

SciGirls CONNECT 2 Workshop: Developing a SciGirls' Culturally Responsive Teaching Framework Report

Introduction: Twin Cities PBS received supplemental funding for the *SciGirls* CONNECT 2 project (NSF Award #1610625; R. Karl, PI) to hold a two-day workshop, ***Developing a SciGirls' Culturally Responsive Teaching Framework***. Twenty-one professionals attended the workshop in person on September 30 – October 1, 2019 in St. Paul, MN, including six *SciGirls* certified trainers, all project PIs and *SciGirls* staff. Additionally, three university-based researchers with expertise in culturally responsive teaching (CRT) presented to the group virtually during the workshop (see the list of attendees in the Appendix).

The updated *SciGirls Strategies*, developed as part of the *SciGirls* CONNECT 2 project, communicate the need for educators to incorporate CRT practices when using the *SciGirls Strategies* to maximize impact and effectively reach a diverse population of girls. The *SciGirls* CONNECT 2 project evaluation with educators indicated that training on CRT practices is critically needed and this workshop was the first step in making that a reality.

The goal of the *SciGirls* CONNECT 2 Workshop was to develop a framework for how *SciGirls* will define and incorporate CRT into their work with media, outreach and professional development designed to engage girls in STEM. The workshop was also designed to help update the *SciGirls* professional development model that includes a Train-the-Trainer workshop and Educator Full Day Training (presented by *SciGirls* Certified Trainers). Workshop objectives included:

1. Share best practices in culturally responsive teaching, paying attention to professional development strategies.
2. Gather ideas on essential changes to the current *SciGirls* Professional Development Training that respond to these practices.
3. Articulate a vision of CRT within the *SciGirls* educational context.

Workshop Activities: The two-day workshop agenda included presentations, small group breakout sessions, large group discussions, and reflection (see the Meeting Agenda in the Appendix). The workshop agenda was designed to provide participants with the opportunity to learn and then apply what they learned in small group discussions. Activities always included a full group debrief after small group breakout sessions to synthesize the discussions of all participants to inform the work.

A highlight of the first day of the workshop was having three CRT researchers join virtually for a presentation and brief discussion:

- Dr. Sherell McArthur, Assistant Professor, Department of Educational Theory and Practice, University of Georgia-Athens;
- Dr. Zahra Hazari, Associate Professor, Department of Teaching and Learning and the STEM Transformation Institute, Florida International University; and
- Dr. Alberto Rodriguez, Professor, Cross-Cultural Science Education, Purdue University

Originally, the researchers were invited to attend the workshop in-person, but due to scheduling challenges, they presented to the group virtually. Dr. McArthur, Dr. Hazari, and Dr. Rodriguez all have expertise in CRT, equity and education, yet their research varies, and each brought a different perspective to the group. The consensus of the group was that having the researchers present virtually was very effective as it was followed by time for participants to digest the information and discuss in small groups. The project team did not feel that having the researchers present virtually inhibited the success of the workshop at all.

In addition to the researcher presentations and discussions, there were four focused discussions throughout the workshop. These are summarized below:

Shared definitions

During the first day, the group divided into small groups and worked on developing definitions for the following terms: STEM; relevance/responsiveness; equity; engagement; diversity and culture. Participants discussed possible ways to define each term and the importance of *SciGirls* using *consistent definitions* for these terms moving forward.

Strategies in action

During the first day, participants also brainstormed how each of the new *SciGirls Strategies* overlapped, aligned or related to CRT. The initial brainstorm was done as a 'chalk talk' activity and then participants were assigned one strategy to discuss in small groups. This activity clarified how interconnected the *SciGirls* strategies are with CRT. This was very helpful for participants who struggled with the concept of CRT overall. This was also a valuable step in beginning to think about the re-design of the *SciGirls* train-the-trainer and educator trainings.

Open space conversations

On the second day, participants self-selected into small groups to discuss topics that had come up over the course of the first day. The topics related to the overall workshop goals but were not already on the agenda. These conversations including: Title IX challenges/girl-only programming; social justice; non-binary inclusion; how to describe the framework to others; empowering girls in their homes; and dealing with white fragility. These additional conversations helped participants dive deeper into topics they felt were important to discuss to help inform the following discussions on integrating the new framework (and CRT in particular) and new *SciGirls Strategies* into the *SciGirls* trainings.

Team conversations

The final activity of the workshop focused on participants applying what they learned throughout the workshop to integrate CRT and the new *SciGirls Strategies* into the current *SciGirls* train-the-trainer and educator training agendas. Participants chose one training agenda to focus on (Train-the-Trainer or Educator Full Day Training) and worked together in small groups. After the small group work session, each group shared their ideas and participated in a large group discussion about the new training agendas.

Two groups focused on the ***Train-the-Trainer*** agenda. In addition to specific suggestions for agenda revisions, the groups made the following general recommendations for this important training:

- Integrate key topics into training instead of presenting them as separate entities (especially CRT, but also the design of an inclusive learning environment).
- Use activities throughout the training that help clarify and reinforce CRT (including a personal identity activity adapted from the NSF-funded PAGE Institute, a privilege walk, self-reflection activities and ice breaker activities).
- Provide homework for participants before they attend the training (including viewing videos, reading articles, and gathering relevant cultural information about their community).
- Have trainers create a concept map/action plan throughout the training that incorporates various concepts they learn (cultural responsiveness, gender equity, an inclusive learning environment, etc.) and helps to guide discussion and internal reflection.
- Include discussions of how to navigate difficult conversations, acknowledging that equity, diversity and CRT can be challenging topics to explore with educators.
- Be very clear about goals of the Train-the-Trainer content and about the expected outcomes for Trainers.

Two other groups focused on the ***Educator Full Day Training*** agenda. Key recommendations from these discussions include:

- Administer a pre-workshop survey to assess participants' experience with gender-equity and CRT and to discover what diverse populations they work with.
- Be very clear about goals of the training, including a focus on new framework (the use of CRT practices and the importance of an inclusive learning environment) and the *SciGirls Strategies*, research-based instructional teaching practices proven to encourage girls in STEM pathways.
- Be explicit about the importance of recognizing that everybody has a unique identity (that includes their culture, background and lived experiences) and that *SciGirls* is increasing their understanding of this and developing strategies and professional development to address it.
- Present the need for gender-equitable and CRT strategies based on underrepresentation of girls/women and especially girls/women of color in STEM studies and occupations and the increasing diversity of the United States.
- Incorporate time and opportunity for educators to reflect on and apply what they are learning throughout the training.
- Importance of doing hands-on activities at the training and linking them to the *SciGirls Strategies* and CRT.

Outcomes: For a final reflection on day two, attendees were asked to list one accomplishment of the workshop. Overwhelmingly, participants reported that the workshop resulted in a better understanding of CRT and concrete ideas of how to integrate CRT into their (and *SciGirls'*) work.

Participants were also sent a follow-up survey via email the week after the workshop and 8 out of 11 participants responded. All respondents agreed ‘very much’ (5 on a scale of 1-5) that the three workshop objectives were accomplished:

1. Share best practices in culturally responsive teaching, paying attention to professional development strategies.
2. Gather ideas on essential changes to the current *SciGirls* Professional Development Training that respond to these practices.
3. Articulate a vision of CRT within the *SciGirls* educational context.

All respondents were ‘very satisfied’ (5 on a scale of 1-5) with the workshop’s learning environment, researcher presentations (overall), small group breakout sessions, and large group discussions. Seven respondents were ‘very satisfied’ with the researcher presentations being virtual while one respondent rated this item a 4 on the 5-point scale. One respondent stated that “our large and small group discussions help me to better understand the goals and the direction in which *SciGirls* is moving. I think by then end of our collaboration, we had developed a roadmap for moving forward.”

The post-survey also asked participants for 1-2 key points they would like the *SciGirls* team to take away from the workshop. The responses included guidance *SciGirls* should provide to trainers and general thoughts about CRT. Participants suggested helping Trainers to articulate how the framework informs and empowers the strategies, clarifying when substitution is acceptable in trainings (activities, adjusting timing, etc.), and strategies to facilitate conversations on race, ethnicity and gender. Participants mentioned how CRT is closely tied to relationship building between educators and the youth they work with, and advised not to lose sight of the importance of modeling equitable STEM activities for educators in the effort to advance CRT, and reinforced the importance of providing an inclusive learning environment in which participants are willing to learn from one another.

Conclusion and Next Steps: Throughout the *SciGirls* CONNECT 2 Design Workshop, the *SciGirls* staff and participants deepened their understanding of CRT and how it relates to the *SciGirls* *Strategies*. *SciGirls* staff left with strong drafts of new agendas for the Train-the-Trainer and Educator Full Day Training that will incorporate CRT.

Moving forward, we hope to submit a proposal for an NSF conference proposal for *SciGirls* trainers. The proposed conference goals are 1) to build a community of practice around the newly updated *SciGirls* *Strategies* and 2) to share best practices for implementing an inclusive learning environment and using CRT practices to engage girls and underrepresented minorities. The *SciGirls* Conference will bring together a larger group of *SciGirls* Certified Trainers, along with representatives from girl-serving organizations (GSOs) to listen, learn, reflect, and develop a collection of resources (e.g., presentations) in support of future training of educators in gender equitable and culturally responsive STEM professional development.

Appendix

Participant List:

1. PI Rita Karl, Sr. Managing Director, STEM Media & Education, Twin Cities PBS
2. Co-PI Karen Peterson, Chief Executive Officer, National Girls Collaborative Project
3. Co-PI Dr. Alicia Santiago, Diversity Consultant, Twin Cities PBS
4. Co-PI Dr. Roxanne Hughes, Director of the Center for Integrating Research and Learning, National High Magnetic Field Laboratory
5. Project Consultant, Dr. Brenda Britsch, Gender Equity Consultant, National Girls Collaborative Project
6. Project Consultant, Dr. Barbara Billington, Science Education Professor, University of Minnesota, STEM Education
7. Sarah Carter, Sr. Manager STEM Media and Education, Twin Cities PBS
8. Niki Becker, STEM Media and Education Specialist, Twin Cities PBS
9. Katie Hessen, STEM Content and Outreach Specialist, Twin Cities PBS
10. Leah Defenbaugh, STEM Outreach Manager, Twin Cities PBS
11. Alex Dexheimer, STEM Outreach Specialist, Twin Cities PBS
12. Kristin Pederson, Senior Director, STEM Project Development, Twin Cities PBS
13. Dr. Wanda Staggers, Educational Consultant, CommunityCode, Inc. Certified SciGirls Trainer.
14. Michelle Higgins, Associate Director, University of Arizona STEM Learning Center. Certified SciGirls Trainer.
15. Tricia Berry, Director, Women in Engineering Program, The University of Texas at Austin. Certified SciGirls Trainer.
16. Laahari Chalasani, Education and Program Manager, Children's Science Center. Certified SciGirls Trainer.
17. Nancy Coddington, Director of Science Content, Services, and Programming, WSKG Public Media. Certified SciGirls Trainer.
18. Carlos Villa, Director of K-12 Education Programs, National High Magnetic Field Laboratory. Certified SciGirls Trainer.
19. Megan Parise, University of MN – Dr. Billington graduate student, meeting note-taker
20. Dr. Preethi Titu, University of MN – Dr. Billington graduate student, meeting note-taker
21. Fawnda Norman, University of MN – Dr. Billington graduate student, meeting note-taker

SciGirls Re-Design Workshop Agenda **Monday, September 30**

Time	Topic
7:40 AM	Walk over from the Hyatt
8:00 AM	Welcome and Opening Remarks
8:45 AM	Overview of Culturally Responsive Teaching (CRT)
9:15 AM	Overview of Lit Review
9:45 AM	Build Definitions
10:00 AM	Research Brief - Dr. Sherell McArthur
10:30 AM	<i>Break</i>
10:45 AM	Research Brief - Dr. Zahra Hazari
11:15 AM	Learnings from Prior Trainings
11:45 AM	<i>Lunch - Research presentation by Dr. Roxanne Hughes</i>
12:30 PM	Research Brief - Dr. Kimberly Scott
1:00 PM	SciGirls Strategies in Action
2:00 PM	Research Brief - Dr. Alberto Rodriguez
2:30 PM	<i>Break</i>
2:45 PM	Synthesis from Researcher Presentations
3:15 PM	Set the Challenge for Day 2
4:00 PM	End of Day Check-in
5:30 PM	Dinner and Screening

SciGirls Re-Design Workshop Agenda **Tuesday, October 1**

Time	Topic
Hyatt Meeting Room 1	
8:00 AM	Welcome
8:20 AM	Chalk Talk
9:00 AM	Open Space Conversations
10:00 AM	Project Team Conversations (<i>with Break</i>)
11:45 AM	<i>Lunch</i>

Move to TPT	
12:30 PM	World Café
1:00 PM	Project Team Conversations <i>(continued)</i>
2:30 PM	<i>Break</i>
2:45 PM	Project Team Report Out
3:05 PM	Wrap-up Discussion
3:15 PM	Closing Reflection
3:30 PM	Group Photo

