Welcome to the NGCP National Webinar

Equity in STEM Education: The Connection to Culture
May 27, 2020
Vision

The National Girls Collaborative Project brings together organizations committed to informing and encouraging girls to pursue careers in science, technology, engineering, and mathematics (STEM).
NGCP Goals

1. Maximize access to shared resources within organizations interested in engaging girls in STEM.
2. Strengthen the capacity of programs by sharing exemplary practice research and program models.
3. Use the leverage of a network to achieve gender equity in STEM.
NGCP Activities

Virtually:
- Distribution and Content Projects
- *The Connectory* – Collaboration Tool
- FabFems – *Role Model Tool*
- E-Newsletter and Social Media
- Webinars – *Exemplary Practices*

Local Collaboratives:
- Professional Development: *Conferences and Forums*
- Incentives to Collaborate: *Mini-Grants*
- Newsletters and Local Resources
National Network of Collaborative Teams
SciGirls is an Emmy Award-winning PBS Kids show funded by the NSF that

- Features *real* girls doing STEM investigations they’re passionate about;
- Highlights science and engineering processes;
- Features *real* female STEM professionals as role models and mentors

[scigirlsconnect.org](http://scigirlsconnect.org)  
[pbskids.org/scigirls](http://pbskids.org/scigirls)
Why do we still care about girls and STEM?

- Boys and girls do not display a significant difference in their abilities in STEM. The cause is social and environmental.
- Differences consistently appear in girls’ interest and confidence in STEM subjects, starting at a very young age.
- These differences can be linked to a negative self-perception, enhanced by stereotypes.
The SciGirls Approach

On TV
• National PBS Kids series – Seasons 1-5 are airing now Season 6 in is production (funded by NASA)

Online
• A PBS Kids website with videos, games and role model profiles (pbskids.org/scigirls) and on the PBS Kids Video App

On the Ground
• STEM activities and professional development for 200+ partners and 3,600 trained educators, and hundreds of SciGirls-affiliated role models on FabFems.
**SciGirls Research to Practice Model**

- *SciGirls* uses **research-based strategies** proven to engage girls in STEM to create media + outreach programs.

- Five PBS seasons feature STEM role models working with real girls on **meaningful STEM projects**.

- *SciGirls CONNECT* has trained over 3,600 educators in gender equitable teaching strategies, resulting in more than 1,600 youth programs for 101,000 girls (and boys!)
SciGirls Research to Practice Model
Our approach is grounded in research-based strategies that motivate girls around STEM engagement and include:

1. Connect STEM experiences to girls’ lives.
2. Support girls using STEM practices.
3. Empower girls to embrace struggles.
4. Encourage girls to challenge STEM stereotypes.
5. Emphasize that STEM is collaborative and community-oriented.
6. Interact with diverse STEM role models & mentors.

Framework for the SciGirls Strategies

In order to be effective at implementing the SciGirls Strategies, educators need to:

Provide an inclusive learning environment.

**TIPS:**
- Create a warm and welcoming space that is accessible to all.
- Create an atmosphere of mutual respect.
- Use icebreakers so youth can introduce themselves in a non-threatening manner.
- Provide opportunities for youth to voice their opinions.

Use culturally responsive teaching practices.

**TIPS:**
- Understand your culture and how it affects others.
- Get to know your youth and build on their life experiences.
- Communicate high expectations for behavior and performance.
- Validate youth’s bilingual abilities to leverage learning.

www.scigirlsconnect.org
Download videos, activities, and other resources to enhance your program!

scigirlsconnect.org
Equity in STEM Education: The Connection to Culture
Culture is central to student teaching and learning

Have you thought about how your culture impacts the way you teach, and the way students engage in STEM learning?

Culture...
• Shapes our everyday life, how we see the world, communicate and interact with each other
• Plays a key role in communicating and receiving information

My Culture...
• Is represented in who I am and who I am as an educator
• Shapes the way I view things and the way I teach
Diversity in the learning environment

How is cultural diversity reflected in your programs?

- Diversity is the norm in most out-of-school programs.
- Teaching in multicultural environments leads to challenges AND opportunities!
- How can educators effectively engage students from diverse backgrounds?
Culturally responsive practices

• A **culturally responsive educator** has the knowledge, attitudes, and skills to communicate and work with diverse students.

• Geneva Gay defines **culturally responsive teaching** as “a process of using cultural knowledge, prior experiences, and performance styles of diverse students to make learning more appropriate and effective for them”. Gay, Geneva, 2013 "Teaching to and through cultural diversity."
Engaging students in culturally responsive and appropriate ways

- **Create a *STEM for All learning environment***. Create an inclusive learning environment that looks and feel inviting and allows students to feel that they belong. Tips:
  
  ✓ Create a welcoming space that is accessible to all and fosters cooperation and acceptance; a space where students can work in a collaborative way.
  
  ✓ Create an atmosphere of mutual respect. Shared expectations help develop a sense of community and encourage positive interactions.
  
  ✓ Provide opportunities for students to voice their opinions and feel accepted.

For more information go to scigirlsconnect.org
Engaging students in culturally responsive and appropriate ways

- Develop genuine and trusting relationships and validate students’ strengths and interests. Get to know your students as individuals and learn about their culture. Use icebreakers or short activities to find out their interests and the way they operate at home and in their community.

- Learn...listen, observe, understand your own culture and how it is affecting the way you relate to students.

- Become aware of your own values, assumptions and beliefs (implicit biases).
Resources


Resources


• Student Centered and Personally Relevant Learning. SciGirls. https://www.youtube.com/watch?v=4w5VokuvYYg

• Culturally Responsive Teaching. SciGirls. https://www.youtube.com/watch?v=Y22JGwU1Upc


A NETWORKED COMMUNITY.

We are an interdisciplinary community of educators and researchers who are firmly committed to making schools places where all students want to be and want to learn.

DeLeon L. Gray, PhD
Joanna Ali
Briana Green
Tamika McElveen
WORKING PD SESSIONS
COMMUNALLY-ORIENTED STEM ACTIVITIES
CULTURALLY-SENSITIVE RESEARCH METHODS
COMMUNAL LEARNING OPPORTUNITIES

An emphasis on when, where, and why academic content will be useful for serving one’s community, serving humanity, and serving others.

<table>
<thead>
<tr>
<th>Serving the Community</th>
<th>Serving Humanity</th>
<th>Serving One Another</th>
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<tbody>
<tr>
<td>Teacher emphasizes the importance of investing in one’s community by devoting one's time and effort to addressing an issue that impacts community members.</td>
<td>Teacher provides opportunities for developing a sense of compassion for, and commitment to, preserving and not destroying various forms of life (e.g., humans, animals, plants).</td>
<td>Teacher's instructional practices underscore the message that it is each student's responsibility to contribute to the collective welfare of the groups to which they belong.</td>
</tr>
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Communal Lessons for the Daily Wins

Relevant Design Challenges

Research Component - Encouraging Students to Research and Prototype-Building
Communal Lessons for Daily Wins

Create your Resources (Worksheets, Cards, Models, Etc.)

Sharing Knowledge with Community
Levels of Culture

**Surface Culture**
Observable Patterns
Low emotional impact on Trust
*Food-Holidays-Clothes-Hair-Language-Art*

**Shallow Culture**
Unspoken Rules
High emotional impact on Trust
*Personal Space-Eye Contact-Concepts of Time*

**Deep Culture**
Collective Unconscious Beliefs & Norms
Intense Emotional Impact on Trust
*Decision Making-World View-Spirituality-Communalism*

Hammond, 2015, p.24
## Why communalism?

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<thead>
<tr>
<th>Self-direction</th>
<th>Achievement</th>
<th>Power</th>
<th>Tradition</th>
<th>Benevolence</th>
<th>Universalism</th>
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<tr>
<td>Curious</td>
<td>Success</td>
<td>Social power</td>
<td>Respect for tradition</td>
<td>Helpful</td>
<td>Protecting the environment/Unity with nature</td>
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<td>Creativity</td>
<td>Capable</td>
<td>Authority</td>
<td>Humble</td>
<td>Honest</td>
<td>Broad-minded</td>
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<tr>
<td>Freedom</td>
<td>Ambitious</td>
<td>Wealth</td>
<td>Obedient</td>
<td>Forgiving</td>
<td>Social Justice</td>
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<tr>
<td>Choosing own goals</td>
<td>Influential</td>
<td>Preserving my public image</td>
<td>Honoring of parents and elders</td>
<td>Loyal</td>
<td>Wisdom</td>
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<tr>
<td>Independent</td>
<td>Intelligent</td>
<td>Social recognition</td>
<td>Self-discipline</td>
<td>Responsible</td>
<td>Equality</td>
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<td>Self-respect</td>
<td></td>
<td></td>
<td>Politeness</td>
<td>A spiritual life</td>
<td>A world at peace</td>
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<td>True friendship</td>
<td>Inner harmony</td>
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BLACK PANTHER + AFROFUTURISM

Lorem ipsum
CULTURAL INSPIRATION

- Top View of school design
- Inspired by African Prints
- Geometric Shapes
- Concentric Circles & Curves
Engaging Black and Latinx students through communal learning opportunities: A relevance intervention for middle schoolers in STEM elective classrooms

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Relevance intervention
Communalism
Culturally relevant pedagogy

\textbf{ABSTRACT}

With the aim of bridging research in educational psychology and teacher education, we designed a research-practice partnership to unpack the concept of relevance from a race-reimagined perspective. Specifically, we employed a mixed-methods sequential explanatory research design to examine associations between the communal learning opportunities afforded to Black and Latinx students, and their engagement patterns during STEM activities. Within a nine-week instructional unit we provided students six opportunities to rate their scholastic activities. High levels of behavioral engagement were sustained over the course of the instructional unit. On weeks when students rated the activities as higher in communal affordances, they also reported more behavioral engagement. Classroom observations facilitated our efforts to create state space grids that show when and how teachers used emancipatory pedagogies to support students' learning. We used these state space grids, along with teacher interviews and student focus groups, to develop contextualized illustrations of two teachers of color as they successfully provided communal forms of motivational support over the span of six observations per teacher. These strategies differed based on three key factors: where the lesson was placed within the larger instructional unit, the way teachers interpreted and responded to their students' engagement patterns, and how the demands of the larger school environment impacted classroom dynamics.
TAKE-AWAYS FROM OUR RESEARCH

DEVELOPING APPRECIATION FOR ACADEMIC CONTENT INVOLVES BOTH LESSON FRAMING AND STUDENT DISCOVERY

THERE ARE GOOD REASONS WHY INSTRUCTIONAL STRATEGY USE IS NOT ALWAYS STABLE

STUDENT ENGAGEMENT ALSO SHAPES INSTRUCTIONAL OPPORTUNITIES FOR COMMUNAL UTILITY VALUE
COMMUNALISM CAN GO HAND-IN-HAND WITH STEM CURRICULA
COMMUNALISM IS A CULTURAL CONNECTOR
COMMUNALISM IS A VEHICLE FOR DEEP ENGAGEMENT
THANK YOU

weareischolar.org
Questions & Discussion
Upcoming NGCP Webinars

Check our website for upcoming webinars:

ngcproject.org/events