Reflections on *SciGirls* CONNECT 2 evaluation as a Research in Service to Practice project

 Knight Williams, Inc.

Valerie Knight-Williams, Ed.D.
Rachael Dobrowolski, MESc
Divan Williams Jr., J.D.

December 2019

This material is based on work supported by the National Science Foundation under grant award DRL 1612605. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.
# Table of Contents

Introduction........................................................................................................................................................................3

History of the *SciGirls Seven* ....................................................................................................................................................3

*SciGirls CONNECT 2* as a Research in Service to Practice project..........................................................................................4

The *SciGirls CONNECT 2* evaluation approach..........................................................................................................................6
  - Role of the outreach partner organizations.........................................................................................................................6
  - Collaborating with the project and research teams ...........................................................................................................7
  - Defining roles and deliverables..............................................................................................................................................7
  - Establishing common goals and language...........................................................................................................................8
  - Sharing findings with the project and research teams.......................................................................................................9

How the evaluation findings informed the *SciGirls Strategies* ..................................................................................................10
  - Informing the draft *SciGirls Strategies* ..........................................................................................................................10
  - Informing the final *SciGirls Strategies* ...........................................................................................................................12

Limitations of the evaluation process and lessons learned........................................................................................................14
  - Addressing partner educator staff turnover ......................................................................................................................14
  - Addressing partner educators’ challenges meeting program requirements.......................................................................14
  - Addressing project timeline issues ..................................................................................................................................14
  - Addressing shared work and language across project teams...........................................................................................15

Future training and dissemination of the *SciGirls Strategies* ....................................................................................................16

References..................................................................................................................................................................................17
Introduction

Funded by the National Science Foundation (NSF), Twin Cities Public Television (TPT) implemented the three-year project SciGirls CONNECT 2: Investigating the Use of Gender Equitable Teaching Strategies in a National STEM Education Network from 2016 to 2019. The primary goal of the project was to update the SciGirls Seven, a set of educational strategies designed to engage girls in science, technology, engineering, and math (STEM) learning and careers. To assist with this effort, the project’s independent evaluation focused on informal STEM partner educators’ use and perceptions of the SciGirls Seven and the draft updated SciGirls Strategies in their girl-serving programs. This paper reflects on the iterative and collaborative nature of the evaluation and how the educators’ contributions to the evaluation informed the final version of the SciGirls Strategies.

History of the SciGirls Seven

Originally published in 2010 and then updated in 2013, the SciGirls Seven strategies drew from two decades of research that informed the development of the transmedia SciGirls PBS Kids television show, website, and outreach program. TPT officially began disseminating the strategies as part of the original SciGirls CONNECT project (2011-2015) by training educators to implement the strategies in their girl-focused STEM programs. The CONNECT project reached a network of 119 STEM education outreach partner organizations across 36 states (SciGirls CONNECT Annual Report 2014-2015).

With the SciGirls CONNECT 2 project launch in 2016, TPT sought to update the SciGirls Seven by incorporating current research on culturally responsive practices (CRP) and gender equitable strategies for engaging girls in STEM. When proposing the project to the NSF, the project team described the rationale for and broader impacts of updating the strategies as follows:

The current SciGirls Seven is used by thousands of educators nationwide both in practice and to inform their own content development. To enrich this resource and increase its utility within these communities of practice we will update them to reflect current research on engaging girls in STEM and best practices around creating a culturally responsive learning space...The updated strategies will also influence the development of all future TPT media-based educational approaches. Ultimately, this work will inspire greater participation of girls, especially those of ethnic or racial minorities, in STEM studies and careers (NSF proposal, 2015, p.12).

SciGirls CONNECT 2 as a Research in Service to Practice project

Although the NSF funded both CONNECT projects, they were funded by different divisions and as different project types. The original CONNECT grant was funded as a Diffusion of Research-Based Innovation project, a project type designed to provide grantees “a mechanism for engaging a wider audience of practitioners (e.g., teachers, faculty, guidance counselors, parents, etc.) with research findings and strategies for changing educational practice relative to gender issues” (Research on Gender in Science and Engineering (GSE) Proposal Solicitation). By contrast, the CONNECT 2 award was for a Research in Service to Practice (RSP) project, which required projects to involve partnerships between researchers and practitioners.

As described in the NSF program solicitation:

The Research in Service to Practice (RSP) project type focuses on research that advances knowledge and the evidence base for practices, assumptions, broadening participation, or emerging educational arrangements in STEM learning in informal environments. For these proposals it is important for practice to inform the research as well as having research inform practice.

SciGirls CONNECT 2 addressed the RSP reciprocal requirement through an iterative project design and timeline that incorporated the development of a literature review, an independent evaluation, and a research study. As described in the NSF proposal:

Our iterative project design includes an evaluation of practice, a literature review and a research study, and is based on the following model:

Practice to research: We will work with an established community of diverse SciGirls practitioners to evaluate how they are currently using the SciGirls Seven, and their perceived efficacy and cultural responsiveness. We will also empower girls in these programs to create autobiographical STEM videos, helping them to articulate their STEM identities. In addition to this input from both educators and learners, we will undertake a formal research study which investigates the hypothesis.

Research to practice: The research component will include a literature review and a study of girls’ STEM identity creation. The results of both the review and the study

---

2 The CONNECT project 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 Dragonfly TV SciGirls (SciGirls), which was designed to encourage girls’ interest in science by building capacity among outreach professionals in the area of gender-equity teaching and learning. The CONNECT project involved 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.

3 Funding for CONNECT 2 was provided by the Advancing Informal STEM Learning (AISL) Division of Research on Learning of the NSF.

4 As described in the NSF proposal, “The research project is driven by the hypothesis that girls who experience programs based on culturally relevant pedagogy and the SciGirls Seven will have an increased positive STEM identity” (NSF proposal, 2015, p. 8).
will be incorporated into an updated set of *SciGirls Strategies* (formerly the *SciGirls Seven*) and disseminated to our original group of practitioners, who will employ them with diverse girls in informal STEM environments. In an iterative fashion, these practitioners will provide feedback on these strategies, which we will incorporate into the final set of *SciGirls Strategies* for broad dissemination and implementation (NSF proposal, 2015, p. 5-6).

The project, research, and evaluation teams collaborated throughout the grant period, with each team taking the lead in a specific area:

- The project team conducted a comprehensive literature review of the latest gender equity research with a focus on cultural responsiveness (forthcoming).

- The evaluation team from Knight Williams, Inc. (Knight Williams) conducted front-end, formative, and implementation evaluations of partner educators’ use and perceptions of the *SciGirls Seven* and draft updated *SciGirls Strategies*, working with 16 informal STEM education outreach partner organizations.

- Working with the same partner sites, the research team from the Center for Integrating Research & Learning of Florida State University implemented a research study investigating the impact of participation in *SciGirls* programs on girls’ STEM identity.

- Finally, periodically over the course of the grant, an Advisory Board whose members included a mix of gender and STEM researchers and practitioners reviewed and provided feedback on the literature review, evaluation, and research study.

As summarized on the *SciGirls CONNECT 2 website*, based on the literature review, evaluation, and research activities conducted over the three-year grant period, the project team officially updated the *SciGirls Seven* and released the *SciGirls Strategies* in 2019. Image 2 below shows the cover page of the *SciGirls Strategies* Guide.
The *SciGirls* CONNECT 2 evaluation approach

The independent evaluation team from Knight Williams conducted the external evaluation for the *SciGirls* CONNECT 2 project, drawing on the team’s prior experience leading evaluations for *SciGirls* CONNECT, *SciGirls* Season Two, *SciGirls* en Español, *SciGirls* en la Familia, and other informal STEM projects designed for youth and families. As described in the evaluation plan submitted in the NSF proposal, the evaluation approach was in part rooted in the team’s experience evaluating previous *SciGirls* and related projects, to help ensure the evaluation remained contextually and culturally responsive (Malyn-Smith, 2014; Bal & Trainor, 2015). As an RSP project, the *SciGirls* CONNECT 2 evaluation also aimed to be attuned to the complexities and different perspectives that come into play with collaborations between PIs, research and evaluation teams, and partner educators (Vanderlinde & van Braak, 2010).

As further articulated in the NSF proposal, the evaluation team’s primary role was to gather, analyze, and summarize data that could facilitate the project’s effort to revisit and update the *SciGirls Seven*, and thus prioritized methods that were interactive and iterative in nature over the grant period (McKenney et al., 2013; Mirjamdotter et al., 2006; Shah et al., 2015). To evaluate educators’ use and perceived effectiveness of the *SciGirls Seven* and the draft updated *SciGirls Strategies* with girls in informal STEM settings, the evaluation gathered feedback from *SciGirls* educators participating in CONNECT 2 at four key project milestones. To capture their experience in real time, and to inform TPT’s efforts to revisit and update the *SciGirls Seven*, the evaluation team relied on an iterative process that required flexibility in responding to each partner’s unique start and end dates, as well as ongoing collaboration with the project and research teams.

Role of the outreach partner organizations

A total of 16 informal STEM education outreach partner organizations committed to participating in *SciGirls* CONNECT 2. The criteria for their selection included experience running *SciGirls* programs and experience with the *SciGirls Seven*, while also prioritizing diversity in recruited program types, location, and youth participants.

As a condition of participating, two educators from each partner organization were required to incorporate and provide feedback on their use of the original *SciGirls Seven* and draft updated strategies in their outreach programs. Although this group of 32 educators was relatively small, their feedback carried significant weight with the project team, given their considerable experience with the *SciGirls Seven* and with *SciGirls* in general.

As shown in the flowchart in Image 3 on the following page, educators shared their feedback at four key points over the grant period through a series of online surveys and interviews, including before and after they implemented the original *SciGirls Seven*, as well as before and after they reviewed and subsequently implemented the draft updated *SciGirls Strategies*.5

---

5 Before the second year of their programs, the educators were required to attend a mid-project webinar presenting the draft updated strategies and review an accompanying document provided by TPT entitled *SciGirls Strategies and Tips*. This document may be viewed in Appendix 1 of the *SciGirls* CONNECT 2 Formative evaluation report (Phase 2).
**SciGirls CONNECT 2**
Partner programming and evaluation activities

Collaborating with the project and research teams

The evaluation team was tasked with evaluating educators’ experience with and perspectives on various versions and aspects of the strategies at four different time points. Given the iterative and collaborative nature of the project and the occasionally overlapping timelines of the evaluation and research activities, the literature review, and the development of the updated *SciGirls Strategies*, Knight Williams prioritized sharing pertinent educator responses throughout the grant period – for example through summaries of key findings, draft sections of evaluation reports, educator quotations grouped by theme, and monthly team meetings updates – to help inform others’ scope of work in a timely manner. Additionally, feedback from the project and research teams was simultaneously factored into the evaluation team’s efforts, for example by helping shape evaluation methods and by influencing the analysis of educator feedback in terms of major themes identified in the *SciGirls CONNECT 2* literature review.

Such examples of research and practice reciprocity occurred frequently over the course of the project, and this reciprocity was a strength of the grant. For the shared work to be useful though, it was critical for the evaluation, project, and research teams to establish a mutual understanding of the team roles and deliverables, as well as common goals and language for the project.

**Defining roles and deliverables**
During the proposal writing stage the three teams developed the project workplan and opportunities for collaboration, recognizing that the ultimate purpose of *SciGirls CONNECT 2* was for each team’s work to contribute synergistically to inform the updated strategies.

Once the project was underway, further delineation of roles and deliverables necessitated that each team understand the specific nature of the work to be pursued by the other teams.
Beyond determining the logistical aspects of how and when each team would perform their various activities, it was important to consider how each team conceptualized and planned to communicate about their work, especially with the partner educators. Image 4 shows a flowchart that was presented to educators at the kickoff partner webinar in 2017, illustrating the relationship between programming, research, and evaluation activities over the course of the grant. This image was also shared with educators on the SciGirls CONNECT 2 website.

**SciGirls CONNECT 2 Research and Evaluation**

*Following each partner through their process*

- Complete front-end evaluation
- Complete Year 1 research pre-surveys (youth, parents, educators)
- Conduct Year 1 program
- Complete Year 1 research post-surveys (youth, parents, educators)
- Complete Year 1 evaluation program report and SciGirls Seven reflections survey and interview (use of current strategies)
- Participate in mid-project webinar/virtual convening
- Complete SciGirls Seven reflections survey and interview (anticipated use of updated strategies)
- Complete Year 2 research pre-surveys (youth, parents, new educators)
- Conduct Year 2 program
- Complete Year 2 research post-surveys (youth, parents, educators)
- Complete Year 2 evaluation program report and SciGirls Seven reflections survey and interview (use of updated strategies)

*Image 4: Flowchart depicting the SciGirls CONNECT 2 partner educators’ programming, evaluation, and research activities*

**Establishing common goals and language**

As SciGirls CONNECT 2 focused on revisiting and updating the SciGirls Seven, arriving at common goals and language was important not only because the three teams collaborated to help develop, review, and draw on one another’s work, but also because each team interacted with the partner educators throughout the project, at times together and at times separately.

The project’s focus on STEM identity was a prime example of the teams’ need for common goals and language. While the SciGirls Seven were designed to engage girls in STEM, the project team envisioned that the updated strategies would be designed to also motivate girls to develop a STEM identity. This goal was introduced in the SciGirls CONNECT 2 NSF proposal and was ultimately included in the SciGirls Strategies Guide released at the end of the project (p. 6). In the intervening years, the teams deliberated on the following types of questions when assessing how to represent the strategies’ STEM identity focus to partner educators, recognizing that the answers to these questions had implications not only for how they communicated with the educators, but also for the nature of the evaluation feedback the educators would in turn provide:
• What language should be used with the educators to define and describe STEM identity, as well as how STEM identity relates to the (original and updated) strategies?

• How challenging will it be for educators who have used the SciGirls Seven for years to wrap their heads around the updated strategies and the conceptual shift from STEM engagement to an expanded goal that also includes STEM identity?

• In what ways might educators perceive that the original and draft updated strategies impacted girls’ STEM identity, beyond engaging them in STEM?

• To what extent should educators be encouraged to suggest edits, tweaks, or supplements to the original SciGirls Seven, to adapt to an expanded goal that includes STEM identity versus, for example, be encouraged to suggest completely new or different strategies?

This kind of reflection and collaboration between the evaluation, research, and project teams helped ensure that the language and messaging partner educators heard from each team was as consistent as possible. In addition to influencing the nature of the educators’ evaluation feedback, this approach helped allow for comparison between the feedback shared over the four key points of the grant period, and the resulting reports that were produced.

*Sharing findings with the project and research teams*

Over the two-year period, the evaluation team produced two reports per year on educators’ use and perceptions of the original and draft updated strategies.

**Evaluation reports relating to the SciGirls Seven:** In year one, the first evaluation report presented educators’ front-end feedback on the original SciGirls Seven, based on their prior experience with the strategies. The second report considered their reflections on their use of and thoughts about the SciGirls Seven in the first year of their programs. Along with the project team’s concurrent literature review, the educator feedback shared prior to and after their first-year programs informed the draft version of the updated SciGirls Strategies.

**Evaluation reports relating to the draft SciGirls Strategies:** In year two, the first evaluation report looked at educators’ initial response to the draft updated SciGirls Strategies, after they were presented to the educators. The second report looked at educators’ feedback about the draft updated strategies after they were used in the second year of their programs. Along with the project team’s ongoing literature review efforts, the educator feedback shared prior to and after their second-year programs helped TPT finalize the updated SciGirls Strategies.

---

6 The evaluation also gathered program reports during both years of the project. Program reporting from the first year was detailed in a stand-alone implementation evaluation report. Program reporting from the second year was included in the formative evaluation report about educators’ use of the draft updated SciGirls Strategies, as it provided valuable context in considering how educators incorporated the strategies into their programs.
How the evaluation findings informed the *SciGirls Strategies*

The partner educators’ experience with the *SciGirls Seven* informed the drafting of the updated strategies, while their experience with the draft *SciGirls Strategies* in turn informed the final version. This section briefly summarizes the nature of the educators’ feedback and how it informed the strategies.

**Informing the draft *SciGirls Strategies***

In their front-end evaluation feedback, educators generally found each of the original *SciGirls Seven* strategies very or extremely valuable, and the majority reported that they had observed each strategy result in a key outcome that TPT envisioned for that strategy, such as energizing girls, motivating girls, or improving girls’ confidence. Overall, the educators also shared positive feedback about the *SciGirls Seven* after using the strategies in the first year of their programs. Thus – once the project team took other factors, including the literature review, into account – it is not surprising that all but one of the original strategies were incorporated into the draft updated *SciGirls Strategies*. Image 5 details the similarities and differences between the original *SciGirls Seven* and the draft updated strategies.

Image 5: Slide from the mid-project webinar detailing the similarities and differences between the *SciGirls Seven* (on the left) and the draft updated *SciGirls Strategies* (on the right).

In addition to being asked to comment on the original strategies before and after their first-year programs, educators were also invited to share suggestions for how TPT might update the strategies. In their front-end surveys, a few educators shared revisions, additions, or other recommendations, commenting on the importance of cultural responsiveness, the development of trust in partners’ communities, and communication strategies to use with
educators and youth. After their first-year programs, additional educators focused on how the updated strategies should include a focus on cultural responsiveness – including one who explained that it would need to be incorporated throughout an entire program, rather than being the focus of a single strategy.

Taken together, this type of feedback was subsequently incorporated into a conceptual framework for strategy development that accompanied the draft version of the updated strategies (and was ultimately included in the final SciGirls Strategies Guide). As presented by the project team during the mid-project webinar, a slide from which is shown in Image 6, the framework introduced educators to the expanded goal of STEM identity and highlighted the importance of considering the learning environment and utilizing CRP when using the SciGirls Strategies, to engage and effectively serve all girls in STEM, especially girls of color and girls from marginalized communities.

Image 6: Slide from the mid-project webinar presenting the conceptual framework for strategy development
Informing the final *SciGirls Strategies*

Prior to and after their second-year programs, educators shared positive feedback about the draft updated *SciGirls Strategies*. At both times, they generally: liked the strategies; found them well organized, clear/easy to follow, and cohesive; felt the strategies met their expectations; thought the strategies would be (or were) easy to use; thought it would be (or had been) easy to shift their thinking from the mindset of the original *SciGirls Seven*; and thought they would recommend the strategies to other educators. After using the draft strategies in their second-year programs, educators also thought they would use them again in their next informal STEM program for girls.

Although much of their feedback was positive – indicating that the concepts behind each of the draft strategies met their expectations and needs – educators also suggested revisions, additions, or made other recommendations for the final version of the strategies. Image 7 presents both the draft and final version of the strategies, for side-by-side comparison.

Below are a few examples of how the educator feedback from before and after their second-year programs helped inform the final version of the *SciGirls Strategies*:

- Before and after they used the draft updated strategies, a few educators suggested streamlining the language of the final strategies, as in, “*I liked* that the *SciGirls Seven strategies* *were* brief ... *Doing that* makes them easier to remember and continue to be conscious of” and “... the extra verbiage makes integration of the [updated] strategies SEEM more daunting to someone unfamiliar with the mission of *SciGirls*.” As shown in Image 7, with the exception of Strategies #1 and #6 – which remained the same between the draft and final versions – the language of each of the strategies was simplified for the final *SciGirls Strategies*. 

![Image 7: The draft *SciGirls Strategies* (on the left) and the final *SciGirls Strategies* (on the right)](Image created by Knight Williams, Inc.)
• After being introduced to the draft version of the strategies, a few educators explained that they thought the language of Strategy #2 (Provide authentic opportunities that mirror the practices of STEM and help girls develop their own ways of exploring and sharing knowledge) could be clearer, as in, "Consider rewording Strategy 2... I think [the] language [of this strategy] is a bit wordy and is ambiguous." This strategy was revised for the final version.

• During the same evaluation, one educator said of Strategy #3 (Promote a growth mindset in girls to help them embrace struggle, overcome challenges, and increase self-confidence in STEM), “The new strategies incorporate lingo like ‘growth mindset’ that is not necessarily familiar to potential role models and may be intimidating.” The specific term “growth mindset” was removed from the final version of this strategy.

• Strategy #4 (Encourage girls to identify and challenge STEM stereotypes and bring their true selves to the learning space) generated the largest number of comments, suggestions, and questions from educators before and after they used the draft updated strategies in their programs. Some educators explained that they had trouble understanding "HOW to actually [use this strategy]," while others described aspects of the strategy that they found difficult to implement, in some cases due to girls’ young ages, their unfamiliarity with STEM stereotypes, and/or educators’ desire to highlight some of the “positive stereotypes of women in STEM.” At the same time, a few expressed confusion about the meaning of “true selves” in the language of the strategy, as in, “I’m not 100% sure what that means. True selves in the sense of their identity or personality or both?” The final version of the strategy removed language about girls bringing their true selves to the learning space, focusing the strategy on helping girls identify and challenge stereotypes.

• Following the mid-project webinar when the educators were introduced to the draft updated strategies and the conceptual framework, the majority thought it would be moderately easy for them to consider the framework as they used the updated strategies, though a few who went on to share questions about the framework tended to focus on an aspect of CRP, such as asking for “more specific ways to interweave culturally responsive [teaching] in all of the strategies.” Educators shared similar feedback – particularly asking for more guidance around CRP – after they used the conceptual framework in the second year of their programs. Taken together, this feedback was ultimately included in the final SciGirls Strategies Guide (p. 8-9) and continues to inform the project team’s intentions beyond CONNECT 2, as discussed in greater detail in the final section of this paper.
Limitations of the evaluation process and lessons learned

As outlined in various places in this paper, the educators’ responses to evaluation questions about the SciGirls Seven, the draft updated strategies, and the conceptual framework for strategy development were shared with the project team to help inform the development of the SciGirls Strategies (and the SciGirls Strategies Guide), and with the research team to provide context and a form of ground truthing, as they planned to implement their study and subsequently interpret findings. While the educators’ evaluation feedback played a critical role in informing the draft and final versions of the updated SciGirls Strategies, as with any evaluation, there were some limitations and implementation challenges. A few examples are shared below that may help inform the design and implementation of other RSP projects.

Addressing partner educator staff turnover

Although the SciGirls CONNECT 2 partner organizations were selected in large part because of their experience running SciGirls programs and their familiarity with the SciGirls Seven, some of the educators who participated in the evaluation were less familiar with the strategies than the project team anticipated. This was likely due to unavoidable staff turnover within some organizations, as well as the replacement of two partner organizations at the end of the first year of the project. In response, the project and evaluation teams were flexible in working with the new CONNECT 2 educators, and the evaluation found that educators with all levels of experience provided in-depth feedback about their use of the strategies in their programs.

Addressing partner educators’ challenges meeting program requirements

Some of the partners had difficulty meeting the SciGirls CONNECT 2 program requirements in the first or second years of their programs. However, it was the opinion of the evaluation team that this did not substantially affect educators’ abilities to provide feedback on their use of the strategies. For example, although some partners did not meet the minimum number of program hours and girls, most organizations were near or above these requirements. Additionally, a few partners failed to host a family event or include youth-created videos; however, these program requirements weren’t directly tied to the strategies. Finally, although some partners did not quite meet one program requirement that was directly tied to a strategy (to include at least three female role models/STEM professionals each year), this was an area where educators generally noted they had fallen short and provided valuable feedback about the specific challenges they had faced.

Addressing project timeline issues

The SciGirls CONNECT 2 timeline was developed to encourage iterative collaboration between the various project teams, with the evaluation, literature review, research, and development

7 As outlined on the partner website, during each year of their programs, partners were required to serve at least 10 girls ages eight to 13; implement at least 16 hours of programming; and include three female role models/STEM professionals, a family event, and video creation by girls about their STEM experiences. The partners were also required to use the SciGirls Seven in the first year and the draft SciGirls Strategies in the second.
of the updated *SciGirls Strategies* happening simultaneously. Over the course of each year of partner programming, however, the teams discovered that a number of partner outreach programs were scheduled relatively late in the program period, meaning that the evaluation activities were still taking place during key periods in the development of the draft and final *SciGirls Strategies*.

For example, during the first year of the project, partner programs took place on a rolling basis between April and December 2017. Educator feedback was gathered until late January 2018, the draft evaluation report was shared with TPT in February, and the updated *SciGirls Strategies* were presented to the partner educators in March. Similarly, during the second year of the project, partner programs took place between April and December 2018 (with one partner receiving permission to end their program in January 2019). Educator feedback was gathered until late January 2019, the draft evaluation report was shared with TPT in February, and the *SciGirls Strategies* were finalized shortly thereafter, with project staff writing, designing, and printing the *SciGirls Strategies* Guide for distribution throughout the national network of *SciGirls* educators in June.

Because of the overlap between the evaluation activities and the development of the updated strategies, the evaluation team prioritized sharing pertinent educator feedback throughout the grant period, for example through summaries of key findings, draft sections of evaluation reports, and educator quotations grouped by theme. However, the project team may have found it valuable to shorten the program window (for example, allowing programs to run between April and November of each year), as this may have given them more time to review the relevant evaluation reports as they were developing the draft and final *SciGirls Strategies*.

**Addressing shared work and language across project teams**

An ongoing opportunity and challenge for the evaluation team was balancing the perspectives and needs of the partner educators with those of the project and research teams. As Knight Williams was tasked with gathering educator feedback at four key milestones of strategy development, to be effective, the evaluation team needed to develop questions at each phase of evaluation that both resonated with the educators and elicited useful feedback for the project and research teams’ ongoing work. Although the reciprocal nature of the research and practice relationship was a strength of the project, given the tight timeline, where research and evaluation activities often occurred simultaneously, the evaluation team’s efforts to share findings and address common language issues sometimes occurred on an ad hoc basis, for example during the monthly project meetings or when reviewing interval documents produced by the project, research, or evaluation teams. In hindsight, the collaborative and iterative nature of the process might have been enhanced by, for example:

- setting aside additional time up front with the project and research teams to establish key project milestones for sharing work and addressing common language issues;
- formally scheduling check-in points with the other teams, even during the monthly meetings, to specifically assess progress and challenges, recognizing where shared work and language issues were most likely to occur and should be revisited; and
• consulting more frequently over the course of the project with prior SciGirls educators who served on the SciGirls CONNECT 2 Advisory Board to help identify, from the educators’ point of view, opportunities and challenges for leveraging team collaborations and developing consistent language practices that both satisfied the needs of all three teams and spoke to the educators’ experiences.

Building in these additional elements might have helped streamline the evaluation process, reduced the amount of ongoing due diligence needed to identify issues as the project progressed through key milestones, resulted in additional insights to share with the project and research teams on a more timely basis, and provided a more consistent experience for the educators who also interfaced with all three teams.

**Future training and dissemination of the SciGirls Strategies**

Looking forward to 2020, the project team has indicated that the next phase of their work related to the strategies will be to train the existing national network of 3,400+ SciGirls educators in the updated SciGirls Strategies and the conceptual framework for strategy development. It is in this second area that the SciGirls CONNECT 2 evaluation continues to inform the project team’s next steps. Although the evaluation did not identify issues with one aspect of the framework – considering the learning environment – educators consistently shared questions and requested additional guidance from TPT on the second aspect, how to utilize CRP. Based on this feedback and similar findings from the project’s research team (Hughes et al., 2019), this will be a key piece in TPT’s future training and resource development. TPT received supplemental NSF funding to hold a two-day workshop in the fall of 2019, the goal of which was to develop a framework for how SciGirls will define and incorporate CRP into their work with media, outreach, and professional development designed to engage girls in STEM. According to participant survey findings and observations presented in a report on the workshop by the project team (TPT, 2019), the SciGirls team and other participants thought the workshop deepened their understanding of CRP and how it relates to the SciGirls Strategies, and indicated that SciGirls staff left with strong drafts of new agendas for including CRP in future SciGirls trainings.
References


