Welcome!

NGCP National Webinar: Addressing STEM Stereotypes with Young Children

Please respond to the poll on your screen
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

Connect + Create + Collaborate

1. Build and sustain a network of advocates to provide equitable and inclusive STEM opportunities.

2. Catalyze equity in STEM from research to practice by providing actionable knowledge that transforms the STEM experience.

3. Increase our collective impact by strengthening organizational effectiveness and enhancing our fiscal sustainability.

Addressing STEM Stereotypes with Young Children
NGCP Activities

• Network Partnerships
• IF/THEN Collection
• FabFems
• State Leadership Teams

Addressing STEM Stereotypes with Young Children
National Webinars

• Offered monthly on topics to help our networks grow and thrive
• Speakers include educators, researchers, authors, and diverse STEM professionals
• Sign up: https://www.ngcproject.org/events-announcements

“Addressing STEM Stereotypes with Young Children

“I have gotten more out of this than the dozens of other presentations I have attended this summer.”

“I found this useful and enjoyable.”

“I really like all the resources placed in the chat that I can go and flip through to find what is most helpful to my organization.”
NGCP Newsletter

• National in-person and online events
• STEM resources for engaging girls and youth, professional development opportunities for educators, and opportunities for youth
• Research and reports related to STEM and equity, informal STEM education and learning
• NGCP updates and events, including webinars, knowledge products, and tools
Addressing STEM Stereotypes

Part two of a two-part webinar series

- What are stereotypes and why do they matter?
- How do stereotypes impact participation and identification with STEM?
- When do stereotypes begin to impact children and youth?
- What are the strategies and approaches for addressing STEM stereotypes?

Share in the chat: What are YOUR experiences with STEM stereotypes? How do they impact you or the youth you serve?
Stereotypes Start Early

• Basic stereotypes begin to develop in children around two to three years of age

• By kindergarten, children have developed a range of stereotypes about STEM

• By adolescence, stereotypes impact confidence, interest, and likelihood of pursuing STEM
Speakers

Dr. Allison Master
University of Houston

Kim Collazo
Public School Educator and Author

Carmelo Piazza
Brooklyn Preschool of Science
Why and How to Counter STEM Stereotypes for Young Children

Allison Master
The danger of the single story

“The single story creates stereotypes…

They make one story become the only story.”
“STEM is for boys.”

“I don’t belong.”
STEREOTYPES

“STEM is for boys.”

NEGATIVE BELIEFS

“I don’t belong.”

OUTCOMES

Not interested
Choose other courses
Stereotypes push girls away
Stereotypes push girls away
Stereotypes push girls away

How many 8-9-year-old girls avoid stereotyped CS activity? 65%

How many middle school girls avoid stereotyped CS course? 80%
Students believe gender stereotypes by 1\textsuperscript{st}-3\textsuperscript{rd} grade

Favoring boys

Interest stereotypes

Favoring girls

Grade Level

Engineering

Computer science
Differences by STEM Field in Elementary School

- Engineering: Stereotypes favor boys by 1\textsuperscript{st} grade
- Computer science: Stereotypes favor boys by 3\textsuperscript{rd} grade
- Science: Stereotypes are neutral
- Math: Stereotypes are neutral or favor girls
Interest Stereotypes
“girls are less interested than boys”

Ability Stereotypes
“girls have less ability than boys”

Girls’ Motivation
What if these stereotypes are true?

Generally not true for young children

STOP

Should never limit opportunities

Even if true on average, can be harmful for individuals
How do we counter stereotypes?

- Challenge stereotypes
- Provide relatable role models
- Teach growth mindsets
- Think before you speak
To learn more about our research:

Lab website: https://uh.edu/education/iamlab/
Twitter: @AllisonMaster

Recent research:

The research reported here was supported by the National Science Foundation through Grants DRL 1849902 and DRL 2122488, and the Institute of Education Sciences, U.S. Department of Education, through Grants R305A180167 and R305A200520. The opinions expressed are those of the author and do not represent views of the Institute or the U.S. Department of Education.
Closing the Gender Gap in STEM Education

Kim Collazo
Digital Integration Facilitator
STEM Advocate
Picture Book Author
Moore County, NC

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Why the Emphasis on Girls?

- Teenage girls often don’t feel welcome in STEM classrooms.
- Girls often don’t see a connection between what they are learning in the classroom to careers they want to pursue.
- They haven’t been exposed to role models for STEM careers like engineering and computer programming.

http://time.com/3835310/girls-stem-school/
Addressing the Issues

Watch What They Watch

Provide Good Role Models

Acknowledge Struggle

Promote Multi-Dimensional Interests

https://www.huffingtonpost.ca/2017/08/17/girls-stem_a_23078434/
Addressing the Issues

Start Young!

Integrate a Picture Book

Find out what interests them

Allow for Creativity

From the research of Dr. Amy Catalano
GigaGirls After School Coding Club

- Girls submitted an application (over 50 were received)
- 3rd, 4th, and 5th Grade Girls
- Met every Tuesday for an hour
Cookies and juice are how we roll!

The girls blog after every session.
Hi Kayden!

I'm glad to hear that you're learning to code in Scratch. It's cool how the code blocks fit together like puzzle pieces and it's nice when your code does what you want it to, but if it doesn't then hey you've got a mystery you can now solve! What would you like to make in Scratch? Maybe games?

I'm making a game in Scratch for one of my classes. It's about penguins in pajamas who go from planet to planet defeating evil cake monsters. (My group members and I got a bit crazy with the idea haha)

Also, it's cool that you like horses! Have you ever rode one? In some beaches in India, they have horses and camels you can ride and that's the only time I ever rode one.

Can't wait to get your reply and hear about all you do this week!

Jan 29, 2018, 7:15pm (107.15.177.153)  Edit | Remove | Reply | Unapprove

Kayden B

YES anam i have rode a horse i actually every weekend and sometimes on week days.
Hi Anam i did have some trouble coding my robot some of the bugs were hard to fix but it got eaiser

That's great. The more you code, the more you'll get used to recognizing the types of bugs you'll have and you'll find some easy solutions/steps that help you squash your bugs. Can't wait to hear about what you do this week.

Keep being awesome,
Anam
GigaGirls and Level Up Village

GLOBAL PROGRAMMING

Video Game Design and Pre-coding
Grades K-2 and 3-5

Students learn the building blocks of coding using MIT’s “Scratch” video game design platform. Together, with their Global Partners, they create animations and video games, while learning sequencing skills and expressing themselves digitally!
Connect with Kim!

Email: kcollazo@gmail.com

Website: kimcollazo.com

Author Website: collazocove.com

Twitter: @kcollazo

Linked In
Addressing Stem Stereotypes with young children
Hello!

I am Carmelo Piazza, owner of the Brooklyn Preschool of Science.

I am here because I love S.T.E.M, early childhood education, inquiry, and cross cutting concepts.

You can find me at:

carmelo@brooklynpreschoolofscience.com
Foundations of a building are not on floor five and six. They start at the bottom floor. To break stereotypes we need to provide beautiful, meaningful early childhood experiences at the youngest ages.
BPOS Teachers are confident and enthusiastic about STEM topics and engage their students in monthly developmentally tailored inquiry based STEM activities. The end result is we pass that excitement to our students.
The microsystem: teachers and parents as the gateway to STEM

2013 national survey of science teachers, showed that only 19% of K–2 classes receive science instruction on a daily or almost daily basis.
Researchers looked at how early STEM stereotypes begin for kids. They found them every step of the way.

*By age 6, many children already believe boys are more interested than girls in STEM*
What is interdisciplinary science-based learning?
WHY SCIENCE! BPOS looks at the world through a scientific lens and finds creative holistic experiences to teach our students through an integrated approach to learning. This way children are learning in a natural setting and absorbing literacy, math, art, movement in the most organic of ways.

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<thead>
<tr>
<th>Inquiry block:</th>
<th>Art Connection</th>
<th>Fine Motor and Math</th>
<th>Math / Fine Motor</th>
<th>Vocabulary / Language Development</th>
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<td>We ask a question every day which taps into a child’s innate curiosity. When you ask a question, it naturally encourages children to investigate, problem solve, and most importantly motivate them to want to do something, hands on.</td>
<td>Pumpkin Print Mural</td>
<td>Children can transform their pumpkins into planters by measuring their soil, seeds, and of course water.</td>
<td>Pumpkin Math and Matching Activity</td>
<td>Matching activity where children need to identify and classify the parts of a pumpkin.</td>
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<td>What is inside of a pumpkin?</td>
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<td>Literacy: Incorporating language and vocabulary</td>
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<td>Fine Motor and Math: Using the seeds that came out of their pumpkin, students will work on sequencing fine motor skills. This is a great intrapersonal skills related activity.</td>
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<td>Math / Fine Motor: Pumpkin Seed Transfer</td>
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| | | | | Endless Stream of connections:
| | | The pumpkin can very effortlessly connect to all domains of education. This is how true learning takes place. | | |
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Biodiversity

Shouldn’t your children have these early life experiences?
Some of our critter friends!

Bearded Dragons

Gerbils, Hamsters, and Rats

Blue Tongued Skink

Incubate Chicks

Madagascar Hissing Cockroach

Living Plant Wall
Curriculum should be innovative ensuring that children are exposed to a unique set of learning experiences. I call this foundational based learning.
Where we want to be!
50%!!!!

2022 School numbers
Thanks!

Any questions?
You can find me at:

➢ carmelo@brooklynpreschoolofscience.com
We’ll take questions from the chat and from people using the ‘hand raise’ function.
Call to action!

Type in the chat...

Write 1 strategy, approach, or resource you will dig into related to addressing STEM stereotypes with young children after this webinar.

https://ngcproject.org/resources/5-ways-counter-stem-stereotypes-children-and-youth
Upcoming NGCP Events

• **STEM Stories: Women's Experiences Advocating for Equity** – Tuesday November 1st, 2022 at 11am Pacific / 2pm Eastern

• **The Genius of Play and STEAM** – Tuesday November 8th, 2022 at 9am Pacific / 12pm Eastern

• **GSAWN Exemplary Practices & Celebration of National STEAM Day** – Tuesday November 8th, 2022 at 11am Pacific / 2pm Eastern
Addressing STEM Stereotypes with Young Children

Learn more at ngcproject.org

Webinar Questions? Contact: asullivan@ngcproject.org