

Computational Thinking: Plugged In!

Presenters: Claire Ratcliffe, Brooks Mitchell, Eric Stroshane,
Tai Hutchinson

The webinar will begin at 2:00 p.m. (MT) and will be recorded.

While you're waiting:

- 1) Find the toolbar – it will either be on the bottom or top of your Zoom window
- 2) Introduce yourself in the chat box (please select “Share with All” *not* “Share with Panelists”)
- 3) Click audio “Join by Computer” – you won’t have microphone access

Tip for viewing: You can resize and move the location of the video and slide screens by clicking and dragging them

Facilitator Introduction

Claire Ratcliffe (Space Science Institute)
Brooks Mitchell (Space Science Institute)
Beatrice Chavez (Space Science Institute)
Eric Stroshane (North Dakota State Library)
Tai Hutchinson (Girls Who Code)

Today's Agenda

Welcome

Recap of CT “Unplugged”

Guest Speaker: Eric Stroshane, Library Development Manager, North Dakota State Library

Activity Demonstration: *Kodable*

Activity Demonstration: *Solar System*

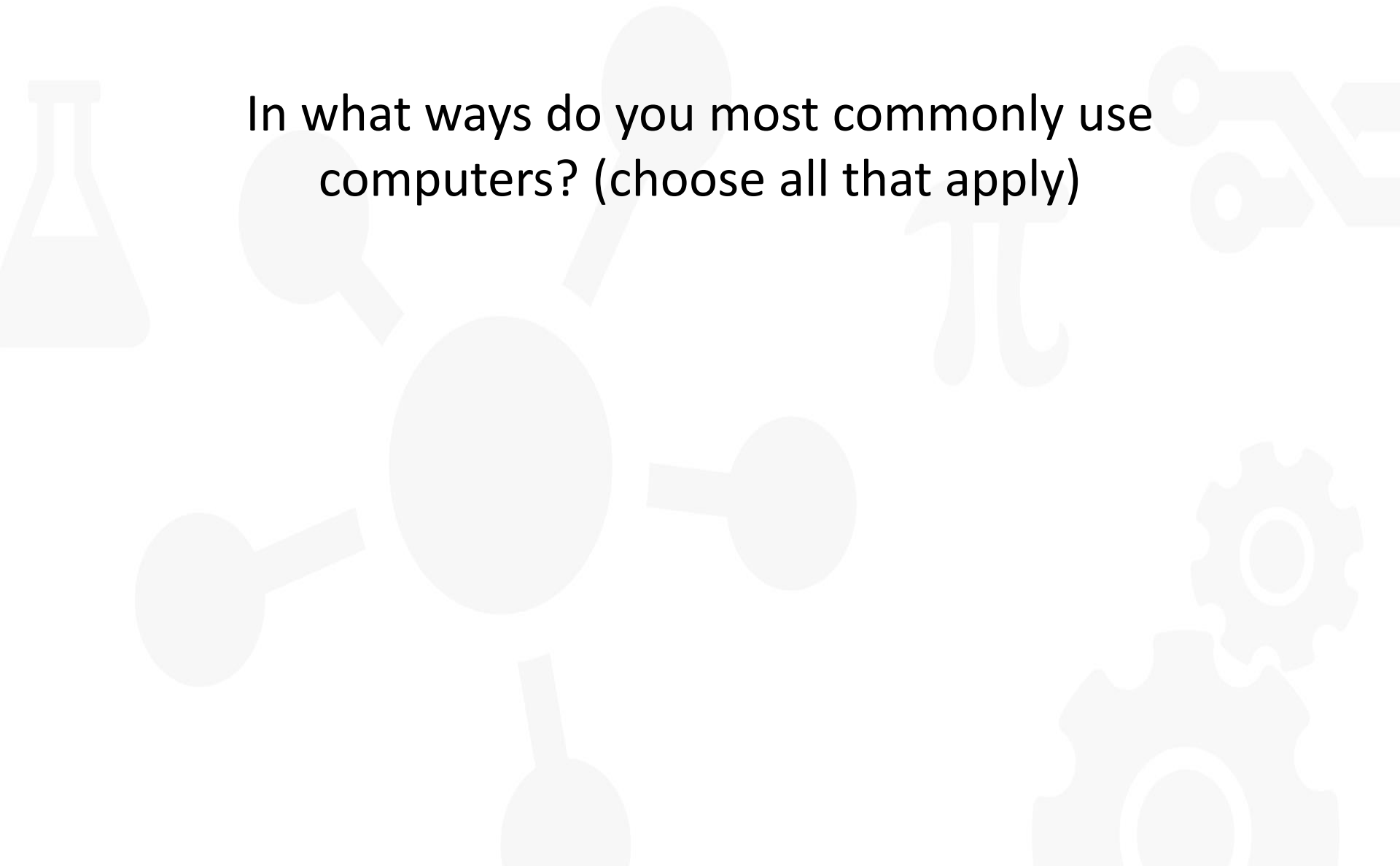
Guest Speaker: Tai Hutchinson, Manager of Community Partnerships & Outreach, Girls Who Code

Clearinghouse

Q&A

Poll Question

In what ways do you most commonly use computers? (choose all that apply)



What is Computational Thinking?

Thought processes used to consider problems and their solutions by...

- Decomposing a problem into smaller pieces to solve: Divide and Conquer!
- Looking for patterns and identifying causes and effects
- Using “Algorithmic Thinking” (creating a series of instructions) to solve problems

Make explicit things humans do implicitly without realizing





How do CT Skills Help our Patrons?

- Confidence in dealing with complexity
- Persistence in working with difficult problems
- Ability to deal with open-ended problems
- Ability to communicate and work with others to achieve a common goal or solution
- Enables kids to be creators, rather than just consumers, of technology

Tips & Tricks for Starting a Coding Club

Eric Stroshane
North Dakota State Library
Library Development Manager
estroshane@nd.gov
@ericstroshane



Out Here in the Fields



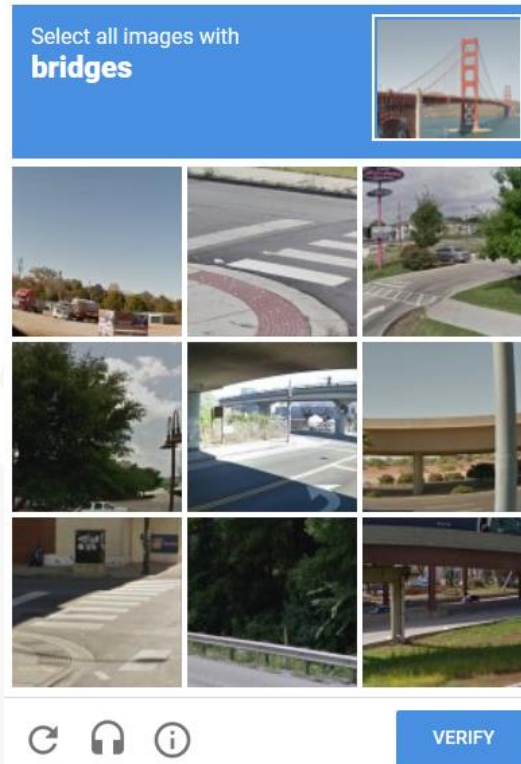
Library Magic



Black Plastic in the Hour of Code



Don't Think Twice, it's All Right



I'm not a robot



reCAPTCHA
[Privacy](#) - [Terms](#)

This Must be the Place

girls who
CODE

C O
D E

prenda



KANO

The Gift of Sound and Vision

The Sonic Pi logo features a pink Greek letter pi (π) followed by three black curved lines of increasing size, resembling sound waves.

π

<https://sonic-pi.net/>



<https://www.openprocessing.org/>

The Robots are Coming



Image source: "Rayna meets a 'robot'" YouTube video by marxj1: <https://youtu.be/h1E-FlguwGw>

Activity Demonstration: Kodable



- Beginner/pre-reader level
- Drag and drop (aka “block”) coding
- Self-guided tutorial
- Promotes algorithmic thinking by creating step by step instructions to solve missions

<https://code.org/learn>

Activity Demonstration: Solar System

- Intermediate level
- Block coding with JavaScript translations
- Self-guided tutorial with DIY options

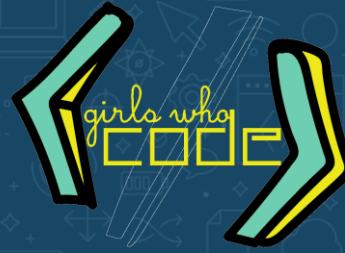


<https://www.tynker.com/hour-of-code/solar-system>

This activity does NOT accurately depict objects in the solar system to scale. Please refer to STAR Net's "Solar System Scale Activities" archived webinar



Tai Hutchinson
Manager, Community Partnerships & Outreach



2019-2020

GIRLS WHO CODE CS PLUGGED

AGENDA

- **Why Gender Equity?**
- **Unplugged Club Curriculum Deep Dive**
- **What's Next?**





WHY GENDER EQUITY?

WHY GENDER EQUITY?

The tech industry is booming! By 2026, there is expected to be more than half a million jobs available, making computing the most sought-after in the US job market, with demand growing **3X** the national average.

However, **only 19%** of students who receive **degrees in computing are women**, and **only 2%** of students who receive degrees in computing are women of color.

We can't leave behind the **ideas and innovations** of half the population, nor can we shut girls out of the economic opportunity represented by the tech sector—on average, **tech jobs pay over \$100K/year!**

We need to make a change!



WHO WE SERVE

Girls Who Code serves all girls, especially those who:

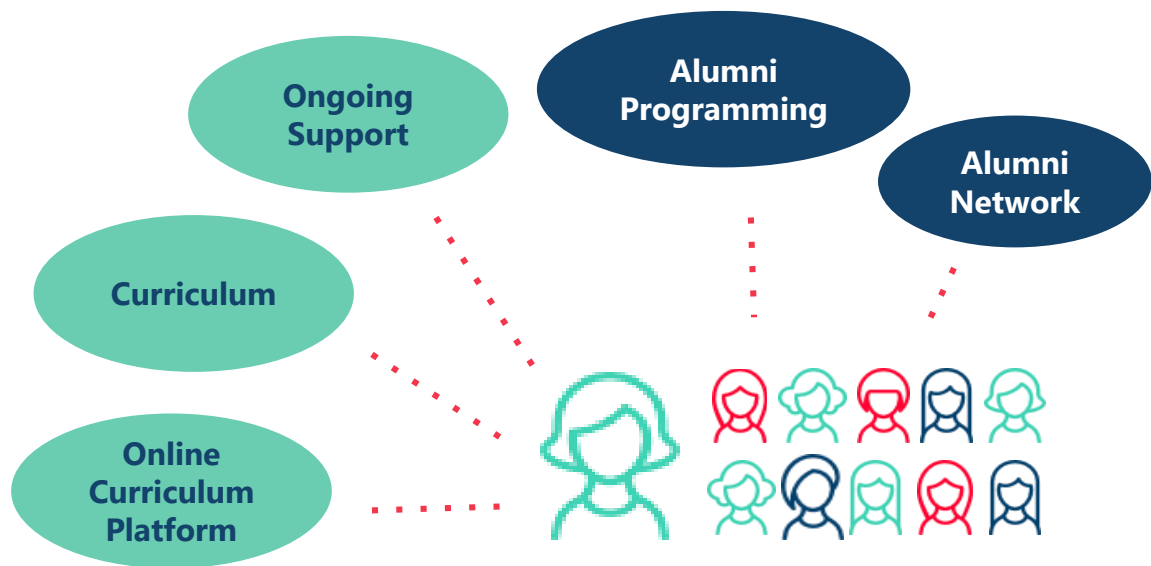
- Are **underrepresented** in computer science and technology fields in terms of race, creed or background
- Have **little to no access or exposure** to computer science education in school
- Are **Free and Reduced Lunch** eligible
- Identify as female **regardless of gender assignment** at birth or legal recognition



GIRLS WHO CODE CLUBS OVERVIEW



Clubs are **FREE** after-school programs for 3-12th grade girls to join our sisterhood of supportive peers and role models and use computer science to change the world.



Clubs are led by **Facilitators**, who can be teachers, librarians, parents, or volunteers from any background or field.

Many Facilitators have no computer science experience and learn to code alongside their Club members with our comprehensive resources and support.



CS PLUGGED CURRICULUM DEEP DIVE

PROGRAM LOGISTICS BY AGE GROUP

Our Club programs differentiated by age group features the following:

3-5TH GRADE CLUBS UNPLUGGED PLUGGED

Time & Logistics:

- 5+ sessions
- ~45-60 min per session
- \$300 per club!

Skill Level:

- Beginner

Curriculum Features:

- Book Club Model
- Chapter Guides for non-fiction and fiction books
- Online or Unplugged Options

6-12TH GRADE CLUBS CS

Time & Logistics:

- 10+ sessions
- ~1-2 hours per session
- \$300 per club!

Skill Level:

- Beginner, Intermediate, Advanced

Curriculum Features:

- Girls Who Code Project Focus
- Project-based learning
- 120+ hours of Curricula
- Beginner to Advanced Self-Guided Tutorials
- Plug and Play Model - **FLEXIBLE!**

6-12TH GRADE CLUB CURRICULUM FOCUS



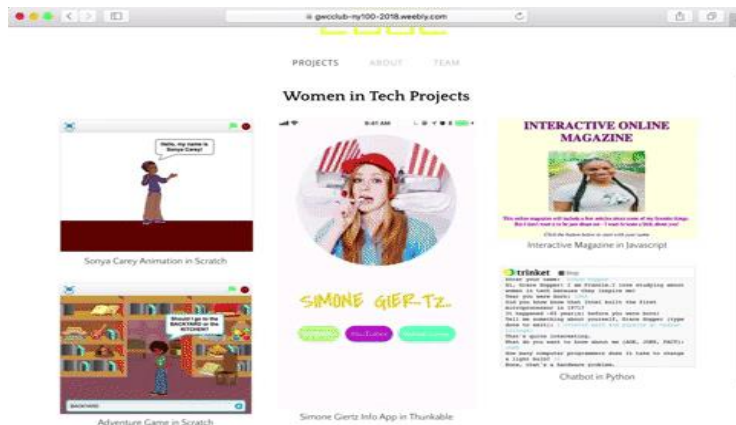
SISTERHOOD



MORE THAN CODE



IMPACT



python™



Swift



thunkable

6-12TH GRADE CLUB LESSON PLANS

Club Plans

Agenda



Standard Club Plan

If you have 15 meetings or more, use this as your home base to help you create Girls Who Code Project!

Agenda



Mini Club Plan

If you have about 10 meetings, use this as your home base to help you create Girls Who Code Project!

Agenda



Design Your Own Club Plan

Use this template to plan your own path from ideation to creation.

Standard Club Plan




Use the activities we recommend below to create your Girls Who Code Project with your Club!

If you have more time during any one meeting...

- Give girls more time in the "Learn" or "Build" sections of each agenda.

If you have more than 15 meetings..

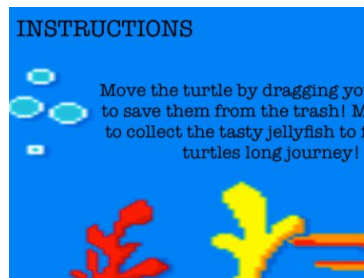
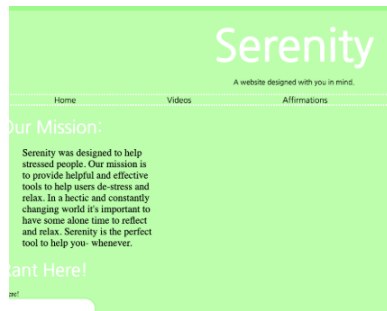
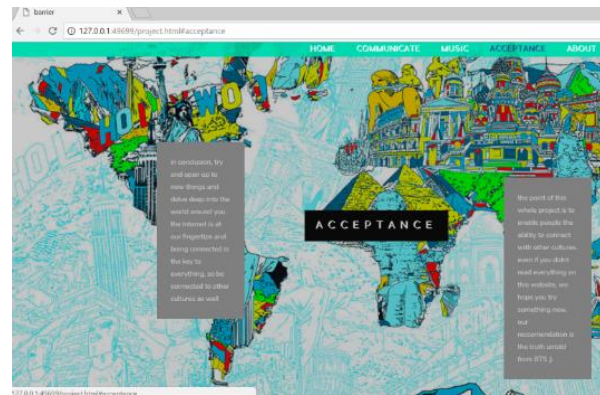
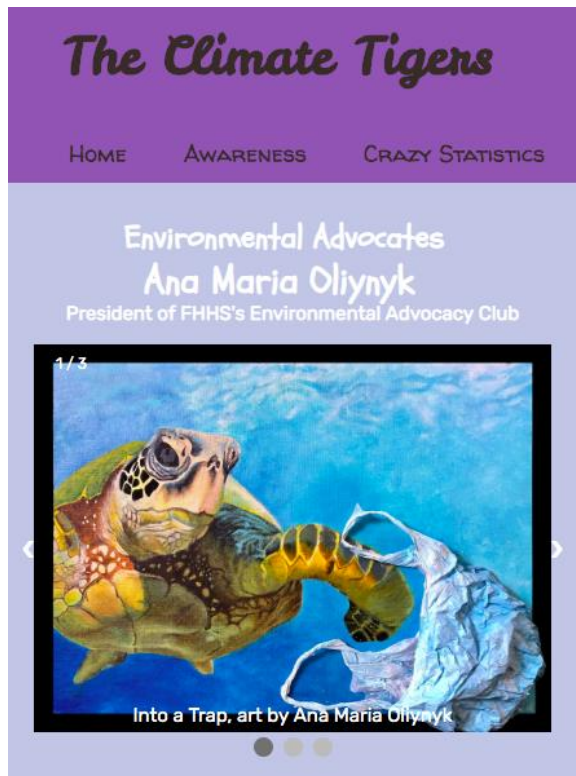
- Try out more of our **Build** activities to give girls more time to test and improve their project - just like real computer scientists!

Meeting 1 Welcome 	Goal: Welcome everyone to your Club and explore the cool things you might build. Agenda: <ol style="list-style-type: none">1. Celebrate - Welcome to GWCI2. Spotlight: Miral Kottb3. Learn - Intro to Tutorials4. Standups	Meeting 2 Find a Focus 	Goal: Choose a theme for your GWC Project, and begin to get the skills you need to build it. Agenda: <ol style="list-style-type: none">1. Spotlight: Grace Hopper2. Plan - Find Your Focus3. Learn - Work on Tutorials4. Standups
Meeting 3 Research 	Goal: Learn a little more about your Club theme and apply what you learn to your GWC Project. Agenda: <ol style="list-style-type: none">1. Spotlight: Haiyan Zhang2. Plan - Research3. Learn - Work on Tutorials4. Standups	Meeting 4 Set Your Vision 	Goal: Make a list of all of the ideas you'd love to include in your GWC Project. Agenda: <ol style="list-style-type: none">1. Spotlight: Simone Giertz2. Plan - Set Your Vision3. Learn - Work on Tutorials4. Standups

6-12TH GRADE CLUB LESSON PLANS



6-12TH GRADE GIRLS WHO CODE PROJECTS





OUR IMPACT

The National Pipeline

3rd-5th
Grade Clubs

6th-12th Grade
Clubs

College Loops

Alumni

6,500+
2018-19 CLUBS

185,000
GIRLS SERVED TO DATE

50%

are from historically
underrepresented
groups.

Majoring in
CS-related fields:

15-16X
the national rate.

PARTNERSHIP



Our organization relies on **collaboration with Community Partners** to drive our work and reach even more girls in your community. We create partnerships with state and local leaders, school districts, community organizations, library networks and colleges/universities to **launch multiple Girls Who Code Clubs**.

- **Access to the Community Partner Fund:** \$100 in grants in addition to the Clubs Fund \$300 to be used for snacks, books, school supplies, field trips, and more (for partners with 5+ Clubs with 3+ students enrolled)



**OAKLAND UNIFIED
SCHOOL DISTRICT**
Community Schools, Thriving Students

KIPP:SoCal
PUBLIC SCHOOLS



MATANUSKA-SUSITNA
BOROUGH SCHOOL DISTRICT

girl scouts
of kansas heartland

**LOS ANGELES
PUBLIC LIBRARY**



NEOSTEWECO
Northeast Ohio STEM Ecosystem

ACCESSING PARTNERSHIP BENEFITS!



Affiliate yourself with an existing partner to get access to partnership benefits & support when you apply at girlswhocode.com/clubsapply !

When you reach the below question on the last page of the Clubs Application, please list "Name of Organization" as your partner affiliation for the following question:

Is your Club affiliated with a Girls Who Code Community Partner (school districts, library systems, nonprofit organization, afterschool networks etc.)? Search for your affiliation here. If your Club is not affiliated, or your search returns no results, simply type "None". *

Note: this may take a second to load.

Will

- Acero Schools
- Achievement First
- After School Matters



Meet Bethany, GWC Facilitator

3 REASONS WHY SHE WAS HESITANT TO START A CLUB

No teaching
experience

No formal CS
experience

Nervous if the
Club would be
received well or
highly attended

3 REASONS WHY SHE WAS GLAD SHE DID

"There is no perfect time to do something - **just take a leap, be brave, and try it!**"

"It was totally **well-received** because in just 3 weeks after we started the Club, we grew from 2 members to 25."

"The curriculum that GWC provides.. **sets you up with literally everything you need**.. I didn't have to worry about curriculum, and I could **focus on building relationships with the girls** and helping to develop their skills."

3 THINGS HER CLUB GIRLS LEARNED

"Coding is more
accessible to learn than it
seems"

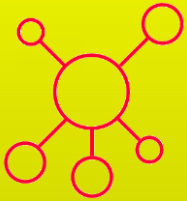
"The payoff of struggling
and persevering is really
worth it."

"Working together always
builds stronger results."



WHAT'S NEXT?

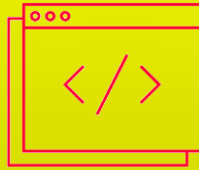
What You Need



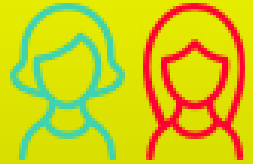
SPACE



- **COMPUTERS**
- **INTERNET CONNECTION**

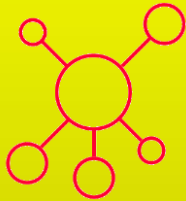


OR



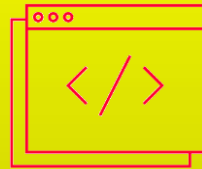
**FACILITATOR
&
DECISION MAKER**

What GWC Provides



LOGISTICS SUPPORT

- Customizable Club Plans
- Student Recruitment Resources
- Clubs Fund, mini-grant \$\$



CS SKILLS

- Custom Online Training
- Girls Who Code HQ Platform
- 120+ Hours of Curriculum
- Extended CS PD Resources



COMMUNITY

- Clubs Success Specialist
- In-person and virtual events
- Alumni programming and networking post-Club

How to Get Started

5 min

Create an
HQ account

Create a [Girls Who Code HQ](#) login to access the application



15 min

Fill out the
Clubs
Application

Fill out the 15 min [Clubs Application](#)

**Complete the background check only if you are a Facilitator who is NOT employed by the host site*

5-10 days

Get your
Approval
Email

Receive our Welcome Email with access to your Club Code for our curriculum! (i.e. HI123)

Prior to Launch

Review
resources &
meet your CSS

Log into [HQ](#) to access:

- Training webinar (15 min)
- Recruitment materials
- 120+ hr curricula
- And more!

Ready?

Launch
Your
Club!

Recruit students and help them enroll on [HQ](#).

Enrolled students receive access to our curriculum. 3+ enrolled students gives you access to Clubs Fund!

GET STARTED TODAY!



Launch an individual Club at girlswhocode.com/clubsapply.

Interested in exploring a Community Partnership? Contact the respective staff member or complete the [Community Partnership Confirmation Form](#)!

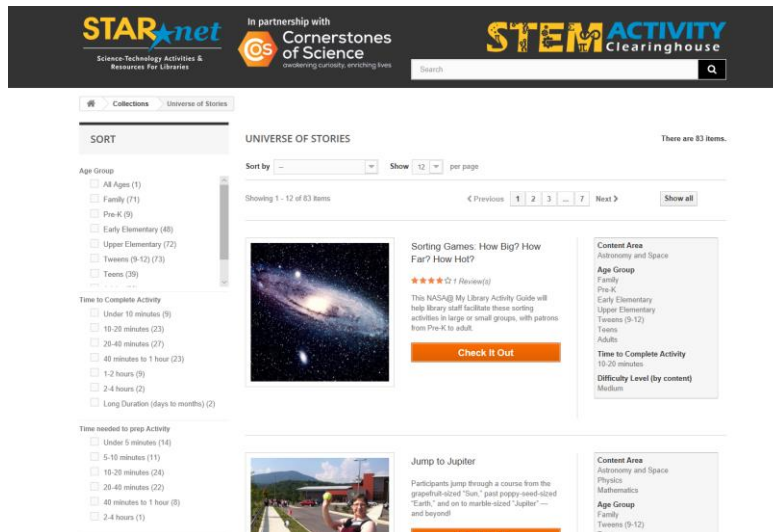
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Thank you for joining!

Have questions? Email Tai Hutchinson at tai@girlswhocode.com

STEM ACTIVITY Clearinghouse



Computational
Thinking

Like an activity and think other library staff should know how great it is? Didn't like an activity or have modifications to make it better? **Make sure to leave a review!**



Thank you!

Any Questions?