

Lesson 7 - Big Goldfish, Little Pond

Learning Goals

- Students will consider what computers have to do with invasive species.
- Students will consider how people use computers to help with invasive species problems.
- Students will create an interactive animation using sprites, behaviors, and **events**.
- Students will identify actions that correlate to input events.

Equity Spotlight

In this lesson, students begin to contemplate how people (themselves and people they might know) can use computers to help with the invasive species problem. They work through a series of coding puzzles related to an example project that illustrates some facts they learned about the invasive goldfish story. In this way, students build personalized interests and learning goals.

Preparation

- Play through the puzzles within the lesson to identify any potential problem areas for your class.
- In Level 13, students learn how to play sounds in Sprite Lab. You may wish to have students use headphones.
- [Reflection Sheet](#): Make sure the students have access to this (a printed or digital copy).
- [Coding Wish List](#): Make sure the students have access to this (a printed or digital copy). They may need more than one page.
- This lesson is adapted from Code.org [Hello World: Animals](#).
- If students are completely new to Sprite Lab, you may wish to direct them to the [Sprite Lab Documentation](#) student resource from code.org.
- Watch [PD Video #6](#) to learn more about how certain UDL and CRP teacher practices are integrated into this lesson in alignment with Project-Based Learning elements.

Links

For teachers:

- [Liz's Fish Pond](#)
- [Sprite Lab Documentation](#)
- [Driving Questions](#)
- [Invasive Species Flowchart](#)
- [Video: Hello World \(Animals\)](#)
- [Video: Hello World \(Programming with Events\)](#)
- [Video: Hello World \(Do What You Want\)](#)
- [Video #5: PBL Step 1](#) - PD resource
- [Video #7: PBL Step 3](#) - PD resource
- [Video #9: PBL Step 5](#) - PD resource

For students:

- [Reflection Sheet](#)
- [Coding Wish List](#)

Vocabulary

- **Event** - An action that causes something to happen
- **Wishlist** - A list of additional sprites or functionality (code) that can be added to a project

Teaching Guide

Warm Up (10 minutes)

Equitable Teacher Practices



- 1.CRP.c** Help students develop personalized interests and learning goals.
- 5.CRP.a** Provide opportunities for students to identify their own personal and cultural connections to the real-world problem or question.

- Remind students about the algorithms they participated in during Lesson 3, and the Sprite Lab project and puzzles they looked at in Lesson 4. On the [Reflection Sheet](#), have each student write:
 - One thing they liked about those lessons
 - One question they have
 - One thing they would like to do next
- Have students think about what they have been learning about invasive species and respond to the prompts on the bottom portion of the [Reflection Sheet](#).
- Write on the board or display the question: “What do computers have to do with invasive species?!”
 - Have students volunteer a few responses to this question and make additions to the class “Need To Know” chart (first created in Lesson 2), as needed.
- Remind students of the [Driving Questions](#). Ask: “How might people be using computers to help with the invasive species problem?”
 - As time allows, provide an opportunity for students to identify people they know (of) that might be using computers to help with the invasive species problem. These people may be their family or community members, or other individuals or organizations they have discovered online.
 - For example: ...
- After discussing some responses, tell students that during this module they will be spending time learning enough computer science to be able to code their own final project about what they’ve learned about invasive species. To do this, they will continue to look at examples of pre-coded projects in Sprite Lab and think about what makes them work.

Main Activity (25 minutes)

Equitable Teacher Practices



- 3.UDL.a** Model the use of specific strategies to solve problems.

- Run the example Sprite Lab project: [Liz's Fish Pond](#). Remind students that they’ve seen this project before (in Lesson 4). Tell students that this project models one of the invasive species they previously investigated, the goldfish.
- Ask students:
 - *What sprites are shown in this project?* Write down the sprites as students name them. As the students name each sprite, provide an explanation of the real organism that the sprite represents in this pond ecosystem.

Sprite	Real Organism
Orange fish with white stripes	Goldfish that was released into a pond
Orange fish	Fish that is native to the pond
Red fish	Fish that is native to the pond
Light green plants	Plants that are native to the pond
Dark green plants	Plants that are native to the pond

- *How are the sprites behaving? How are they interacting with each other? Write down the behaviors as students name them.*

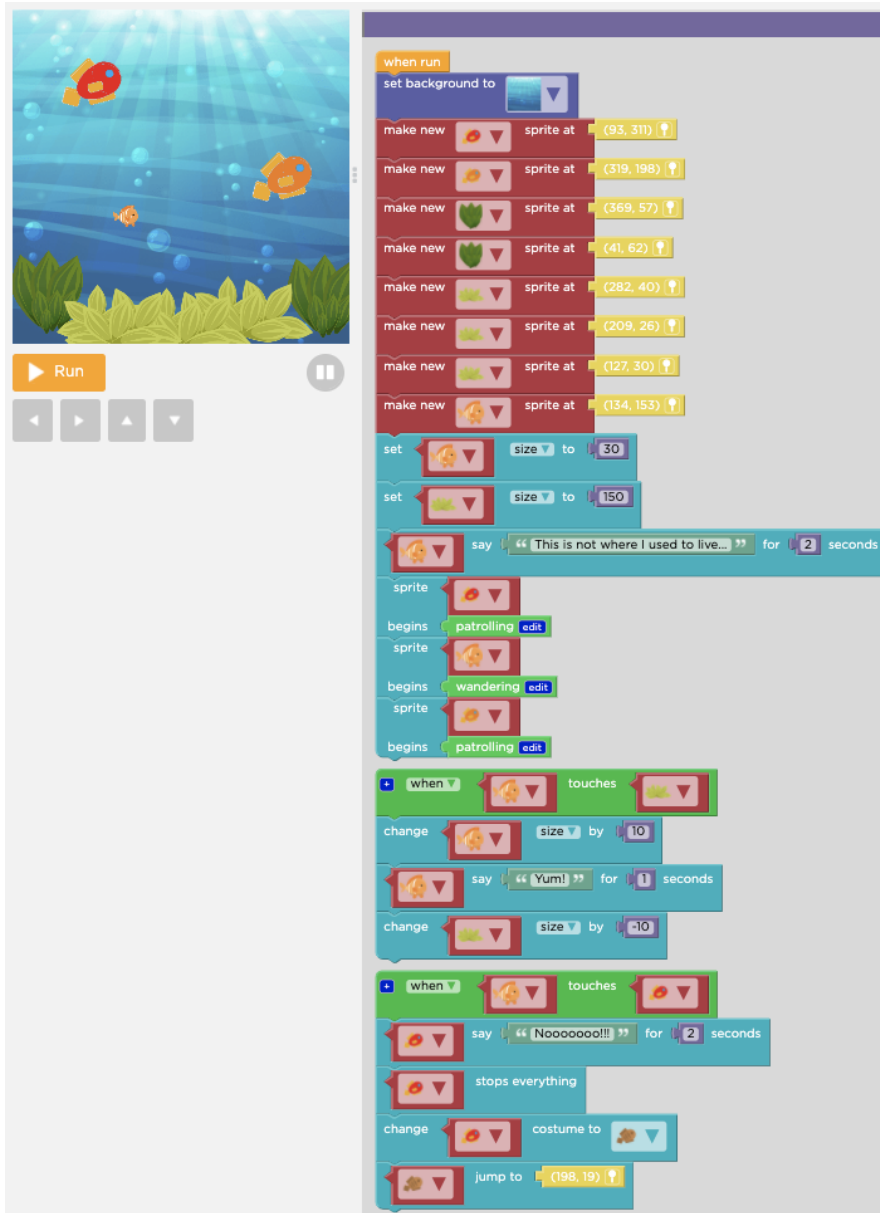
Sprite	Behavior
Orange fish with white stripes	Swims, talks, eats light green plants, grows
Orange fish	Swims
Red fish	Swims, dies, talks
Light green plants	Shrinks
Dark green plants	None

- Display the [Invasive Species Flowchart](#) and have students use the flowchart to categorize each sprite as it is shown in the example project. Encourage students to consider the characteristics and impacts they learned about in Lessons 5 and 6, and use the behaviors shown in the example project to answer the categorization questions.
 - You may wish to run the project several more times to assist students with this activity.
 - You may need to provide time for students to return to the article to recall what they read about these organisms, or acknowledge uncertainty around particular organisms.
 - Consider having students work in pairs or groups, with one shared computer available to run the program as needed.
- Transition students to their computers. As needed, remind them how to log in and get to today's lesson ([Big Goldfish, Little Pond](#)). Encourage students to follow the instructions for each puzzle.
 - Level 1: EXAMPLE. Liz's Fish Pond
 - Level 2: VIDEO. "Hello World: Welcome to Sprite Lab"
 - Level 3: PUZZLE. Make a new sprite and have it say something.
 - Level 4: PUZZLE. Give each sprite a different location.
 - Level 5: PUZZLE.
 - Make two sprites each say something
 - Extra Challenge: Set a background.
 - Level 6: PUZZLE.
 - No toolbar
 - Notice three chunks of code, utilizing a new Event
 - when [sprite] clicked
 - Level 7: VIDEO. "Hello World: Programming with Events"
 - Level 8: PUZZLE.
 - Make a sprite say something when you click on it
 - Level 9: PUZZLE.
 - Do something else with events

- Change the scene by clicking a sprite (use a second event block and the set background block)
- Level 10: PUZZLE.
 - Change the appearance of sprites.
- Level 11: PUZZLE.
 - Change the size of sprites
- Level 12: PUZZLE.
 - Learn to animate sprites using behaviors
 - Challenge: Use events to make a sprite begin a behavior when it is clicked.
- Level 13: PUZZLE.
 - Learn how to play sounds
 - Challenge: Use events to play a sound when a sprite is clicked.
- Level 14: VIDEO. “Hello World - Do What You Want (What will you create?)”
 - Topics covered:
 - sprite costumes
 - Behaviors
 - When X touches Y
 - Create Effect Block
 - Clicking Share Button
- Level 15: SANDBOX. Students creatively add to their code.

Wrap Up (15 minutes)

- Play the example project [Liz's Fish Pond](#) again. Ask students to think about how it compares to the “pond project” they each created as they completed the series of puzzles. What is similar? What is different?



- Using the [provided journal page](#), have students make a **wishlist** of additional sprites or functionality (code) they might want to add to their project. Encourage students to use the list of sprites and behaviors available in Sprite Lab, and think about what they learned from the goldfish article when considering their wishlist.
- Ask for student volunteers who might want to demonstrate and share their projects. Allow other students the chance to add to their wishlists based on their classmates' demonstrations.
- Tell students that in the next lesson they will work more on expressing their own identity with a project.

[Give anonymous feedback on this lesson.](#) (optional)