# Treehouse Camp

Sofie is looking forward to seeing the moon from her treehouse! How can she open the treehouse roof for a great view of the sky?



© 30-45 min.

**Beginner** 

⊛ Grade: 1-2

# **Teacher Support**

Key objectives

Students will:

- Identify and fix errors in a program (test and debug)
- Test to ensure the program works correctly
- Practice helping a story character
- Participate in collaborative conversations

Things you will need

(one for every two students)

- LEGO<sup>®</sup> Education SPIKE<sup>™</sup> Essential Set
- Device with the LEGO<sup>®</sup> Education SPIKE<sup>™</sup> App installed

Additional resources

**Building instructions** 

Meet the Team: Minifigure Bios

Assessment Rubric

Educational standards

- CSTA 1A-AP-14
- NGSS K-2-ETS1-2
- ISTE 1.5c
- CCSS.ELA-LITERACY.SL.1.1 Language Arts Extension
- CCSS.ELA-LITERACY.SL.1.5

## **Prepare**

- ∘ Review the *Treehouse Camp* lesson in the LEGO® Education SPIKE<sup>™</sup> App.
- If necessary, pre-teach these related vocabulary words: camping, debug, moon, roof, and treehouse.
- 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 language arts extension. See the *Extension* section below for more information.

## **Engage**

(Whole Class, 5 Minutes)

- Facilitate a quick discussion about having to make a change in order to be able to do something.
  - Talk with your students about wanting to see the sunset while standing in the classroom but not being able to.
  - Ask questions, like: What could you change to be able to see the sunset while standing in the classroom? What could you move or remove to help you see it?
- Introduce your students to the story's main characters and the first challenge: opening the treehouse roof.
- Distribute a brick set and a device to each group.

# **Explore**

(Small Groups, 30 Minutes)

- Have your students use the LEGO<sup>®</sup> Education SPIKE<sup>™</sup> App to guide them through their first challenge:
  - Make and try the program that opens the treehouse roof.
  - Note: The first program your students create won't be successful. They'll be prompted to fix (debug) the program using a Motor Block running in the opposite direction.

- Have your students iterate and test their models to complete the next challenge in the app:
  - Change the treehouse for Sofie's next camping adventure.
- You can find coding and building support in the Tips section below.

## **Explain**

(Whole Class, 5 Minutes)

- Gather your students together to reflect on their completed challenges.
- Ask questions, like: How did you help Sofie see the moon? How did you make the treehouse roof move?

## **Elaborate**

(Whole Class, 5 Minutes)

- Prompt your students to discuss and reflect on the importance of fixing (debugging) errors in a program.
- Ask questions, like: Why is it important to make sure that your program works correctly? What can you do if your program isn't working the way you want it to?
- Have your students clean up their workstations.

## **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 testing their programs and fixing the errors they find.
- 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 test my program and fix the errors I find.
  - Blue: I can test my program and fix the errors I find.
  - Green: I can test my program and fix the errors I find, 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...

# **Tips**

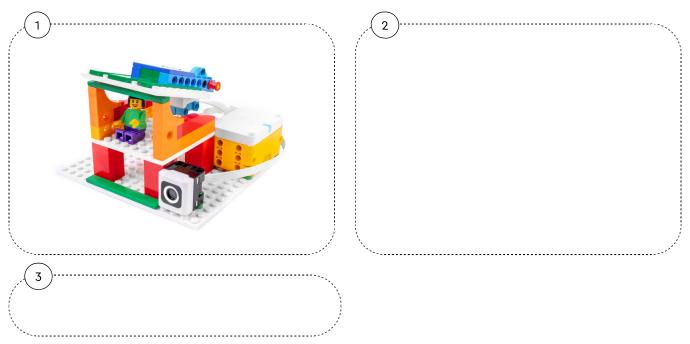
#### **Coding Tip**

- To successfully debug their programs, your students will need to replace the Motor Block.
  - o Changing the direction of the motor will enable the treehouse roof to open.

#### **Model Tip**

- After your students complete their first 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.



There aren't any building instructions for this challenge.

# **Differentiation**

## Simplify this lesson by:

- $\circ$  Reading the *Treehouse Camp* story and instructions from the LEGO<sup>®</sup> Education SPIKE<sup>TM</sup> App aloud to your students
- o Selecting one Inspiration Image to help your students change their models

## Increase the difficulty by:

- Including the Loop Block in the program to automate how the roof opens and closes
- $\circ\,$  Using the Color Sensor to change how the treehouse roof is activated

## **Extension**

• Have your students write a description of Sofie's treehouse, draw a picture of it, and label its parts.

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

Language Arts: CCSS.ELA-LITERACY.SL.1.5