

# Welcome to the NGCP National Webinar

## Addressing STEM Stereotypes and Biases: Facilitating Challenging Conversations with Youth

Wednesday, September 15, 2021

Please respond to the poll and introduce yourself in the chat.  
Use the chat to ask questions, respond to one another, and share resources.



# NGCP Vision

The vision of the National Girls Collaborative Project is to **support and create STEM experiences that are as diverse as the world we live in.**



# OUR GOALS

1

## **Maximize access**

to shared resources within projects, and with public and private sector organizations and institutions

2

## **Strengthen capacity**

of existing and evolving projects by sharing exemplary practice, research, and program models, outcomes, and products.

3

## **Create the tipping point**

for gender equity in STEM by using the leverage of a network and the collaboration of individual girl-serving STEM programs

# NGCP Activities



**Leap**  
into  
**science**  
— Engineered by —  
THE FRANKLIN INSTITUTE

 **GIRLS**  
ADVISORY BOARD

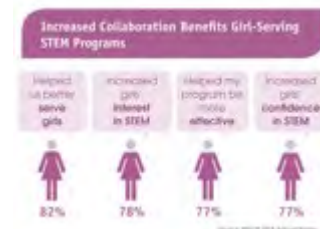


 **THE**  
**CONNECTORY**



MILLION GIRLS MOONSHOT

**IF/THEN**  
*Collection*



 **FabFems**



# National Network of Collaborative Teams



NATIONAL GIRLS COLLABORATIVE PROJECT

# Speakers



**Sara Kobilka**

Owner and Principal Consultant for  
Renaissance Woman Consulting LLC



# The State of Girls and Women in STEM

Girls' and young women's achievement in mathematics and science **is on par with that of boys and young men.**



NGCP's *The State of Girls and Women in STEM* (March 2021)

Latinx, Black, and Indigenous women represent **less than 10% of women in the STEM workforce**



NGCP's *The State of Girls and Women in STEM* (March 2021)



SciGirls

nys NEW YORK STATE  
NETWORK FOR  
YOUTH SUCCESS



Nancy Coddington  
Director of Science at WSKG



Sara Kobilka  
Owner Renaissance Woman Consulting



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Additional Support from:





# SciGirls Strategies

**Encourage girls to identify and challenge STEM stereotypes.**

(Allen et al., 2017; Carl et al., 2016; Cheryan et al., 2015; Robnett, 2016; Allen et al., 2017; Carlone et al., 2015; Sammet et al., 2016; Scott et al., 2014; Tan et al., 2013; Dasgupta et al., 2014; Verdin et al., 2016; Civil, 2016; Boucher et al., 2017)

Support girls in pushing against existing stereotypes and the need to conform to gender roles. Helping girls make connections between their unique cultural and social backgrounds and STEM disciplines will negate potential stereotype barriers.

# STEM Identity

How they **see themselves** and how **others see them** in relationship to **concepts of femininity** congruent with ideas of warmth, sensitivity, cooperation and the need for belonging.

Carlone et al., 2015; Deikman et al., 2015



Campers work on programming robots at SciGirls MagLab, photo Stephen Bilenky

# Tapping into Femininity

In 2012, the European Commission created this video to try to inspire more high school girls to pursue careers in STEM. As you watch, note how it tries to tap into femininity.



NATIONAL GIRLS COLLABORATIVE PROJECT



SciGirls



# Speakers

Amanda Sullivan, Ph.D  
Researcher and Educator with  
expertise in early childhood  
technology and STEM stereotypes



Michelle Higgins  
Associate Director of the University  
of Arizona's Societal Impact



Timothy Fowler  
Professional Development  
Director for New York State's  
Network for Youth Success



# STEREOTYPES





## **STEREOTYPES DEVELOP EARLY!**

Basic stereotypes begin  
to develop in children  
around ages 2-3

By age 5, children have  
developed a range of  
stereotypes about  
gender



# RESEARCH SNAPSHOT

Young children have STEM stereotypes & biases

[\(Sullivan, 2016\)](#)

Boys outperform girls on advanced programming tasks

[\(Sullivan & Bers, 2016; Sullivan & Bers, 2013\)](#)

Females on high school robotics teams have less confidence

[\(Sullivan & Bers, 2019\)](#)





# ADDRESS STEREOTYPES EARLY

- ✓ Hands-on early experiences
- ✓ Adult-role modeling & attitudes
- ✓ Female representation
- ✓ Growth mindset & embracing failure
- ✓ Combat negative stereotypes
- ✓ **Talk about stereotypes!!!**

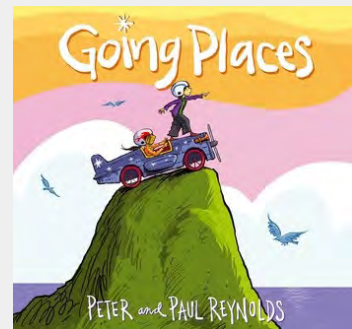
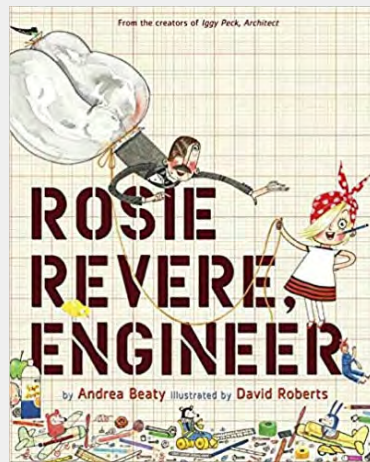
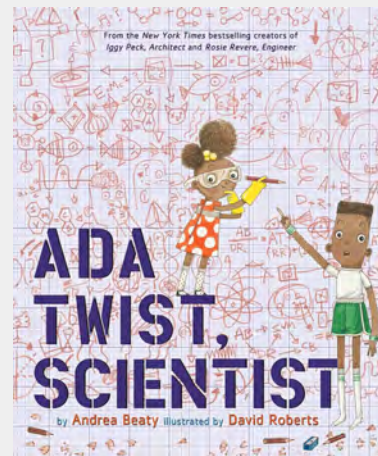
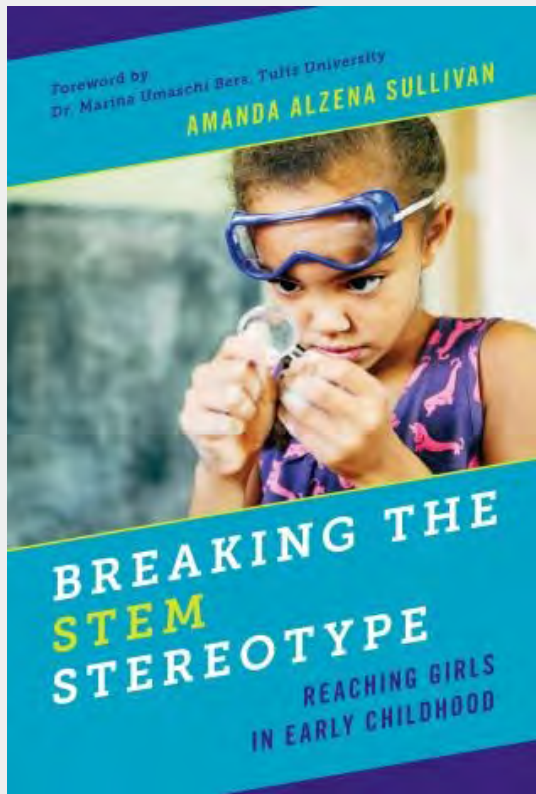
(Sullivan, 2019)



# TALKING TO YOUNG CHILDREN ABOUT STEREOTYPES



- ✓ Careful language choice
- ✓ Every interaction counts
- ✓ Observe play
- ✓ Contrast stereotypes
- ✓ Unfair things can be changed!
- ✓ Silence = reinforcement



# Keep in Contact!

## Dr. Amanda Sullivan, Ph.D.

Lecturer, Tufts University  
Dept. of Child Study & Human Development  
Early Childhood Technology Graduate Certificate  
Program

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Graduate School of Arts and Sciences  
Early Childhood Technology



# Engineering Spaces for Engaged Conversations

Michelle Higgins  
Associate Director, Societal Impact



# A 2-Pronged Approach

Girl Scout  
Leadership  
Experience  
Framework



*What,  
So What,  
Now What  
Strategy*

# Girl Scout Leadership Experience Framework for Activities

Activities include opportunities to **Discover**, **Connect** and **Take-Action**

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## **Discover**

Girls understand themselves and their values and use their knowledge and skills to explore the world.

## **Connect**

Girls care about, inspire, and team with others locally and globally.

## **Take-Action**

Girls act to make the world a better place.



# Girl Scout Leadership Experience Framework Outcomes

When activities are **girl-led**, involve **learning by doing**, and **cooperative learning**, girls:

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## Discover Outcomes

- Develop a strong sense of self
- Develop critical thinking
- Develop positive values
- Seek challenges in the world
- Identify appropriate risks

## Connect Outcomes

- Develop healthy relationships
- Promote cooperation
- Ability to resolve conflicts
- Feel connected to their communities
- Advance diversity

## Take-Action Outcomes

- Identify community needs
- Advocate for themselves and others
- Educate and inspire others to act
- Feel empowered to make a difference

# Layering STEM Activities with *What, So What, Now What*

## **What?**

What did you do?

What did you learn?

Who did what?

## **So What?**

So, what is special about this project?

Why is this important to know?

Who can benefit from this and how?

Why would I bring this activity to a group of girls?

## **Now What?**

Now what are YOU going to do about it?

Who needs to know about this?

How will you get the message out?

# The Power of Circles

<https://www.edutopia.org/article/using-circle-practice-classroom>

<https://www.heartland.edu/documents/idc/talkingcircleclassroom.pdf>

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## **Designates Opening/Closing**

Signals beginning and ending of our time together

Individual time becomes whole group time

## **Decenters and Redistributes**

There is no front, back, or center

No beginning or end

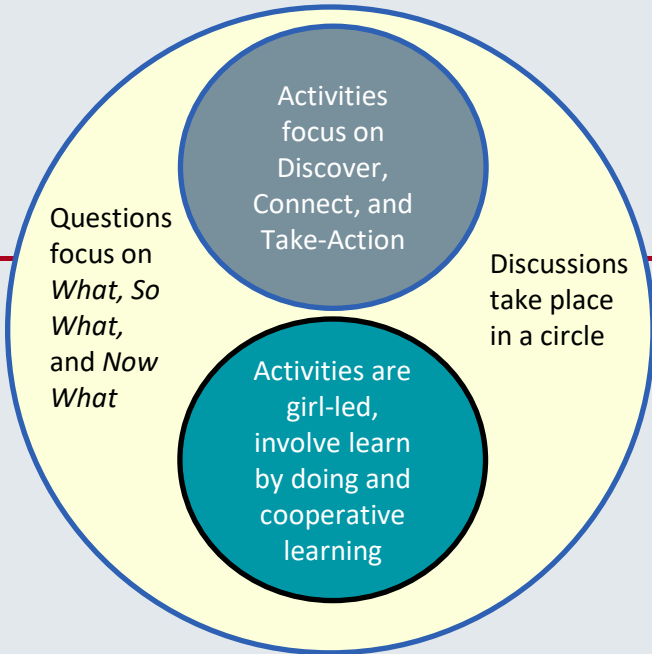
Everyone can be seen and heard

## **Promotes Whole Group Interaction**

Questions are addressed to group

Recognizes knowledge within group

# An Engineered Space



## My Observations:

- Girls have a lot of questions about equity in STEM
- They want to think about and discuss equity

## Outcomes:

- Doing hands-on activities for other girls
- Making presentations at elementary and middle school
- Creating #ILookLikeASTEMStudent videos
- Participating on panels



# Thank you

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[mlhiggins@arizona.edu](mailto:mlhiggins@arizona.edu)



NEW YORK STATE  
**NETWORK FOR  
YOUTH SUCCESS**

formerly



# Setting the stage: Timothy

- Peer mediator in high school
- Peer counselor in college
- Youth work (Birth-Teens) since 1992
- Social justice work since 1994
- Professional development full-time since 2002



# Setting the Stage: Youth Work

- Environment
- Community norms
- Consistent reinforcement of norms
- Youth voice and choice
- Skill building with youth
- Identity development

# Caucus Groups

- Separating into discussion groups by identity
- Focus on identity development
- How our group views itself
- How our group views others
- How we are treated
- How we treat others
- Each group has different ‘work’ to do

# Accountability

- Ways people avoid accountability
  - Denial
  - Blaming the victim
  - Claiming victimhood
  - Reframing the past/rewriting the past
- Focus on the behavior not the person
  - Behaviors are learned and can be unlearned
  - People have strengths and the capacity for growth
- Double loop learning
  - Reflect on the product/performance
  - Reflect on the process

# Thank You

Timothy Fowler

Professional Development Director

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# Stay Connected!

- **Sign up** for our listservs
- Join the Power of 3:00 Campaign
- **Follow @NYSYouthSuccess**
- Visit [www.networkforyouthsuccess.org](http://www.networkforyouthsuccess.org)
- **“Like”** us on Facebook  
facebook.com/NetworkForYouthSuccess



# Facilitating Difficult Conversations

- Peace Learner
- Constructive Communities (Liz London)
- *The Art of Mindful Facilitation* by Lee Mun Wah
- STEPUPphysics.org
- Learning for Justice (formerly Teaching Tolerance)

# Facilitating Difficult Conversations

## Guidelines for Conduct During Discussions



This poster represents the work of many. For more details about this national initiative supporting high school physics teachers to improve science, see

**STEPUPphysics.org**





# Q & A



# Upcoming NGCP Events

## **TECHNOLOchicas: Transforming the T in STEM**

October 5, 2021 at 2:00pm Pacific /  
5:00pm Eastern

**TECHNOLOchicas**  
I'm Latina, and I love technology!

## **Brite 2021: Sharing Strategies and Learnings from an Online Summer STEM Program for Girls**

October 19, 2021 at 2:00pm Pacific /  
5:00pm Eastern

