

Swamp Boat

Sofie found crocodile eggs! Could there be crocodiles nearby?

🕒 30–45 min. 📦 Beginner 🎓 Grades 3–5



Teacher Support

Key objectives

Students will:

- Identify the parts of an existing program that should be modified
- Carry out tests to identify where a program can be modified
- Recount an experience using relevant facts and descriptive details

Things you will need

(one for every two students)

- LEGO® Education SPIKE™ Essential Set
- Device with the LEGO® Education SPIKE™ App installed

Additional resources

[Building instructions](#)

[Meet the Team: Minifigure Bios](#)

[Assessment Rubric](#)

Educational standards

- CSTA 1B-AP-12
- NGSS 3-5-ETS 1-3
- ISTE 1.5d
- CCSS.ELA-LITERACY.SL.3.4

Math Extension

- CCSS.MATH.CONTENT.3.MD.B.3

Prepare

- Review the *Swamp Boat* lesson in the LEGO® Education SPIKE™ App.
 - If necessary, pre-teach these related vocabulary words: *content*, *modifications*, *notify*, *observe*, and *predict*.
 - Consider the abilities and backgrounds of all your students. Differentiate the lesson to make it accessible to everyone. See the *Differentiation* section below for suggestions.
 - If time allows, plan and facilitate the math extension. See the *Extension* section below for more information.
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Engage

(Whole Class, 5 Minutes)

- Facilitate a quick discussion about modifying an existing object to achieve a goal.
 - Talk with your students about needing to see what's under the water.
 - Ask questions, like: *What could you change about your eyes to make them able to see under the water? What would you need?*
 - Introduce your students to the story's main characters and the first challenge: telling Sofie when her boat is near a crocodile.
 - Distribute a brick set and a device to each group.
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Explore

(Small Groups, 30 Minutes)

- Have your students use the LEGO® Education SPIKE™ App to guide them through their first challenge:
 - Create and test the program that tells Sofie when her boat is near a crocodile.
 - Have your students iterate and test their models to complete the next two challenges in the app:
 - Modify the program to tell Sofie in a different way when her boat is near a crocodile.
 - Upgrade the swamp boat to help Sofie find other animals.
 - You can find coding and building support in the *Tips* section below.
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Explain

(Whole Class, 5 Minutes)

- Gather your students together to reflect on their completed challenges.
 - Ask questions, like: *How did Sofie know when she was near a crocodile? What did you change about how the swamp boat told Sofie when she was near a crocodile? What did the swamp boat do then?*
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Elaborate

(Whole Class, 5 Minutes)

- Prompt your students to discuss and reflect on modifying an existing program.
 - Ask questions, like: *Why is it important to be able to modify an existing program? How did you decide which Coding Blocks to use when you modified your program?*
 - Have your students clean up their workstations.
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Evaluate

(Ongoing Throughout the Lesson)

- Ask guiding questions to encourage your students to "think aloud" and explain their thought processes and reasoning in the decisions they've made while building and programming.

Observation Checklist

- Measure your students' proficiency in modifying an existing program.
- Create a scale that matches your needs. For example:
 1. Needs additional support
 2. Can work independently
 3. Can teach others

Self-Assessment

- Have each student choose the brick that they feel best represents their performance.
 - Yellow: I think I can modify an existing program.
 - Blue: I can modify an existing program.
 - Green: I can modify an existing program, and I can help a friend do it too.

Peer-Feedback

- In their small groups, have your students discuss their experiences working together.
 - Encourage them to use statements like these:
 - I liked it when you...
 - I'd like to hear more about how you...
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Tips

Coding Tip

- After your students complete their first challenge, they'll be provided with three Inspiration Coding Blocks to help them modify their programs.
- The Inspiration Coding Blocks are intended to spark their imaginations as they experiment to find their own solutions.

1

A Scratch code block with a yellow 'when green flag clicked' trigger, a 'when color is green' condition, and a 'turn on sound for 1 seconds' action.

2

3

Model Tip

- After your students complete their second challenge, they'll be provided with three Inspiration Images and an open-ended prompt for improving their models.
- The Inspiration Images are to help spark their imaginations as they experiment and change their models.

1

A 3D printed model of a car chassis, colored blue, with two white wheels attached to the front.

2

3

There aren't any building instructions for this challenge.

Differentiation

Simplify this lesson by:

- Reading the *Swamp Boat* story and instructions from the LEGO® Education SPIKE™ App aloud to your students
- Selecting one Inspiration Image to help your students change their models

Increase the difficulty by:

- Exploring new and different coding blocks in the program
 - Prompting your students to modify each other's programs to improve each other's work
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Extension

- Have your students keep track of the number of animals Sofie's boat detects. Ask them to create a bar graph and calculate how many more and how many less of each animal the boat encountered.

If facilitated, this will extend beyond the 45-minute lesson.

Math: CCSS.MATH.CONTENT.3.MD.B.3