Access Academy

AMERICAN PRINTING HOUSE

On the Road to Code: Code Jumper

Leslie Weilbacher

APH Outreach Specialist - NW

Jason Martin

AT Trainer, CATT, AIDB

Objectives

1. **Understand** the relationship between the physical components and screen-based block coding
2. **Build vocabulary** for coding concepts such as**: Processing:** Changing information into a useful format., **Command:** An instruction for the computer, **Computer Program:** Many commands put together make up algorithms and computer programs. **Parameter:** A value that is given to a command, for example, which note to play **Computer:** An electronic device for receiving input, storing information, processing information, and outputting information.
3. **Practice** the language of computers by writing a line of code to produce a song or story.

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Poll Question

What is your comfort level with Coding and Coding Concepts?

1. Excited, but don't know where to start
2. Interested, but a little overwhelmed
3. Very comfortable and ready to go
4. Not comfortable, but I want to support an interested student

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Why Coding Foundational Skills

- 29.5% of adults with a visual impairment are employed in the US
- 2X faster growth of jobs in the CS field
- 2.5% of all undergraduate degrees awarded in computer science.
- 50% of top paying jobs in the US require some coding skills

(Burning Glass Technologies (2016) *Beyond point and click: the expanding demand for coding skills*, Retrieved from www.burning-glass.com).

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What is Code Jumper

- Microsoft and American Printing House for the Blind
- Block coding
- Kinesthetic learners could be anyone

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Set Up

- Watch the unboxing video
- Download the app
- Connect the Hub to Bluetooth
- Select the sound set
- Plug in the first pod and listen for the “click”

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On The Road!

Code Jumper

Using the App

- Download from Microsoft Store or Google Play Store
- Visible accessible block coding
  - Add your own sounds
- With JAWS/NVDA
  - Arrow keys and tab
  - 4 Thread are visible
- TalkBack on Android tablet/MATTConnect
  - Flick and tap
  - 1 Thread is visible

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The Road

CodeQuest

- Grid
- VoiceOver
- Block Coding tapping buttons

Code and Go Robot Mouse

- 3D
- Free form
- Block Coding pressing buttons

Code Jumper

- Tactile and On screen
- Basic to Advanced
- Block Coding turning dials

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Block Code VS Writing Code

In C++

```
#include <iostream>

Int main()
{
        std::count <<“oh no!\n”;
}
```

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Vocabulary from CodeQuest

- **Sequence:** putting steps in an order
  - First, Second, Third, Last
- **Debug:** finding an error and fixing it
  - It did not work. Why? How do we fix it?
- **Loop:** an action that is repeated
  - Walking you repeat the same action of moving your feet until you reach your destination.

Vocabulary from Code and Go Mouse

- **Algorithm:** a sequence of commands
- **Input:** The Signals or instructions sent to a computer.
- **Store:** Saving information in order to be used at a later time.
- **Output:** Data or information that is created by a computer.

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New Vocabulary

- **Processing:** Changing information into a useful format
- **Command:** An instruction for the computer
- **Computer Program:** Many commands put together to make up algorithms and computer programs.
- **Parameter:** A value that is given to a command, for example, which note to play
- **Computer:** An electronic device for receiving input, storing information, processing information, and outputting information.

Let’s Go!

Code-a-long

Alabama School for the Blind Road to Code Event

Jason Martin
Center of Assistive Technology Training

Computers need to do four tasks

1. Computers need to be able to take information as **input**.
2. Computers need to **store** that information.
3. Computers need to **process** information,
4. Computers need to **output** information.

Guided Activity: Code Jumper is a Computer!

Animals

Day 1

Code Jumper is a computer

What is the input?

Code Jumper takes information as input in the form of sound data files, settings on dials, and the pushes of buttons.

What is stored?

Code Jumper stores information in the form of sounds that can be played.

Code Jumper is a computer continued

How does Code Jumper process?

Code Jumper processes information by following the commands of pods as arranged. It also processes in the way that it outputs and modifies the sounds.

How does Code Jumper output?

It outputs information in the forms of sounds it produces.

An **algorithm** is a step-by-step process to complete a task

Steps in our morning algorithm (Unplugged Activity)

Wake up

Brush teeth

Get dressed

Comb hair

Eat breakfast

Take the bus to school

Sequence and Commands

The algorithm we've created is:

A **sequence** or a set of instructions

Computers use:

Commands, which are carried out one at a time in the order they appear.

Parameters

1. What were the parameters in this program?
    a. **Sound** and **Duration**
2. What is a **Parameter**?
    a. A parameter in computer science is a value that is given as an instruction or command.
3. What is a **Sound Set**?
    a. Up to eight related sounds assigned to a single connector that can be changed in the app

The Dancing Machine

Day 2 & 3

Keep Going!

Code and Go Mouse Tie In

We Will Code You!

What is this in Computer Science

What is the We Will Rock You in the terms of Computer Science?

1. What is **this** algorithm?
2. What does it do?
3. What is the sequence it uses?
4. What are some parameters it uses?
5. What are the threads?

Painting an Audible Picture

1. Explain the threads you used.
    a. What was the sequence in the thread?
    b. Did it work the way you expected?
2. What were the parameters in this program?
    a. Sound and **Duration**
3. What is a **Parameter**?
    a. A parameter in computer science is a value that is given as an instruction or command.
    b. What was the newest parameter you used?
        i. The Pause Pod!
4. What is a **Sound Set?**
    a. Up to eight related sounds assigned to a single connector that can be changed in the app
    b. Which Sound Set did you use?

Time for Review

What is a:

1. Computer System
2. Sequence
3. Algorithm
4. Parameter
5. Thread

Day 4

Code Jumper Lessons Continued

- ❑ Lesson 5 – Debugging
- ❑ Lesson 6 – Loops
- ❑ Lesson 7 – Loops and Sequences
- ❑ Lesson 8 – Decomposition
- ❑ Lesson 9 – Constants
- ❑ Lesson 10 – Selection and Conditionals
- ❑ Lesson 11 – Selection and Random
- ❑ Lesson 12 – Variables
- ❑ Lesson 13 – Counters
- ❑ Lesson 14 – Nested Loops
- ❑ Lesson 15 – Networks
- ❑ Lesson 16 – Topologies
- ❑ Lesson 17 – Protocols
- ❑ Lesson 18 – Binary Numbers
- ❑ Lesson 19 – Boolean Logic

www.codejumper.com/resources

ASB Group Photo

Poll Question 2

How are you doing?

1. I feel a little better about pursuing this with my students
2. Great, I want to learn more
3. I am still confused

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Sneak Peek

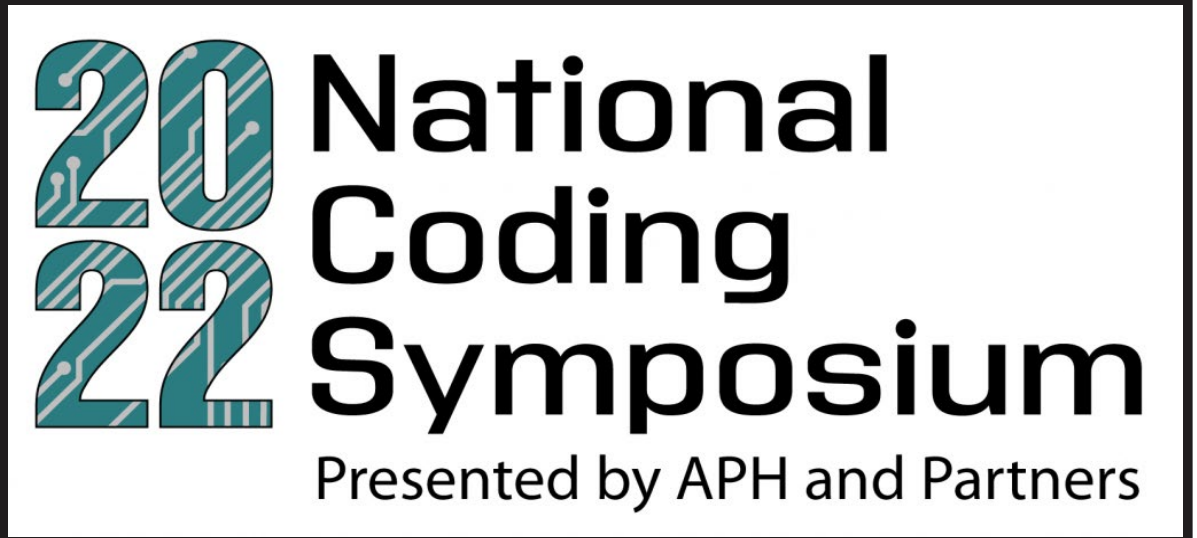
Meet CJ…

New ways of using Code Jumper

- Use clues in BRF, PDF, or MP3 to solve the puzzle
- Help CJ the alien explore, get a job, learn about the Earth and more

What's Next?

- National Coding Symposium
- May 9-13



Resources

- Road to Code Blog post https://www.aph.org/aphs-road-to-code/
- Code Jumper https://codejumper.com/
- Microsoft Course on Teaching Code Jumper https://education.microsoft.com/en-us/course/b38ae828/overview
- National Coding Symposium https://aphconnectcenter.org/coding/
- Coding for VI https://ijcses.org/index.php/ijcses/article/view/25
- Coding Concepts https://www.perkinselearning.org/technology/blog/coding-concepts-code-and-go-robot
- Code and Go robot Mouse post on Paths to Technology
- Code.org Six Studies on benefits of CS: https://codeorg.medium.com/cs-helps-students-outperform-in-school-college-and-workplace-66dd64a69536
- Paths to Tech K12 https://www.perkinselearning.org/technology/blog/accessible-k-12-computer-science-resources
- Paths to Tech Accessible Coding post: https://www.perkinselearning.org/technology/blog/coding-posts-summary
- What is Coding: https://www.codeconquest.com/what-is-coding/how-does-coding-work/

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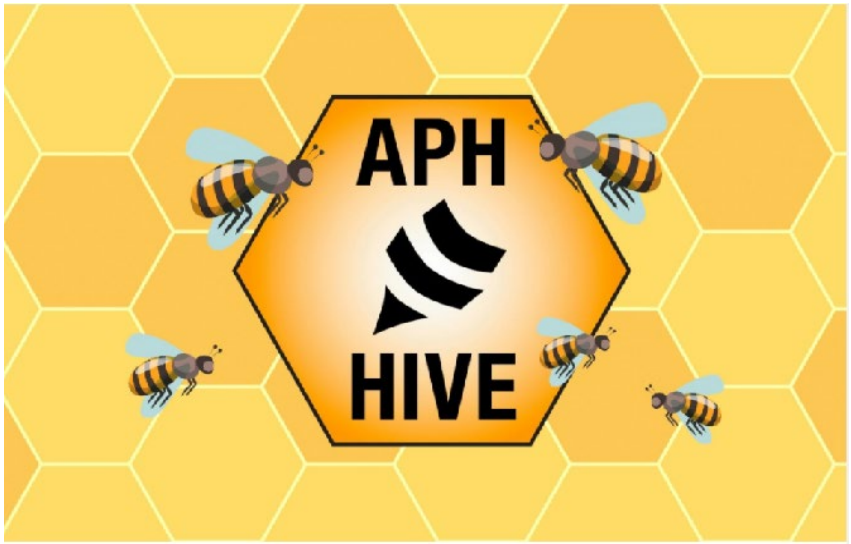
Learning Management System



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LESLIE WEILBACHER

American Printing House for the Blind
1839 Frankfort Avenue • Louisville, KY 40206

aph.org • lweilbacher@aph.org

502.515.9102

outreach@aph.org

800.223.1839 ext. 102

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