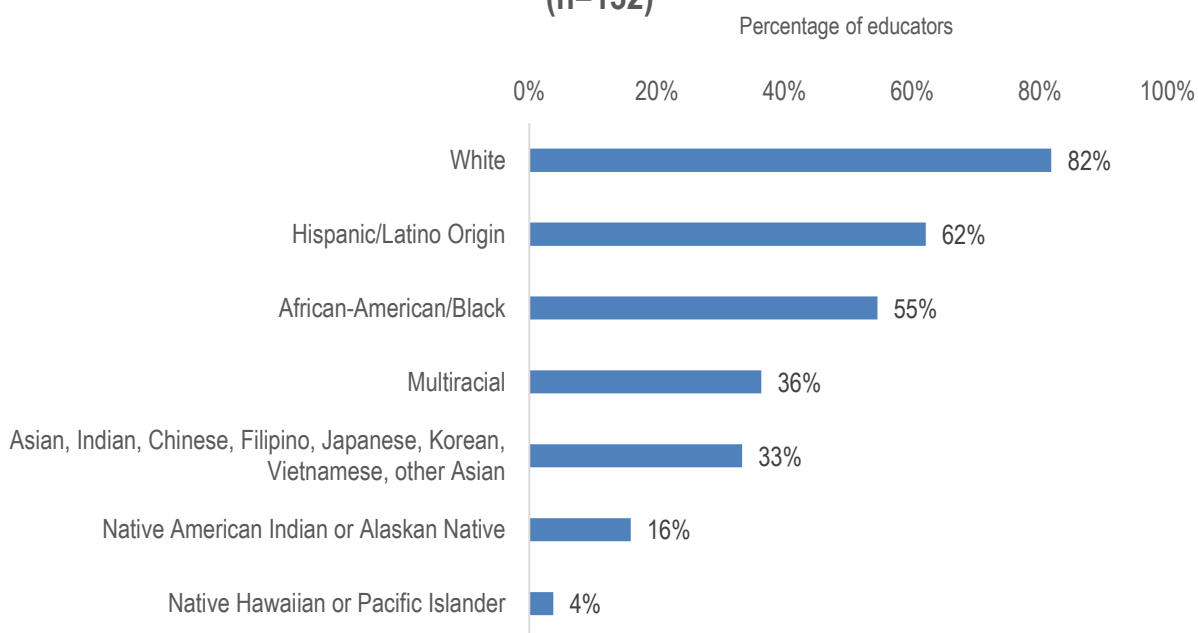**Gender of youth participants (n=6015)**

- Boys — 28%
- Girls — 72%
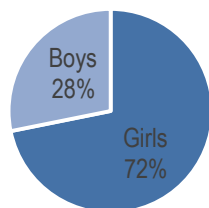
Girls and boys enjoying *SciGirls*, from the
SciGirls CONNECT Annual Report: 2014-2015

3b.13 Racial/ethnic background

Of the 143 EPRR respondents, 132 shared information about the races or ethnicities represented at their programs.[12] Of this group of 132 educators, more than four-fifths (82%) reported that their programs were attended by White youth, as shown in the chart below. Nearly two-thirds (62%) of educators reported that their programs were attended by youth of Hispanic or Latino origin, and more than half (55%) noted that their programs were attended by African-American or Black youth. About a third each reported that their programs were attended by multiracial youth (36%) or Asian or Indian youth (33%), and about a sixth (16%) of educators reported their programs were attended by Native American or Alaskan Native youth. An even smaller number of the educators reported that their programs reached Native Hawaiian or Pacific Islander (4%) youth.

The percentage of educators who reported having program participants from youth of different races/ethnicities (n=132)

Percentage of educators

Race/ethnicity	Percentage
White	82%
Hispanic/Latino Origin	62%
African-American/Black	55%
Multiracial	36%
Asian, Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, other Asian	33%
Native American Indian or Alaskan Native	16%
Native Hawaiian or Pacific Islander	4%

Educators were also invited to comment on or explain the numbers they reported. Several participants indicated that they did not formally keep track of race/ethnicity information or that they did not have a formal sign-in process, explaining either that their numbers were estimates or that they could not provide information about race or ethnicity. A few educators qualified their estimates to help explain the way they were calculated. Examples of their comments and explanations are shared below.

- *I did not collect this information and do not feel comfortable guessing this without having individuals self report*
- *I cannot provide any of the numbers because I am not sure on any of them*
- *These are estimates. There was not a formal sign in process. This was an evening activity of the Mathcounts program.*
- *I am guessing on the numbers*

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[12] Note: These percentages do not represent the actual percentages of youth of each race or ethnicity. They represent the percentage of educators who indicated that youth of each race or ethnicity were present – in any number – at their programs.

- *Our district is primarily economically disadvantaged white students.*
- *Of the 8 multiracial, 6 are part Native American Indian or Alaskan Native.*
- *We had 2 girls of Indian origin - I counted them in the Asian group as I was unsure where else to put them.*

3b.14 Other types of individuals present at programs

Of the 143 EPRR respondents, 126 shared information about other individuals (other than themselves and their youth) who attended their programs. Though reasons for the non-responses are unknown, it is likely that at least some educators left the question blank to indicate that no other individuals were present.

As shown in the chart below, the 126 educators who answered the question indicated that other educators were present at more than two-thirds (68%) of their programs, while community volunteers were present at about half (48%). Parents and guardians were present at about a third (31%) of the programs, grandparents were present at less than one-tenth (6%), and more than a tenth (14%) of programs were attended by other individuals, including: summer camp staff, afterschool program coordinators, STEM role models, undergraduate female engineers, and guest speakers from the community.

The percentage of educators who reported having other types of individuals present at their programs (n=126)
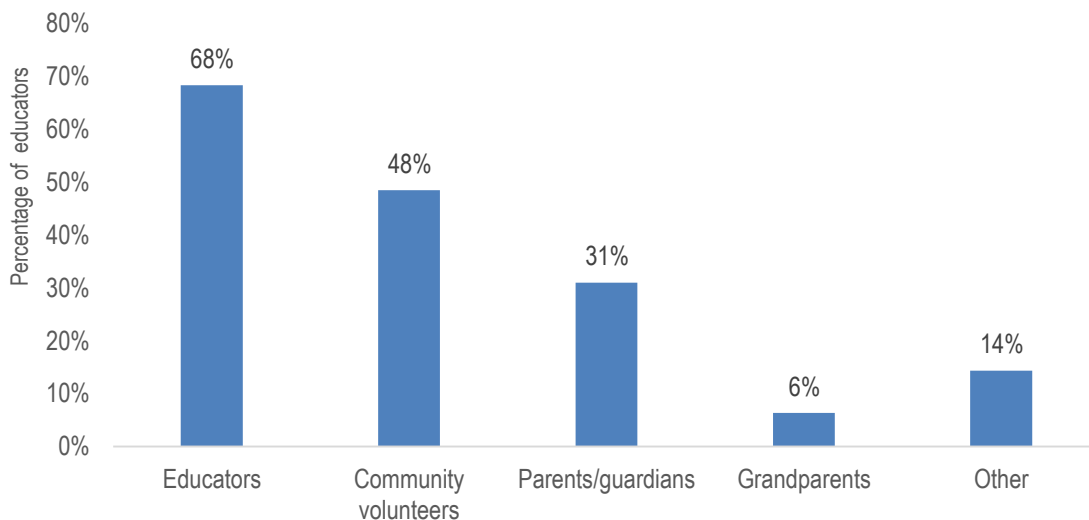
Summary of findings

The *SciGirls CONNECT* Final Evaluation Report is summarized below, in three parts:

Part 1: Part 1 presents the findings from **Train-the-Trainer Evaluation Forms (TTT)** completed by educators who completed *tpt*'s Train-the-Trainer training in 2011, 2013, or 2015.

Part 2: Part 2 presents the findings in two sections: Part 2a presents the findings from the **Trainer Workshop Reflection Form (TWRF)**, completed by trainers each time they conducted a full-day *SciGirls* training. Part 2b presents the findings from the **Trainer Annual Reflection Form (TARF)**, completed by trainers toward the end of each project year.

Part 3: Part 3 presents the findings in two sections: Part 3a presents the findings from the **Educator Training Feedback Form (ETFF)**, completed by educators who participated in a *SciGirls* training. Part 3b presents the findings from the **Educator Program Report and Reflection Form (EPRR)**, completed by educators year-round each time they implemented a local *SciGirls* program.

Part 1: Train-the-Trainer findings

During the first year of the *SciGirls CONNECT* project, the evaluation team attended the initial Train-the-Trainer training, hosted at *tpt* and led by *SciGirls* project staff. In preparation for this and subsequent annual Train-the-Trainer trainings, the evaluation team developed the Train-the-Trainer Evaluation Form (TTT), a paper-based survey that participants completed at the conclusion of the 1.5-day training to provide feedback on their experience.

During Years 1, 3, and 5 of the project, the evaluation team provided paper copies of the Train-the-Trainer Evaluation Form (TTT) for use at the *tpt*-hosted Train-the-Trainer trainings, wherein *SciGirls* staff trained a new group of educators each of these years. Over the course of the reporting period, 46 trainees submitted TTTs: 10 in 2011, 14 in 2013, and 22 in 2015. As noted in the [*SciGirls CONNECT* Annual Report: 2014-2015](#), a total of 57 trainees attended a Train-the-Trainer training, for a TTT response rate of more than four-fifths of trainees.

1.1 What trainees liked most about the Train-the-Trainer training: When asked what they liked most about their Train-the-Trainer training, around three-fifths of the 46 trainees explained that they liked the opportunity to collaborate and network with other participants, and about a quarter liked the hands-on activities. More than a tenth each pointed to the focus on adult learning strategies or commented on something relating to the training format/process. Smaller groups pointed to the quality of presenters, the *SciGirls Seven* strategies, and the feedback they received. Less than one-sixth shared miscellaneous responses.

1.2 What trainees liked least about the Train-the-Trainer training: When asked what they liked least about the Train-the-Trainer training, 38 of the 46 trainees answered the question. The remaining 8 trainees may have left the question blank to indicate that they liked everything about the training. Of those who shared a response, more than a quarter pointed to the logistics of their training. More than a tenth each explained that they disliked an aspect of the way the training was presented, said there was *nothing* they disliked, noted that they wanted to learn more about adult learning, or indicated that they had wanted additional activities. Smaller groups wanted more networking, disliked working over lunch, wanted less discussion of gender-related topics including the *SciGirls Seven*, and/or wanted to visit the local museum or PBS station. Less than a quarter shared miscellaneous feedback.

1.3 Value of the Train-the-Trainer training elements: Overall, the educators found all of the training elements to be valuable. While there were some differences of opinion as evidenced by the range of ratings in each case, the sessions on gender equity/the *SciGirls Seven*, tools and resources, and trainer-led *SciGirls* activities were generally rated *extremely valuable* (median rating 5.0) on a scale of 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*). The whole group debrief and training binder sessions were also generally found to be *extremely valuable* (median rating 5.0 each), and the trainees generally found the following elements *moderately valuable* (median rating 4.0 each): the welcome and big picture overview, the adult learning strategies sessions, and the individual debriefs.

1.4 Most valuable ideas, concepts, or facts gained by trainees: When asked to identify the most useful ideas, concepts, or facts they gained from the training, 45 of the 46 trainees shared a response. More than two-thirds of this group pointed to information about the *SciGirls Seven* and gender equity strategies, and more than a fifth each appreciated the information about implementing activities and resources and/or commented on the strategies for working with adult learners. About a sixth found the information about working with a diverse group of youth to be most valuable, and less than one-tenth shared miscellaneous responses.

1.5 Most useful skills gained by trainees: When asked about the most useful skills they thought they gained from the training, 43 of the 46 trainees shared a response. Two-fifths of this group found the information about how to incorporate and communicate the *SciGirls Seven* to be most useful. More than a third pointed to what they learned about working with adult learners, while less than a third commented on what they learned about implementing the *SciGirls* activities. Smaller groups explained that they found what they learned about working with diverse student audiences to be most useful, said they hadn't learned any useful skills, or shared miscellaneous feedback.

1.6 Overall trainee feedback about the Train-the-Trainer training: The trainees were asked to rate their level of agreement with a series of statements about the Train-the-Trainer training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*) each. While there were some differences of opinion as evidenced by the range of ratings in each case, overall the trainees *strongly agreed* (median rating 7.0 each) that the training was well run and organized, a good use of their time, generally met their expectations, that they had fun, and that they acquired knowledge that would have been difficult to obtain without having been there in person. The trainees were generally *neutral* (median rating 4.0 each) about wanting more information about the training agenda before they arrived, having more time to prepare for the activity they led, and having more opportunities to relate the training material to their own situation.

1.7 Trainee feedback about the length and density of the Train-the-Trainer trainings: Trainees were first asked to rate four aspects of the length and density of the 1.5-day training on a scale from 1.0 (*too short* or *too little*) to 7.0 (*too long* or *too much*). While there were some differences of opinion as evidenced by the range of ratings in each case, the trainees generally felt that the following aspects of the training were all *about right* (median rating 4.0 each): the 1.5-day training period, the amount of material covered, the amount of formal presentation/lecture, and the amount of time to debrief/discuss.

When asked if there were topics they would have liked to see covered in more depth, 38 of the 46 trainees answered the question. About a quarter of this group noted they would have liked to learn more about implementing *SciGirls* activities, and just over a fifth pointed to the issue of organizing or preparing their trainings. Slightly less than one-fifth each indicated they would have liked more depth on the topics of working with adult learners and/or working with diverse student audiences. About a tenth each wanted to learn more about incorporating the *SciGirls Seven* or explained that there weren't any topics they would have liked to see covered in greater depth. A sixth shared miscellaneous feedback.

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Next, the trainees were asked if there were topics they would have liked to see covered in less depth. Only 14 of the 46 trainees answered the question, indicating that at least some of the remaining trainees may have felt the issues were covered in sufficient depth. Of those who shared a response, more than a quarter each said there was nothing they would have liked to cover in less depth or that they would have preferred to spend less time learning about working with diverse audiences. Just over a fifth pointed to gender issues and more than a tenth felt the topic of incorporating the *SciGirls Seven* was covered too deeply. Less than a tenth shared feedback about the topic of working with adult learners. More than a tenth shared miscellaneous feedback.

When asked if the training omitted a topic they wished had been covered, 25 of the 46 trainees answered the question. Of this group, three-fifths said there were no omitted topics. Less than a tenth each pointed to something related to gender equity issues or working with adult learners. About a quarter of trainees who answered the question shared miscellaneous feedback.

1.8 Impact of Train-the-Trainer training on trainee knowledge and skill: While there were differences of opinion in each case, using a scale from 1.0 (*no knowledge*) to 5.0 (*advanced knowledge*), the trainees generally reflected that they had *above medium knowledge* (median rating 4.0) of gender equity and the *SciGirls Seven* before the training and after the training had *advanced knowledge* (median rating 5.0) of this topic. They also indicated that they had *medium knowledge* (median rating 3.0) of the *SciGirls* activities used at the training prior to the training but *advanced knowledge* (median rating 5.0) after. Finally, they indicated that they had *medium knowledge* (median rating 3.0) of adult learning strategies prior to the training but *above medium knowledge* (median rating 4.0) after.

While there were again differences of opinion in each case, on a scale from 1.0 (*no skill*) to 5.0 (*advanced skill*), the trainees generally reflected that they had *medium skill* (median rating 3.0) incorporating the *SciGirls Seven* into their training presentations prior to the training but after the training had *advanced skill* (median rating 5.0). They also indicated that they had *medium skill* (median rating 3.0) using the *SciGirls* tools and resources prior to the training but after the training had *advanced skill* (median rating 5.0). Furthermore, they had *medium skill* (median rating 3.0) explaining/demonstrating the *SciGirls* activities used in the training and *above medium skill* (median rating 4.0) after. Finally, they indicated that they had *medium skill* (median rating 3.0) advising or mentoring trainees on topics prior to the training and *above medium skill* (median rating 4.0) after.

1.9 Impact of Train-the-Trainer training on trainee confidence and sense of preparation: First, the trainees were asked to rate the extent to which the training increased their confidence in their ability to train and mentor others on a scale from 1.0 (*didn't increase at all*) to 5.0 (*greatly increased*). Though there was a range of ratings, the trainees generally felt that the Train-the-Trainer training *greatly increased* (median rating 5.0) their confidence in this area. The trainees were then asked to comment on how the Train-the-Trainer training affected or didn't affect their confidence. Thirty-nine (39) of the 46 trainees responded to the question. More than two-fifths of this group pointed to the opportunity to practice or prepare for their own trainings, and about a quarter noted that the information about *SciGirls Seven* impacted their confidence. A fifth commented on the activity demonstrations, and more than one-tenth mentioned the focus on adult learning strategies. Just over a quarter shared miscellaneous feedback.

Next, the trainees were asked to rate how prepared they felt to begin training and mentoring others on *SciGirls* on a scale from 1.0 (*not at all prepared*) to 5.0 *(extremely prepared)*. Though they gave a range of ratings, the trainees generally felt *very prepared* (median rating 4.0) to begin training and mentoring others on *SciGirls*. The trainees were then asked to comment on any concerns they might have about their level of preparation. Only 29 of the 46 trainees responded to the question, potentially because remaining trainees may not have had feedback to share on this issue. Of those who answered the question, about a third explained that they

needed more practice, more than a quarter said they didn't have any concerns, and a fifth felt they needed to review the materials. Less than one-tenth thought they needed guidance on organizing their own training, and more than a tenth shared miscellaneous feedback.

1.10 Other impacts of Train-the-Trainer training on trainees: Reflecting on other impacts of the Train-the-Trainer trainings, trainees were asked to rate their level of agreement with a series of statements on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*). Though there was a range of ratings in each case, overall trainees *strongly agreed* (median rating 7.0) that they felt ready to network with their colleagues to help establish the *SciGirls CONNECT* community. In general, they also *agreed* (median rating 6.0 each) that they had a good understanding of the goals of the *SciGirls CONNECT* program and that they felt confident to lead a 1-day professional development workshop on behalf of *SciGirls*.

1.11 Trainee feedback about project expectations: The trainees were asked if, based on everything they had learned about their new role as a *SciGirls* trainer, they felt the *SciGirls CONNECT* project was asking too much of them. Of the 43 trainees who answered the question, more than four-fifths said *no*, while slightly more than a sixth said they were *not sure* and one trainee said *yes*. The trainee who felt the project was asking too much qualified his or her response, noting, "*I feel constrained by season 3/ citizen science requirements + not my own strength or interest.*" Those who indicated that they did not think *SciGirls CONNECT* was asking too much of them generally explained that they were prepared, well supported, and committed to the project. Those who were unsure generally indicated that time would tell if the expectations of the project were reasonable for their situations.

1.12 Expected assistance trainees thought they would need: After completing their Train-the-Trainer training, the trainees were asked how much assistance they thought they would need from the *SciGirls CONNECT* staff on a scale from 1.0 (*no assistance*) to 5.0 (*extensive assistance*). Though they shared a range of responses, the trainees generally expected that they would need *moderate assistance* (median rating 3.0) from the *SciGirls CONNECT* staff after the training.

When asked to elaborate on any training, development, or education they thought they might need, 30 of the 46 trainees responded to the question. Of this group, a third pointed to logistics support. A fifth commented on troubleshooting, less than a fifth said there was nothing they expected to need from *SciGirls* staff, a tenth explained that the program's webinars would be helpful, and less than a tenth thought they might have trouble meeting *tpt*'s expectations. Less than a quarter shared miscellaneous feedback.

1.13 What trainees hoped to gain from their involvement in *SciGirls CONNECT*: Nearly all (44 of the 46) trainees commented on what they hoped to gain from being a *SciGirls CONNECT* trainer. Of this group, about two-fifths each explained that they hoped to gain networking opportunities and/or the experience of sharing *SciGirls* with educators. About a third pointed to professional development, and more than a quarter commented on the opportunity to impact girls. Less than a tenth each hoped to gain access to resources or to become a mentor. More than a tenth shared miscellaneous feedback.

1.14 If and how trainees thought the project would influence their work: The trainees were asked if they thought being a *SciGirls CONNECT* trainer would influence their work. All but one of the trainees answered the question; in each case, the majority of the 45 trainees indicated that they thought their work as a trainer would affect their current job, their longer-term career or professional growth, and/or their institutions.

1.15 Trainees' suggestions for improving future Train-the-Trainer trainings: When asked if they had suggestions for how *tpt* could improve the Train-the-Trainer training for future participants, 32 of the 46 trainees provided a response. Those who declined to answer the question may have done so because they

had nothing to share on this topic. Of those who gave a response, more than a quarter suggested a change to the format of the training, while a fifth each expressed a desire for more discussion or reflection or said they had no suggestions. About one-sixth recommended additional hands-on activities, and more than one-tenth each thought it would help if *tpt* streamlined the sessions or suggested *tpt* lengthen the training. Less than one-tenth wanted more information about the *SciGirls Seven*, and about a sixth shared miscellaneous feedback.

Part 2: Trainers' reports on their trainings and annual reflections

Part 2a: Trainers' reports on their trainings

During Year 1, the evaluation team developed and piloted the online Trainer Workshop Reflection Form (TWRF). Beginning in Year 2, an online version was developed and subsequently made available to trainers. This form was designed to be completed by *SciGirls* trainers each time they conducted a full-day *SciGirls* training for partners and local educators.

Over the course of Years 2 through 5 of the project, a total of 31 trainers submitted 56 online forms about their programs, with 12 trainers reporting on between two and five trainings each. More than three-fifths of the 31 trainers submitted one TWRF. One-sixth submitted two TWRFs, a tenth each submitted three or four TWRFs, and one trainer submitted five TWRFs. For the purposes of this evaluation, multiple forms filled out by the same trainer are considered distinct TWRF submissions. As noted in the SciGirls CONNECT Annual Report: 2014-2015, trainers coordinated a total of 169 trainings over the grant period (with no trainings taking place in the first year); thus, one-third of trainings were reported on via TWRF submissions.

2a.1 Elements included in the *SciGirls* trainings: When asked which resources they included in their *SciGirls* training, all of the 56 trainers explained that they introduced *SciGirls* on TV, online, or on the ground. Additionally, more than nine-tenths each: gave a history of *SciGirls*, screened a *SciGirls* video (either the sizzle reel or a clip from an episode), presented the *SciGirls Seven* strategies and the tips associated with each, ended each activity with questions and reflection, distributed curriculum resources after completing the activities, used PowerPoint slides incorporating the *SciGirls* template, presented research on the state of women in STEM, introduced or gave a brief overview of the *SciGirls Seven* strategies, engaged participants in a gender equity activity, showed a *SciGirls* video clip in conjunction with an activity, or gave an overview of the print pieces. Slightly smaller groups indicated they did each of the following: reviewed the "Program Leader Expectations" form, had participants complete the "Action Plan" form, had participants complete the evaluation form, incorporated the trademark/logo/funder information, provided a web tour of the PBSKids site, provided a web tour of the *SciGirls CONNECT* site, or incorporated another element. Those who indicated that they incorporated another element generally pointed to: related research, materials, and initiatives; strategies intended to address the goals of their organizations and participants; and/or elements such as games, activities, and brainstorming sessions.

2a.2 Most helpful *SciGirls* resources and support: The full group of 56 trainers pointed to a range of *SciGirls* resources and support that they found most helpful. More than half explained that they thought the PowerPoint template and slides were most helpful, calling them "*an excellent resource*" and "*a HUGE time saver.*" More than a third commented on the video resources (both online and on DVD), and just under a third pointed to the activities or activity guides. About one-quarter indicated that the online resources (including *SciGirls CONNECT,* PBS's website, the Ning platform, and the online registration process) were most helpful. A fifth mentioned the organizational support provided by *SciGirls* staff, including the planning checklist, agenda template, and assistance with activity materials. About a tenth commented on something related to *SciGirls*

research and methods, such as the *SciGirls Seven* strategies or the "puzzle pieces" featuring the strategies. Finally, just under a tenth of trainers shared miscellaneous feedback, including one response about the resources being "*great.*"

2a.3 Least helpful *SciGirls* resources and support: No single element stood out as least helpful to the majority of the 48 trainers who answered the question. More than two-fifths of trainers wrote "*N/A*" or explained that everything was helpful. Additionally, less than one-tenth of trainers explained that they were "*not sure*" which resources or forms of support had been least helpful. Of those who identified the least helpful resources or forms of support, the largest group, about a fifth, pointed to the online resources, with some commenting on challenges they faced with the online registration sites, a few explaining that they had technical difficulties and hadn't been able to access the resources, and one noting that the PBSKids website was the "*least touched upon*" resource. Less than a tenth indicated that either the online or DVD video resources were least helpful for various reasons, and smaller groups identified the post-training evaluation, planning checklist, or *SciGirls Seven* as least helpful. A tenth shared miscellaneous feedback.

2a.4 Greatest highlights/successes of the *SciGirls* trainings: The full group of 56 trainers generally identified three main highlights or successes of their trainings: participants' excitement, engagement, or increased comfort; the activities; and the group discussions. Smaller groups commented on networking opportunities for participants and organizers, the diversity of participants, their training's turnout, or shared miscellaneous feedback.

2a.5 Greatest challenges of the *SciGirls* trainings: When asked about the greatest challenge of the training, no single element stood out to the majority of the 53 trainers who answered the question. More than one-sixth each pointed to technical issues, attendance, communicating with participants, time management/scheduling, or something related to the activities. At the same time, more than one-tenth each identified the greatest challenge to be the venue or lack of participant engagement. Less than a tenth indicated that they had not identified any challenges, and more than a tenth shared miscellaneous challenges.

2a.6 Suggested revisions to *SciGirls* training timing or format: The trainers were asked what revisions they would have made to each training's timing or format to improve the experience or outcome for participants. Out of the 56 trainers who completed a TWRF, 53 shared suggested changes. More than two-fifths of these trainers noted they would have changed something about the activities. At the same time, just under one-quarter shared suggestions regarding the overall timing or format of the training, and more than a tenth each said they would change the presentation of *SciGirls* research and methods or the presentation of online resources. Less than one-tenth proposed changes to the wrap-up or evaluation portion of the training. Finally, less than one-tenth indicated that they did not have any suggestions for changing the training timing or format, and more than a tenth shared miscellaneous recommendations.

2a.7 Improvements to future *SciGirls* trainings: Out of the 56 trainers who completed a TWRF, 54 identified improvements they would make to future trainings. About a third of this group explained that they would like to change something about the activities. A quarter indicated that they would increase their personal preparation in various ways, while about one-sixth each said they would like to change something about training outreach and/or the presentation of *SciGirls* research and methods, including the *SciGirls Seven*. Less than a tenth each described how they would change the presentation of online resources and/or share additional resources. About a tenth indicated that there was nothing else they would like to improve for their next training. More than one-tenth pointed to miscellaneous changes, including a few trainers who mentioned that they would encourage more interaction between participants.

2a.8 Assistance needed from *SciGirls* staff to implement changes: Out of the 56 trainers who completed a TWRF, 50 responded when asked if they would need assistance from *SciGirls* staff to implement their suggested changes. Nearly half of this group said this would not be the case. More than a tenth each indicated they would like additional resources and information, support in training preparation or follow-up, and/or additional guidance with the activities, including two trainers who made recommendations about activity strategies they thought *SciGirls* might share with others. A tenth said the trainers needed to do more and less than a tenth explained that they would appreciate help from SciGirls staff with training outreach. About one-sixth shared miscellaneous feedback, commenting on needing help from local partners and making changes to training timing, among other responses.

2a.9 Trainings with participants needing additional support or follow-up: Out of the 56 trainers who completed a TWRF, 48 responded when asked if they had training participants who might need additional support or follow-up from *SciGirls* staff. Nearly two-thirds of these 48 trainers indicated that they did not think this was the case at the time they completed the TWRF. Of those trainers who identified participants who might be in need of additional support or follow-up from *SciGirls* staff, a tenth each pointed to attendees with questions about training qualifications or professional development and/or attendees in need of follow-up with or after the implementation of their *SciGirls* program. Less than a tenth each commented on the need for follow-up regarding *SciGirls* materials and/or had questions about getting more involved. A tenth shared miscellaneous responses.

Part 2b: Trainers' annual reflections

Beginning in Year 2, the evaluation team developed, piloted, and then implemented use of the online [Trainer Annual Reflection Form (TARF)](#). The TARF was completed by *SciGirls CONNECT* trainers at the end of each year that they worked as a trainer. The form gave trainers an opportunity to look back on the year and reflect on their experience as a trainer through a series of open-ended questions.

A total of 25 trainers submitted 38 forms, with some trainers filling out forms in multiple years. More than half of the trainers filled out one TARF, just under half filled out two TARFs, and less than a tenth filled out three TARFs. For the purposes of this evaluation, forms filled out in different years by the same trainer are considered distinct TARF submissions. As noted in the [*SciGirls CONNECT* Annual Report: 2014-2015](#), there were 45 active *SciGirls* trainers working over the grant period, for a TARF response rate of just over one-half.

2b.1 Highlights of being a *SciGirls CONNECT* trainer: When asked about the highlights of their experience as a *SciGirls CONNECT* trainer, half of the 38 trainers noted that they had enjoyed sharing *SciGirls* with others. Slightly less than half explained that they appreciated the opportunity to make connections and work with other people and organizations. About one-fifth pointed to the positive impact *SciGirls* had on others, while more than a tenth commented on the *SciGirls* Reflect meeting in Seattle in December 2015. A tenth of the trainers described the personal impact of being a *SciGirls CONNECT* trainer, and just over a tenth shared miscellaneous feedback.

2b.2 Accomplishments of the *SciGirls CONNECT* trainers: Considering the overall goals of *SciGirls CONNECT*, the trainers were asked to comment on their main accomplishments as trainers. The majority of the 38 trainers pointed to the accomplishment of sharing *SciGirls* with educators and organizations, primarily through trainings. About a fifth described some of their personal accomplishments, such as feeling more comfortable, confident, knowledgeable, or connected to members of their community. Just over a tenth each commented on reaching girls and/or other ways they had been involved with *SciGirls*. Less than a tenth explained that helping start or expand a *SciGirls* program had been one of their main accomplishments.

When asked which *personal* accomplishments they were most proud of, the trainers generally pointed to three main achievements: sharing *SciGirls* in some way, learning to lead trainings, and the knowledge they gained. A smaller group of trainers shared miscellaneous responses.

2b.3 Factors that facilitated success: When asked about the main factors that facilitated or helped them succeed over the course of the year, more than half of the 38 trainers pointed to the trainer resources that were provided online and in physical form. Slightly less than half commented on the training, follow-up (including quarterly calls and webinars), and general support provided by *tpt*. Three-tenths explained that their success had been facilitated or helped by peer group support of some kind, and more than one-tenth attributed their success – at least in part – to their personal experience. About a fifth of trainers shared miscellaneous feedback.

2b.4 Feedback regarding the *SciGirls* training resources: The trainers were asked if they found the *SciGirls* training resources helpful, and to explain why or why not. Nearly all the 38 trainers noted that they found at least some of the resources helpful. Those who commented on the value of specific resources generally pointed to either the webinars or web resources. This was likely because the TARF question drew their attention to those specific resources, as follows: "*Have you found the SciGirls training resources that you received to be helpful? (e.g. Ning, webinars, other resources) Please explain why or why not.*" Additionally, a fifth of trainers described various resources they felt could be improved and just under a fifth shared miscellaneous responses.

Next, the trainers were asked how any of the resources could be improved and what else *SciGirls CONNECT* could give them that would be helpful. Out of the 38 trainers who were surveyed, 35 answered the question, and no one improvement stood out to the majority of these trainers. The largest group, a fifth, said no improvements were needed. Of those trainers who pointed to specific improvements, another fifth explained that the web resources could be improved in some way. Just over a tenth each commented on the video resources, learning opportunities for trainers, or suggested various ways they thought the program should continue as before. Smaller groups pointed to the training resources or webinars. Finally, a fifth shared miscellaneous feedback and one trainer said s/he was "*not sure.*"

2b.5 Extent to which prior experience training adults helped with their work as *SciGirls* trainers: When asked if they trained adults as part of their regular job, roughly four-fifths of the 38 trainers said they did or used to do this work. About one-sixth indicated they had little or no experience training adults other than the trainings they did with *SciGirls*, and one trainer answered "*N/A*" in response to the question.

Next, the 31 trainers who indicated that they had previously trained adults were asked about the extent to which this experience helped in their work as a *SciGirls* trainer. About half of this subgroup of trainers explained that their experience training adults gave them a sense of comfort, confidence, or familiarity in their *SciGirls* trainings. Nearly two-fifths indicated that the experience helped them better understand adult audiences, for example helping them "read" adults and understand how adults learn. A tenth each said the experience made them more knowledgeable (with two trainers pointing specifically to educational pedagogy) and/or that it facilitated their outreach efforts. About a sixth shared miscellaneous feedback.

2b.6 Schedule flexibility and supervisor support: When asked about the flexibility of their regular work schedules in terms of fitting in their *SciGirls CONNECT* work, half of the 38 trainers described having flexible schedules and a quarter explained that their schedules were fairly flexible. One-sixth said it depended on the day or the time of year, and less than one-tenth said their schedules were at least somewhat inflexible.

Next, the trainers were asked to reflect on the level of support they received from their supervisors while completing their *SciGirls CONNECT* training responsibilities, and to explain if and how this level of support had changed over time. About two-fifths of the 38 trainers explained that their supervisors were supportive and constant with this support over time. The next largest group, a third, indicated that their supervisors were supportive but didn't comment on if and how this support had changed over time. Though the reasons for this omission are unknown, it is possible that the second part of the TARF question was simply overlooked by these trainers. About a tenth of the trainers indicated that their supervisors were supportive but that their support had fluctuated in some way, and less than a tenth said they received little or no support from their supervisors. About one-tenth explained that the question didn't apply to them, for various reasons. In general, there were no changes in response rates over the course of the grant period.

2b.7 Impact of working as a *SciGirls* trainer: The trainers were asked to comment on the extent to which they had a passion for inspiring girls' interest in STEM and STEM careers before they began working as a *SciGirls* trainer. For trainers who submitted multiple TARFs over the evaluation period, only their first submissions were considered in response to this question, for a total of 25 trainers. The majority of this group indicated they were passionate about inspiring girls in STEM before becoming a *SciGirls* trainer. A fifth explained that they were at least somewhat passionate – with many in this group commenting on the impact *SciGirls* had on them – and a handful noted that their passion grew only after they began working as a trainer. All of the trainers went on to explain that working as a *SciGirls* trainer helped to create or reinforce their passion for inspiring girls' interest in STEM and STEM careers.

When asked if their work as a *SciGirls* trainer had influenced or changed their attitudes about STEM learning and girls in any way, two-thirds of the 38 trainers said yes and explained that their experience as a trainer had a positive impact on their attitude, for example correcting misconceptions and strengthening commitments, among other impacts. Though the remaining third of trainers said no, they generally indicated that this was because they had experience with STEM learning and girls prior to becoming a *SciGirls* trainer.

2b.8 Challenges faced by the *SciGirls CONNECT* trainers: When asked to comment on any challenges they may have faced in accomplishing their goals as trainers, about a third of the 38 trainers identified time as the biggest barrier. Just under a fifth commented on budget-related barriers. More than a tenth each shared feedback about the challenges they faced finding training participants, explained they would have liked to do more, said they hadn't experienced any challenges or barriers in accomplishing their goals as trainers, commented on personal issues they encountered (including one trainer who twice shared feedback about the challenges of having moved), and/or mentioned challenges related to travel. About a quarter shared miscellaneous challenges, including a handful each who commented on technical issues and difficulties with the post-training evaluation.

Next, the *SciGirls CONNECT* trainers were asked to reflect on any challenges or barriers faced in meeting the expectations *tpt* established for them as a trainer. Out of the 38 trainers who completed the TARF survey, 37 responded to the question. Just under half of this group said that they hadn't experienced difficulty meeting *tpt*'s expectations. A quarter pointed to time being a challenge, and about a fifth explained that they had trouble coordinating trainings, either in planning the event or finding enough attendees. Another fifth shared miscellaneous responses, including a handful who commented on travel barriers.

Finally, the *SciGirls CONNECT* trainers were asked to reflect on the challenges they identified and comment on any factors they thought might have played a role in creating or contributing to these challenges. Out of the 38 trainers who completed the survey, 34 responded to the question. More than a quarter of this group pointed to time constraints or competing priorities, while about a fifth explained that there were no contributing factors or answered "*N/A*." More than a tenth each explained that outreach barriers and/or confusion about an aspect

of the project contributed to the challenges they faced. Just under a tenth explained that the barriers they faced were related to personal issues, and one trainer expressed uncertainty, responding, "*I am not sure.*" One-fifth of trainers shared miscellaneous feedback.

2b.9 Additional feedback about the *SciGirls CONNECT* training program: Next, the trainers were asked if they had additional feedback about the *SciGirls CONNECT* training program and how the *SciGirls* team could help improve upon their experience for the future. Out of the full group of 38 trainers, 26 opted to answer the question; it's possible that the remaining 12 trainers left the question blank because they didn't have anything to share. Nearly three-fifths of the 26 trainers explained that they had nothing to add, with the majority going on to praise the program and/or thank the *SciGirls* staff. About a fifth commented on the importance of continued trainer education, and less than a tenth had questions about adding trainers to their region (shared by two different trainers in two different years). Around a fifth shared miscellaneous feedback.

Part 3: Educator feedback and reports on their *SciGirls* training and program implementation

Part 3a: Educator feedback on training

During Year 1, the evaluation team developed and piloted a paper version of the [Educator Training Feedback Form (ETFF)](). The ETFF asked educators who attended a *SciGirls* training about their experience at the training and their expectations for implementing *SciGirls* programs within the next 12 months.

In all, during Years 2 - 5 of the project a total of 1070 educators participated in *SciGirls* trainings and completed an online [Educator Training Feedback Form (ETFF)]() about their experience at the training and their expectations for implementing *SciGirls* programs within the next 12 months. These educators represented a wide range of organizations, including K-12 schools, science centers, girl-serving organizations, and other non-profit organizations. As noted in the [*SciGirls CONNECT* Annual Report: 2014-2015](), since 2011, 2,500 educators were trained. Therefore, a little under half of the educators who were trained completed an ETFF over the course of the grant.

3a.1 Most valuable aspects of the training: Educators were asked to describe the most valuable aspect of the training. Among the 1060 educators who answered the question, nearly half pointed to the hands-on activities. One-fifth pointed to other *SciGirls* resources – most often the *SciGirls* websites, booklets, videos, games, and CDs – while another fifth pointed to the information about how girls learn STEM, the majority of whom mentioned the *SciGirls Seven*. Smaller groups pointed to general teaching ideas/tips they picked up from the training or everything. Less than a tenth shared miscellaneous responses.

3a.2 Least valuable aspects of the training: When asked to describe the least valuable aspect of the training, no one aspect stood out for the majority of the 831 educators who answered the question. More than half said *nothing* was least valuable. Less than a tenth of educators pointed to some aspect of the training conditions, typically the facilities used, the length of the training, the time of day, the room temperature, or the training setting. Smaller groups commented that the training featured too much focus on either the *SciGirls Seven*, projects, and/or the website, or said they already knew the material presented at the training. More than a fifth shared miscellaneous feedback not mentioned by the other educators.

3a.3 Most valuable things learned: Educators were then asked to describe the most valuable thing they learned from the training. Among the 1000 educators who answered the question, the largest group, just over one-third, focused on the information provided about how girls learn STEM, two-fifths of whom referenced the *SciGirls Seven*. A slightly smaller group focused on the information or skills they gained relating to the activities demonstrated at the training. Smaller groups of educators pointed to other valuable things learned, including: teaching ideas that were applicable to their educational setting, access to the *SciGirls* resources, the STEM content featured, the flexibility of the *SciGirls* program, and the value of mentors. Nearly one-fifth pointed to miscellaneous elements not mentioned by other educators.

3a.4 Value of the individual training sessions: Overall, the educators found all of the training sessions valuable. While there were some differences of opinion as evidenced by the range of ratings in each case, in general, the gender equity/*SciGirls Seven* session and the *SciGirls* activity session were both rated as *extremely valuable* (median rating 5.0) on a scale of 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*). The introductions/overview to *SciGirls* mission and program elements session and the wrap-up/reflections session were each rated as *very valuable* (median rating 4.0).

3a.5 Overall satisfaction with training: When the educators were asked for their level of agreement with four statements about their satisfaction with the training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*), overall they indicated they were satisfied. While there were some differences of opinion as evidenced by the range of ratings in each case, the educators *strongly agreed* (median rating 7.0) that the training was well run and organized, that they found the training to be a good use of their time, and that they had fun at the training. The educators generally *agreed* (median rating 6.0) that they learned a lot about how girls learn, experience, and enjoy science, and were *neutral* (median rating 4.0) about whether they would have liked more information about the agenda before they arrived.

3a.6 Training impact on skill levels: Educators were asked to reflect on their skill level in implementing the *SciGirls* activities covered at the training before vs. after the training, using a scale from 1.0 (*no skill*) to 5.0 (*advanced skill*). While there were some differences of opinion, the educators generally reflected that they had *medium skill* (median rating 3.0) prior to the training and *above medium skill* (median rating 4.0) after.

Educators were also asked to reflect on their skill incorporating three strategies or processes when implementing the *SciGirls* activities covered at the training. While there were again differences of opinion, the educators generally reflected that they had *little skill* (median rating 2.0) incorporating the *SciGirls Seven* strategies prior to the training but *above medium skill* (median rating 4.0) after. They further indicated that previously they had *little skill* (median rating 2.0) incorporating the engineering design process but after the training had *above medium skill* (median rating 4.0). Finally, they indicated that they had *medium skill* (median rating 3.0) incorporating the science inquiry process prior to the training, and after the training had *above medium skill* (median rating 4.0).

3a.7 Whether the training changed educators' thinking about girls in STEM: When asked to consider whether the training changed their thinking about girls in STEM, more than four-fifths of the 1022 educators who answered this question indicated that the training *did* change their thinking in some way. The remaining educators indicated that the training *reinforced* their thinking or that they *already knew* the material presented, with a small group of educators indicating that the question *wasn't applicable*.

3a.8 Whether the training omitted or covered topics in insufficient depth: The majority of the 794 educators who answered the question indicated that nothing was omitted or covered in insufficient depth. Small groups of educators indicated there were some topics or activities they would have liked to see covered or addressed more fully, including: gender issues, STEM content other than math or biology, math content, biology content, or reaching diverse audiences. About a fifth shared miscellaneous comments.

3a.9 How educators expected to apply what they learned at the training: Among the 902 educators who responded when asked how they expected to use or apply what they learned at the training, the largest group, about a third, pointed to miscellaneous applications not mentioned by other educators. Smaller groups of educators pointed to specific program types or ways that they planned to use what they learned, including: classroom-based programs, after-school programs, summer programs, or other program types. Other ways educators planned to apply what they learned involved directly using or sharing either the *SciGirls* resources or the *SciGirls Seven*.

3a.10 Readiness for training utilization: The educators were asked to rate how strongly they agreed or disagreed with five statements about their readiness for applying information learned at the training on a scale from 1.0 (*strongly disagree*) to 7.0 (*strongly agree*). While there were some differences of opinion, overall, the educators *agreed* (median rating 6.0) that they: could clearly describe the *SciGirls Seven* strategies to a colleague, felt well prepared to implement the *SciGirls* activities in girls-only settings, felt well prepared to implement the *SciGirls* activities in mixed-gender settings, and planned to incorporate the *SciGirls Seven* strategies throughout other areas of their work. The educators were generally *neutral* (median rating 4.0) about preferring more opportunities to relate the training material to their own situations.

3a.11 Expected timeframe for using what was learned at training: When asked about the timeframe for which they planned to use or apply what they learned at the training, 911 educators responded to the question. Of this group, one-half expected to use or apply what they learned in 6 months, while one-third pointed to 3 months, more than one-tenth to 1 year, and a handful shared another type of response (saying, for example, "*anytime*" or "*I do not want to be contacted regarding this*").

3a.12 Expectations of sharing something about the training with other educators: Educators were asked whether they expected to share something relating to the training with other educators. More than three-quarters of the 515 educators who answered this question said they planned to share something with one or more educators, with most of these educators listing names of personal contacts, often colleagues. One-fifth said they did not currently plan to share about the training with others, most often stating "*not applicable*" or "*I do not know*," and a few gave other answers that related to an aspect of the training.

3a.13 Interest in becoming a *SciGirls* trainer: Based on their experience at the training, educators were asked to indicate how interested they were in becoming a *SciGirls* trainer on a scale from 1.0 (*not at all interested*) to 5.0 (*extremely interested*). Generally speaking, the educators were *moderately interested* (median rating 3.0), although they shared a range of ratings.

3a.14 Suggestions for improving *SciGirls* training: Based on their experience at the training, educators were invited to provide any suggestions for improving future *SciGirls* trainings. Nearly two-thirds of the 676 educators who answered the question indicated that no improvements were needed, while small groups of educators made various suggestions that related to the training logistics, activities, or resources. Just over a tenth shared miscellaneous feedback.

Part 3b: Educator reflections on their programs

During Year 2, the evaluation team developed and piloted the [Educator Program Report and Reflection Form (EPRR)](#), an online form to be completed by educators who finished their *SciGirls* training and began to implement local *SciGirls* programs. The purpose of the EPRR was to capture information about the kinds of programs educators implemented, the highlights and challenges encountered, and the extent to which *SciGirls* strategies and resources were used.

Part 3b presents the findings from the program report forms completed by educators who implemented *SciGirls* programs between 2012 and 2015 and subsequently completed the EPRR. Though their programs took place between 2012 and 2015, Part 3b accounts for the program reports submitted between February 6, 2013 and July 2, 2015. In interpreting the educators' responses, it is important to note that these numbers only apply to forms submitted during this 29-month period, and do not necessarily reflect the total sum of *SciGirls* activity as a whole. As reported in the [*SciGirls* CONNECT Annual Report: 2014-2015](#), since 2011, more than 800 *SciGirls* programs took place. This estimate was calculated by *tpt* from EPRR feedback and responses to a separate form, the Partner Yearly Report (PYR). Given the relative uncertainty of the estimate, and that this evaluation only looked at EPRRs submitted between 2013 and 2015, the overall response rate of educators who coordinated *SciGirls* programs is unknown.

During the 2013-2015 timeframe, 111 educators submitted 143 forms about their programs, with 20 educators reporting on two or more programs. More than four-fifths of these 111 educators submitted one EPRR, about a tenth submitted two EPRRs, and less than a tenth each submitted three or four EPRRs. For the purposes of this evaluation, multiple forms filled out by the same educator are considered distinct EPRR submissions.

3b.1 Years programs were held: Out of the 143 EPRR respondents, 134 shared information about the years their programs were held. Of this group, about half of the educators indicated that their programs were held in 2014, while more than two-fifths noted their programs were held in 2013. The least active years, each with less than one-tenth of educators' reported program offerings per year, were 2012 and 2015.

3b.2 Program types: Out of the 143 EPRR respondents, 142 shared information about the type of program they held. Of this group, more than half explained that their programs were held after school, and nearly two-fifths said they were held during the summer. Less than one-tenth each had programs that were held on a weekend, during school, or in the evening. Around one-tenth of educators' programs were a type other than those listed.

3b.3 Program settings: Out of the 143 EPRR respondents, 142 shared information about the settings in which they held their programs. Of this group, more than half explained that their programs were held at a school. Less than a tenth each said their programs were held at a community center, library, or a museum or science center. About one-fifth of the educators said their programs were held at other locations.

3b.4 Program lengths: All of the 143 educators responded to the survey question about program length. Two-fifths of the educators identified their programs as ongoing, more than a fifth said they were about 1 hour in duration, and a fifth noted their programs were 2 to 3 hours long. More than one-tenth of the educators held programs that were more than 3 hours long, and a handful each said their programs were less than 1 hour or overnight.

3b.5 How youth participated in programs: Educators were asked to check off which of the ways youth participated in their programs. The 10 activity strategies listed are reflected in the *SciGirls Seven*. Out of the 143 EPRR respondents, 127 shared information about how youth participated in their programs. Of this group,

three-quarters or more of the educators indicated that the youth at their programs engaged in projects, collaborated in groups, received positive feedback, approached projects in their own way, and expressed individual viewpoints. More than three-fifths each reported that their youth communicated findings to the group using a variety of techniques, that the youth worked on a project designed to be personally relevant and meaningful to them, and/or that they discussed STEM careers. More than half noted that the youth developed relationships with role models or mentors and less than half indicated their youth used solid evidence to support claims when communicating findings. Less than one-tenth described other kinds of participation, including two educators who explained that their programs were primarily for adults, as in: "*Discussed STEM opportunities in/out of school for girls their age*," "*Only teachers participated in these sessions*," and "*Training.*"

3b.6 Program highlights: Reporting on their *SciGirls* programs, educators were asked to describe the program highlights. Of the 113 educators who identified a program highlight, around two-fifths each pointed to the hands-on elements of their programs or to the *fun* or *excitement* they observed in their girls as they participated in a *SciGirls* program. One-quarter of the educators pointed to the scientific inquiry/investigative elements of their programs, while smaller groups pointed to the development of confidence they observed in their participating girls, the teamwork and collaborative elements of their programs, and/or to the STEM content featured. A small number of educators pointed to the mentoring and/or STEM career elements of their programs.

3b.7 Program challenges: When asked to describe any challenges they faced in implementing their *SciGirls* programs, no one element stood out among the 109 educators who responded to the question. Most often these educators pointed to challenges they experienced in either recruiting girls to attend or stay in their programs or in managing participant dynamics during their programs. Somewhat smaller groups of educators pointed to time constraints, coordination and management of staff, supply and material issues, facility/equipment issues, and/or money and funding constraints. Just under one-tenth stated they did not face any challenges in implementing their programs, and more than a tenth pointed to miscellaneous challenges.

3b.8 Efforts to evaluate programs: Nearly two-fifth of the 143 educators surveyed indicated that they had an opportunity to evaluate how their programs impacted their youth. Of this subgroup of educators, 46 shared feedback about their methods of evaluation. Half of the educators who commented on how they evaluated their programs offered some kind of survey as a means of evaluating impact, while more than a quarter indicated that they used discussion to gauge impact. Less than a fifth explained that they relied on observation to evaluate their youth, and more than one-tenth gathered feedback through other means.

3b.9 Number of youth who attended the programs: Overall, 134 educators estimated the number of youth participants who attended their programs. Here and in the sections below, in cases where educators provided estimated ranges (for example, "*6-12*"), the median value of the provided range was used in estimating total attendance. Additionally, among educators who reported on the number of attendees at each session (as in, "*8-14 each session, average = 11*"), the reported average for a single session was used to determine a conservative attendance calculation, so as not to count repeat attendees more than once. With these notes in mind, the educators' estimates ranged from a low of 2 to a high of 2000. On average there were 45 youth per program, with a total of 5998 youth attending across the 134 programs.

3b.10 Community types where youth resided: In all, 136 of the 143 educators shared information about the communities where youth who attended their programs resided. These educators most often indicated that they served youth from urban or suburban communities, with rural communities being less frequently cited.

3b.11 Grade level: Out of the 143 surveyed educators, 135 shared information about the number of youth they reached in the following grade ranges: kindergarten through 2nd grade, 3rd through 5th, 6th through 8th, and 9th through 12th. In total, these 135 educators reported reaching 6044 youth in kindergarten through 12th grade. This estimate was slightly larger than the 5998 youth estimated by the 134 educators who shared youth attendance in Part 3b.9, perhaps (but possibly not entirely) due to the information reported by an additional educator. The 135 educators who estimated grade level indicated that just over two-fifths of youth were in grades 6 through 8, while 3rd through 5th graders made up one-third of youth. Nearly a fifth were in 9th through 12th grade, and less than a tenth were in kindergarten through 2nd grade.

3b.12 Gender: Out of the 143 educators, 135 shared estimates of the number of girls and boys reached, for a total of 6015 youth. For unknown reasons, this total estimate differed slightly from previous total estimates shared in elsewhere in Part 3b. The 135 educators indicated that nearly three-fourths of the total number of youth at their programs were girls, compared to more than a quarter who were boys.

3b.13 Racial/ethnic background: Of the 143 EPRR respondents, 132 shared information about the races or ethnicities represented at their programs. Of this group of 132 educators, more than four-fifths reported that their programs were attended by White youth. Nearly two-thirds of educators explained that their programs were attended by youth of Hispanic or Latino origin, and more than half noted that their programs were attended by African-American or Black youth. About a third each reported that their programs were attended by multiracial youth or Asian or Indian youth, and about a sixth of educators reported their programs were attended by Native American or Alaskan Native youth. A handful of educators reported that their programs reached Native Hawaiian or Pacific Islander youth.

3b.14 Other types of individuals present at programs: Of the 143 EPRR respondents, 126 shared information about other individuals (other than themselves and their youth) who attended their programs. Though reasons for the non-responses are unknown, it is likely that at least some educators left the question blank to indicate that no other individuals were present. The 126 educators who answered the question indicated that other educators were present at more than two-thirds of their programs, while community volunteers were present at about half. Parents and guardians were present at about a third of the programs, grandparents were present at less than one-tenth, and more than a tenth of programs were attended by other individuals, including: summer camp staff, afterschool program coordinators, STEM role models, undergraduate female engineers, and guest speakers from the community.

Conclusions

Consideration of the key evaluation questions

In closing, below we consider the key evaluation questions relating to the Train-the-Trainer training, the annual feedback gathered from *SciGirls* trainers, the training for educators, and a limited sample of *SciGirls* programs, summarizing the key findings in each case.

SciGirls Train-the-Trainer training

During Years 1, 3, and 5 of the project the evaluation team provided paper copies of the Train-the-Trainer Evaluation Form (TTT) for use at the *tpt*-hosted Train-the-Trainer trainings, wherein *SciGirls* staff trained a new group of trainee educators each of these years. Over the course of the reporting period, 46 trainees submitted TTTs.

➲ *To what extent did the training improve trainees' confidence, sense of preparation, and ability to share SciGirls with others?*

Overall, the 46 trainees who completed the TTT indicated that the Train-the-Trainer training *greatly increased* their confidence in their ability to train and mentor others. Some went on to explain that their confidence was impacted by the opportunity to practice or prepare for their own trainings and by learning about the *SciGirls Seven* strategies, among other factors.

Furthermore, the trainees generally indicated that, after receiving their training, they felt *very prepared* to begin training and mentoring others on *SciGirls*. When invited to comment on any concerns they might have about their level of preparation, some explained that they needed more practice, others thought they needed to review the materials, and a handful wanted more guidance on how to organize their own trainings, among other responses. At the same time, a number of trainees left the question blank or indicated that they didn't have any concerns.

Finally, the trainees' generally reported that, after their training, they had a good understanding of the goals of *SciGirls CONNECT*, thought they were ready to network with their colleagues to help establish the *SciGirls CONNECT* community, and felt confident in leading a 1-day professional development training workshop on behalf of *SciGirls*.

➲ *Did trainees indicate that they gained knowledge and skills from the training?*

In general, the trainees indicated that their knowledge of gender equity/*SciGirls Seven*, adult learning strategies, and the *SciGirls* activities used at the training all increased due to their attendance at the Train-the-Trainer training. Elsewhere in their TTTs, the trainees indicated that they acquired knowledge at the training that would have been difficult to obtain without being there in person.

When asked about the most valuable ideas, concepts, or facts gained at their training, the largest group of trainees pointed to knowledge gained about the *SciGirls Seven* and gender equity strategies. Smaller groups appreciated the information about implementing activities and resources, commented on the strategies for working with adult learners, or noted that they found the information about working with a diverse group of youth to be most valuable, among other responses.

Next, the trainees indicated that their skill levels in incorporating the *SciGirls Seven* into their training presentations, using the *SciGirls* tools and resources, explaining/demonstrating the *SciGirls* activities used in the training, and advising or mentoring trainees were all at a higher level after they attended the Train-the-Trainer training. When asked about the most useful skills they thought they gained from the training, the largest group of trainees pointed to skills gained in incorporating and communicating the *SciGirls Seven* strategies. Others commented on skills gained in working with adult learners, implementing *SciGirls* activities, or working with diverse student audiences, among other responses.

⊃ *Did trainees feel the training was well organized and run?*

Overall, the trainees indicated that they felt the training was well run and organized, that they found it to be a good use of their time, and that they had fun. They also generally felt that the training met their expectations.

⊃ *What did trainees like most and least about the training?*

The largest group of trainees indicated that they most liked the opportunity to collaborate and network with other participants. Smaller groups pointed to the hands-on activities, the focus on adult learning strategies, or something relating to the training format or process, among other responses.

When asked to describe what they liked *least* about the training, the largest group of trainees pointed to something about the logistics, such as the schedule and the time they spent sitting. Smaller groups left the question blank, explained that they disliked an aspect of the way the training was presented, said they liked everything, noted that they wanted to learn more about adult learning, or indicated that they wanted additional activities, among other responses.

⊃ *What did trainees hope to gain from being a SciGirls CONNECT trainer, and how did they think their involvement would affect their work?*

When invited to comment on what they hoped to gain from being a *SciGirls CONNECT* trainer, the trainees most often pointed to networking opportunities, the experience of sharing *SciGirls* with educators, professional development, and the opportunity to impact girls, among other responses. In each case, the majority of trainees also indicated that they thought their work as a *SciGirls CONNECT* trainer would affect their current job, their longer-term career or professional growth, and/or their institutions.

⊃ *Did trainees have suggestions for improving the training experience?*

When asked if they had suggestions for how *tpt* could improve the Train-the-Trainer training for future participants, a number of trainees left the question blank, potentially indicating that they had nothing else to add. Of those who shared a response, the largest group suggested a change to the format of the training, while smaller groups expressed a desire for more discussion or reflection, said they had no suggestions, or recommended additional hands-on activities, among other responses.

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Annual feedback from *SciGirls* trainers

Beginning in Year 2, the evaluation team developed, piloted, and then implemented use of the online [Trainer Annual Reflection Form (TARF)](#). This form was completed by *SciGirls CONNECT* trainers at the end of each year that they worked as a trainer. A total of 25 trainers submitted 38 forms, with some trainers filling out forms in multiple years. For the purposes of this evaluation, forms filled out in different years by the same trainer are considered distinct TARF submissions.

➲ *What did trainers identify as the highlights of being a SciGirls CONNECT trainer?*

When asked about the highlights of their experience as a *SciGirls CONNECT* trainer, the largest group of the 38 trainers who completed a TARF noted that they enjoyed sharing *SciGirls* with others over the course of the year. A slightly smaller number explained that they appreciated the opportunity to make connections and work with other people and organizations. Even smaller groups pointed to the positive impact *SciGirls* had on others, commented on the *SciGirls* Reflect meeting in Seattle in December 2015, or described the personal impact of being a *SciGirls CONNECT* trainer, among other responses.

➲ *What were trainers' main and personal accomplishments each year they were involved in the project?*

Considering the overall goals of *SciGirls CONNECT*, the trainers were asked to comment on their main accomplishments as trainers. The majority pointed to the accomplishment of sharing *SciGirls* with educators and organizations, primarily through trainings. Smaller groups described some of their personal accomplishments (such as feeling more comfortable, confident, knowledgeable, or connected to members of their community), commented on reaching girls, noted other ways they had been involved with *SciGirls*, or explained that helping start or expand a *SciGirls* program had been one of their main accomplishments.

Next, when asked which personal accomplishments they were most proud of, the trainers generally pointed to three main achievements: having shared *SciGirls* in some way, having learned to lead trainings, and the knowledge they gained though their involvement in the program. A smaller group of trainers shared other responses.

➲ *Did trainers find the training resources helpful, and did they have suggestions for improving the resources?*

Nearly all of the trainers noted that they found at least some of the resources helpful, with one trainer describing him or herself as "*indifferent*" about the helpfulness of the resources. In particular, the trainers identified the webinars and web resources as being helpful, though this was likely because the TARF question drew their attention to those specific resources, as follows: "*Have you found the SciGirls training resources that you received to be helpful? (e.g. Ning, webinars, other resources) Please explain why or why not.*"

When asked how any of these resources could be improved and what else *SciGirls CONNECT* could give them that would be helpful, no one improvement stood out to the trainers. The largest number of trainers explained that no improvements were needed. Of those trainers who pointed to specific improvements, the biggest groups explained that the web resources could be improved in some way, commented on the video resources, or noted they would like more opportunities for trainers to learn, among other responses.

➲ *To what extent did the training improve the trainers' passion for inspiring girls in STEM and attitude toward STEM learning and girls?*

First, the trainers were asked to comment on the extent to which they had a passion for inspiring girls' interest in STEM and STEM careers before they began working as a *SciGirls* trainer. For trainers who submitted multiple TARFs over the evaluation period, only their first submissions were considered in response to this question. The majority of this group of 25 trainers explained that they were passionate about inspiring girls in STEM before becoming a *SciGirls* trainer. A smaller number of trainers explained that they were at least somewhat passionate – with many in this group commenting on the impact *SciGirls* had on them – and a handful noted that their passion grew only after they began working as a trainer. All of the trainers went on to explain that working as a *SciGirls* trainer helped to create or reinforce their passion for inspiring girls' interest in STEM and STEM careers.

Next, when asked if their work as a *SciGirls* trainer influenced or changed their attitudes about STEM learning and girls in any way, the majority of the 38 trainers said *yes* and explained that their experience as a trainer had a positive impact on their attitude, for example correcting misconceptions and strengthening commitments, among other impacts. Though the remaining trainers said *no*, they generally indicated that this was because they had experience with STEM learning and girls prior to becoming a *SciGirls* trainer.

➲ *Did trainers face any challenges in meeting their goals or tpt's expectations?*

The largest number of trainers identified time as the biggest barrier to their personal training goals. Smaller groups commented on budget-related barriers, the challenges they faced finding training participants, personal issues, challenges related to travel, or explained that they would have liked to do more, among other responses.

When asked to reflect on any challenges or barriers faced in meeting the expectations *tpt* established for them as a trainer, the largest number of trainers said that they hadn't had trouble meeting *tpt*'s expectations. Smaller groups pointed to time being a challenge or explained that they had trouble coordinating trainings, among other responses.

SciGirls training for educators

During Year 1, the evaluation team developed and piloted the [Trainer Workshop Reflection Form (TWRF)](#) and then created an online version that was administered to trainers beginning in Year 2. This form was designed to be completed by *SciGirls* trainers each time they conducted a full-day *SciGirls* training for partners and local educators. Over the course of Years 2 through 5 of the project, a total of 31 trainers submitted 56 online forms about their programs, with some trainers reporting on multiple trainings. For the purposes of this evaluation, multiple forms filled out by the same trainer are considered distinct TWRF submissions.

Also during Year 1, the evaluation team developed and piloted a paper version of the [Educator Training Feedback Form (ETFF)](#) and then made the form available for online completion in Year 2. The ETFF asked educators who attended a *SciGirls* training about their experience at the training and their expectations for implementing *SciGirls* programs within the next 12 months. In all, 1070 educators participated in trainings and completed an online evaluation form during Years 2 through 5 of the project. In interpreting the educators' responses, it is important to note that the information summarized in the report only applies to educators who

submitted training evaluation forms in this timeframe, and does not necessarily reflect the total sum of educator feedback during the grant period.

➲ *What did trainers identify as the highlights and challenges of their training?*

The 56 trainers who filled out the TWRF generally identified three main highlights or successes of their training: educators' excitement, engagement, or increased comfort with the material; the activities; and the group discussions. Smaller groups pointed to the networking opportunities for educators and organizers, the diversity of participants, and large turnouts, among other responses.

When asked about the greatest challenge of their training, no single element stood out to the majority of trainers who answered the question. Small groups pointed to technical issues, attendance, communicating with educators, time management/scheduling, something related to the activities, the venue, and a lack of participant engagement, among other responses.

➲ *What resources and forms of support from tpt did the trainers find most and least helpful?*

The majority of *SciGirls* trainers explained that they thought the PowerPoint template and slides were most helpful resource or form of support. In addition to being appreciative of how it reduced their workload (for example, having it "*ready to go with minimal work for trainers is a HUGE time saver")*, they were also pleased to be able to modify the PowerPoint to suit their needs (as in, "*I liked the prepared PowerPoint that I could easily customize to fit my training*"). Smaller groups of educators pointed to the video resources (both online and on DVD), the activities or activity guides, the online resources, or the organizational support provided by *SciGirls* staff, among other responses.

When asked about the *least* helpful resource or form of support, no single element stood out to the majority of trainers. The largest group of trainers wrote "*N/A*" or explained that everything was helpful, while others said they were "*not sure*" or left the question blank. Of those who identified a least helpful resource or form of support, some pointed to the online resources, other indicated that either the online or DVD video resources were least helpful for various reasons, and smaller groups identified the post-training evaluation, planning checklists, or *SciGirls Seven* as least helpful, among other responses.

➲ *What did educators identify as the most and least valuable aspects of the training?*

Of the 1070 educators who completed an ETFF and shared feedback about the most valuable aspect of the training they attended, the largest group pointed to the hands-on activities, while smaller numbers commented on the other *SciGirls* resources (most often the *SciGirls* websites, booklets, videos, games, and CDs) and information about how girls learn STEM, among other responses.

When asked to describe the *least* valuable aspect of the training, no one aspect stood out for among educators who answered the question, as the majority said *nothing* was least valuable and nearly one-quarter mentioned an aspect not referenced by the rest of the group. Small groups of educators pointed to some aspect of the training conditions (typically the facilities used, the length of the training, the time of day, the room temperature, or the training setting), said the training featured too much focus on the *SciGirls Seven*, projects, and/or the website, or explained they already knew the material presented.

➲ *Did educators indicate that they gained knowledge and skills from the training?*

In general, the educators *agreed* that they learned a lot at their training about how girls learn, experience, and enjoy science. Additionally, when asked to describe the most valuable thing they learned from the training, the largest group of educators commented on the information provided about how girls learn STEM, while a slightly smaller group pointed to information or skills gained relating to the activities demonstrated at the training. Smaller groups of educators pointed to other valuable things learned, including: teaching ideas that were applicable to their educational setting, access to the *SciGirls* resources, the STEM content featured, the flexibility of the *SciGirls* program, and the value of mentors, among other responses.

In terms of the training's impact of their skill levels, the educators generally felt that they had *medium skill* in implementing the *SciGirls* activities covered at the training before their training and *above medium skill* after. They also reflected that they had *little skill* incorporating the *SciGirls Seven* strategies prior to the training but *above medium skill* after, *little skill* incorporating the engineering design process prior to the training but *above medium skill* after, and *medium skill* incorporating the science inquiry process prior to the training but *above medium skill* after.

➲ *Did educators feel the training was well organized and run?*

Overall, the educators indicated that they felt the training was well run and organized, that they found it to be a good use of their time, and that they had fun.

➲ *To what extent did the training increase educator awareness of issues in gender-equity teaching and learning? In particular, did the training raise awareness of how girls learn, experience, and enjoy science?*

When asked to consider whether the training changed their thinking about girls in STEM, the majority of educators indicated that the training *did* change their thinking in some way. Remaining educators indicated that the training *reinforce*d their thinking or that they *already knew* the material presented, with a small group explaining that the question *wasn't applicable*.

Additionally, the educators tended to *agree* that, after their training, they could clearly describe the *SciGirls Seven* strategies to a colleague, that they felt well prepared to implement the *SciGirls* activities in girls-only settings, that they felt well prepared to implement the *SciGirls* activities in mixed-gender settings, and that they planned to incorporate the *SciGirls Seven* strategies throughout other areas of their work.

➲ *How did educators expect to apply what they learned at the training?*

When asked how they expected to apply what they learned at the training, the largest group of educators pointed to miscellaneous applications not mentioned by their peers, such as "*Mother/Daughter event with SciGirls*" and "*I'll be presenting this to my department head*." Remaining educators pointed to specific program types or ways that they planned to use what they learned, including classroom-based programs, after-school programs, or summer programs, among others. The remaining ways educators planned to apply what they learned involved directly using or sharing either the *SciGirls* resources or the *SciGirls Seven*.

⮑ *Did trainers and educators have suggestions for improving the training experience?*

Of the trainers who identified improvements they would make to future trainings, the largest group explained that they would like to change something about the activities, commenting, for example, on their use of the materials and their personal preparation, among other responses. Smaller groups indicated that they would increase their personal preparation in various ways, change something about their outreach, or present the *SciGirls* research and methods in a different way. A handful each described how they would change the presentation of online resource or share additional resources, among other responses.

Based on their experience at the training, educators were also invited to provide any suggestions for improving future *SciGirls* trainings. Of those educators who answered the question, the majority indicated that no improvements were needed, while small groups shared miscellaneous feedback or made various suggestions that related to the training logistics, activities, or resources.

SciGirls programs

During Year 2, the evaluation team developed and piloted the [Educator Program Report and Reflection Form (EPRR)](), an online form to be completed by educators who finished their *SciGirls* training and began to implement local *SciGirls* programs. This evaluation presents the findings reported by educators who implemented *SciGirls* programs between 2012 and 2015 and subsequently completed the EPRR between February 6, 2013 and July 2, 2015. In interpreting the educators' responses, it is important to note that these numbers only apply to forms submitted during this 29-month period, and do not necessarily reflect the total sum of *SciGirls* activity as a whole. During this timeframe, 111 educators submitted 143 forms about their programs, with some educators reporting on two or more programs. For the purposes of this evaluation, multiple forms filled out by the same educator are considered distinct EPRR submissions.

⮑ *What did educators identify as the highlights and challenges of their SciGirls programs?*

The 143 educators who completed an EPRR and identified a highlight of their *SciGirls* program most often pointed to the hands-on elements or to the *fun* or *excitement* they observed in their girls as they participated. Smaller groups commented on the scientific inquiry/investigative elements of their programs, the development of confidence they observed in their participating girls, the teamwork and collaborative elements of their programs, and/or to the STEM content featured, among other responses.

When asked to describe any challenges they faced in implementing their *SciGirls* programs, no one element stood out among the educators who responded to the question. Most often these educators pointed to challenges they experienced in either recruiting girls to attend or stay in their programs or in managing participant dynamics during their programs. Somewhat smaller groups of educators pointed to time constraints, coordination and management of staff, supply and material issues, miscellaneous issues, facility/equipment issues, and/or money and funding constraints, while others stated they did not face any challenges in implementing their programs.

⮑ *What types of SciGirls programs did the educators hold and what were the lengths of their programs?*

The majority of educators who provided information about the type of program they coordinated indicated that they held afterschool programs. Summer, evening, school, and weekend programs were

implemented far less frequently. Most responding educators said they either held ongoing programs or one-time programs that lasted between 1-3 hours.

➲ *When and in what types of settings did educators hold their programs?*

Of the educators who provided information about the date of their program, the largest groups indicated that they held their programs in 2014 or 2013. In terms of program location, the largest group of educators held their programs at schools, with community centers, libraries, and museum/science centers hosting programs far less frequently.

➲ *How did youth participate in their programs?*

Educators were asked to check off which ways youth participated in their programs. The ten activity strategies described on the questionnaire are reflected in the *SciGirls Seven*. Of those who shared information about how youth participated in their program, more than two-thirds reported that their youth participated in ways that drew on at least seven of the ten strategies. Specifically, more than nine-tenths each indicated that their youth engaged in hands-on, open-ended projects and investigations or collaborated in groups. Meanwhile, more than three-quarters each explained that their youth: received specific, positive feedback on their effort, strategies, and/or behaviors; approached projects in their own way; and expressed their individual viewpoints within a group setting. Other strategies were reported somewhat less frequently.

➲ *How many youth attended their programs, what were the community types in which the youth lived, and what were the grade levels, gender, and racial/ethnic backgrounds of the youth?*

Among educators who estimated the number of youth participants who attended their programs, their estimates ranged from a low of 2 to a high of 2000. On average there were 45 youth per program, with a total of 5998 youth attending events where educators estimated attendance.

Of the educators who shared information about the communities where their youth resided, the largest groups indicated that they coordinated programs that served youth from urban and suburban communities, with youth in rural communities being reached at a smaller number of programs.

The educators who shared information about grade levels estimated that the majority of the youth who participated in their programs were in upper elementary school or middle school. Specifically: 6th through 8th graders made up more than two-fifths of youth, while a third were in grades 3 through 5. Less than a fifth of youth were in 9th through 12th grade, and less than one-tenth were in kindergarten through 2nd grade.

Finally, among educators who shared estimates of the number of girls and boys reached, nearly three-fourths were girls, compared to just over a quarter boys. Of those who shared information about the races or ethnicities represented at their program, more than four-fifths of educators reported that their programs were attended by White youth. Nearly two-thirds reported that their programs were attended by youth of Hispanic or Latino origin, and more than half noted that their programs were attended by African-American or Black youth. About a third each reported that their programs were attended by multiracial youth or Asian or Indian youth, and smaller numbers of educators reported their programs were attended by Native American or Alaskan Native youth or that their programs reached Native Hawaiian or Pacific Islander youth.

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➲ *To what extent were other individuals present during the programs?*

When asked to share information about other individuals (other than themselves and their youth) who attended their programs, educators who answered the question reported that other educators were present at the majority of programs, while community volunteers were present at about half. Parents/guardians, grandparents, and other individuals were present fewer programs. Additionally, some educators left the question blank, potentially indicating that no other individuals were present at their programs.

➲ *To what extent did educators evaluate their SciGirls programs?*

Nearly two-fifth of the full group of educators who completed an EPRR indicated that they had an opportunity to evaluate how their programs impacted their youth. Among those who shared feedback about their method(s) of evaluation, the largest group of educators offered some kind of survey as a means of evaluating impact, while smaller numbers used discussion or observation, among other methods.

Consideration of the overarching evaluation questions

Finally, in reflecting on the key evaluation questions and findings just considered, it is important to take into account the extent to which the evaluation was able to capture the full range of the trainees', trainers', and educators' *SciGirls* training experiences and the educators' *SciGirls* programming. The *SciGirls CONNECT* emphasis on a Train-the-Trainer model led the evaluation team to prioritize two goals: (i) assessing the various levels of *CONNECT* trainings from different vantage and time points, and (ii) capturing information on the implementation of *SciGirls* programs led by those who completed a training. This evaluation approach allowed the team to collect ongoing data over the course of the grant and share this information with *tpt* on a regular basis, serving both formative and summative functions.

At the same time, the response rates for the five forms developed for *SciGirls CONNECT* varied by form and over time, and thus do not provide a complete picture of project activity over the full grant period. The response rates ranged from a low of 33% for the TWRF to a high of 81% for the TTT; the rates for the TARF (55%) and ETFF (43%) were in between, and there was no clear way to establish a response rate for the EPRR forms. To help interpret these response rates in context, it's important to note the following:

- The evaluation and *SciGirls* teams did not designate an expected rate of return for each form at the beginning of the project, but instead monitored the form submissions periodically and worked together to find ways to increase the proportion of trainers and educators completing the various reporting requests. With the exception of the TARF, which was directly administered by Knight Williams, the remaining four forms were generally administered via *tpt* as a direct request or were made available to trainers, trainees, and educators as part of the ongoing partner expectation of participating in or leading trainings and programs (though all online forms were hosted by the independent evaluation team to ensure respondent confidentiality).

- Each form served a different purpose, and the relative importance of the formative and summative functions differed to an extent. For example, the TWRF was viewed as an important way to collect in-depth, open-ended formative information on the trainers' workshop reflections, such that *tpt* could iteratively review the feedback and provide additional assistance or direction where warranted. Therefore this information was collected on an ongoing basis but primarily analyzed and used in the project's first few years; maintaining and seeking out a higher response rate over the full project period was not a high priority.

   On the other hand, with the ETFF form, for example, given the broad-based network of educators participating in *SciGirls* trainings and programs in diverse settings over time, the project and evaluation teams sought more extensive feedback from this audience over the course of the grant. The teams discovered early on, however, that relatively few educators were completing the forms following their trainings during Year 2 when the ETFF was made available as an online form. Initially, educators received a post-training email from *tpt* asking them to essentially "please fill out this online form," but in discussions with the project team it became apparent that a paper version of the form would be easier for some educators to complete at the end of their training. The evaluation team subsequently made a paper version of the form available, and arranged for these forms to be returned for data entry. In addition, *tpt* began to tie completion of the ETFF with receipt of *SciGirls* materials. These two shifts in approach subsequently led a substantially higher number of ETFF completions in Years 3-5, although the exact rate of response from year to year is unknown and could not be readily tracked.

The project and evaluation teams made similar adjustments to each of the other forms. During Year 5 the teams also discussed recommendations for increasing response rates in future *SciGirls* evaluations relating to the design, development, and administration of each form, or subsequent versions thereof. Some of the suggestions involved the teams collaborating to, for example: 1) pilot the forms more extensively to help establish overall priorities for the evaluation and to improve question clarity; 2) shorten the forms to focus on essential questions and minimize missing data; 3) pre-notify the trainees, trainers, and educators with more advanced notice of upcoming evaluation requests so they can plan ahead to accommodate them immediately following a *SciGirls* training or program implementation; 4) consider alternate means of both distributing and collecting the various forms to allow for maximal ease of completion and return; 5) communicate to respondents the importance of committing to the ongoing evaluation process and the value of each individuals' responses to the project and their future experience in the project; 6) use incentives tied to the *SciGirls* project that can further support participants' contributions to the project and/or motivate them to continue as key stakeholders; and 7) conduct more direct follow-up to ensure timely receipt and completion of the various form requests.

With these limitations and recommendations regarding evaluation priorities and response rates in mind, the evaluation concludes with the three overarching questions introduced at the beginning of the report.

1. *How effective is the "Scale Up" model in training educators, providing resources, and building community?*

Three of the primary goals of *SciGirls CONNECT* were to train educators, provide them with resources, and build a community of informed individuals dedicated to encouraging more girls to take part in STEM activities and pursue STEM careers. Below, we consider if and how these three objectives were met over the course of the grant period.

Training educators: As noted in the [SciGirls CONNECT Annual Report: 2014-2015](#), since 2011, 45 *SciGirls* trainers completed 169 trainings for 2,500 educators, resulting in more than 800 *SciGirls* programs reaching 37,000 youth.[13] Those who attended a Train-the-Trainer training went on to train educators in their local communities, to great success.

Feedback about the Train-the-Trainer and educator trainings was overwhelmingly positive, indicating that both trainings increased participants' knowledge, skill level, confidence, and sense of preparation. However, one area for improvement might be in finding and recruiting educators. Some trainers suggested *tpt* provide additional support in this area in the future (for example, noting that they would like "*more ways to spread the word about the workshop*," including customizable flyers and connections to their local PBS stations). Additionally, a handful of trainers mentioned that *SciGirls* might want to shorten the trainings to attract new participants, as in, "*I know a lot of organizations would like shorter or incremental training. I think there is opportunity here, but I realize we also want to maintain a standard in the curriculum*." At the same time, other trainers felt that the need to do additional outreach was primarily their responsibility, as in, "*I'd focus on spreading the word in the region more and not depend on the host organization to do all the marketing*."

Another area where *SciGirls* might provide additional support is in online training registration. A few trainers ran into trouble with the NGCP's training registration website and, in one case, a rescheduling

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[13] As noted in section 3b.9 of this report, of programs where educators estimated attendance on their EPRRs, on average there were 45 youth per program. Using the data provided in the [SciGirls CONNECT Annual Report: 2014-2015](#), since 2011, more than 800 programs reached 37,000 youth, for an estimated average of 46 youth per program.

issue was avoided through an otherwise inefficient duplication of effort (as in, "*We had to reschedule ours due to the snow, if the Science center hadn't had people register through another site as well we would have had great difficulty getting a hold of everyone before the cancelation because we did not have access to the registration information on our own. At the very least, the password feature should be used to allow the trainers to access the information. Perhaps a standard, 'SciGirls' password is used*").

Providing resources: The trainees, trainers, and educators generally shared positive feedback about the *SciGirls CONNECT* resources, and in particular the activities. For example, in their TARF and TWRF submissions, the trainers praised the *SciGirls* activities, calling them "*awesome*," "*engaging*," and "*a hit*" with educators. The educators also confirmed this finding, noting that they found the hands-on activities to be the most valuable part of their training (followed by other *SciGirls* resources, such as the online resources and videos). However, some of the trainers mentioned that, if they were to revise the timing and format of future trainings, they might dedicate less time to each activity, saying that they "*don't take a full 45 minutes each*" and that "*in the second half of the day, the activities seem to go faster*."

Most of the remaining feedback about the *SciGirls* resources considered in this evaluation came from the trainers. One training resource this group found particularly valuable was the webinar series, noting that the webinars were a good way to stay up to date on "*the landscape of girls in STEM careers*," connect with their peers around the country, and gain leadership experience when invited to lead or host. One trainer mentioned that, even though some of the benefits of the webinars were not initially apparently, s/he still found thought they could be helpful, as in, "*I will say that not all of the webinars IMMEDIATELY feel like they relate, but they can relate to some part of what I do. For example, the bird webinar didn't feel like it related because in my work I wouldn't ever be able to incorporate that, BUT I present SciGirls every year at an informal science educators conference and they would LOVE that. So some of them take a little more stretching of my network.*"

Overall, the trainers liked having the resources online, and some mentioned their appreciation for *SciGirls* staff members' ongoing efforts to keep the materials up to date, as in, "*The new season 3 was fantastic timing for keeping educators who were previously trained eager to include new activities*" and "*The updates to the presentation were also really helpful.*" However, a handful of trainers mentioned that they would have liked to receive an email when new resources were posted on the Ning platform.

In spite of their overall appreciation for the online resources, some trainers expressed an interest in using physical resources like DVDs, citing concerns about Internet access at their training sites and the need to have a back-up plan in place. For these reasons, a few trainers mentioned that *SciGirls* staff might want to add technical preparation items to the pre-training checklist, as in, "*The Trainer Checklist was very helpful, but I think necessary technology for the workshop should be included on there as well. I knew I need a computer and projector, but forgot about items such as extension cords, speakers and Internet. Myself and the host were responsible for bringing all the technology since none was available at the site.*"

Building community: Though not directly addressed in the survey questions, a number of trainees, trainers, and educators shared positive feedback about the *SciGirls* community, with some noting their appreciation for how *SciGirls* established partnerships with other organizations (as in, "*The connections SciGirls is making with the NGCP, the Fabfems, the Girl Scouts, etc., speaks to the understanding of the power of collaboration, the work it takes to make it successful, and the power of multiplying efforts to make a larger-scale impact*") and others explaining that they appreciated and

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benefitted from "*the camaraderie the SciGirls team…worked to create.*" In general, respondents shared positive feedback about the range of ways they connected with their peers, including conference meet-ups, webinars, quarterly calls, and trainings. At the same time, some trainers and educators expressed an interest in strengthening these relationships by sharing ideas, networking, and learning more about the work done by others.

Additionally, given their consistent interest in connecting with other trainers, it is not surprising that the *SciGirls* Reflect meeting in late 2015 (shown in the image to the right) was widely praised by the trainers. A number of trainers who filled out a TARF in 2015 indicated that the Reflect meeting was one of the highlights of their year, with much of the praise coming from experienced trainers who had filled out TARF or TWRF surveys in years past. Though trainers' initial enthusiasm for the *SciGirls* Reflect meeting was clear, additional research would be needed to determine the longer-term impact of these kinds of meetings on trainers' passions and motivations.

SciGirls **Reflect meeting, image provided by** *tpt*

Furthermore, it appears that the *SciGirls* community was built in both formal (that is, through trainings and programs) and informal ways, at least to some extent. Though not a question on their surveys, a handful of trainers commented on how they shared *SciGirls* outside of their official work as trainers (for example, "*I have delivered SciGirls resources to a ton of people, both formally and through discussions*" and "*by becoming a spokesperson for SciGirls, anywhere I go when gender is discussed I refer people to the SciGirls resources*").

Additionally, informal feedback from *tpt* indicates that the *SciGirls* community was sustainable for the grant period, and potentially beyond. In the last three years of the project, up to approximately half of the *SciGirls* partners in any given year were active over multiple years, and a number of partners and trainers remained active after the conclusion of the grant period. Moreover, as of the submission of this report, 16 *SciGirls CONNECT* partners had signed on to partner with each of the following projects: *SciGirls Code*, *Latina SciGirls*, and *SciGirls CONNECT*[2]. In all, *tpt* received commitments from 48 of the 120 *SciGirls CONNECT* partners (40%) to join one or more of these upcoming projects, pointing to the ongoing strength and dedication of the *SciGirls* community.

The results of this evaluation indicate that *tpt* staff members were successful in meeting their goals to train educators, provide them with resources, and build a community of informed individuals dedicated to encouraging more girls to take part in STEM activities and pursue STEM careers. Central to this effort was the Train-the-Trainer model, which allowed *tpt* to build a larger network of *SciGirls*-trained educators than they would have otherwise been able to reach with their available funding. Though the results of this evaluation show that *tpt*'s use of the Train-the-Trainer model was effective from the standpoint of trainers and educators, further evaluation would be needed to consider the larger impact of the model's use.

The use of the Train-the-Trainer model has been evaluated in some educational contexts, most notably public health programs (Mutha, 2007, Hill et al., 2010, Yarber et al., 2015). As reported by Suhrheinrich

(2011), the model can be cost-effective, efficient, and particularly useful for programs focused on translating research to practice and/or concerned with providing trainees with ongoing support:

> *The train-the-trainer (TTT) model, which has also been called pyramidal training, triadic training, and helper model training, focuses on initially training a person or people who, in turn, train other people at their home agency. The TTT model has promise of being both efficient and cost-effective (LaVigna, Christian, & Willis, 2005). The TTT model may be especially useful in addressing issues of translating interventions from research to practice and providing ongoing support to trainees. The TTT model has a sound body of literature supporting its effectiveness in a variety of contexts, including residential centers (Page, Iwata, & Reid, 1982; Parsons & Reid, 1995; Shore, Iwata, Vollmer, Lerman, & Zarcone, 1995), hospitals for the mentally disabled (Whalen & Henker, 1971), experimental laboratories (Hester, Kaiser, Alpert, & Whiteman, 1995), and schools (Jones et al., 1977).*

Unfortunately, comparable evaluations in the informal science education field have not been published or are difficult to locate. Though not directly addressed in the *SciGirls CONNECT* evaluation, many of the elements Suhrheinrich touched on came into play. To help inform future *SciGirls* projects and the informal science field more broadly, future *SciGirls* evaluations might focus on topics such as: the relative cost-effectiveness and efficiency of the Train-the-Trainer model compared to other approaches; the relative value of using the Train-the-Trainer model for diffusing the *SciGirls Seven* principles to educators and girls in local settings; the impact of the Train-the-Trainer model on the STEM interest or identity of girls who are educated by those trained through a Train-the-Trainer approach; the impact of ongoing support made available through a Train-the-Trainer model and the role of supplemental support through resources and opportunities like the Ning platform, the webinar series, and the 2015 *SciGirls* Reflect meeting; and, finally, the impact of variations among *SciGirls* trainers (considering, for example, varying levels of trainer expertise and differing organizational priorities) and ways to anticipate and allow for variation in the educator trainings.

Finally, it is important to note that the success of the *SciGirls CONNECT* "Scale Up" model in reaching the three goals listed above can be attributed, at least in part, to the attention and dedication of *tpt*'s staff. Trainers consistently praised *SciGirls* and *tpt* for their ongoing support, calling the staff "*amazing*" and explaining that they know they can "*count of them for answers*" at any time. This admiration was regularly shared, from the beginning of the project through the final years of the evaluation period (as in, "*Constant connection with Niki Becker and using her as a resource to make the training go smoothly*"). This support was felt indirectly by educators attending *SciGirls* trainings, as reflected in their positive feedback noted throughout this report.

2. *How did SciGirls CONNECT impact the knowledge and skill levels of trainers and educators?*

The trainees who attended a 1.5-day training to become *SciGirls* trainers generally indicated that they learned about the *SciGirls Seven*/gender equity strategies, adult learning strategies, and the *SciGirls* activities featured at the training. Additionally, almost all of the trainees were able to identify the most useful idea, concept, or fact that they learned at their training, with the majority pointing to something related to the *SciGirls Seven*/gender equity strategies. As a group they *strongly agreed* that the knowledge they acquired at the Train-the-Trainer training would have been difficult to obtain without having been there in person.

The trainees also indicated that their skills in the following areas increased: incorporating the *SciGirls Seven* into their training presentations, using the *SciGirls* tools, explaining/demonstrating the *SciGirls* activities, and advising or mentoring others. Overall, they noted that the most useful skills gained from their

training included incorporating and communicating the *SciGirls Seven*, working with adult learners, and implementing the *SciGirls* activities.

Reflecting on the work they went on to do as *SciGirls CONNECT* trainers, many trainers shared feedback about the knowledge and skills they continued to gain, as in, "*I have become more familiar with SciGirls strategies since I need to live and breathe them when I present!*" and "*I think my main accomplishment has been to improve as a trainer. I learned from the mistakes made, and built on those to improve over the course of the different trainings I have lead.*" Some trainers also shared a desire to take part in continuing trainer education, as in, "*I would encourage holding additional updates for trainers like the SciGirls Reflect meeting. This gives trainers the opportunity to come face to face to share best practices, lessons learned and to collaborate…and continue offering engaging webinars.*"

Commenting on the impact of their trainings, the trainers consistently noted that they thought the educators who participated gained a lot from the experience. Many pointed to having witnessed educators' increased comfort and "*ah-ha moments*" firsthand, particularly on the issue of gender equity, as in, "*The most eye-opening thing for participants were the presentation on gender-equity research as well as the SciGirls Seven strategies.*" They also indicated that they thought their trainings were useful for experienced educators (for example, "*Most of the educators I trained had some kind of background in informal education, but I feel these trainings elucidate their techniques and cement them as best practices*") as well as those with less experience (as in, "*I think providing practice and resources for people not familiar with educating girls in the fields of STEM is very powerful*").

The educators generally confirmed these findings, noting that they learned a lot about how girls learn, experience, and enjoy science and that they found the sessions on gender equity and the *SciGirls Seven* extremely valuable. They also noted that they gained skills in incorporating three strategies/processes when implementing the *SciGirls* activities covered at their training: the *SciGirls Seven* strategies, the engineering design process, and the science inquiry process.

Looking ahead, it is important to note that, overall, this evaluation focused on *SciGirls*' impact on a professional audience of trainers and educators, rather than impact on youth. To provide a more complete picture of the *SciGirls* project, future evaluations might consider, for example: the impact of *SciGirls* programs on girls' STEM identity development (including their sense of self-efficacy, persistence, and aspirations around future STEM careers), both in all-girls and mixed-gender settings; the impact of the *SciGirls Seven* strategies on girls; the impact of *SciGirls* programs on girls over time; and whether longer-term participation is necessary for lasting impact.

3. ***How did trainers and educators perceive and use the SciGirls Seven strategies in their trainings, programs, and other areas of their work?***

The trainers and educators consistently shared positive feedback about the *SciGirls Seven* strategies, indicating that their understanding of, ability to describe, and skill level in incorporating the strategies increased as a result of their trainings and their work in the project.

For example, trainees who attended a Train-the-Trainer training found the session on gender equity and the *SciGirls Seven* to be one of the most valuable elements, and the majority of trainees also noted that the information about gender equity and the *SciGirls Seven* strategies was among the most useful ideas, concepts, or facts gained (as in, "*Many of those are things I try to use in my workshops/programs but now that I have a good grasp of all of them I will strive to ensure that all 7 are covered in my programs.*"). The largest group of trainees also found that learning to incorporate and communicate the *SciGirls Seven* was

the most useful skill gained at the training, and many trainees explained that they felt comfortable teaching the material to others.

To the above point, a number of trainees indicated that the opportunity to practice at the Train-the-Trainer training was critical to their skill development and overall confidence, as in, "*I feel more confident in understanding and integrating the 7 strategies. After the practices we had (in a safe environment) as well as learning here about the activities and the tools (3 training models) provided, I feel much more confident in leading training on my own.*" Finally, when asked if and how they thought *SciGirls* would influence the rest of their work, some of the trainees pointed to the expected longer-term impact of learning the *SciGirls Seven*, both institutionally and on a personal level. (For example, "*[Continue] to add skills/programs we can offer to other organizations across the state. We want to recognized as the leading organization in gender equity and STEM*" and "*If I ever switch jobs, I will want to make sure that there will be room for me to incorporate SciGirls principles.*")

Working as *SciGirls* trainers, the former trainees went on to share their knowledge and enthusiasm for the *SciGirls Seven* strategies with other educators. A number of trainers indicated that the topic was so popular, they were likely to spend more time on the *SciGirls Seven* in future trainings, as in, "*My group really enjoyed discussing and hashing out the research too so there might be more time incorporated into that portion of the workshop.*" At the same time, other trainers saw an opportunity to create a stronger link between the strategies and the *SciGirls* activities covered in their trainings, as in, "*I want to really emphasize the SciGirls Seven during/after each of the activities, rather than just during the SciGirls Seven time of presentation.*"

Feedback from educators generally indicated that they also valued the *SciGirls Seven*. For example, the largest group noted that the most valuable thing they learned from the training was the information provided about how girls learn STEM, with many of these educators directly referencing the *SciGirls Seven* (for example, "*The SciGirls 7- I really appreciated learning the pillars behind SciGirls lessons to differentiate these 'activities' from just any student science engagements*"). Overall, the educators also thought that the training increased their skill level at incorporating the *SciGirls Seven* strategies. Furthermore, the majority agreed that the training changed their thinking about girls in STEM, with a number of educators indirectly pointing to the role of the *SciGirls Seven* strategies, as in, "*It had not occurred to me that the collaborative, meaningful, contributory aspects of science are what draw girls in - and to use these aspects to promote programs. Thank you for sharing that!*"

Looking ahead, it is important to note that, overall, this evaluation focused on the effectiveness of the trainings at the national and local level from the perspectives of the trainers and educators. However, a relatively small group of educators provided feedback about their *SciGirls* programs, as considered in Part 3b of this report. Of these educators, the majority indicated that their youth participated in the *SciGirls* programs in ways reflected in the *SciGirls Seven* strategies, for example by engaging in hands-on, open-ended projects and investigations and collaborating in groups. Given how much more there is to learn about the use of the *SciGirls Seven* in local *SciGirls* programs, future evaluations might consider, for example: educators' perceptions and use of the *SciGirls Seven* and the extent to which they feel the strategies could potentially be updated or expanded for use with diverse audiences; key facilitating factors and challenges educators face in implementing the various *SciGirls Seven* strategies in their programs; the role of additional factors (such as teaching experience and familiarity with the strategies) on the implementation of the strategies; educators' perceptions of the impact of the strategies on the girls in their programs; and whether and how the strategies work synergistically.

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Appendix 1: *SciGirls Seven*

Please see below for screenshots of the *SciGirls Seven*, as detailed in the online book *SciGirls Seven: How to Engage Girls in STEM*, available at: http://scigirlsconnect.org/page/scigirls-seven.

The SciGirls Seven
Proven Strategies for Engaging 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, and these have become **SciGirls'** foundation. We call these strategies the **SciGirls Seven**.

1. **Girls benefit from collaboration, especially when they can participate and communicate fairly.** *(Parker & Rennie, 2002; Scantlebury & Baker, 2007; Werner & Denner, 2009)*

Girls are energized by the social part of science—working and learning together. Provide opportunities for small group work, and encourage girls to talk about their ideas and consider all possibilities before digging in. Make sure discussions remain respectful and inclusive, and that each girl's contributions are valued. Girls are likely to remember not only what they learned, but also how they felt when they learned it.

> "Whenever you come together with a team, you can find the answer to any question."
>
> Josie, age 12

2. **Girls are motivated by projects they find personally relevant and meaningful.** *(Liston, Peterson & Ragan, 2008, Lyon & Jafri, 2010; Mosatche, Matloff-Nieves, Kekelis, & Lawner, 2013; Patrick, Mantzicopoulos, & Samarapungavan, 2009; Thompson & Windschitl, 2005)*

Girls become motivated when they feel their project or task is important and can make a difference. Support them using STEM as a tool to explore issues or topics they care about. If they see how STEM is relevant to their own lives and interests, their attraction to these subjects is likely to increase.

3. **Girls enjoy hands-on, open-ended projects and investigations.** *(Chatman, Nielsen, Strauss & Tanner, 2008; Denner & Werner, 2007)*

SciGirls promotes exploration, imagination, and invention. Encourage your girls to ask questions and find their own paths for investigation.

For more information, go to scigirlsconnect.org

SciGirls

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4. **Girls are motivated when they can approach projects in their own way, applying their creativity, unique talents, and preferred learning styles.** *(Calabrese Barton et al., 2013; Calabrese Barton, Tan, & Rivet, 2008; Eisenhart & Finkel, 1998; Lyon & Jafri, 2010)*

Encourage girls to develop their own ways of exploring and sharing knowledge, paying attention to the unique learning styles that motivate your group. You may be surprised by what creative, exciting approaches girls come up with when designing investigations, collecting data, and communicating results.

5. **Girls' confidence and performance improves in response to specific, positive feedback on things they can control—such as effort, strategies, and behaviors.** *(Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2000; Halpern et al., 2007; Kim et al., 2007; Mueller & Dweck, 1998)*

Self-confidence can make or break girls' interest in STEM. Foster their efforts, compliment their strategies for problem solving, and let them know their skills can be improved through practice. Celebrate the struggle. Wrestling with problems and having experiments fail is a normal part of the scientific process!

6. **Girls gain confidence and trust in their own reasoning when encouraged to think critically.** *(Chatman, Nielsen, Strauss & Tanner, 2008; Eisenhart & Finkel, 1998; Kim et al., 2007)*

Cultivate an environment in which asking questions and creative thinking are a must. Throughout the centuries, this same trust in logic and re-examination of ideas made advances in science, technology, and engineering possible.

7. **Girls benefit from relationships with role models and mentors.** *(Holmes, Redmond, Thomas, & High, 2012; Liston, Peterson & Ragan, 2008; Lyon & Jafri, 2010; Mosatche et al., 2013; Weber, 2011)*

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 the lab. 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.

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Appendix 2: Use of *SciGirls* resources
Fall 2013 – Spring 2014

Appendix 2 presents findings regarding use of *SciGirls* resources from EPRRs submitted by educators between October 1, 2013 and May 31, 2014. During this timeframe, a total of 49 educators completed the form. In interpreting the educators' responses, it is important to note that these numbers only apply to programs that submitted forms during this 8 month period, and do not necessarily reflect the total sum of *SciGirls* activity as a whole during this period.

Basic descriptive statistics were performed on the quantitative data generated from the evaluation questions. Content analyses were performed on the qualitative data generated in the open-ended questions.[14] The analysis was both deductive, drawing on the program objectives, and inductive, looking for overall themes, keywords, and key phrases. All analyses were conducted by two independent coders. Any differences that emerged in coding were resolved with the assistance of a third coder.

Originally shared in the Evaluation of *SciGirls Season Two* Outreach Program report (September 2014) by Knight Williams, Appendix 2 provides an overview of educators' use of and experience with the *SciGirls* activities, videos, and website, including their perceptions of the value of these resources and the gains they observed in the youth as a result of their use.

1.1 Use and perceived value of *SciGirls* activities

Use of Season One and Two activities

As the two charts below show, the educators used some *Season One* and *Season Two SciGirls* activities more than others in their programs.

Season One
From *Season One, Passion for Pixels* was most frequently used followed by *This Bitter be Good, Sink or Swim?, Bouncing Balloons, Breathing Room, Dough Creatures,* and *Blowin' in the Wind.*

*Season One* activities used in program (N=49)

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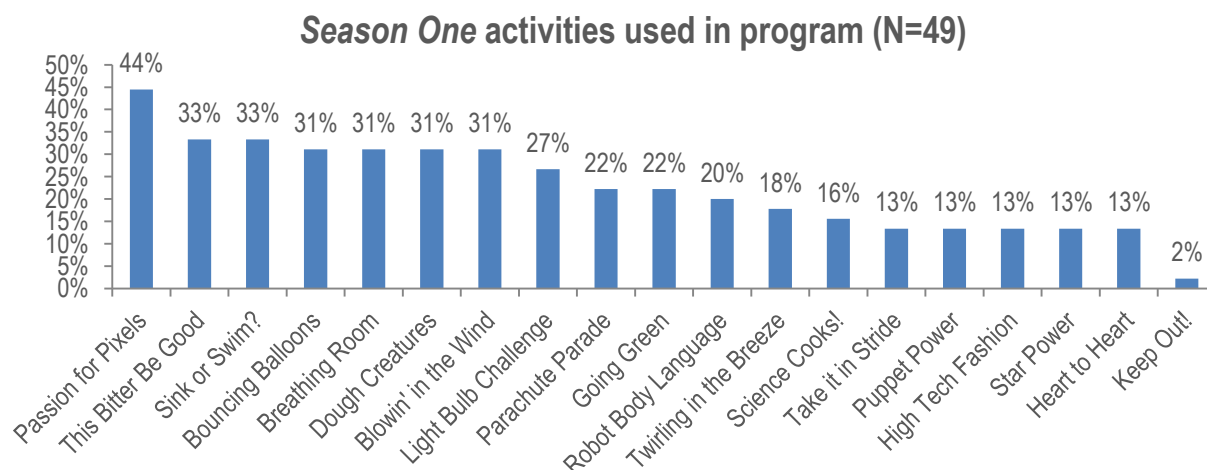
[14] The educators frequently provided multiple answers to the open-ended questions, often resulting in response categories that added up to more than 100% for these questions.

Specifically:

- Nearly one-half (44%) of programs reported using *Passion for Pixels*, making it the most used activity from *Season One*.
- *This Bitter Be Good, Sink or Swim?, Bouncing Balloons, Breathing Room, Dough Creatures,* and *Blowin' in the Wind* were all used by a third of program (31% to 33%).
- *Light Bulb Challenge, Parachute Parade,* and *Going Green* were all used by about one-fourth of programs (22% to 27%).
- *Robot Body Language, Twirling in the Breeze,* and *Science Cooks!,* were used by about one-fifth of programs (20%, 18%, and 16% respectively).
- *Take it in Stride, Puppet Power, High Tech Fashion, Star Power,* and *Heart to Heart* were each used by just over one-tenth (13%) of programs.
- *Keep Out!* was only used by 2% of programs, making it the least used activity.

<u>Season Two</u>
According to the educators, the *Season Two* activities were generally used less widely than those from *Season One*. The three most used activities were *The Awesome Game Race, Insulation Station,* and *Super Sleuths.*

Season Two activities used in program (N=49)
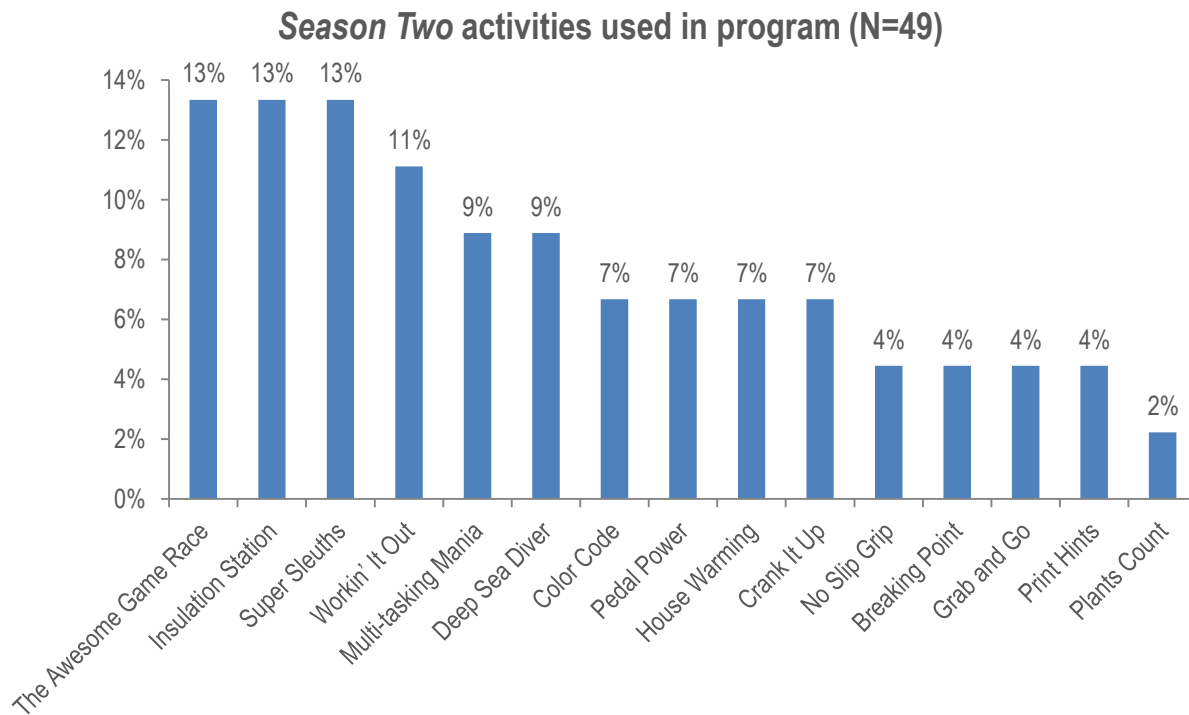
Specifically:

- *The Awesome Game Race, Insulation Station,* and *Super Sleuths* were each used by just over one-tenth (13%) of programs.
- *Workin' It Out, Multi-tasking Mania,* and *Deep Sea Diver* were used by about one tenth (9% to 11%) of programs.

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- *Color Code, Pedal Power, House Warming,* and *Crank It Up* were each used by less than one-tenth (7%) of programs.
- *No Slip Grip, Breaking Point, Grab and Go,* and *Print Hints* were each used by less than one-twentieth (4%) of programs.
- *Plants Count* was used by 2% of programs, making it the least used activity.
- None of the educators reported using the *Season Two* activities in Spanish.

1.2 Perceived value of *SciGirls* activities

Reflecting on the overall value of the *SciGirls* activities used in their programs, the educators indicated that the activities were generally *very valuable*. Using a scale from 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*) the median rating for the educator group of 49 was 4.0, though there were some differences of opinion within the group, as the ratings ranged from a low of 2.0 to a high of 5.0.

When invited to elaborate on their ratings, the educators praised various aspects of the *SciGirls* activities, such as their ease of use, adaptability, interactivity, applicability to boys and girls, synergistic value with the *SciGirls* videos, and overall motivational and learning value. For example:

- *I think the most amazing thing was to see how the girls were motivated to combine fashion with circuits.*
- *Great activity, easy to use as a stand alone and introduce meaningful concepts.*
- *Boys and girls both love these videos and learn valuable lessons from these activities.*
- *It was good to start with information that they knew and let them discuss and think before leading them with questions.*
- *Very interactive; enjoyed critical thinking.*
- *Just from the comments of the students, the balloon bounce presented several engineering concepts that the students had to consider and work through.*
- *The boys and girls in our program loved the materials. The boys didn't even seem to notice that the science mentors presented in the videos were all women.*
- *I like that the activities are spelled out and the videos are relevant.*
- *The Sink or Swim activity was very popular with teachers ranging from upper elementary to middle school. Interest was high, the activity was engaging, participants liked the group work and active thinking about how to address the problem of determining characteristics of materials and how to use those observations practically in identifying the mystery materials.*
- *I was doing the presentation at a community recreation center and for some of the participants this was their 1st time engaging with STEM activities. They were really excited and want me to come back and do more.*
- *I had a lot of students who are really active in sports and this activity really connected them to what some engineers do.*
- *Girls were engaged in the activities and made connections to the video.*
- *We embellish on the activities quite a bit, but all of our activities are based on SciGirls Curriculum.*

1.3 Participant gains from use of *SciGirls* activities

The educators were asked to reflect on what participants gained from their involvement with the *SciGirls* activities. As seen in the chart below, the educators most often observed their participants gain STEM content knowledge, scientific inquiry/process skills, teamwork/collaboration skills, and/or the opportunity to enjoy a fun/engaging experience.

Participant gains from use of *SciGirls* activities (N=49)
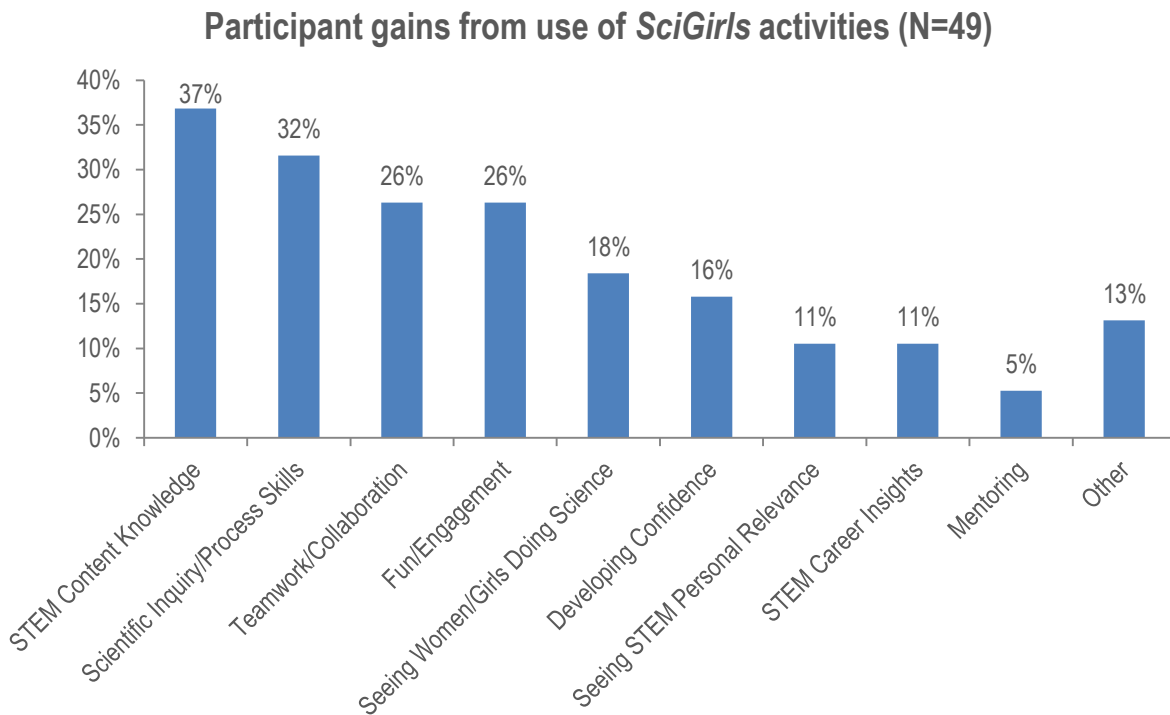
Specifically:

- Nearly two-fifths (37%) of the educators observed their youth gain STEM content knowledge.
- About one-third (32%) indicated the youth gained scientific inquiry and process skills.
- One-quarter (26%) each observed gains in teamwork and collaboration and/or saw the youth having fun and being engaged by the materials.
- One-fifth (18%) believed the youths' experiences were enriched by seeing women and girls doing science.
- One-sixth (16%) observed their youth develop greater confidence.
- More than one-tenth (13%) observed something other than the categories listed on the chart above. For example:
  - *The older girls have attitude issues and have already decided they don't like science and have no use for it…The younger girls are jumping right in and learning every time we meet.*
- One-tenth (11%) each observed seeing the youth discover STEM as being more personally relevant and/or developing career insight in STEM fields.
- A handful (5%) believed that their youth gained the most from mentoring.

1.4 Use and perceived value of *SciGirls* videos

Use of Season One and Two videos

As the two charts below show, the educators used some *Season One* and *Season Two SciGirls* videos more than others in their programs.

Season One
Of the *Season One* videos, *Blowin' in the Wind* was used most often, followed by *Going Green, Puppet Power,* and *High Tech Fashion.*

Season One videos used in program (N=49)
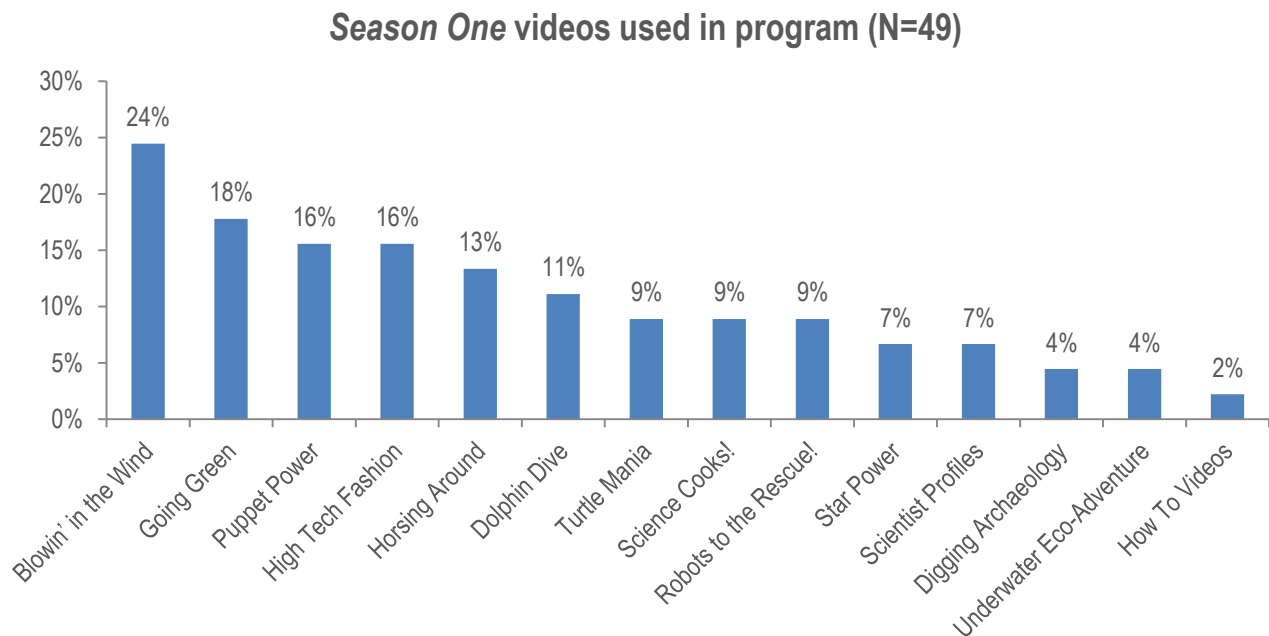
Specifically:

- *Blowin' in the Wind* was used by nearly one-quarter (24%)of programs, making it the most used *Season One* video.
- *Going Green* was used by less than one-fifth (18%) of programs.
- *Puppet Power* and *High Tech Fashion* were each used by about one-sixth (16%) of programs.
- *Horsing Around* and *Dolphin Dive* were each used by more than one-tenth (13%) of programs.
- *Turtle Mania, Science Cooks!, Robots to the Rescue!, Star Power,* and *Scientist Profiles* were each used by less than one-tenth (7% to 9%) of programs.
- *Digging Archaeology, Underwater Eco-Adventure,* and *How To Videos* were the used least *Season One* videos, with each being used by just a handful (2% to 4%) of programs.

As a whole, the *Season Two* videos were less widely used than the *Season One* videos. The two most-used videos were *Aquabots* and *Super Sleuths.*

Season Two videos used in program (N=49)
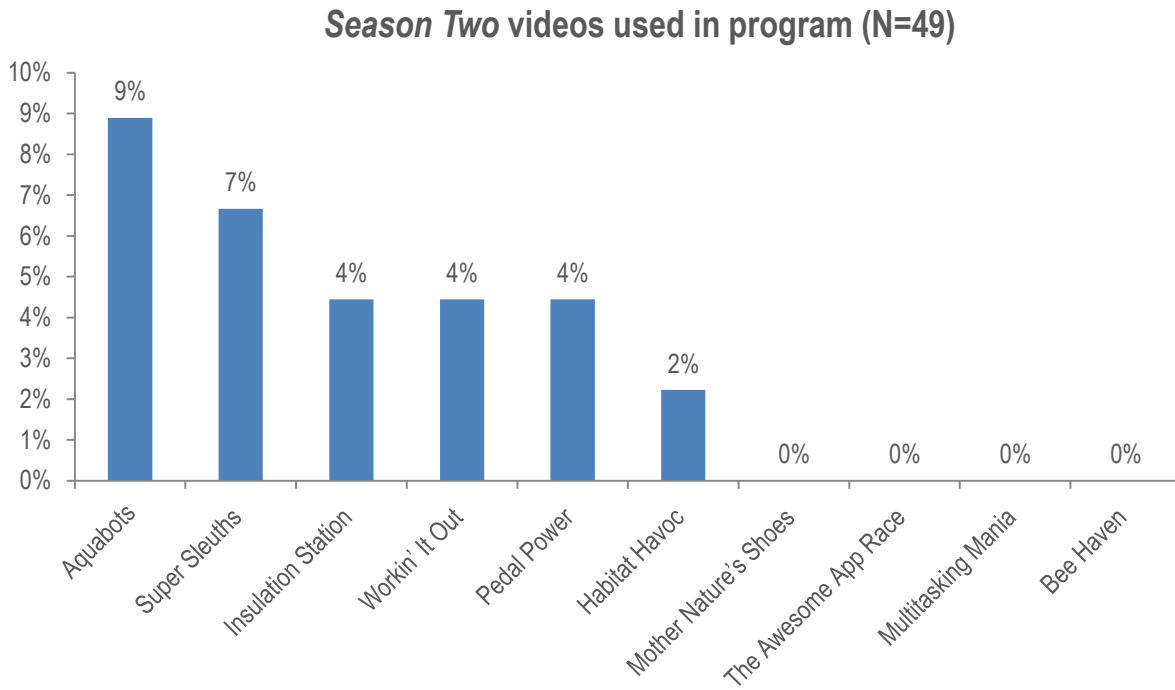
Specifically:

- *Aquabots* was the most frequently used *Season Two* video, used by nearly one-tenth (9%) of programs.
- *Super Sleuths* was used by less than one-tenth (7%) of programs.
- *Insulation Station, Workin' It Out, Pedal Power*, and *Habitat Havoc* were each used by just a handful (2% to 4%) of programs.
- *Mother Nature's Shoes, The Awesome App Race, Multitasking Mania,* and *Bee Haven* were not used by any programs.
- Less than one-twentieth (4%) of programs used the *Season Two* videos in Spanish.

Perceived value of SciGirls videos

Reflecting on the overall value of the *SciGirls* videos used in their programs, educators indicated that the videos were generally *very valuable*. Using a scale from 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*) the median rating for the educator group of 49 was 4.0, though there were some differences of opinion within the group, as ratings ranged from a low of 1.0 to a high of 5.0.

When invited to elaborate on their ratings, the majority of educators praised some aspect of the videos, typically explaining that they were excellent lesson starters, fed well into discussions, featured wonderful scientist role models, and/or were valuable because they showed regular girls discovering science. For example:

- *The girls loved having a discussion afterwards and thought it was neat that the mentor was on Project Runway. We did a passport piece and they moved into stations. We used the engineering design process and I think they felt like the girls on the video.*
- *They appreciated that the kids in the video were more their own age. Some of the introductory material made them think it would be for the "little kids."*
- *Videos are an excellent tool to start a lesson.*
- *The facilitator for our program during the fall did not utilize any videos. I'm so disappointed by this, and I look forward to writing the report for the spring program we are running currently! We're using lots of videos!*
- *I love how the videos use regular girls to discover science topics. The girls are into these.*
- *I think the Mentor Moments were very valuable because [they] gave teachers a great resource to show real scientists at work.*
- *Even the older girls were a little more interested in the videos than in the hands-on activities. They thought the bicycle was cool, but admit they are lazy and don't want to do any work. We are trying to win them over slowly.*
- *Videos got the girls excited about science and got to see the activities.*

Some educators, however, did not find the videos particularly valuable for use in their programs. These educators most often indicated that they did not find a way to use them due to space, access, or time constraints, or they explained that their participants (particularly older girls) were not interested in the videos. For example:

- *We didn't show any videos due to facility space and access.*
- *Our facilitators barely used the videos. I think junior high age girls can be awfully critical, but we're going to make sure they are better used in our next program year.*
- *None were used but staff continues to encourage our volunteers to use the material provided in addition to what they present.*
- *The girls in our group that watched the videos claimed they were boring and hard to watch. We are going to try videos again next year and hope to get a better response from the girls.*
- *Our older girls were not interested in the videos.*
- *I did not use any SciGirls videos because the facility we use does not have proper equipment for showing videos.*
- *Difficult to keep kids focused, they are ready "to do."*
- *They did not enjoy the videos but liked most of the games.*

Use of video clips or full episodes

Educators indicated that they more often used the videos as clips, as opposed to full episodes or a combination of clips and full episodes, as shown in the chart below.

**Use of video clips and/or full episodes (N=49)**
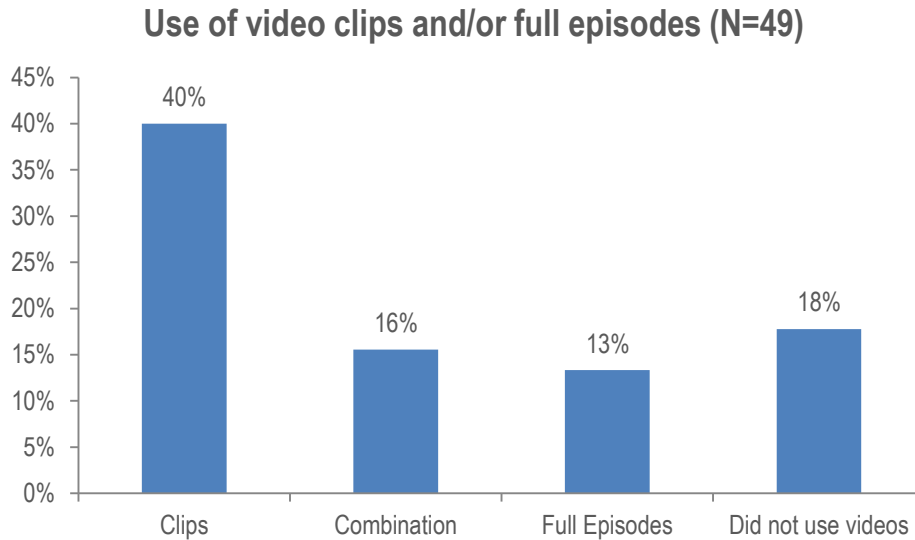
Specifically:

- Two-fifths (40%) of programs used clips exclusively.
- One-sixth (16%) of programs used a combination of clips and full episodes.
- More than one-tenth (13%) of programs used full episodes exclusively.
- Nearly one-fifth (18%) did not use videos, providing the following reasons:
  ‣ *Volunteers were new and felt more comfortable with their material. Moving forward staff plans to have the video running as a part of the opening of the meeting.*
  ‣ *We didn't show any videos due to facility space and access.*
  ‣ *I stated this above. The facilitator chose not to, and I was unaware. We have been utilizing them like crazy since January 1 with new facilitators! Woot Woot!*
  ‣ *Our program was set up in a lunch room. We had no access to the equipment needed.*
  ‣ *I do not have the ability in the setting I am in to show videos. I hope to work on obtaining a laptop for next time.*
  ‣ *I did not use any SciGirls videos because the facility we use does not have proper equipment for showing videos.*

Video formats used

Educators indicated that the youth in their programs most often watched the videos on DVD or through the *SciGirls CONNECT* website, as opposed to watching them through PBSkids.org, YouTube, or iTunes, as shown in the chart below.

**Video formats used in programs (N=49)**
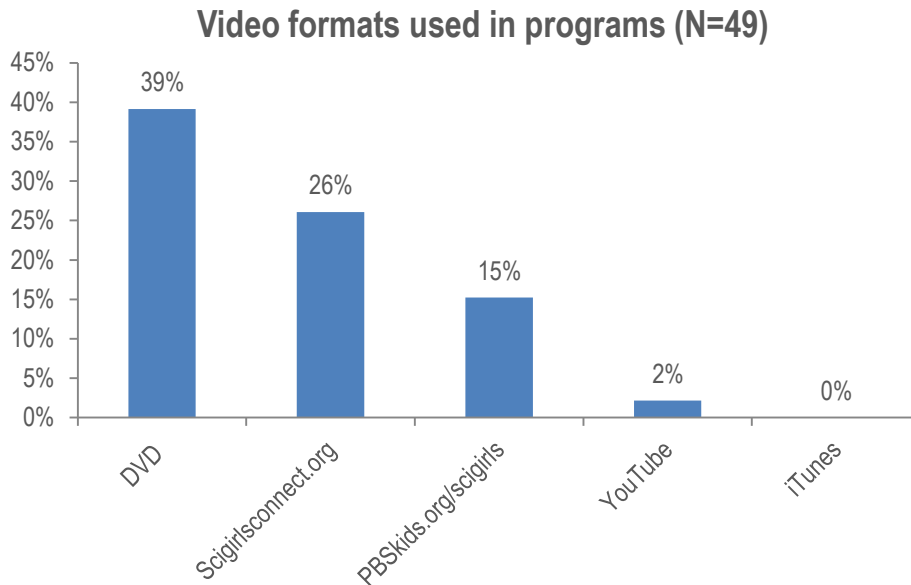
Specifically:

- Almost three-tenths (29%) of the programs used videos shown in DVD format.
- About one quarter (26%) used videos shown through Scigirlsconnect.org.
- Approximately one-sixth (15%) used videos shown through PBSkids.org/scigirls.
- A handful (2%) used videos shown through YouTube.
- No videos were shown using iTunes.

Participant gains from use of SciGirls videos

The educators were asked to reflect on what they believed participants gained from watching the *SciGirls* videos used in their programs. As the chart below shows, the educators most often pointed to benefits their participants gleaned from seeing women and girls doing science, followed by gains they observed in their participants' use of scientific inquiry/process.

Educator reflections on participant gains from use of *SciGirls* videos (N=49)
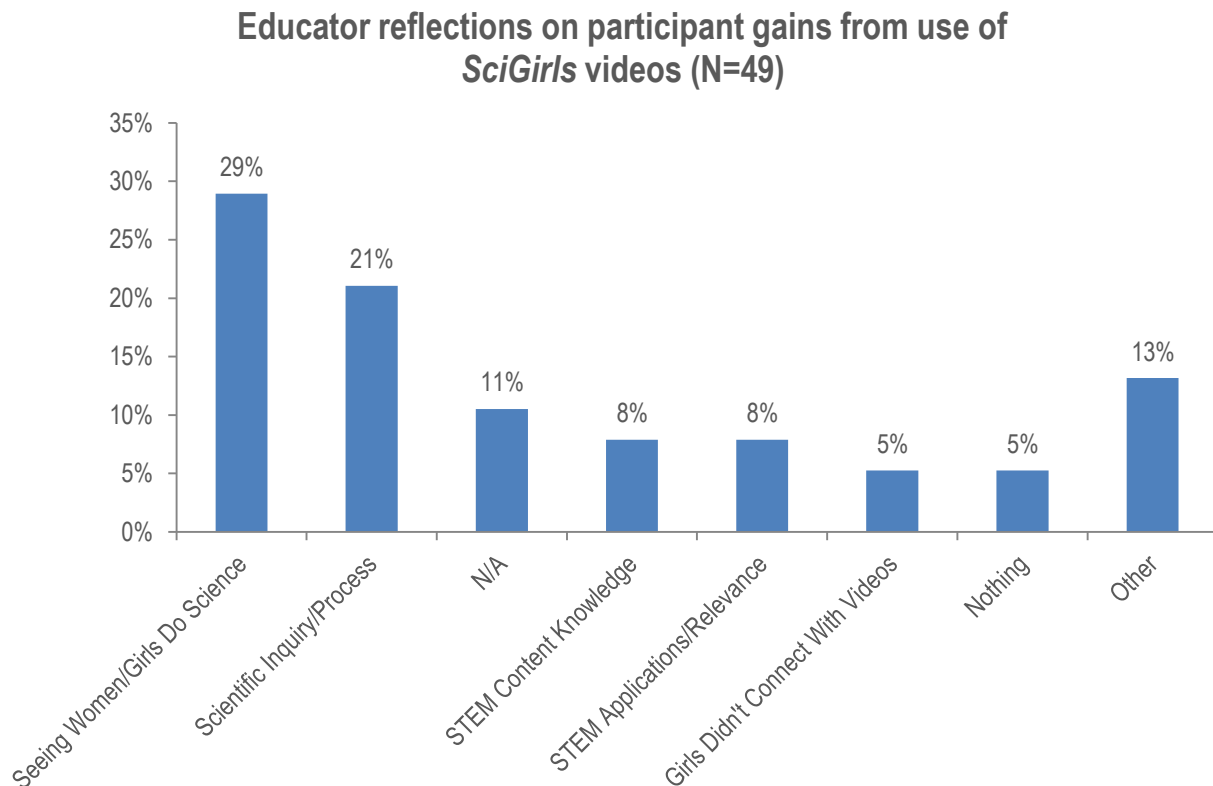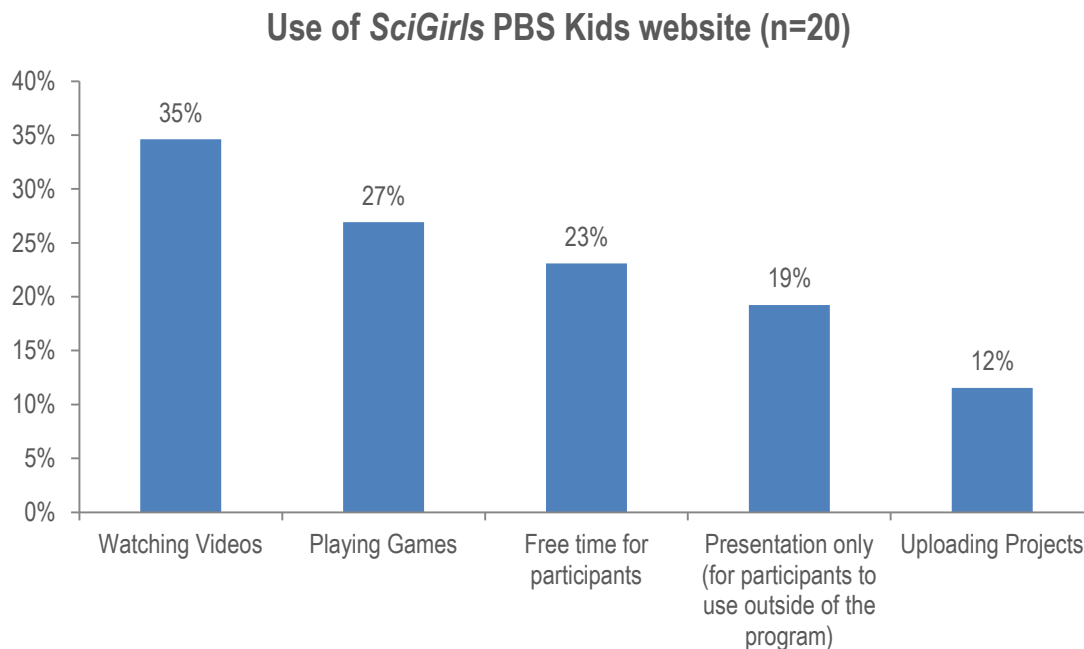

Specifically:

- Nearly three-tenths (29%) of the educators believed that their participants benefitted from seeing women and girls do science.
- More than one-fifth (21%) observed the improvement of scientific inquiry and processes among participants.
- About one-tenth (11%) reported the question was not applicable in their case.
- Less than a tenth (8%) each observed gains in STEM content knowledge and STEM applications and relevance.
- One-twentieth (5%) each believed that their participants did not connect to the videos or believed that their youth did not gain anything from viewing.
- More than one-tenth (13%) reported gains in areas other than those noted above.

1.5 Use and perceived value of web resources

Use, perceived value, and perceived gains from use of SciGirls PBSKids website

Use of the *SciGirls* PBSKids website
Just under one-half (44%) of the educators who answered this question (n=45) reported using the *SciGirls* PBSKids website at http://pbskids.org/scigirls with participants in their program. As shown in the chart below, among the 20 educators who *did* use the website, the most common uses were watching videos and playing games, followed by free time for participants, presenting findings, or uploading projects.

Use of *SciGirls* PBS Kids website (n=20)

Specifically:

- Of those who used the website, more than a third (35%) used it for watching videos.
- More than a quarter (27%) used the website for playing games.
- Just under a quarter (23%) used the website for free time for participants.
- One-fifth (19%) used the website for presentations.
- More than one-tenth (12%) used the website to upload projects.
- No participants reported using the website for anything other than the categories listed.

Perceived value of *SciGirls* PBSKids website
Reflecting on the overall value of the *SciGirls* PBSKids website used in their program, the 20 educators who used the website indicated that it was generally *very valuable*. Using a scale from 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*) the median rating for the group as a whole was 4.0, with the ratings ranging from a low of 3.0 to a high of 5.0, indicating there was some difference of opinion within the group.

When invited to elaborate on their ratings, a few educators praised some aspect of the website, noting that it was easy to navigate and handy for both in-class and out-of-class use. For example:
- ‣ *The site is easy to navigate.*
- ‣ *One of the teachers forgot the DVD and we were able to find the video on the site- thank you!*
- ‣ *This would be a nice if we had more time. Good activity to follow up with at home.*

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A few educators commented on technical difficulties they had with the online videos, as in:

‣ *I, personally, really enjoy the videos. I think our girls would enjoy the videos if we had presented them at a different time and with equipment that worked well. At the time we had them watching the videos, the equipment did not have a new filter and the colors were distorted.*

Participant gains from use of *SciGirls* PBS website
The 20 educators who used the website indicated that their participants gained from the site in different ways. The largest group (40%) said participants benefitted from the opportunity to explore the website at home/during leisure time. About one-fifth (21%) pointed to the opportunity to play games/activities, and less than one-sixth (14%) each pointed to the opportunity to share and track investigations online and/or engage in social networking with girls and female scientists.

Use and perceived value of SciGirls CONNECT website

Use of *SciGirls Connect* website
Nearly two-thirds (60%) of the educators who answered this question (n=45) indicated that they used the [SciGirls CONNECT website](#) to develop their programs. These educators were further asked to rate the value of the site to their programs on a scale from 1.0 (*not at all valuable*) to 5.0 (*extremely valuable*). The median rating for the group as a whole was 4.0, with the ratings ranging from a low of 3.0 to a high of 5.0.

When invited to elaborate, many educators praised some aspect of the website. They most often explained that it helped with program structure, served as a full-service resource, had high repeat visit value, and/or provided valuable information and resources. For example:

‣ *The information on the website gave my program structure.*
‣ *I have spent a great deal of time at SciGirls CONNECT, and I introduced all facilitators to it from the get go. It's a great resource!*
‣ *Everything you need is there. The videos, the activity and challenge lessons, links to handouts.*
‣ *Lots of helpful information.*
‣ *At first it was difficult to navigate around the site…As I use the site it is becoming easier to obtain what I want..*
‣ *I can double check for best practices and find the webinars inspiring.*
‣ *The website is fantastic. The resources are GREAT.*
‣ *I used most of the website to decide if I wanted to do the activity with the younger students or not. It helped me guide my focus on what younger students should be able to do.*
‣ *I refer to the activities and SciGirls strategies on the website while creating programs.*
‣ *Too many things to list. We use this site every day!*
‣ *There is so much information available on this website that helps with every aspect of the club. The discussion boards helped a lot because there was feedback from other after school club leaders going through the same processes I was.*

Use of resources at *SciGirls Parents* website
About one-sixth (16%) of the educators who answered this question (n=45) indicated that they used the [SciGirls Parents website](#) to develop their *SciGirls* programs. Those who did described their uses as follows:

‣ *Logo to recruit and to communicate to volunteers and children.*
‣ *I've printed quiz cards from the website to leave out to play with in the library.*
‣ *Green lesson folio.*
‣ *SciGirls Seven to adapt programs.*
‣ *As the lead educator, I checked out the various activities and background information in planning which ones would fit best for my class.*
‣ *Handouts for parents and students.*