

Challenge 5: What is the connection between community needs and innovative design?

Get Prepared

Challenge Goal: Reflect on examples of technological innovations that benefit society

Time Needed: 45 minutes

Note: Kids may use the activity sheet printouts or they may follow along on their tablets at: www.scholastic.com/sparks2.



What You Will Need:

Printouts

- **Activity Sheet F: Talk About It!**

Materials

- Samsung tablets
- pens or pencils

Sparks Exploration: STEM Careers (optional)

If you have time, you can start Challenge 5 by having kids use their tablets to access the **STEM Career Flip Book**. Introduce the software developer and web developer in the technology section. Explain that technology is a growing field with the ability to influence everyday life. Tell them when they use cell phones, apps, and computers, they are benefiting from the work of software developers and web developers.

Goal Selection:

Ask them what needs they think software and web developers consider when they develop projects. Remind them to reference the **STEM Career Flip Book** if they need more information. (Make sure they understand that software developers design computer systems and games, while web developers design websites and web programs.)



Setting the Strategy: Engineering in the Community 10 mins.

1. Remind kids that innovative engineering solves specific problems. When working on a new design, engineers have a particular goal in mind that should solve an issue or meet a need.
2. Explain that community improvement strategies are not just structural. New technology can also solve community problems. Have kids use their tablets to view three examples of helpful technological innovations. As you review, identify the need or want that each innovation was created to serve.
 - **Google Self-Driving Cars (California):**
To help cut down on traffic accidents, Google created a car that drives itself: <http://nyti.ms/1i5NSHt>
 - **Bluefin-21 Submersible (Maryland):**
An underwater robot helps search for a missing Malaysia Airlines plane that disappeared after takeoff in March 2014: <http://nyti.ms/1ibMp2l>
 - **Soccket (New York):**
A new soccer ball generates electricity to provide power in underdeveloped areas of the world: <http://wapo.st/1hE90EW>

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Challenge 5: What is the connection between community needs and innovative design? (continued)

Shifting Gears: STEM Challenge! 20 mins.

Break kids into their design teams and ask each to choose one of the three innovations you just discussed: Google Self-Driving Cars, Bluefin-21 Submersible, or Soccket. Challenge each team to find a creative way to revise this innovation so it meets a need or want in your community.



Use the Tablets! 15 mins.

Pass out **Activity Sheet F: Talk About It!** for each design team to complete as a group. In this activity, kids will share and write down their opinions about new engineering improvements they would like to see made in their town or community.

Encourage kids to think creatively about the wide variety of innovations they have already learned about. Can ideas be combined? What would improve the lives of the people in your community? For inspiration, following are links to the six innovations discussed in other lessons:

- **SkyCycle (London, England):**
This elevated pathway was proposed to help cyclists travel safely through the city: <http://bbc.in/1hvQAHq>
- **Water-Generating Billboard (Lima, Peru):**
An engineering school created this billboard, which collects water from the air and turns it into clean drinking water: <http://bit.ly/OJwM6C>
- **Makoko Floating School (Lagos, Nigeria):**
This school was built for children living in a poor area in Africa prone to frequent flooding: <http://nyti.ms/1kvwyPi>
- **Google Self-Driving Cars (California):**
To help cut down on traffic accidents, Google created a car that drives itself: <http://nyti.ms/1i5NSHt>
- **Bluefin-21 Submersible (Maryland):**
An underwater robot helps search for a missing Malaysia Airlines plane that disappeared after takeoff in March 2014: <http://nyti.ms/1iVy2et>
- **Soccket (New York):**
A new soccer ball generates electricity to provide power in underdeveloped areas of the world: <http://wapo.st/1hE90EW>

NAME: _____

Talk About It!

Use this sheet to get your creativity flowing! What would make your community happier or more successful? What do kids need? How about the elderly?

Instructions: Read each question and make a short list of three local needs that apply to this question. Then brainstorm a list of solutions for each need!

Ideas for Our Community

<p>1. Want places to play? Do we have enough places for physical activity (like public pools, sports centers, basketball courts, soccer fields, playgrounds, and parks) in our town or city? If not, what types of places would you like to have?</p>	<p>Needs:</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>Solutions: _____</p> <p>_____</p>
<p>2. Want to fix things that are broken? What things in our town or city need to be fixed or replaced (like boarded-up buildings, old streetlights, or uneven sidewalks)?</p>	<p>Needs:</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>Solutions: _____</p> <p>_____</p>
<p>3. Want to make dangerous areas safer? Are there local areas that are dangerous (busy street corners, dark lots, open construction areas)? What could be done to make these areas safer? Could empty buildings or lots be turned into something great for the community?</p>	<p>Needs:</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>Solutions: _____</p> <p>_____</p>
<p>4. Want to help people? Are there improvements that could be made that would help people be healthier or more comfortable?</p>	<p>Needs:</p> <p>1. _____</p> <p>2. _____</p> <p>3. _____</p> <p>Solutions: _____</p> <p>_____</p>