



Challenge 4: What Is Innovation?

Get Prepared

 **Challenge Goal:** Learn about new types of community designs and make their own designs

 **Time Needed:** One 45-minute session

 **What You Will Need:**

Tablet Flip Book

• Innovation Flip Book



Materials

- Samsung tablets
- scrap paper
- Engineer's Notebook (from Challenge 1)
- crayons, markers, or color pencils
- pencils
- highlighters

Before You Begin:

- Before the participants come in for the afternoon, set the browsers on their tablets to www.scholastic.com/sparks.

Connect With the Home:



Download and print out the **Council-to-Home Communication: Unit 2 Overview** for K-2 and ask kids to take the communication sheets home to share with their family members.

Imagine That!

1. Ask participants:
 - *Can you ride a bike in the sky?*
 - *Do schools float?*
 - *Can you get water from a sign?*
 - *Can a car drive itself? Why not?*

Explain that engineers have created new things for communities by using their imagination.

2. Have participants tap the Innovation Flip Book on their tablets. Show them the billboard drawing. Explain that in a desert town in South America where there isn't a lot of water, there is a billboard that has a fan inside. The fan draws in the air, the air runs over very cold pipes, and water in the air drips out. The water runs down the pole of the sign and when people turn on the faucet, they get water.
3. Show them the image of the Sky London bike lane. Ask a volunteer to explain what they see. Ask another volunteer to explain why this bike lane would be in the sky. If they don't come to it on their own, guide them to think about the safety of the bikers, and how traffic

would flow more quickly on both the bike lane and the streets if the cars and bikes were not traveling together. Note that engineers are building this bike lane in London, England.

4. Have kids tap the number 2 on their tablets. Show them the floating school. Explain that in this particular African country, there is a community that lives on the water in houses built just above a lake. Because the water makes it difficult for children to travel to school and it is difficult to build large structures such as a school, an architect designed this floating school. Ask a volunteer to explain why this is important.

5. The final design is a car that drives itself, which engineers in the United States are building. The car uses computer hardware to sense when it is near other objects and to navigate where to go.



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Innovation Everywhere

1. Tell kids that all of these things are innovations. Explain that an innovation is something new that's never been created before. Tell them that the most important innovations help communities thrive.
2. Have kids select the Community Engineering Flip Book tab on the K-2 landing page and tap the number 5. Ask them to think back to the conversation they had about community and then discuss what it needs. Make sure that a place to get food, water, things



that help safety (such as stop signs and stoplights), buildings for shelter, and a place to play are included in the conversation.

Challenge Time!

1. Ask: **What would you like to have more of in your community? Do you need more safety in your community? Do you need more places to get food and water? Do you think everyone needs a place to play—even grown-ups?** Pass out the Engineer's Notebooks and have kids flip to page 5, "What My Community Needs." Ask them to write or draw their community's needs.
2. When they have completed this task, have a few volunteers share their answers. Then ask: **If you could choose one thing on your list to change, what would it be?** Have everyone choose one thing they want more of in their community and write it on the "Goal" line on page 5, "Making My Community Safer," of their Engineer's Notebooks.
3. Pass out scrap paper. Tell kids that they will now put on their thinking caps. **Can they think of an innovation, or something new, they could build to meet their goals in their community? Would they build a machine? A building? Something that floats? Something that flies? Would it be big? Would it be small? What would it do?** Ask as many questions as possible to rev up their imaginations.
4. Have kids draw their innovations on scrap paper while leaders circulate asking questions and giving advice.

Wrap-up:

Once kids feel comfortable with their drawings, have them copy their sketches into their Engineer's Notebooks in the "My Innovation: Sketch" box on page 6. Encourage kids to share their innovations and why they chose them.

Reflection Time!

Lead kids in a discussion to reflect on Challenge 4. Ask the following questions: **Was it easy to come up with an idea? Was it hard or easy to draw that idea? What would you change about your drawing? Do you think engineers and architects spend a lot of time coming up with ideas? Why or why not?** The goal of this discussion is to help kids reflect on their process to better understand the role of engineers and others who help design things in their communities.