

Welcome!

NGCP National Webinar: Addressing STEM Stereotypes with Young Children

Please respond to the poll on your screen



National Girls
Collaborative Project



Addressing STEM Stereotypes with Young Children

October 20th, 2022

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.

NGCP Activities

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



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>

"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

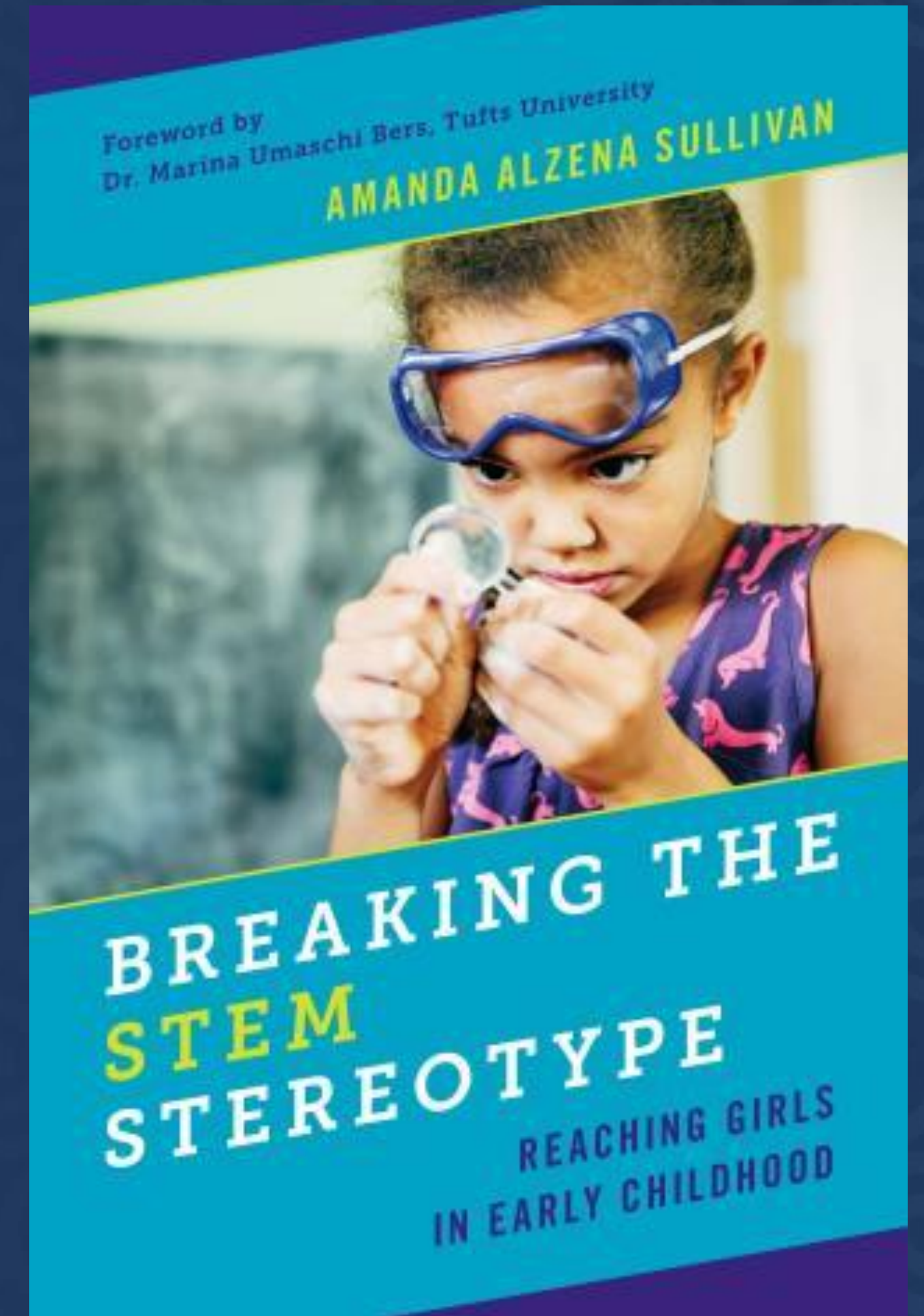
- What are stereotypes and why do they matter?
- How do stereotypes impact participation and identification with STEM?
- When do stereotypes begin to impact children and youth?
- What are the strategies and approaches for addressing STEM stereotypes?

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.”



STEREOTYPES

NEGATIVE BELIEFS

“STEM is for boys.”

“I don’t belong.”



STEREOTYPES

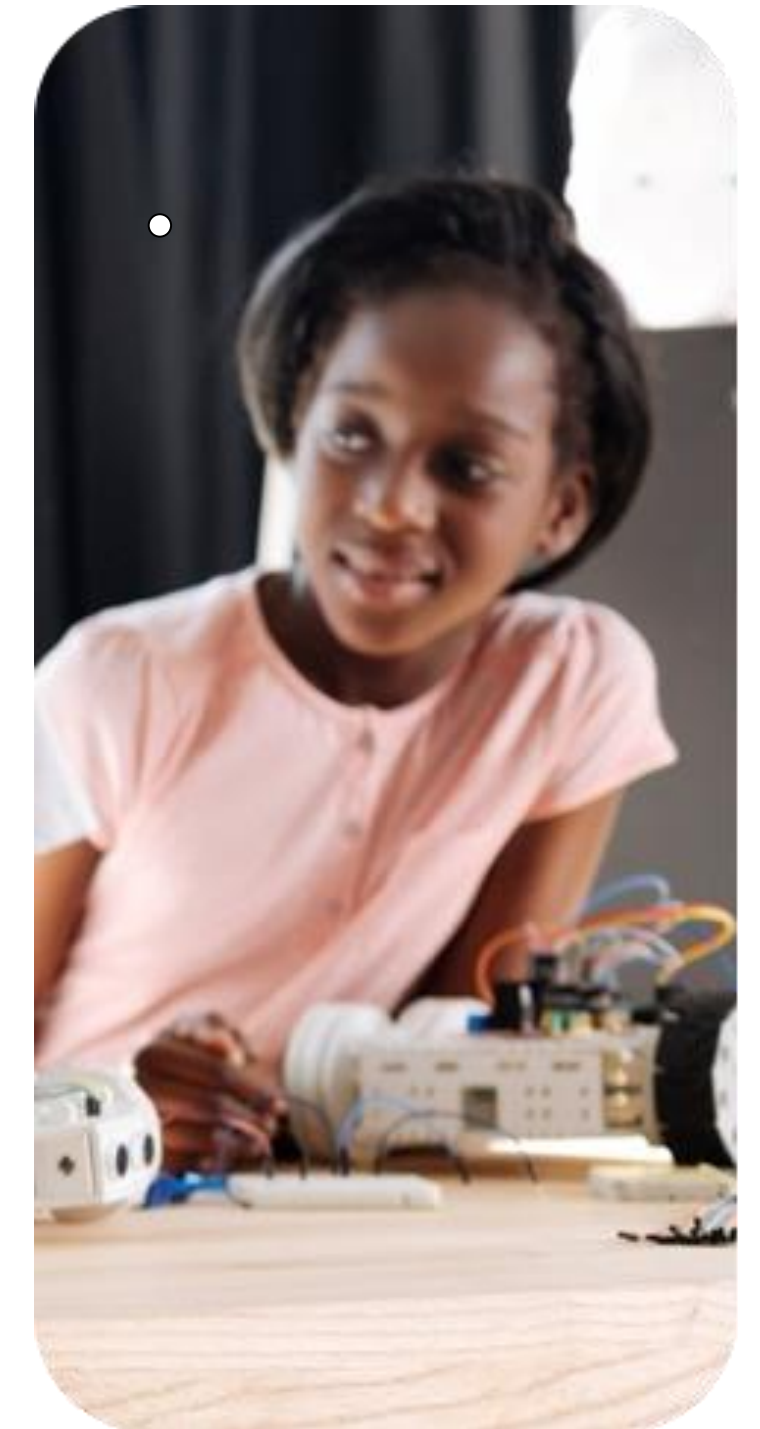
NEGATIVE BELIEFS

OUTCOMES

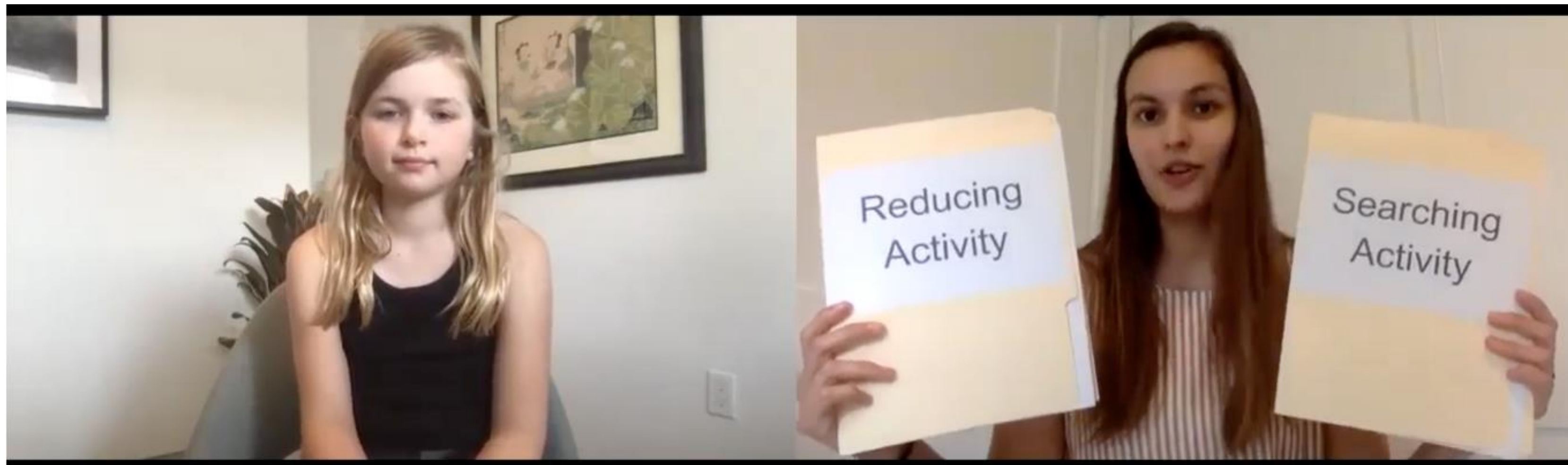
“STEM is for boys.”

“I don’t belong.”

Not interested
Choose other courses



Stereotypes push girls away



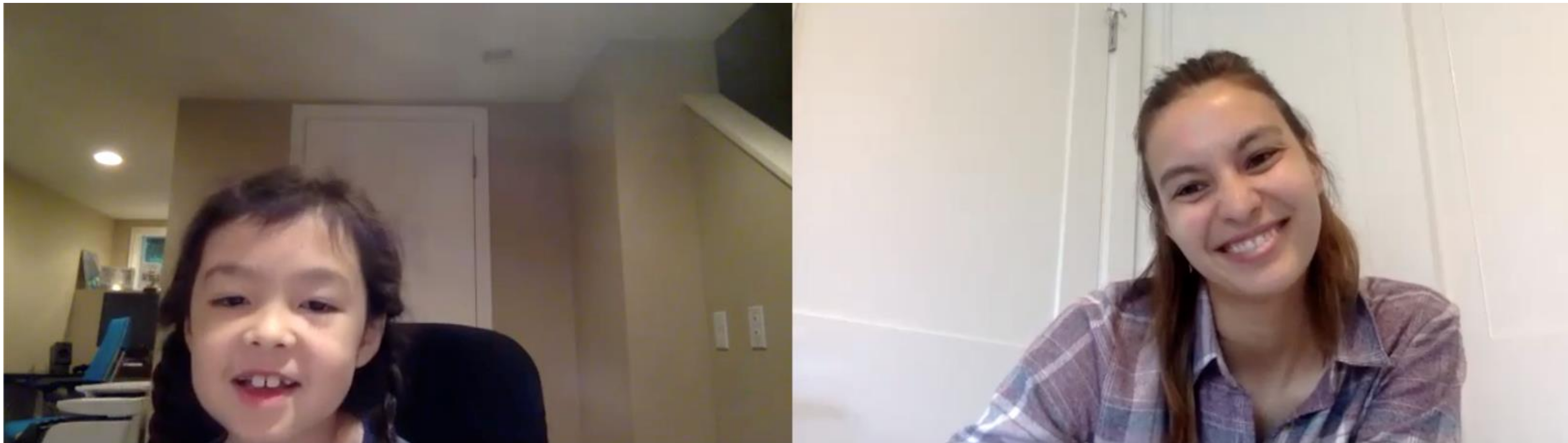
Stereotypes push girls away



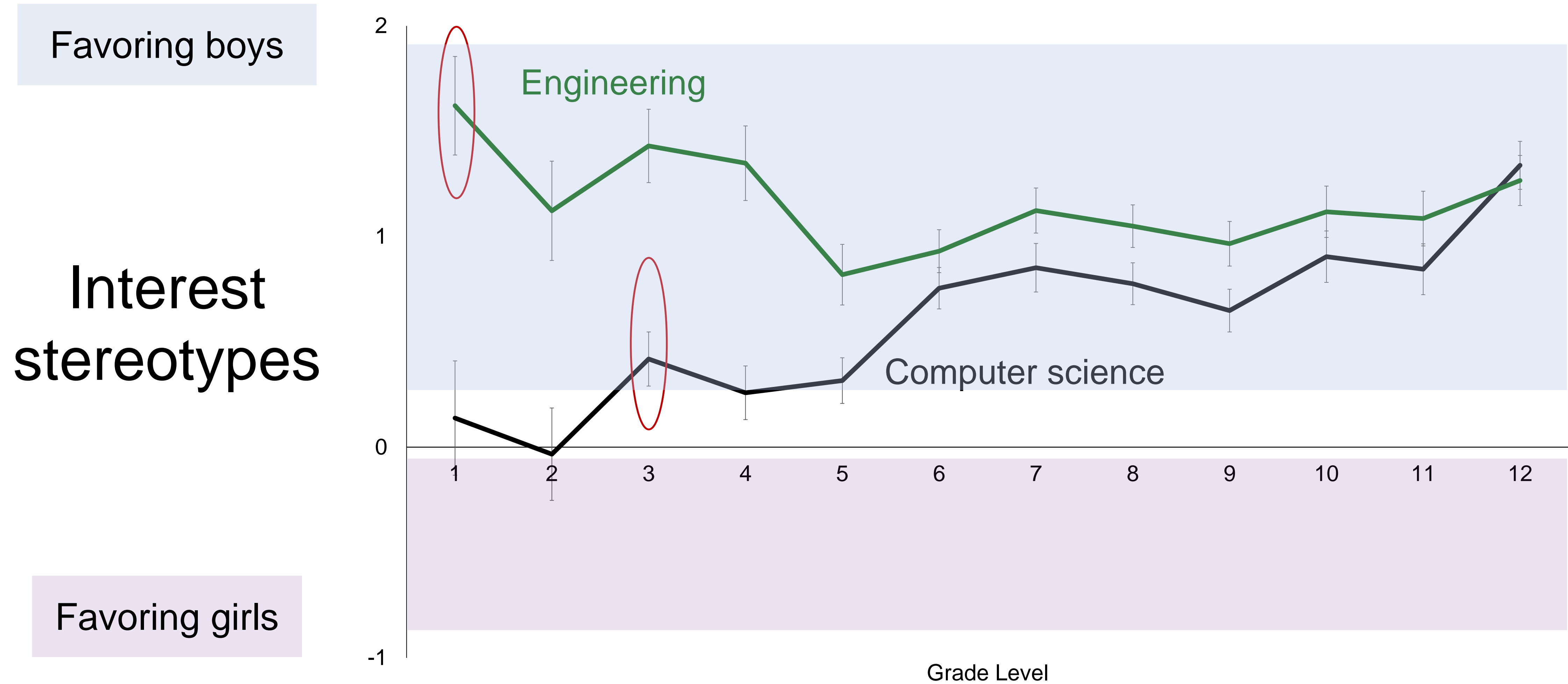
Stereotypes push girls away

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

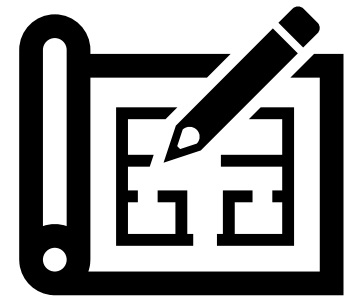
How many middle school girls avoid stereotyped CS course? 80%



Students believe gender stereotypes by 1st-3rd grade



Differences by STEM Field in Elementary School



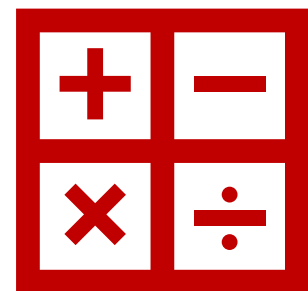
Engineering: Stereotypes favor boys by 1st grade



Computer science: Stereotypes favor boys by 3rd grade



Science: Stereotypes are neutral



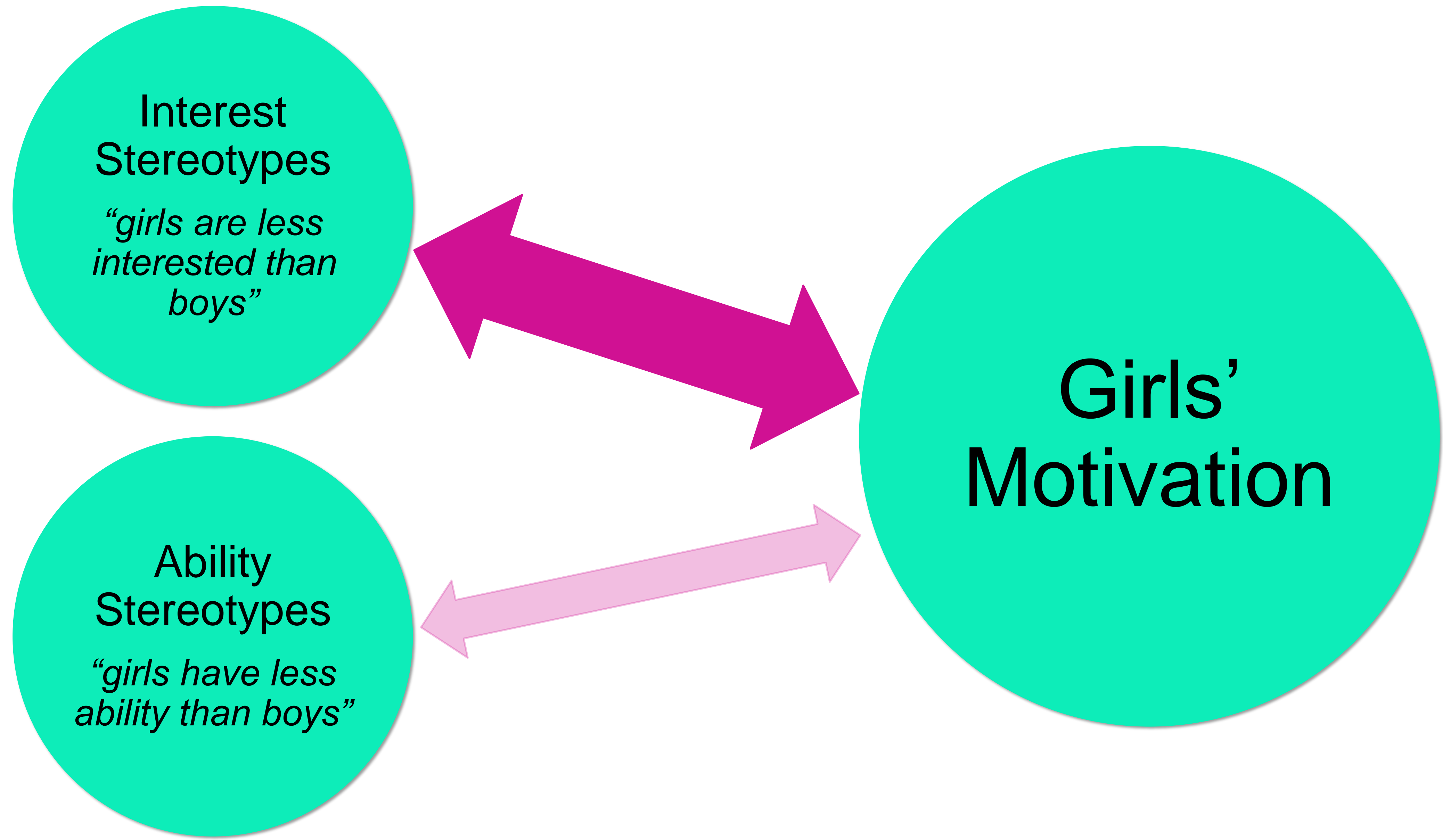
Math: Stereotypes are neutral or favor girls



A diagram consisting of two large teal circles. The left circle contains the word "Stereotypes" and the right circle contains the word "Motivation". A blue double-headed arrow connects the right side of the left circle to the left side of the right circle, indicating a reciprocal relationship between the two concepts.

Stereotypes

Motivation



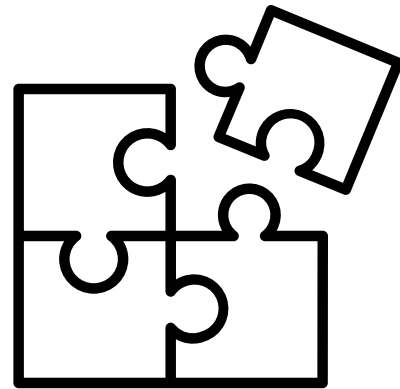
What if these stereotypes are true?



Generally not true for young children



Should never limit opportunities



Even if true on average, can be harmful for individuals

NIH

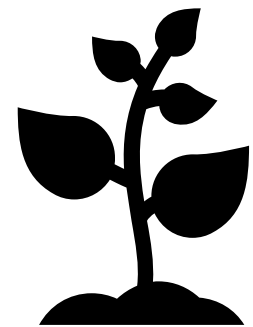
How do we counter stereotypes?



Challenge stereotypes



Provide relatable role models



Teach growth mindsets



Think before you speak



To learn more about our research:

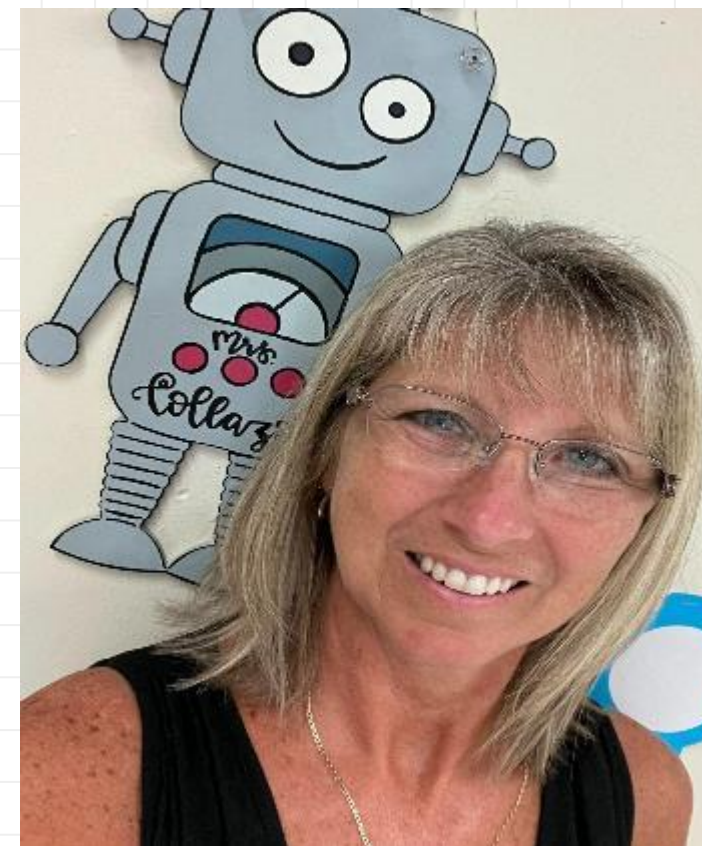
Lab website: <https://uh.edu/education/iamlab/>

Twitter: @AllisonMaster

Recent research:

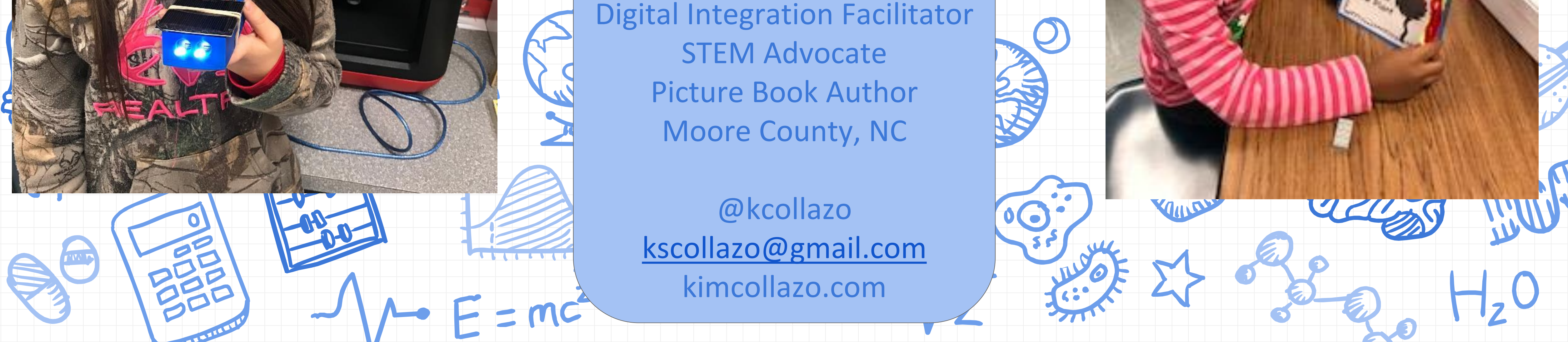


Closing the Gender Gap in STEM Education



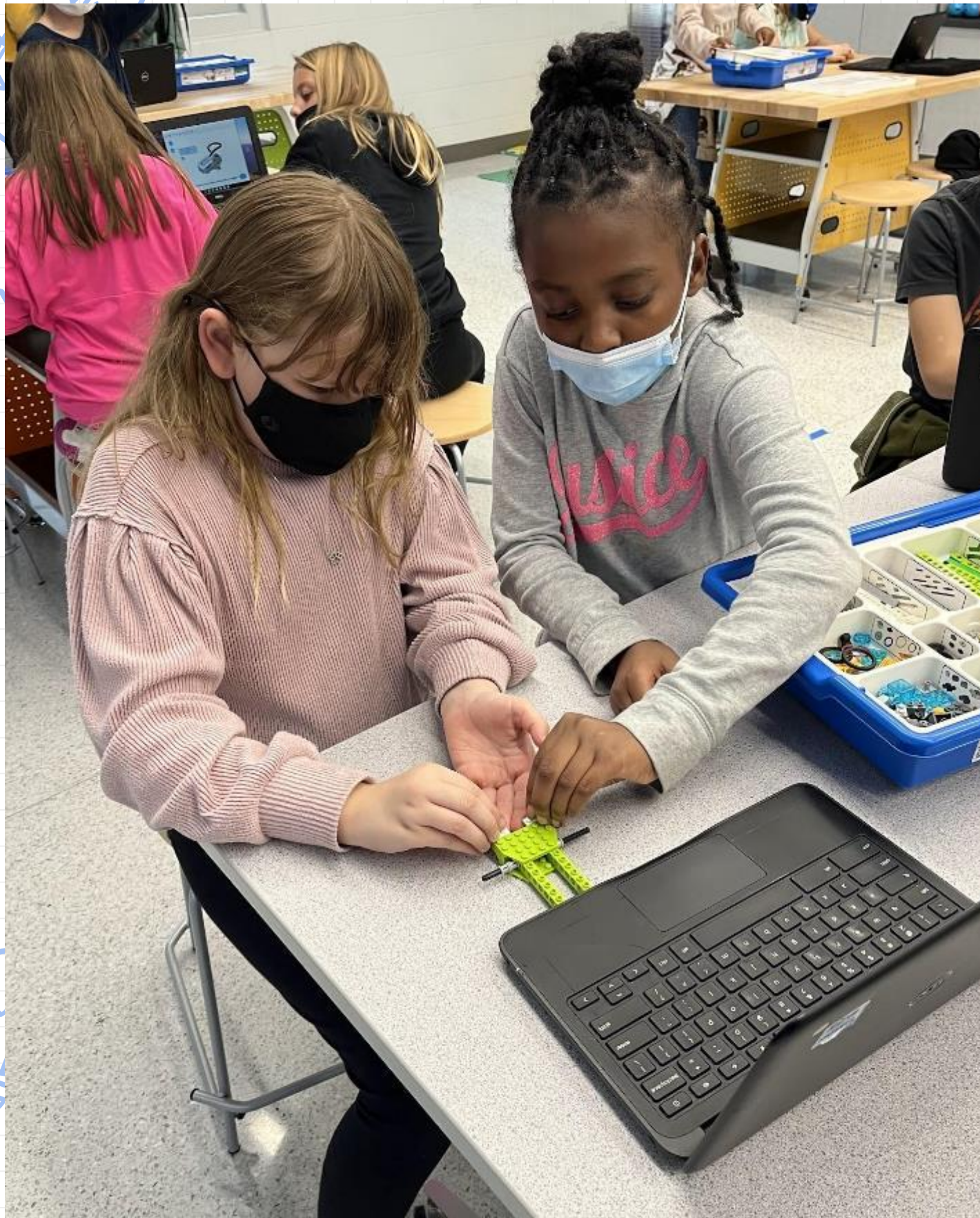
Kim Collazo
Digital Integration Facilitator
STEM Advocate
Picture Book Author
Moore County, NC

@kcollazo
kscollazo@gmail.com
kimcollazo.com



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.



Addressing the Issues

Watch What They Watch



Provide Good Role Models



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

Acknowledge Struggle



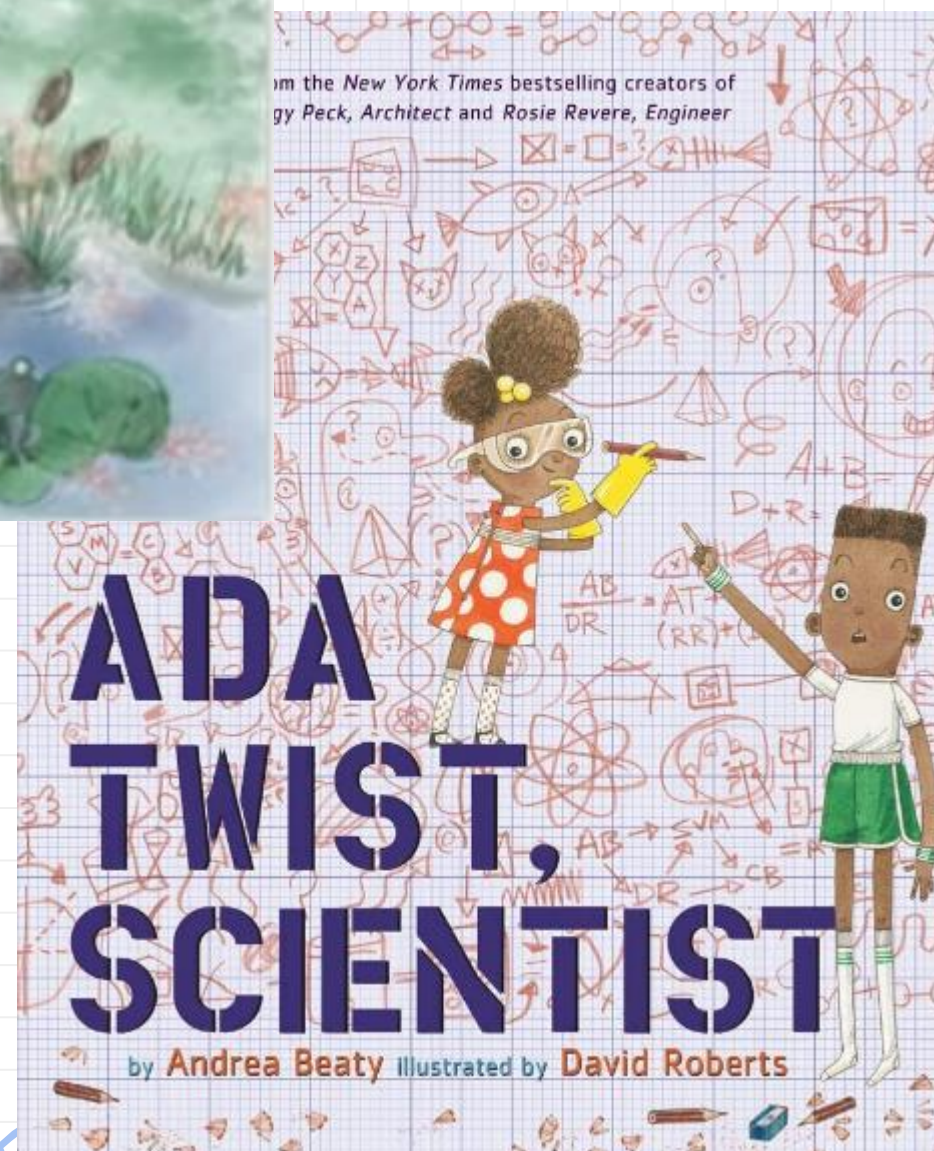
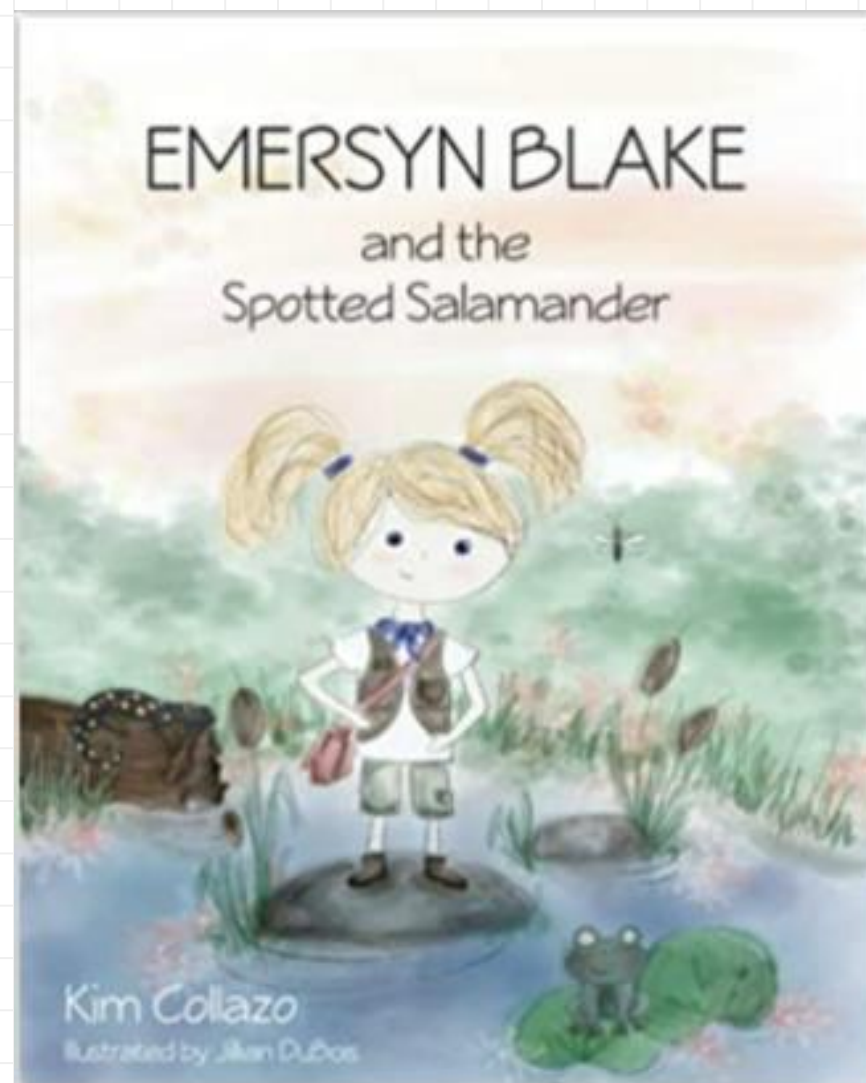
Promote Multi-Dimensional Interests



Addressing the Issues

Start Young!

Integrate a Picture Book



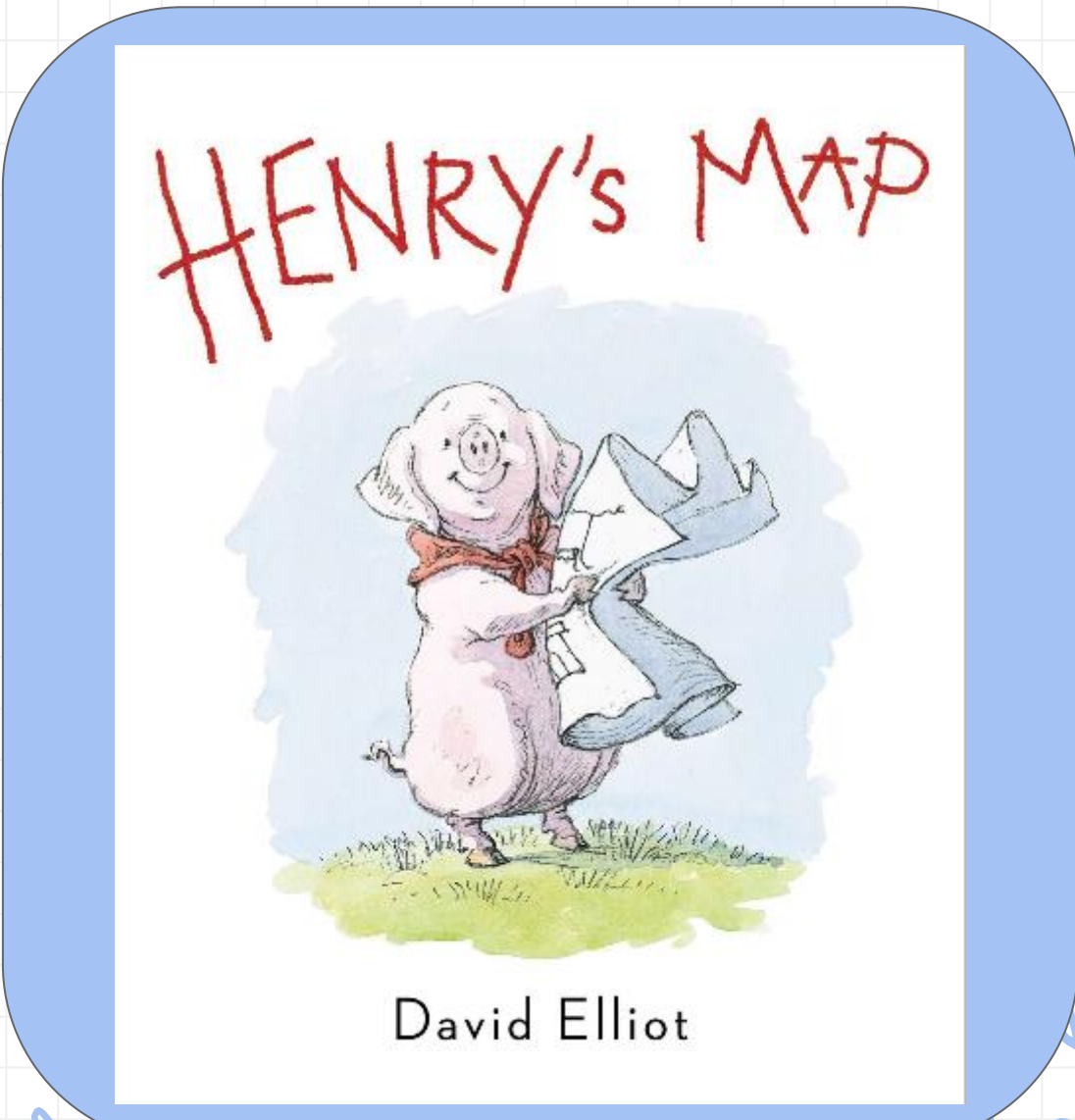
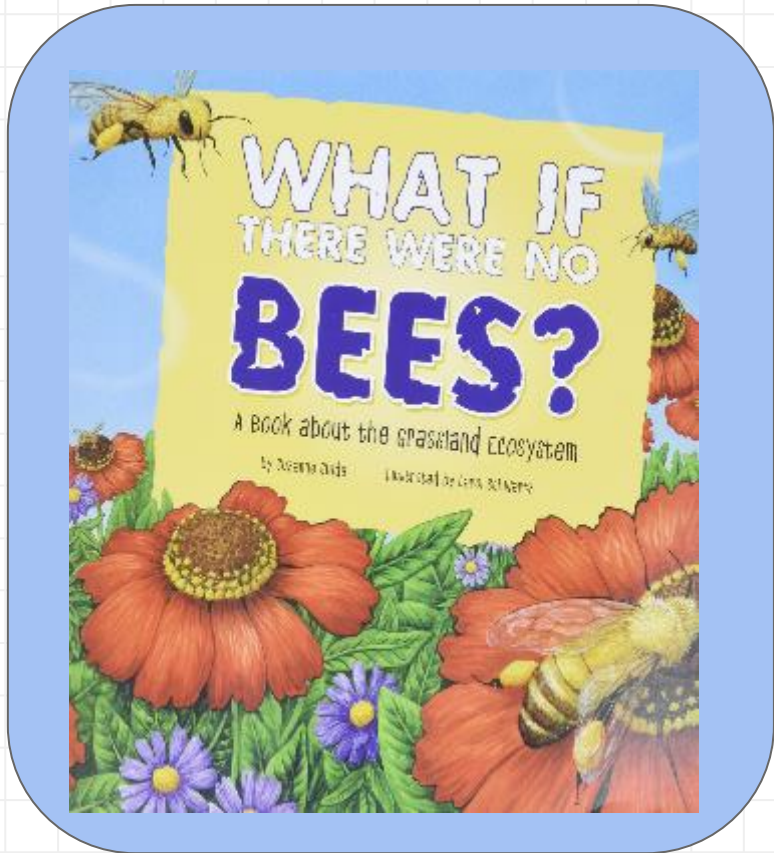
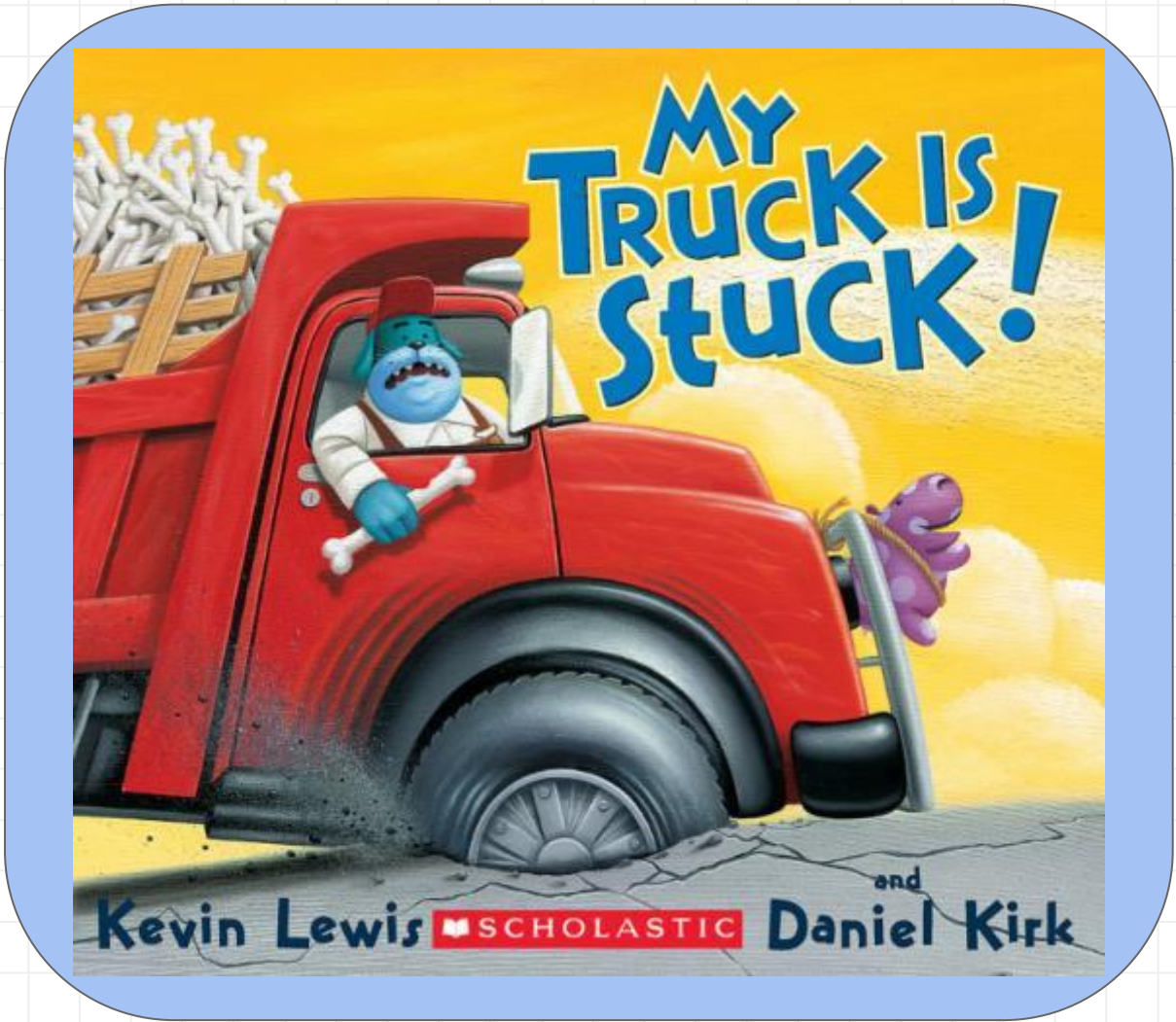
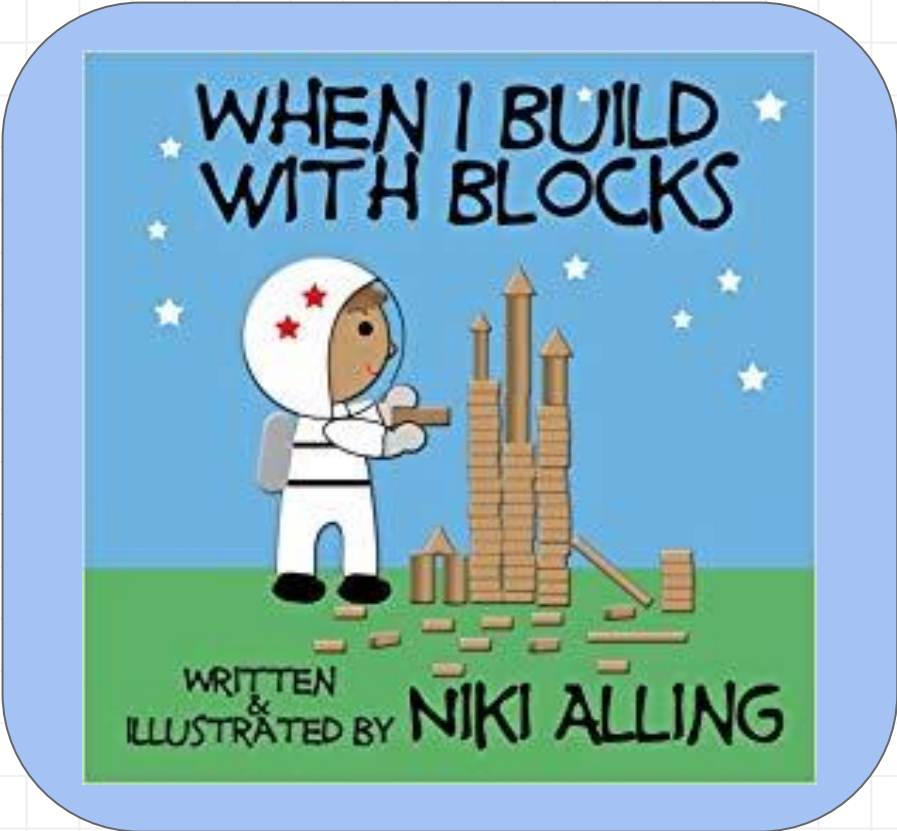
Find out what interests them



Allow for Creativity



From the research of Dr. Amy Catalano

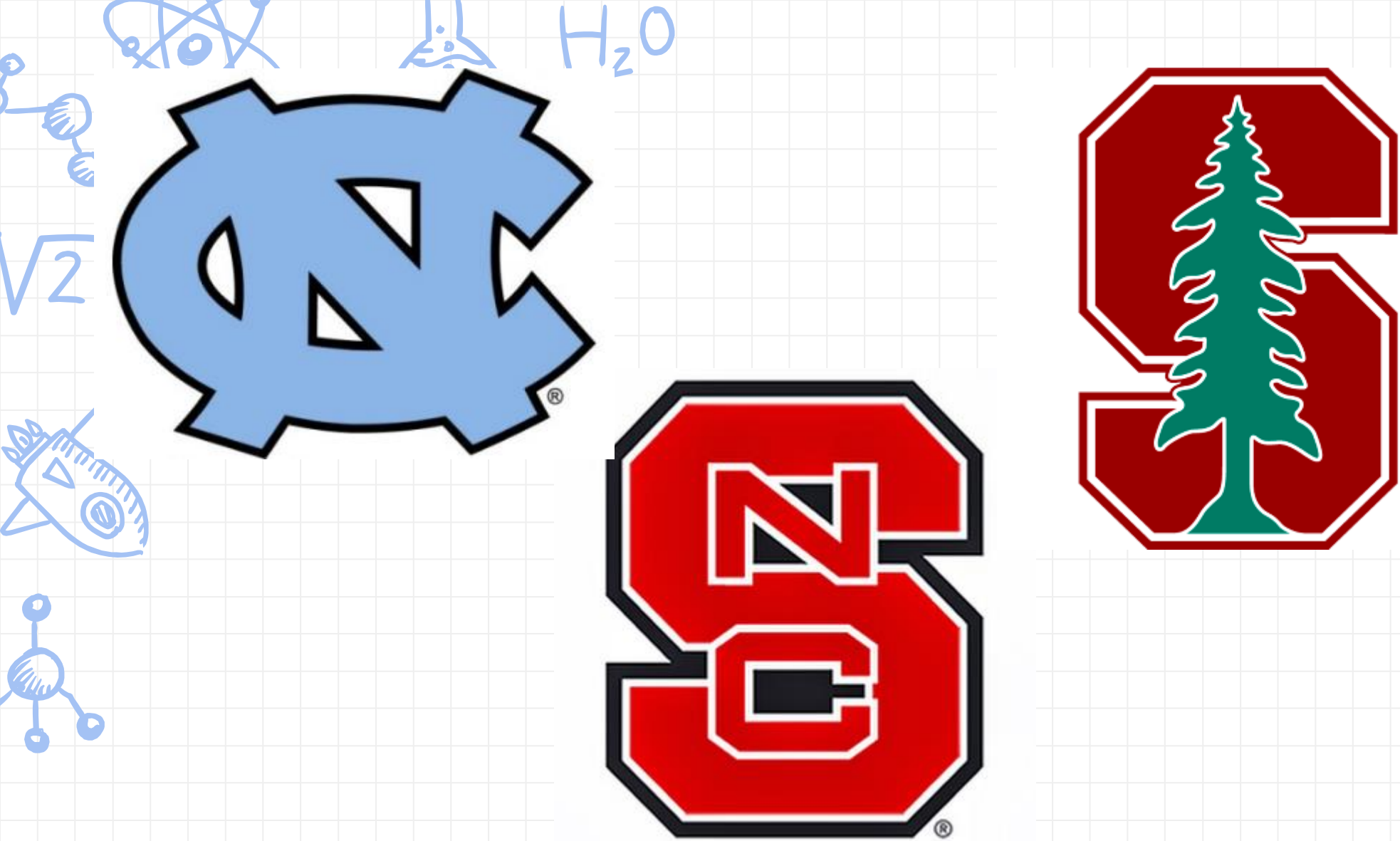




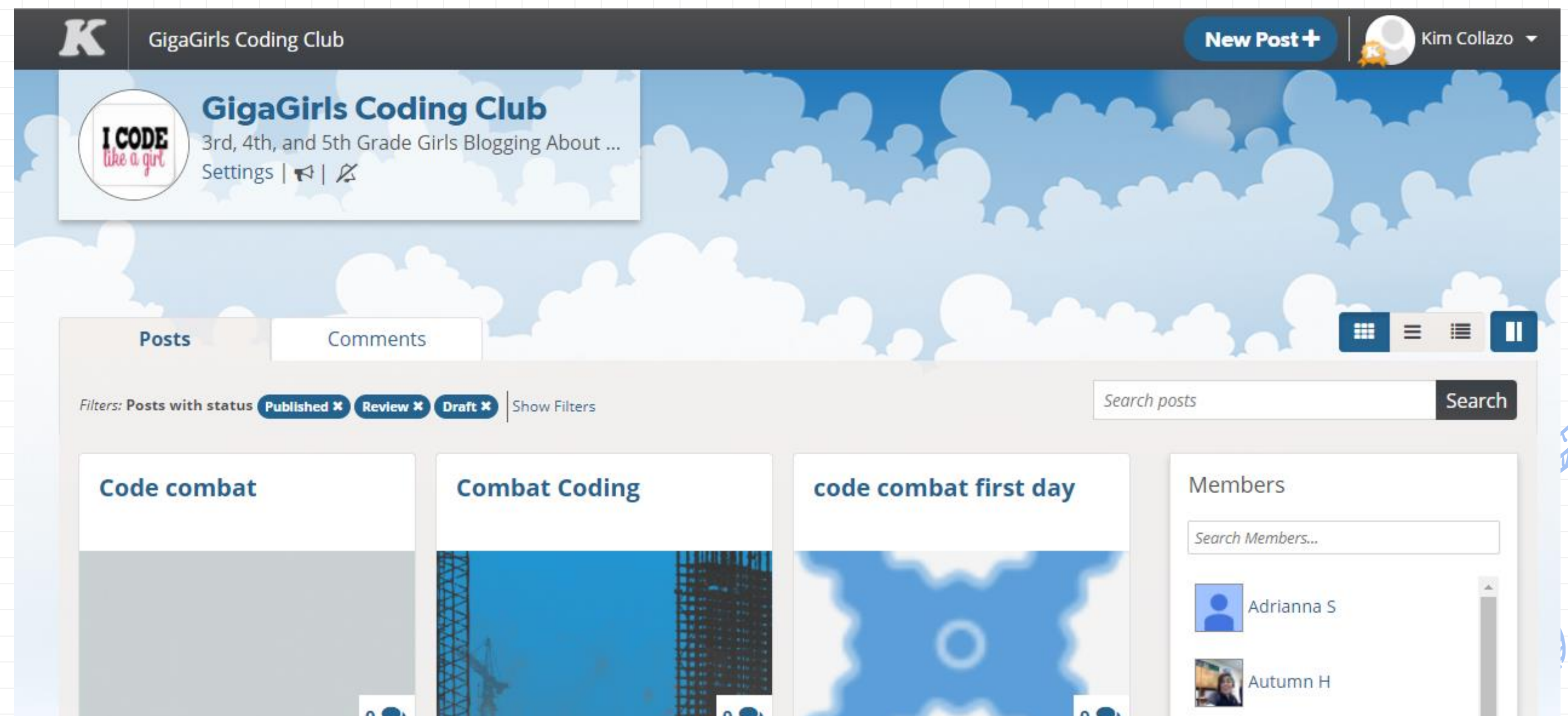
GigaGirls After School Coding Club



- Girls submitted an application (over 50 were received)
 - 3rd, 4th, and 5th Grade Girls
 - Met every Tuesday for an hour



The girls blog after every session.



Google | CS First



Anam

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.

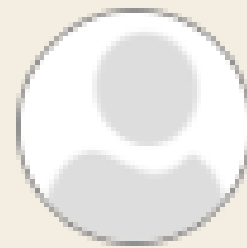
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Kayden B ▼

Hi Anam i did have some trouble coding my robot some of the bugs were hard to fix but it got esier

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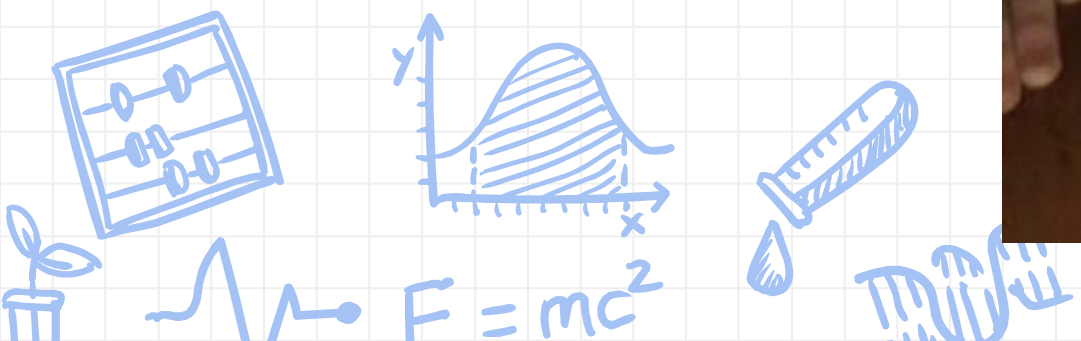
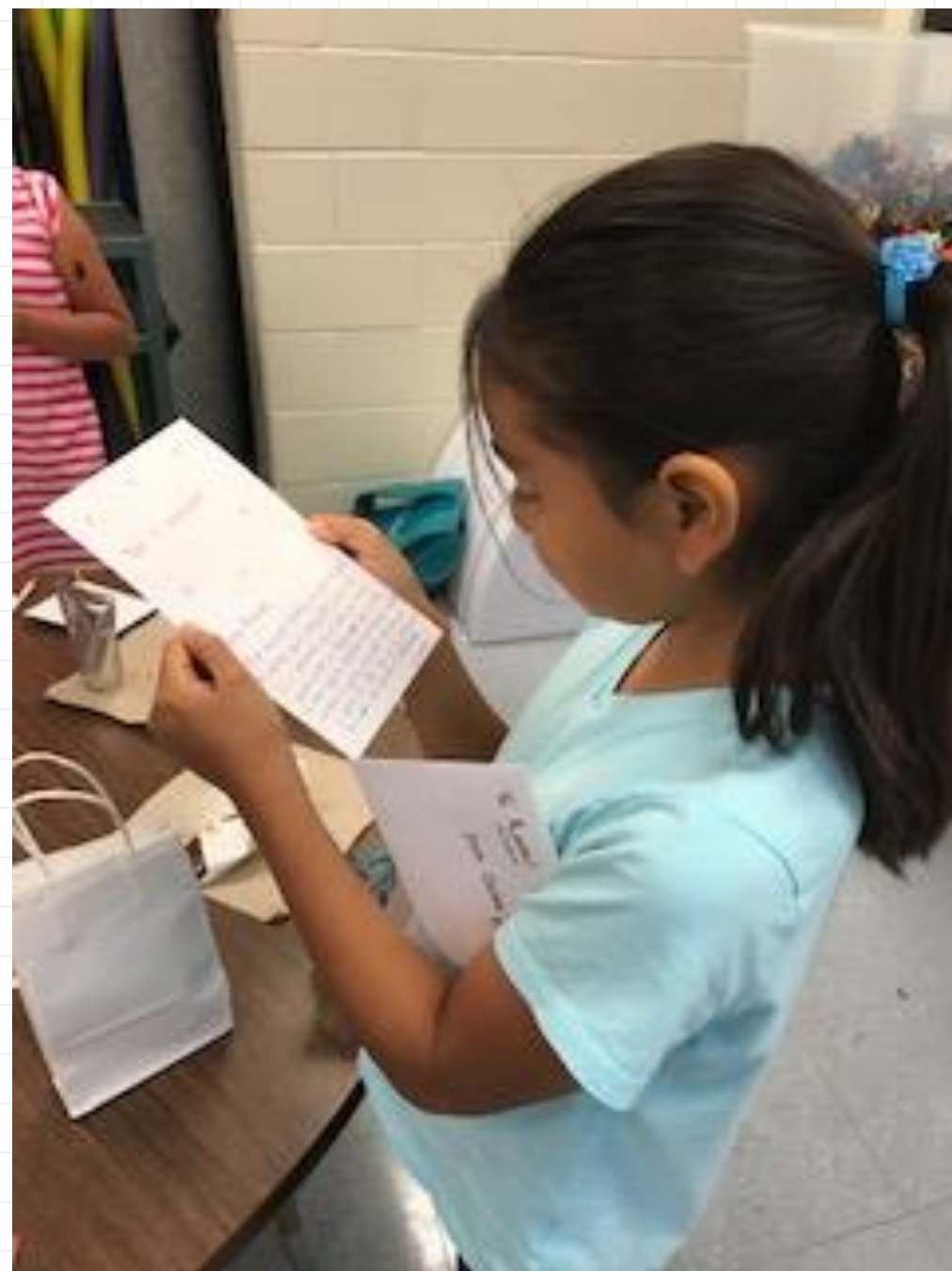
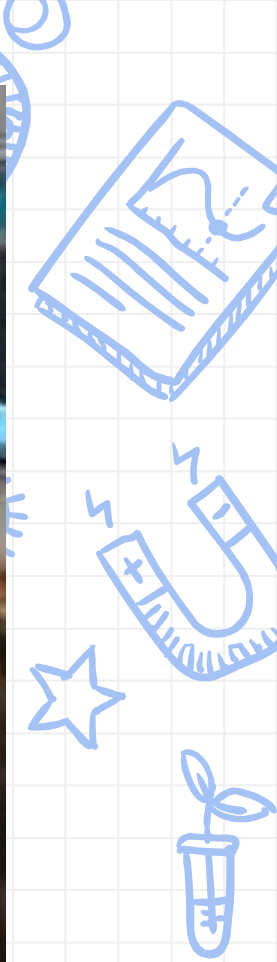


Anam

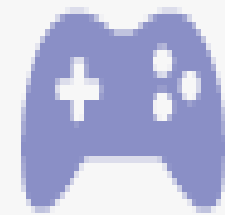
That's great. The more you code, the more you'll get used to recognizing the types of bugs you'll have and you'll find some easy solutions/steps that help you squash your bugs. Can't wait to hear about what you do this week.

Keep being awesome,

Anam



GigaGirls and Level Up Village

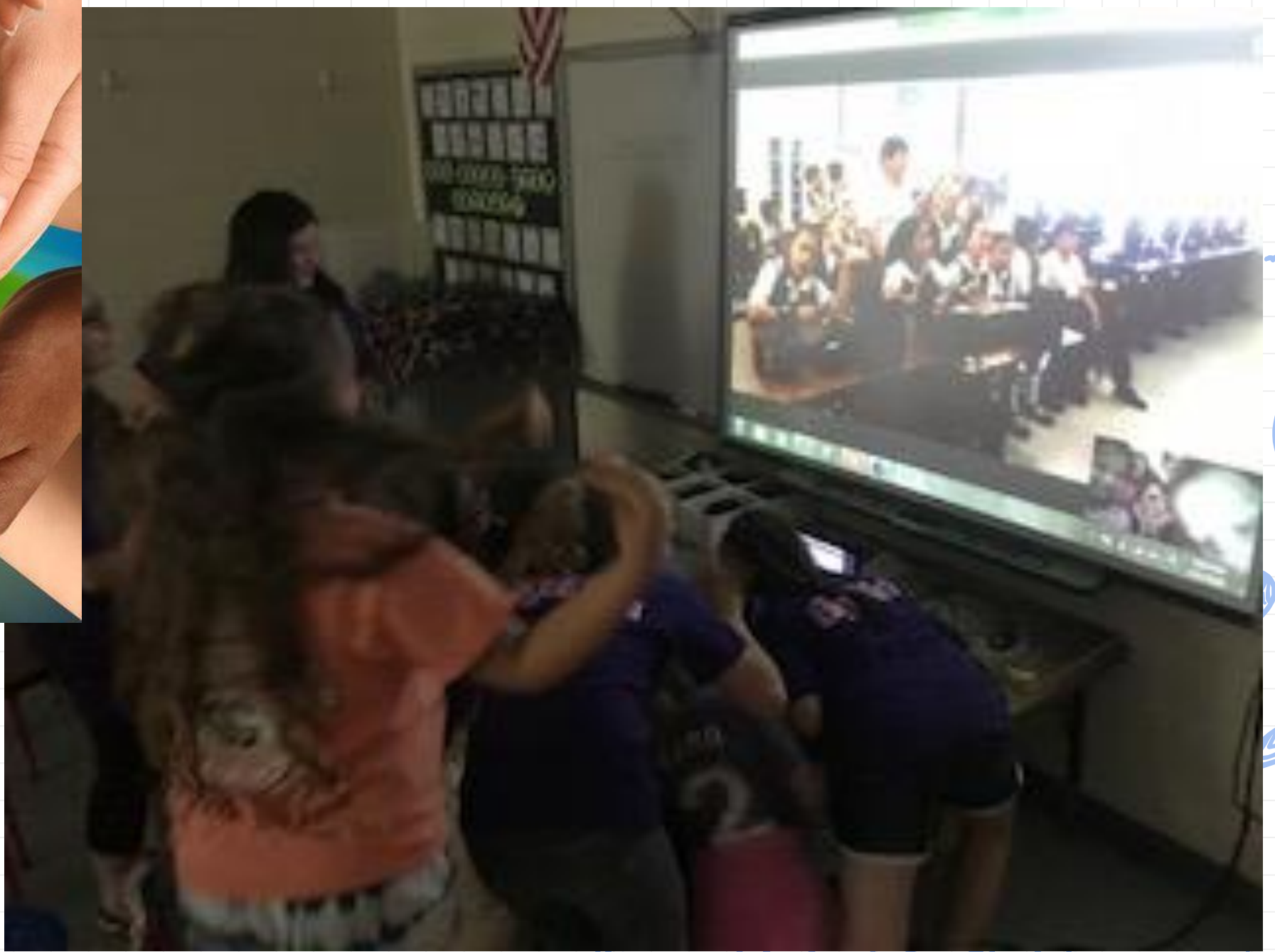


GLOBAL PROGRAMMING

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!



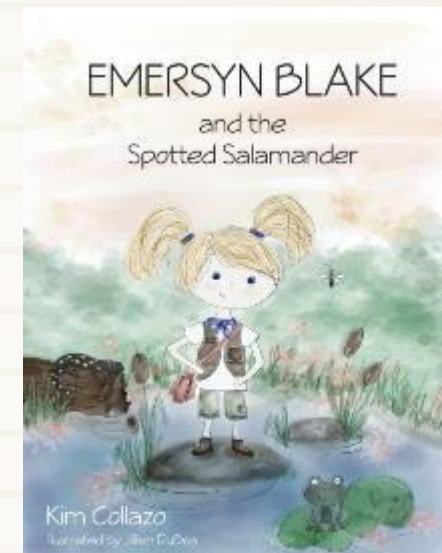
Connect with Kim!

Email

kscollazo@gmail.com



Author Website
collazocove.com



Twitter

[@kcollazo](https://twitter.com/kcollazo)



Website

kimcollazo.com



Linked In

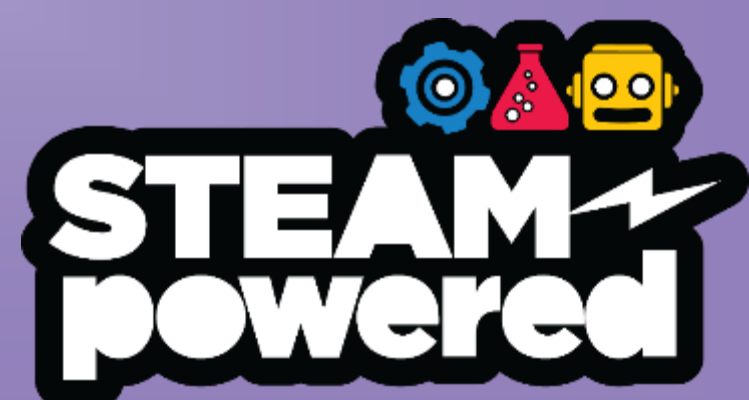




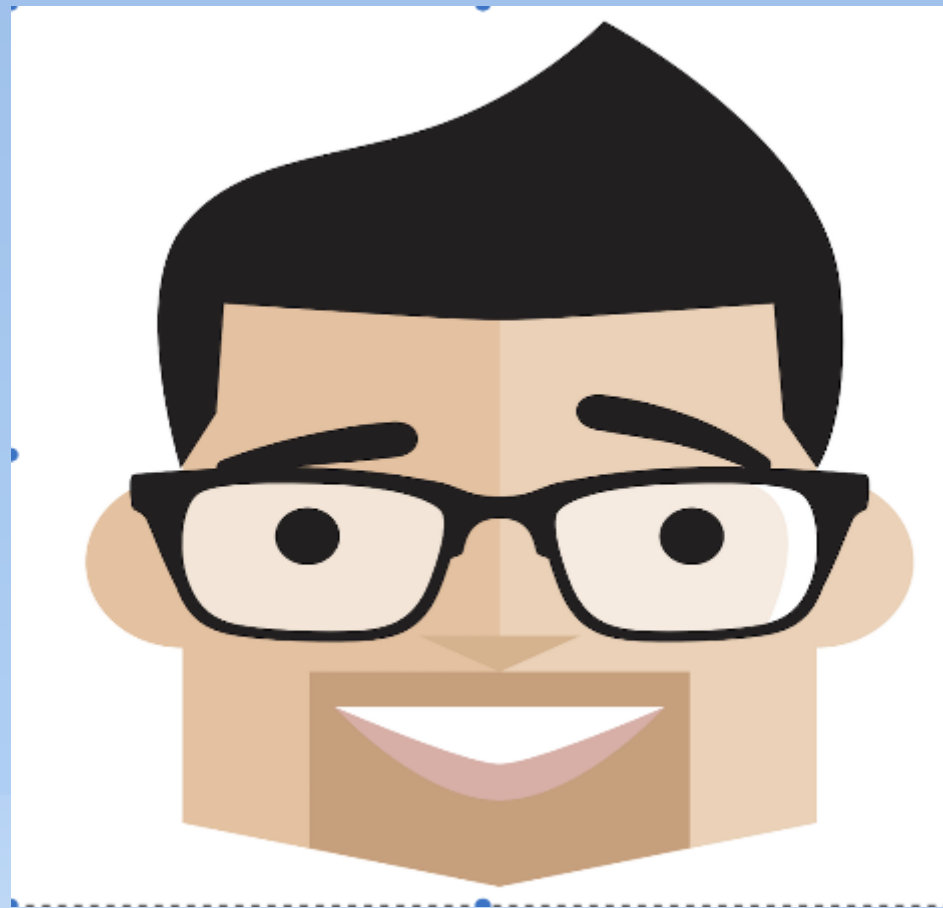
Addressing Stem Stereotypes with young children



National Girls
Collaborative Project



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.




**Stand back,
I got this.**


**Stand back,
I got this.**



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.



National Girls
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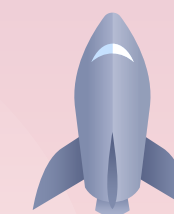
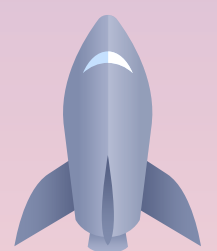
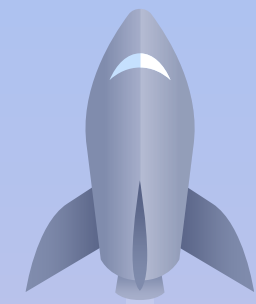
The microsystem: teachers and parents as the gateway to STEM

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.

Inquiry block:



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.



What is inside of a pumpkin?

Art Connection



Pumpkin Print Mural



Literacy



Incorporating language and vocabulary



Fine Motor and Math



Children can transform their pumpkins into planters by measuring their soil, seeds, and of course water



Math / Fine Motor



Pumpkin Math and Matching Activity



Chemistry, Art, and Math



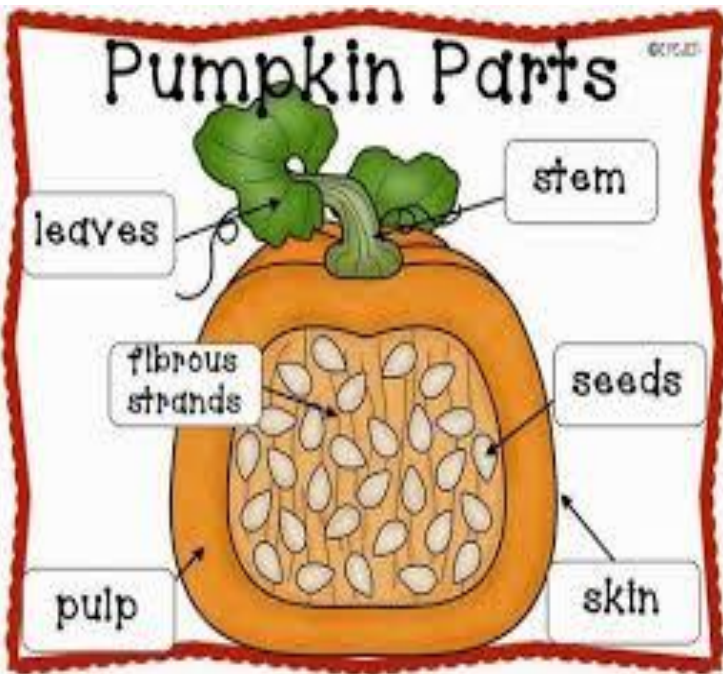
Making pumpkin play dough



Vocabulary / Language Development



Matching activity where children need to identify and classify the parts of a pumpkin



Math / Fine Motor

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



Endless Stream of connections

The pumpkin can very effortlessly connect to all domains of education. This is how true learning takes place.



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



3-D PRINTING



KIBO



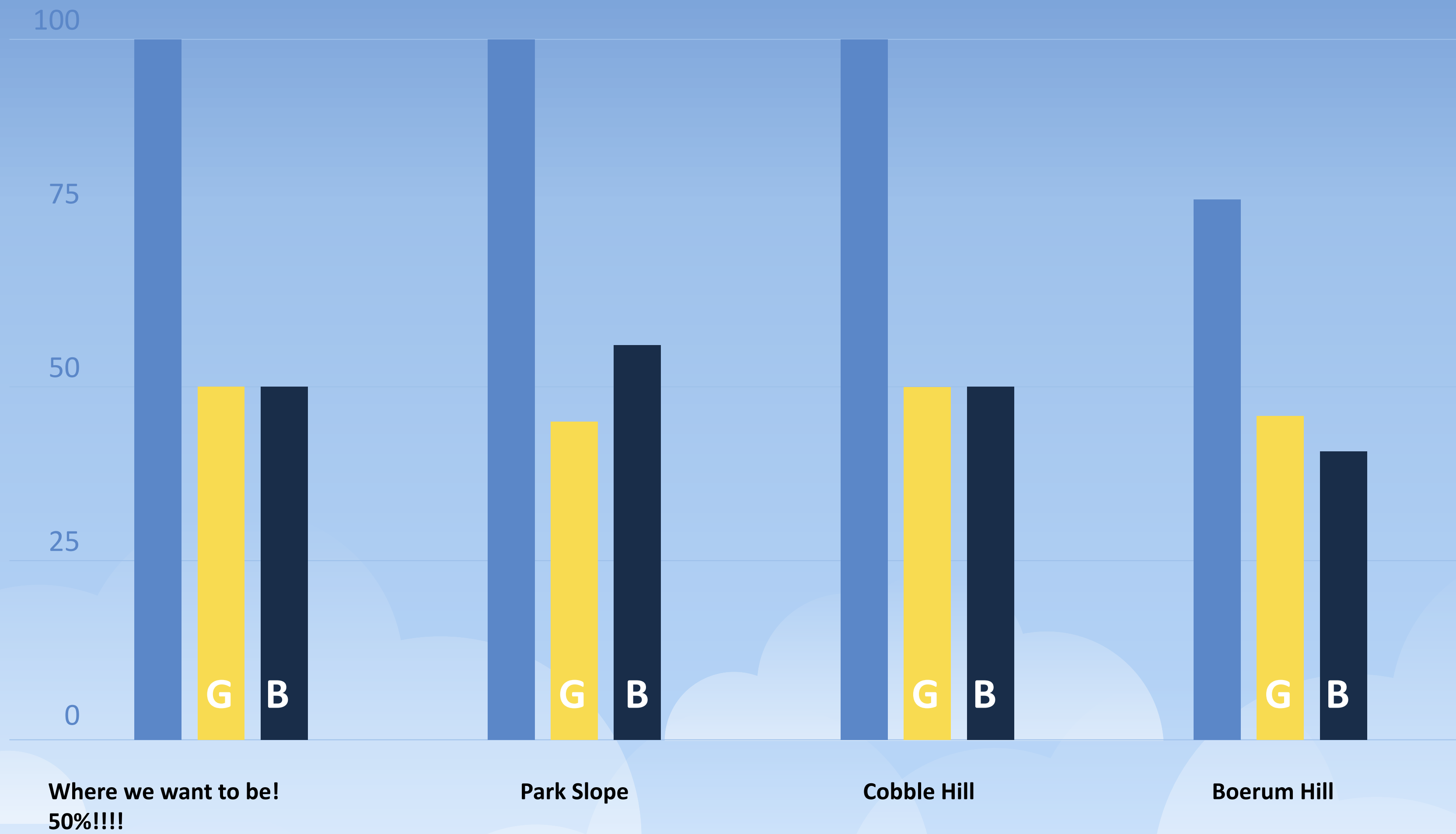
Curriculum should be innovative ensuring that children are exposed to a unique set of learning experiences. I call this foundational based learning.



INDI



BOTZEES TRAIN SET

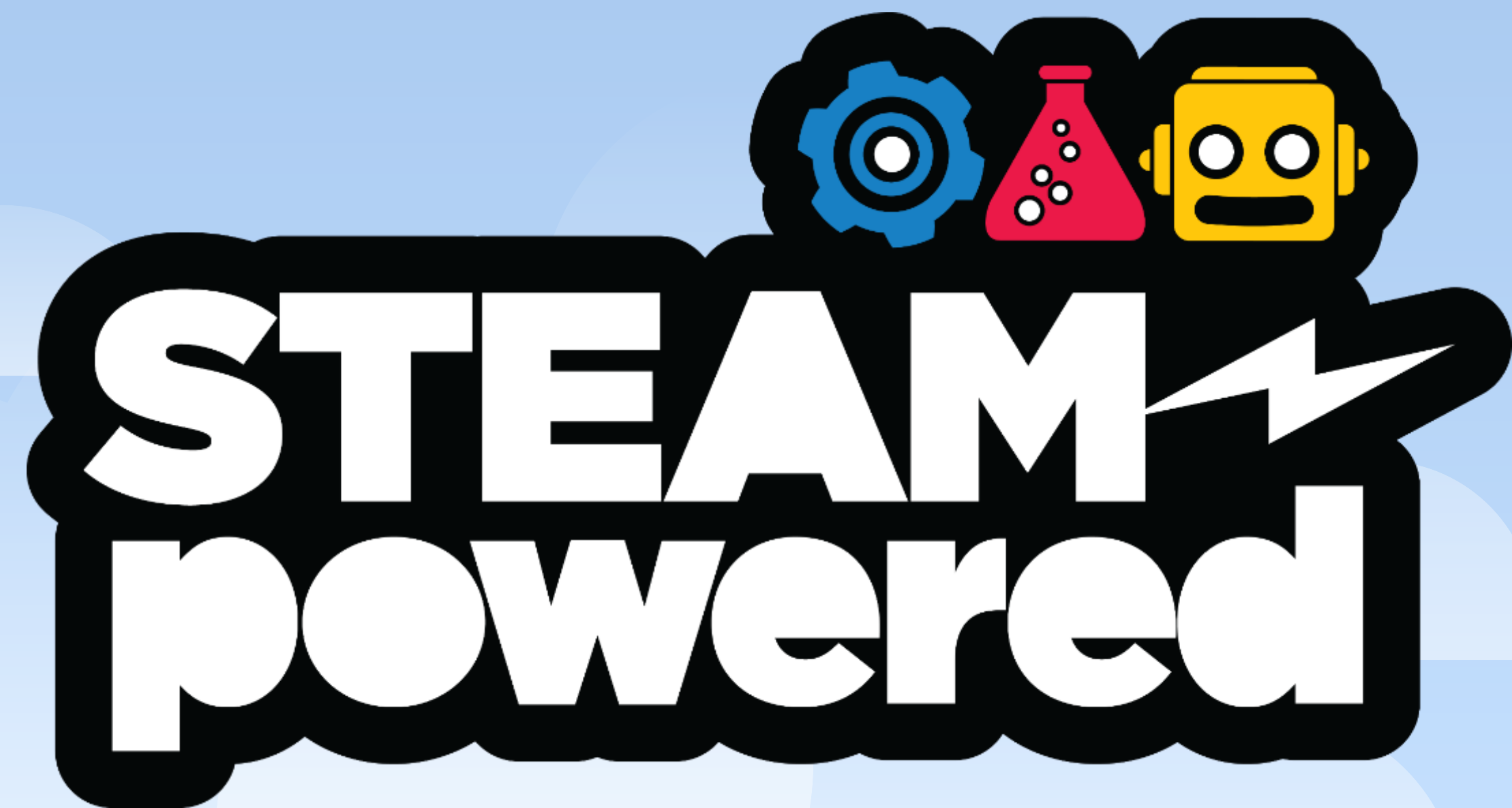


Thanks!

Any questions?

You can find me at:

➤ carmelo@brooklynpreschoolofscience.com



Q & A

We'll take questions from the chat and from people using the 'hand raise' function.

Call to action!

Type in the chat...

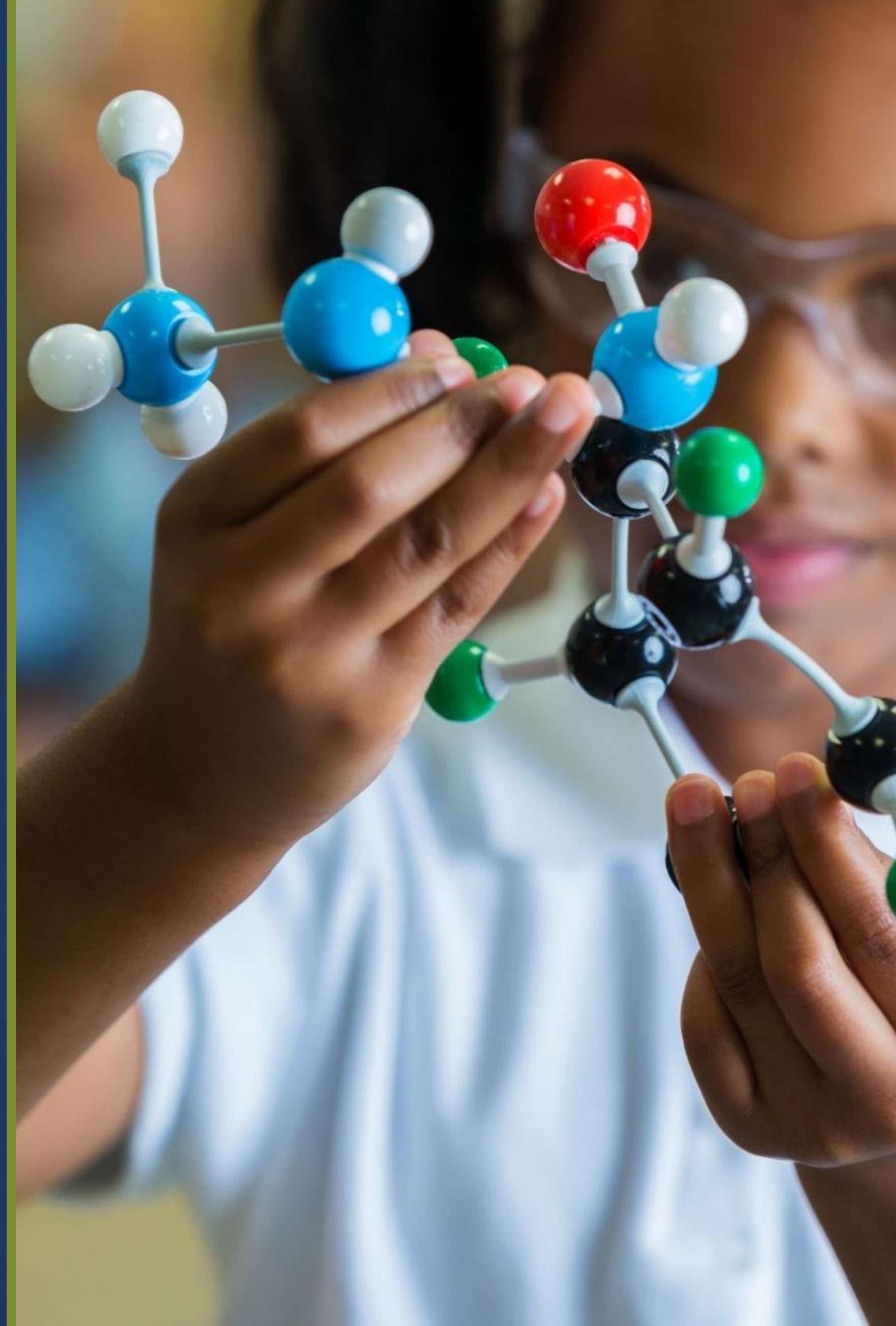
Write 1 strategy, approach, or resource you will dig into related to addressing STEM stereotypes with young children after this webinar.



<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





20 YEARS OF TRANSFORMING STEM

Learn more at ngcproject.org

Webinar Questions? Contact: asullivan@ngcproject.org

