



Executive summary

Twin Cities Public Television (*tpt*)

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By

Knight Williams Inc.

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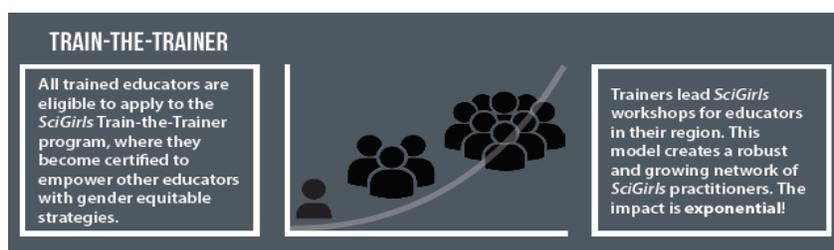
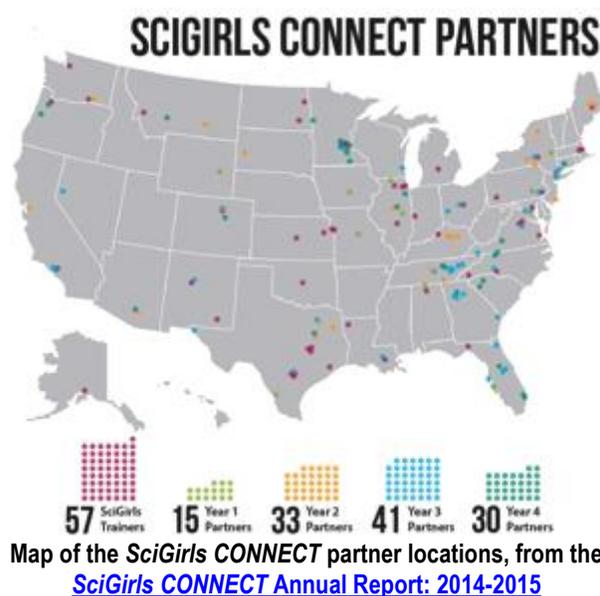
Introduction

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.



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

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.¹

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?²

¹ Prior to completing an independent evaluation form (whether the TTT, TWRF, TARF, ETFF, or EPRR), trainees, trainers, and/or educators respectively were informed that the form was developed and 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 trainings and programs.

With respect to data analysis, basic descriptive statistics were performed on the quantitative data generated from each evaluation form. Content analyses were performed on the qualitative data generated in the open-ended questions. 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.

² For more information about the *SciGirls Seven* strategies, please visit: <http://scigirlsconnect.org/page/scigirls-seven>

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) <i>(Attendees of Train-the-Trainer training attend.)</i>	<ol style="list-style-type: none"> Attend/advice MN training Nov 2011 Develop/pilot/revise TTT form Produce TTT Year 1 compilation report 	NA	<ol style="list-style-type: none"> Compile/analyze TTT surveys after <i>tpt</i> sends KW paper forms from May 2013 training Produce compilation report (July 2013) 	NA	<ol style="list-style-type: none"> Enter/analyze data from May/ June 2015 training Produce final TTT report on Years 1, 3, 4, and 5
Trainers	Trainer Workshop Reflection Form (TWRF) <i>(Trainers complete after full day training)</i>	<ol style="list-style-type: none"> Review/comment on Train-the-Trainer RFP; Develop/pilot TWRF form 	<ol style="list-style-type: none"> Revise and pilot TWRF form Create TWRF online platform for <i>tpt</i> to administer to trainers http://www.knightwilliams.com/scigc/sgcreflection.aspx 	<ol style="list-style-type: none"> Maintain TWRF online platform & database Send database to <i>tpt</i> upon request 	<ol style="list-style-type: none"> Maintain TWRF online platform & database Send database to <i>tpt</i> upon request 	<ol style="list-style-type: none"> Produce final TWRF report of all data through 12/31/15 Keep TWRF form open through 12/31/15
	Trainer Annual Reflection Form <i>(TARF)(Certified trainers provide reflections and feedback on factors that led to success)</i>	NA	<ol style="list-style-type: none"> Develop and pilot TARF survey/interview protocol Create TARF online platform for KW to administer to trainers http://www.knightwilliams.com/scigc/sgcstrain.aspx Administer TARF to trainers Produce TAR compilation report (Jan/Feb 2013) 	<ol style="list-style-type: none"> Administer annual TARF surveys from Year 2 (Dec 2013) Produce TARF compilation report (Jan/Feb 2014) 	<ol style="list-style-type: none"> Administer annual TARF surveys from Year 2 (Dec 2014) Produce TARF compilation report (Jan/Feb 2015) 	<ol style="list-style-type: none"> Produce final TARF report on Years 2-4 Administer final TARF 12/31/15
Educators	Educator Training Feedback Form (ETFF) <i>(Attendees of SciGirls training complete)</i>	<ol style="list-style-type: none"> Develop/pilot ETFF form 	<ol style="list-style-type: none"> Revise ETFF form Produce Year 2 ETFF compilation report Create ETFF online platform for <i>tpt</i> to administer to educators http://www.knightwilliams.com/scigc/sgctrainerform.aspx 	<ol style="list-style-type: none"> Maintain ETFF online platform & database Produce bi-annual ETFF compilation reports (June 2013, Feb 2104) 	<ol style="list-style-type: none"> Maintain ETFF online platform & database Produce bi-annual ETFF compilation reports (June 2014, Feb 2015) 	<ol style="list-style-type: none"> Produce final ETFF report of all data through 12/31/15
	Educator Program Report and Reflection Form (EPRR) <i>(Educators complete after each program)</i>	NA	<ol style="list-style-type: none"> Develop/pilot EPRR form Create EPRR online platform for <i>tpt</i> to administer to educators http://www.knightwilliams.com/scigc/sgcprogram.aspx; updated as of 10/30/2013: http://www.knightwilliams.com/scigc/sgcprogramtest2.aspx Produce EPRR compilation report (Feb 2013) 	<ol style="list-style-type: none"> Maintain EPRR online platform & database Send database to <i>tpt</i> upon request Produce annual EPRR compilation report (Feb 2014) 	<ol style="list-style-type: none"> Maintain EPRR online platform & database Send database to <i>tpt</i> upon request Produce annual EPRR compilation report (Feb 2015) 	<ol style="list-style-type: none"> Add activity and video descriptions to form by 4/30/15 Produce final EPRR report of data through 12/31/15

Executive summary outline

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 (TWRP)***, 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.

The executive summary concludes with a consideration of the key evaluation and overarching questions provided in the previous section.

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. 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 a 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 a 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 a 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.

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. During Years 2- 5, 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 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.

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 Final Evaluation Report (and in this executive summary) 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 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 a 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 a 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 TTIs.

➤ *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 TTIs, 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.

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 through 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 in the Final Evaluation Report (and in this executive

summary) 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 *reinforced* 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.

➤ **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 executive summary.

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.³ 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 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 apparent, 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."

³ As noted in section 3b.9 of this executive summary, 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.

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 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 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.

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 the Final Evaluation 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 the Final Evaluation Report and this executive summary.

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 be 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 executive summary. 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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