



PROGRAM GUIDE

Welcome to Building Blocks, a STEM-enrichment program that helps kids in grades K–8 use today’s technology to create new innovations for a better tomorrow.



Science, technology, engineering, and mathematics (STEM) are all around us, yet many kids don’t know what types of jobs STEM professionals do. Help

prepare kids for bright futures with exciting hands-on projects that use Samsung tablets to introduce Camp Fire kids to STEM careers. By the end of the **Building Blocks** program, kids will even create their own technological or architectural innovations!

WHAT’S IN THE TOOL KIT

The **Building Blocks** Tool Kit is set up to provide step-by-step support as you take kids in grades K–8 through this STEM-engagement program. Materials include:

- **Step-by-step challenge guides** that walk council leaders through program implementation
- **Activity sheets and tablet resources** for hands-on learning
- **Neighborhood Engineering Flip Book and Innovation Flip Book** for grades K–2
- **Career Flip Book** for grades 3–8 describing interesting STEM careers and profiling Camp Fire alumni who work in STEM fields
- **Council-to-home communications** providing parents and caregivers with program and challenge overviews
- **Templates for writing letters** to the editor, city/town council, and the mayor so kids can spread the word about their amazing ideas



HOW TO ACCESS THE MATERIALS

The Tool Kit can be accessed through downloadable PDFs or online via tablet view. Council leaders may choose to print program materials at www.scholastic.com/STEMsparks. Alternatively, council leaders may choose to have kids follow along with the instructions online: grades K–2 page at www.scholastic.com/sparks, grades 3–5 page at www.scholastic.com/sparks2, and grades 6–8 page at www.scholastic.com/sparks3.

PREPARATION AND PLANNING

Before you begin the **Building Blocks** program, review the Learning Objectives on the final page. Most challenges take 45 minutes to complete, with a number of them requiring additional sessions. Depending on the composition, interest, and attention span of your group, you may decide to present each challenge in parts. As an alternative, you may decide to move through

the critical units more quickly, so Camp Fire kids may spend more time on the building phase of the project.



Program Guide (continued)

Regardless of your approach, it is important to plan for program challenges to last a minimum of nine weeks for grades K–2 and 14 to 16 weeks for grades 3–8. Once you have planned how you would like to time the challenges, print out all the materials, making multiple copies of the Activity Sheets and Council-to-Home Communication Sheets. Alternatively, all activities can be done on the tablets without having to print out the Activity Sheets. Be sure to use the materials list at the end of the Challenge Structure to collect all the items you will need for the program.

CONNECTING THRIVE

The **Building Blocks** program combines STEM education with Camp Fire’s Thriving framework to foster potential in youth especially around STEM careers. Through interesting challenges and tablet technology, kids will actively use Camp Fire principles to overcome obstacles as they create an innovative engineering solution in their community.

The Thriving framework elements are integrated into the **Building Blocks** materials in the following ways:

- **Spark Exploration:** Sparks are inner passions, skills, and strengths that motivate. In the **Building Blocks** program, kids will explore STEM careers and potentially discover new possibilities for today and for their futures.
- **Growth Mind-set:** The growth mind-set is the mind-set that is focused on learning. By adopting and applying a growth mind-set, teens develop resiliency, a trait that will benefit them all their lives as they continue to face new challenges. In **Building Blocks**, kids will be taught new principals and experiment with inventing and building their own innovations. As they solve the problems connected to the program projects, they will practice overcoming obstacles and build their potential for future successes.
- **GPS: Building Blocks** challenges employ the Thriving framework’s goal management model, which includes:
 - **Goal Selection:** Determining where they want to go or what they want to do
 - **Pursuit of Strategies:** Determining the best way to get where they want to go
 - **Shifting Gears:** Determining what they will do when the going gets tough by developing new strategies to address barriers and achieve their goal(s)
- **Reflection:** As with all Camp Fire curricula, the **Building Blocks** materials prompt kids to reflect on what they’ve learned. These reflections are designed to guide kids to think about and share their experience, what they learned, and how this applies to the future.

PROGRAM FRAMEWORK

The core challenge of **Building Blocks** is for kids to select a goal and create innovative designs that could improve their communities. The nine challenges for each grade band are broken down into three units: Inquiry and Exploration; Collaboration and Planning; and Project Design and Development. Each unit contains three separate challenges that take kids one step further in the engineering and design process. The challenges begin by exposing kids to the products of engineering and civic innovation through their tablets. Kids then experiment with the skills that engineers use to build and plan. After finishing the **Building Blocks** program, kids will have the option to create a presentation to show what they have learned.

CHALLENGE STRUCTURE

Each challenge requires the use of Samsung tablets and begins with a guiding question, followed by hands-on activities and explorations. The challenges will start with approximately 15 to 30 minutes of discussion time when kids will use their tablets to follow along with leaders as they review STEM careers, engineering structures, examples of innovative designs, etc. The discussion section of each session will be followed by hands-on engagement activities using both tablets and craft supplies.

PROGRAM MATERIALS

K–2

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|---|---|--|
| <input type="checkbox"/> Card stock | <input type="checkbox"/> Magazine pages featuring community landscapes (optional) | <input type="checkbox"/> Scissors |
| <input type="checkbox"/> Chopsticks or wooden dowels | <input type="checkbox"/> Paper (varying sizes) | <input type="checkbox"/> Shoe boxes or other containers to hold supplies |
| <input type="checkbox"/> Construction paper | <input type="checkbox"/> Pencils | <input type="checkbox"/> Small marshmallows, gumdrops, or balls of clay |
| <input type="checkbox"/> Crayons, markers, or colored pencils | <input type="checkbox"/> Pipe cleaners | <input type="checkbox"/> Tape |
| <input type="checkbox"/> Glue | <input type="checkbox"/> Poster board | <input type="checkbox"/> Toothpicks |
| <input type="checkbox"/> Highlighters | <input type="checkbox"/> Rulers | |

3–8

- | | | |
|---|---|---|
| <input type="checkbox"/> Books | <input type="checkbox"/> Graph paper (optional) | <input type="checkbox"/> Plastic containers |
| <input type="checkbox"/> Bottle caps | <input type="checkbox"/> Index cards | <input type="checkbox"/> Rulers |
| <input type="checkbox"/> Cardboard | <input type="checkbox"/> Markers | <input type="checkbox"/> Scissors |
| <input type="checkbox"/> Colored pencils | <input type="checkbox"/> Paint | <input type="checkbox"/> Straws |
| <input type="checkbox"/> Construction paper | <input type="checkbox"/> Pencils and pens | <input type="checkbox"/> String |
| <input type="checkbox"/> Egg cartons | <input type="checkbox"/> Pennies | <input type="checkbox"/> Tape |
| <input type="checkbox"/> Glue | <input type="checkbox"/> Pipe cleaners | <input type="checkbox"/> Tinfoil |

LEARNING OBJECTIVES: GRADES K–2

UNIT 1: INQUIRY AND EXPLORATION

In Challenge 1 (45 minutes), kids will:

- Identify important structures in their neighborhoods
- Use paper to create structures found in their neighborhoods

In Challenge 2 (45 minutes), kids will:

- Learn about the STEM professionals who built the important structures in their neighborhoods
- Draw pictures of themselves as STEM professionals at work

In Challenge 3 (45 minutes), kids will:

- Learn that there is an order to how their neighborhoods are organized
- Make simple maps of their own neighborhoods or of their school's neighborhood

UNIT 2: COLLABORATION AND PLANNING

In Challenge 4 (45 minutes), kids will:

- Be introduced to the idea of innovative design
- Create their own innovative designs
- Draw ideas that would make their neighborhoods safer

In Challenge 5 (45 minutes), kids will:

- Learn about the design process
- Work with their peers to improve their innovative ideas

In Challenge 6 (45 minutes), kids will:

- Reflect on how their innovations work
- Draw the different stages of their innovations at work

UNIT 3: PROJECT DESIGN AND DEVELOPMENT

In Challenge 7 (45 minutes), kids will:

- Create a poster presentation of their models
- Draw and color their innovation ideas

In Challenge 8 (45 minutes), kids will:

- Complete their poster board presentations by adding the stages of their innovations
- Break their innovative design ideas into steps to show how they will work

In Challenge 9 (three 45-minute sessions), kids will:

- Create 3D models of their innovations
- Present 3D models of their innovations

LEARNING OBJECTIVES: GRADES 3–8

UNIT 1: INQUIRY AND EXPLORATION

In Challenge 1 (45 minutes), kids will:

- Learn about STEM careers
- Focus on how engineering can help communities

In Challenge 2 (two 45-minute sessions), kids in grades 3–5 will:

- Learn how to draw a scale map of their own neighborhood
- Use their tablets to explore online mapping tools

Grades 6–8 will:

- Study maps and blueprints
- Draw a neighborhood map to scale using ratios and other math concepts

In Challenge 3 (four 45-minute sessions), kids will:

- Learn about 3D models, along with their specific features and benefits
- Use both tablets and craft materials to draw and then build a scale community model

UNIT 2: COLLABORATION AND PLANNING

In Challenge 4 (three 45-minute sessions), kids will:

- Explore the idea of innovative engineering
- Learn about basic engineering structures
- Use tablets to learn how innovative designs can help solve problems

In Challenge 5 (45 minutes), kids in grades 3–5 will:

- Review examples of technological innovations that benefit society
- Identify and discuss places within existing communities that were built to meet a specific need

Grades 6–8 will:

- Review examples of technological innovations that benefit society
- Brainstorm what types of engineering improvements they'd like to see in their own community

In Challenge 6 (45 minutes), kids will:

- Brainstorm solutions to a community-based engineering problem
- Turn their ideas into an innovative design that will solve this problem

UNIT 3: PROJECT DESIGN AND DEVELOPMENT

In Challenge 7 (45 minutes), kids will:

- Learn about the role of revision in the design process
- Role-play to test and discuss their innovative ideas

In Challenge 8 (45 minutes, plus optional 45-minute session), kids in grades 3–5 will:

- Create flowcharts to show how their innovations will work and how people in their community will use them
- Discuss why flowcharts are useful tools
- Use a flowchart to describe a familiar process to the group (e.g., a baseball game)

Grades 6–8 will:

- Create flowcharts to show how their innovations will work and how people in their community will use them
- Use tablets to visualize and discuss flowcharts and their pros and cons
- Discuss the storyboarding process

In Challenge 9 (45 minutes, plus optional 45-minute session), kids will:

- Build 3D models or prototypes of their innovations
- Present their innovation