

APH Coding Symposium

Code Jumper Lesson Plan

Audience:	For students interested in beginning coding concepts
Duration	40 minutes per lesson

Learning targets (what do I want the students to learn?)

In activity 1, students will understand the importance of finding errors in a computer program. Students will build a program from the Sample Sound sets of their choosing, create an error in the program and then challenge another student to find the error.

In activity 2, students will create a program based on a story they have written or a known short story. Students will take the main ideas from the beginning, middle, and end of the story with up to 8 Play pods. Students will use sounds from the Sample Sound sets, Midi sounds, find free new sounds online to download, or create custom sounds of their own.

Objective #1	Understand the concept of a bug in computer programming
Objective #2	Identify and fix simple bugs in their own programs
Objective #3	Students will learn to sequence code to create action

Vocabulary terms for this lesson:

- Thread: A thread is one set of commands or tasks that can be carried out at the same time as another set of commands.
- Sequence: a sequence is where one action is followed by another action.
- Algorithm: A step-by-step process to complete a task.

Materials needed (What I need to teach the lesson?)

- Code Jumper Kit
- Eight Play pods
- Three Pause pods

Resources

- [Code Jumper App](#)
- [The Hub](#)
- [Play and Pause Pod](#)

- [Adding a Custom Sounds Set](#)

Activity 1: Debugging!

Instruction:

1. Ask students to explore the Sample Sets to find one they would like to use.
2. Some of the sound sets are a story that have a logical sequence, and some are a collection of related sounds. Students can pick either one.
3. For students who choose a story that has a logical sequence, they can create a Code Card that has an error that either a line of code out of order, or a speed that is incorrect.
4. For students who choose a related sound set such as animals or tools, students can create a game of “what doesn’t belong?” The Code Card will have each of the sounds that belong, and the one that does not. The student should determine which sound should replace the incorrect sound. Part of the exercise is determining where the bug is, because it is not always obvious.
5. An example of find the one that doesn’t belong:

Program with an error:

Thread 1 Nature

Play Sea Gulls, speed: 1 times

Play Crickets, speed: 1 times

Play Thunder, speed: 1 times

Play Frogs, speed: 1 times

End Thread

Program without an error:

Thread 1 Nature

Play Sea Gulls, speed: 1 times

Play Crickets, speed: 1 times

Play Birds, speed: 1 times

Play Frogs, speed: 1 times

End Thread

6. Once students have created their Code Cards they then challenge a peer to find and debug their program. Including finding the correct sound the replace the one that is the error.
7. Wrap up the exercise by reflecting on the experience. Where else in life do you need to debug?

Activity 2: Translate a story into code

Instruction

1. Ask students to brainstorm a short story they know or write one of their own in their Computer Science Journal. This can be done in a group setting.
2. Ask the students to breakdown the story in eight or less lines from the story that will be used for each line of code. This is like the framework, or outline of the story. It is important that students include parts of the story that will convey the entire story, start to finish.
3. If the students are creating a story based on the sample sounds, Midi sounds, or downloaded sounds:
 - a. They can write the story around the sounds where the sound accompanies the telling of the story.
 - b. Students will write the code and while the program is running, verbally tell the story and use the sounds as sound effects.
4. If the students are writing a story or using a pre-written story and creating their own sound set, the telling of the story comes solely from the Code Jumper program.
 - a. Students will write/find a story.
 - b. Break it down into simplified lines of code.
 - c. Play the program and debug as needed
 - d. This [video](#) will explain how to create a custom sound set.
5. Students create their Code Cards for the program in their Computer Science Journal or other format. See the examples below.
6. Ask the students to run their programs for other groups.
7. Reflect on the experience and ask students what they would do differently next time.

Example1

Creating Custom Sound Sets for a known story:

Three little pigs

Once upon a time, there lived three little pigs. One day, they built their own houses of straw, sticks and bricks. The next day, a big bad wolf came to the first house. "Little pig, little pig, let me come in," he snarled. "Not by the hair on my chinny, chin, chin, I will not let you in!" cried the first little pig. "Then I'll huff and I'll puff and I'll blow your house down!" growled the big bad wolf. He blew the house down! The first little pig ran to the second house. The big bad wolf came to the second house. "Little pig, little pig, let me come in," he snarled. "Not by the hair on my chinny, chin, chin, I will not let you in!" cried the second little pig. "Then I'll huff and I'll puff and I'll blow your house down!" growled the big bad wolf. He blew the house down! The two little pigs ran to the third house. The big bad wolf came to the third house. "Little pig, little pig, let me come in," he snarled. "Not by the hair on my chinny, chin, chin, I will not let you in!" cried the third little pig. "Then I'll huff and I'll puff and I'll blow your house down!" growled the big bad wolf. He huffed and he puffed, but he could not blow it down! So he climbed down the chimney and landed in a big pot of stew. SPLASH! He jumped out and ran away. He never came back again. The three little pigs lived happily ever after in the house made of bricks. The end.

Sound Name	Sound Script
Three little pigs	Three little pigs built their own houses of straw, sticks and bricks.
House made of straw	The Big Bad Wolf visits the first house made of straw and demands to come in.
Straw house blown down	The Pig says: "Not by the hair on my chinny, chin, chin, I will not let you in!" So he huffs and puffs and blows the house down.
House made of sticks	The big bad wolf visits the second house made sticks and demands to come in.
Stick house blown down	The Second Pig says: "Not by the hair on my chinny, chin, chin, I will not let you in!" So, he huffs and puffs and blows the house down.
House made of bricks	The Big Bad Wolf visits the second house made bricks and demands to come in.
Brick house stands tall	The Third Pig says: "Not by the hair on my chinny, chin, chin, I will not let you in!" So, he huffs and puffs and could not blow the house down.
Big Bad Wolf climbs chimney	The Big Bad Wolf then climbs down the chimney and lands in a pot of stew! Splash! And he ran away.

Using a Sound Set to create a story:

Sound Set: People Sounds

Line of text	Sound	
One day I was walking down the street with my friend, and I sneezed!	Sneeze	
My friend was laughing so hard.	Laughing	
She had to blow her nose	Blowing nose	
All of a sudden she starts to scream!	Scream	
I heard a funny sound like someone was surprised.	Ohh!	

I wasn't sure what to do, so I was keenly listening for sounds.	Pause pod: 2 beats	
To my surprise there was a sound just like a ghost!	Ghost sound	