

Welcome!



- Please introduce yourself, organization, and Collaborative in the chat box.
- What do you hope to learn on this webinar?

December 6, 2018



Agenda

- Research and Analysis from JeffriAnne Wilder
- Questions and Discussion
- Google's Hour of Code
- Closing



JeffriAnne Wilder



Research Scientist,
National Center for Women &
Information Technology

Bridging the “Encouragement Gap” in STEM +C

JeffriAnne Wilder, Ph.D.

Lifetime Partner:



Strategic Partners:



Investment Partners:



NCWIT: Broadening Participation & Diversity in Computing



CONVENE

UNITE

EQUIP

NCWIT uses a three-pronged strategy to improve awareness and knowledge, and motivate change leaders to act.

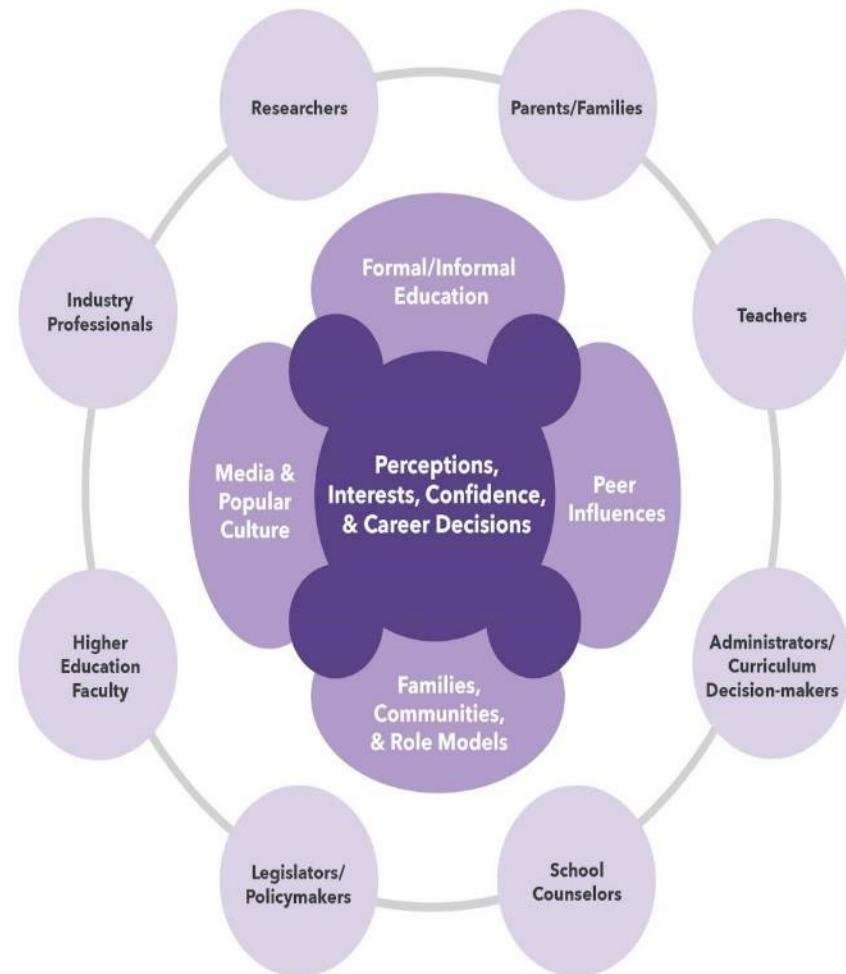
Increase gender diversity in CS Education

- Schools across the country and around the world are working to increase access to quality CS education.
- While CS classes and opportunities are expanding, ***only a fraction of girls and women*** are likely to pursue STEM degrees and careers.



NCWIT K-12 SYSTEMIC CHANGE MODEL

The NCWIT K-12 Systemic Change Model identifies several key social and structural factors that influence girls' participation in computing, often deterring them from choosing education or careers in technology. NCWIT uses the Systemic Change Model with Alliance members to heighten awareness and knowledge about how young women's perceptions, interests, confidence, and career decisions are shaped by society and the local environments in which they learn about computing and technology. The Systemic Change Model helps Alliance members explore the different ways they can make change.



What is Encouragement?

**Encouragement is
the simple act of:**

- *Showing up*
- *Giving support*
- *Creating a spark*
- *Building confidence*
- *Inspiring a new idea*
- *Bolstering self-efficacy*

Encouragement can be:

- *Formal*
- *Informal*
- *Positive*
- *Negative*
(Discouragement)
- *Social Encouragement*
- *Academic Encouragement*
- *Peer Encouragement*

Encouragement Matters!

- Encouragement is a major factor in girls' decisions to explore and pursue careers in STEM and computing.
- NCWIT has established a number of programs and partnerships to inspire and engage a broad range of girls to participate in computing. These initiatives have worked to increase access and to close the gender gap in computer science.

The “Encouragement Gap” in STEM +C

Girls--and girls of color especially--are not encouraged to study computer science and to pursue careers in STEM +C in the same way as boys.

What Creates the Gap? Encouragement Research Summary

1. Young Girls Dream Big, But Societal Views Cause Them to Doubt their Abilities and to Believe They're not Smart Enough.

- Four and five-year old girls dream of being doctors, vets, and scientists.

Fatherly's 2017 [Imagination Report](#)

- By the time they reach the first grade, young girls develop gendered stereotypes about intelligence, and believe that they are not as smart as boys.

[Bian, Leslie, and Cimpian](#), 2017

[Draw A Scientist](#) studies (Miller et al, 2018)

The cultural messages that girls receive and internalize about their intelligence compared to boys can certainly impact their beliefs about being successful in computer science.

2. Girls Don't Know Enough About Careers in STEM.

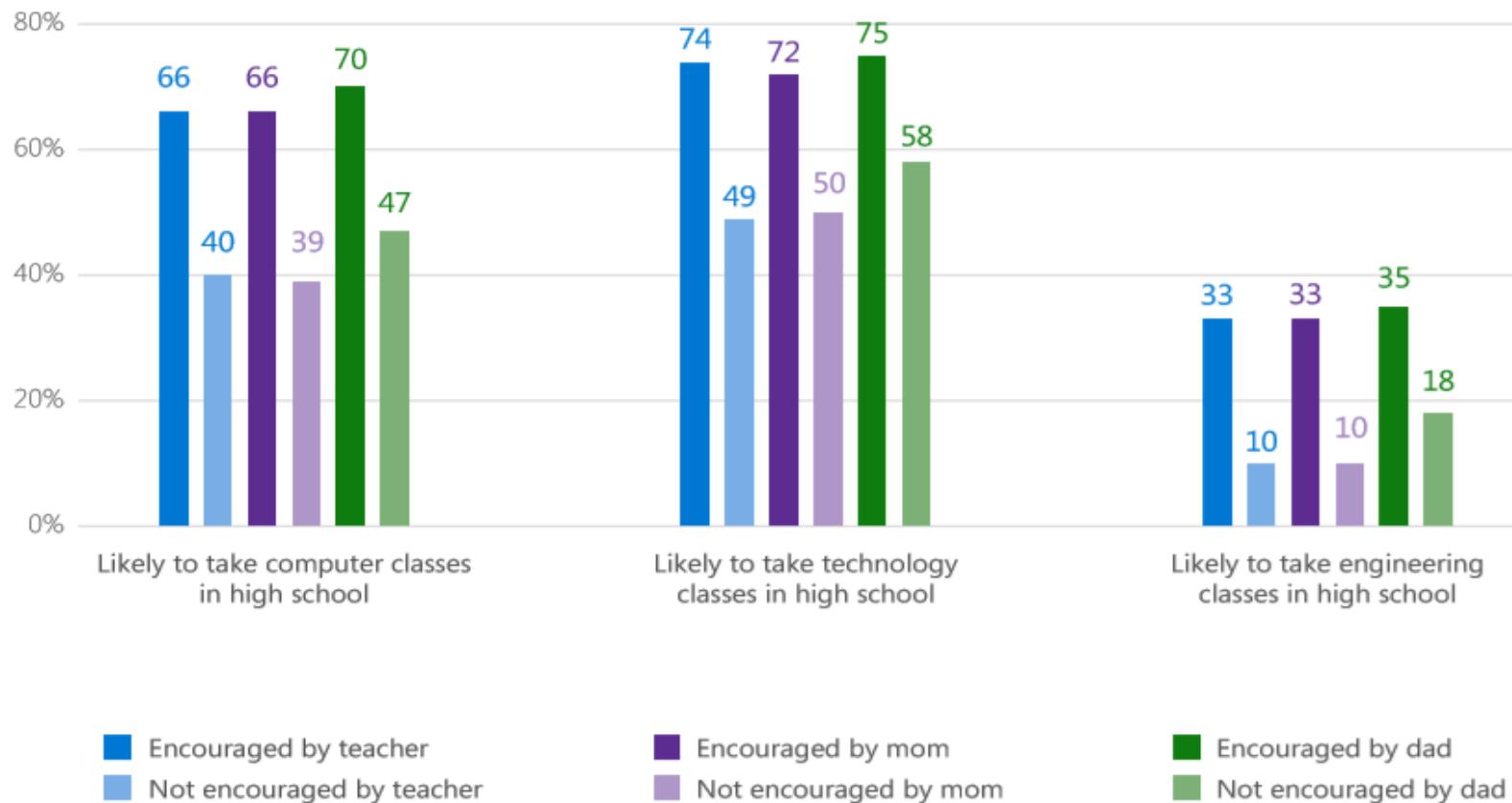
- Knowledge is power!
 - Girls don't know enough about the range of career choices in STEM and computer science that are available now and in the future.
- The Girls Scout Research Institute finds:
 - 60% of girls interested in STEM admit to not knowing their possible career choices;
 - 79% of girls uninterested in STEM aren't knowledgeable of career choices.

3. Teachers and Parents Can Impact CS Learning

- Researchers at Microsoft found that middle school girls in grades 5-8 who are encouraged by their teachers, mothers, or fathers individually are roughly 1.5 times more likely to take computing and technology classes in high school compared to girls who have not been encouraged to do so.
- Girls who have the combined support of parents and teachers say that they are 3 times more likely to study computer science than girls who don't have that support!

What difference does encouragement make?

Girls, Grades 5-8



4. Intersectionality Shapes Encouragement

- Girls of color face additional barriers related to their participation and engagement in STEM and computing.
 - Research supports that specific strategies and interventions positively impacts their exposure to and engagement with STEM.
- Structural and unconscious bias persists.
 - Kimberly Bryant, Founder of [Black Girls Code](#) & NCWIT K12 Exec Council Member on the “[importance of shattering the bigotry of low expectations](#)” for black girls in STEM.

Exposure and Encouragement Make a Difference



*How can we bridge the
gap?*

For Parents and Families:

- Encourage **early, often and equally!**
 - It's vitally important to encourage girls and children of color to explore STEM.
- Connect with **local and national organizations** that offer STEM programming for children.
- Remember: **you don't have to know a lot about STEM** to boost your child's interest in a STEM-related occupation.
 - For as cliche as it sounds, even the smallest “you can do it” can go a long way.

For Educators:

- Ensure that your **K-12 STEM curriculum is relevant, responsive and equitable** for all students. Look into building a collaborative partnership with local and national organizations if your school or district isn't already working with STEM-based groups.
- Provide **professional opportunities for educators** to learn more about STEM careers, and the barriers facing underrepresented individuals in STEM.
- Actively seek ways to **disrupt unconscious bias** in the classroom, school clubs/groups and in the community.

For Everyone:

- Don't be afraid to become a **change leader!**
- Change leaders are people who **expand and go outside their comfort zone to build community and connection**; they change the local conditions that create barriers to diversifying the STEM fields.

Encouragement IS:

- Engaging Diverse Audiences
 - Bring everyone in, including them in the discussion and decision-making.
 - Be inclusive and strategic about reducing unconscious bias.
- Intersectional
 - Be responsive to race, class, gender, color, ethnicity, and other aspects of social identity.
- Centered on value and visibility of all girls
 - Girls of color should be able to see themselves in others, and be encouraged by fellow women and girls of color.

Encouragement is NOT:

- A one-dimensional practice, effort, or strategy;
 - Encouragement takes on a number of forms.
- Limited to K-5, K-8, or High school;
 - Spans across all phases of the educational life-course.
- Solely focused on CS educators
 - Peers, parents, community members and organizations alike--with CS expertise or not--should all feel empowered to offer girls in computing social support.

NCWIT Resources on Encouragement

- Computer Science is for Everyone Toolkit
- NCWIT Tips:8 Ways You Can Give Students More Effective Feedback Using a Growth Mindset
- Enrich PK-8 Computing Education
- How Can You Engage a Diverse Range of Girls in Technology?
- Case Studies on Encouragement
- Top 10 Ways Families Can Encourage Girls' Interest in Computing
- Top 10 Ways to Engage Underrepresented Students in Computing
- Why Should Young People Consider Careers in IT?
- Multiple Factors Converge to Influence Women's Persistence in Computing

THANK YOU!

Lifetime Partner:



Strategic Partners:



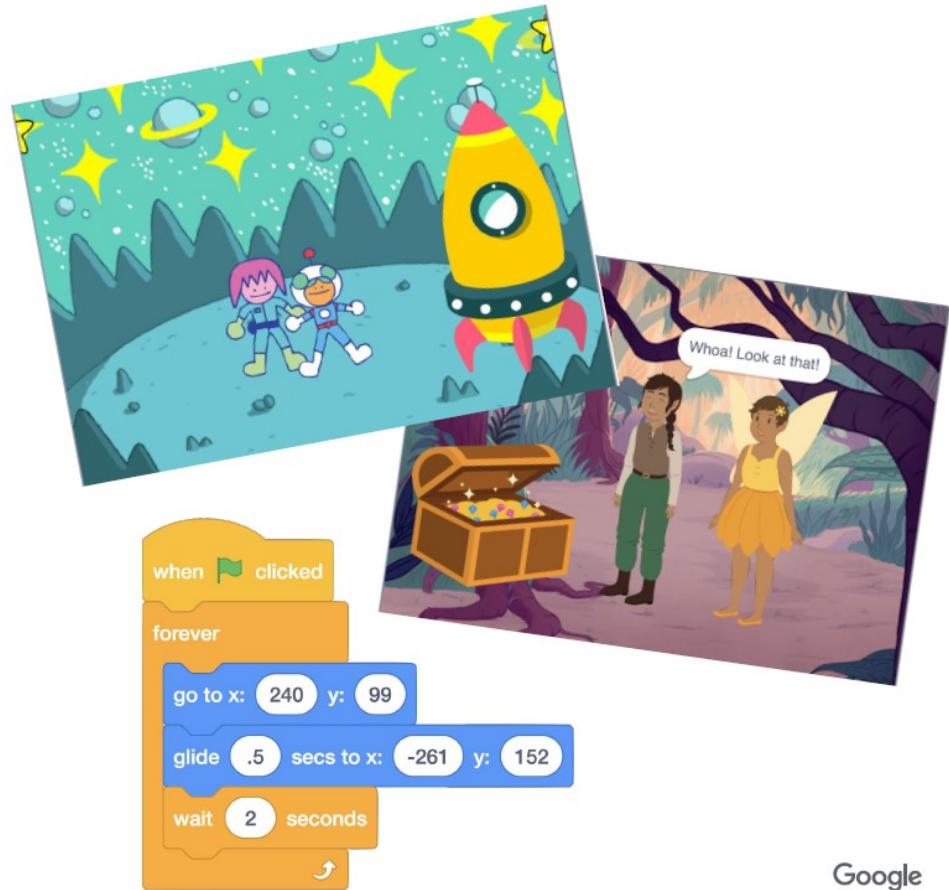
Investment Partners:

Celebrate CSEdWeek with CS First!

Code ‘An Unusual Discovery’

“Two characters meet in a world, and discover a surprising object. What happens next?”

- Try it out! [a.co/csfirst/discovery](https://g.co/csfirst/discovery)
- Digital Materials & Lesson Plans: g.co/csfirst/discovery-teachers
- Available in English & Spanish
- Scratch 3.0



Upcoming Webinar



Design Squad Global Inventing Green: Engage Kids
Hands-on Engineering around Sustainability

Thursday, January 10, 2019
11:00AM Pacific/2:00PM Eastern

Thank you for joining us today!



Take the survey:

<https://ngc2018.typeform.com/to/eb1UOA>

