

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 🎓 Grades 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® 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 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™ 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.
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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:
 - 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.
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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.
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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 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...
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Tips

Coding Tip

- To successfully debug their programs, your students will need to replace the Motor Block.
 - 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.

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There aren't any building instructions for this challenge.

Differentiation

Simplify this lesson by:

- Reading the *Treehouse Camp* 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:

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