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

Weintrop et al., 2015
Wing, 2006
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
This Must be the Place
The Gift of Sound and Vision

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
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
Our Club programs differentiated by age group features the following:

### 3-5TH GRADE CLUBS UNPLUGGED

**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 PLUGGED

**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


### Club Plans

<table>
<thead>
<tr>
<th>Agenda</th>
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<th>Agenda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Club Plan</td>
<td>Mini Club Plan</td>
<td>Design Your Own Club Plan</td>
</tr>
<tr>
<td>If you have 15 meetings or more, use this as your home base to help you create Girls Who Code Project!</td>
<td>If you have about 10 meetings, use this as your home base to help you create Girls Who Code Project!</td>
<td>Use this template to plan your own path from ideation to creation.</td>
</tr>
</tbody>
</table>

### 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
**Goal:** Welcome everyone to your Club and explore the cool things you might build.

**Agenda:**
1. Celebrate - Welcome to GWC!
2. Spotlight: Miral Koib
3. Learn - Intro to Tutorials
4. Standups

### Meeting 2
**Goal:** Find a Focus

**Agenda:**
1. Spotlight: Grace Hopper
2. Plan - Find Your Focus
3. Learn - Work on Tutorials
4. Standups

### Meeting 3
**Goal:** Research

**Agenda:**
1. Spotlight: Hayan Zhang
2. Plan - Research
3. Learn - Work on Tutorials
4. Standups

### Meeting 4
**Goal:** Set Your Vision

**Agenda:**
1. Spotlight: Simone Giertz
2. Plan - Set Your Vision
3. Learn - Work on Tutorials
4. Standups
6-12TH GRADE CLUB LESSON PLANS

- **5+ MIN**
  - Sisterhood Activity

- **5+ MIN**
  - Women in Tech Spotlight

- **40+ MIN**
  - Self-Guided Tutorials & GWC Project
    - LEARN → PLAN → BUILD → CELEBRATE

- **5+ MIN**
  - GWC Stand Up
6-12TH GRADE GIRLS WHO CODE PROJECTS

The Climate Tigers

Home    Awareness    Crazy Statistics

Environmental Advocates
Ana Maria Olijnyk
President of FHHS’s Environmental Advocacy Club

HUNGERLESS
Helping End Hunger

Donate Now!

Collect a Meal!

Learn About Us!

Serenity

A website designed with you in mind.

Our Mission:
Serenity was designed to help around people the ability to provide helpful and effective tools to help users by solving and relax. In a chaotic and constantly changing world it’s important to have some alone time to reflect and relax. Serenity is the perfect tool to help you whenever.

INSTRUCTIONS

Move the turtle by dragging you to save them from the trash! Make to collect the tasty jellyfish to a turtle's long journey!
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)
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.

- Aacoro Schools
- Achievement First
- After School Matters
"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."

"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
- FACILITATOR & DECISION MAKER

OR
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

15 min
Fill out the Clubs Application

5-10 days
Get your Approval Email

Prior to Launch
Review resources & meet your CSS

Ready?
Launch Your Club!

Create a Girls Who Code HQ login to access the 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

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

Log into HQ to access:
• Training webinar (15 min)
• Recruitment materials
• 120+ hr curricula
• And more!

Recruit students and help them enroll on HQ.

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

<table>
<thead>
<tr>
<th>Girls Who Code Staff</th>
<th>Email</th>
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</tr>
</tbody>
</table>
Thank you for joining!

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