Mobile Technology Lab featuring Building Blocks

STEM TOOL KIT

Professional Development Webinar

Presented By SAMSUNG

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Welcome to the Building Blocks Webinar!

During this 60-minute presentation you’ll learn about the Building Blocks program, which provides lessons and resources for STEM engagement in grade 6 to 8 classrooms using Samsung Galaxy Tab® 4 Education Edition tablets.

Speakers

• Kiini Salaam
• Allison Leach
• Milagros Montalvo
Before You Begin

Samsung Galaxy Tab® 4 Education Edition

• You have received 20 Samsung Galaxy Tab® 4 Education Edition tablets to implement the Building Blocks program.

• A Setup and Management Guide was distributed with the technology. You can also access it at scholastic.com/STEMbootcamp.

• Follow the steps outlined in the Setup and Management Guide to set up, charge, and test your technology well in advance of the program launch date.
Samsung Galaxy Tab® 4 Education Edition

• Each tablet:
  – comes with a ruggedized protective case and a charger
  – runs on the Android operating system
  – connects to networks by Wi-Fi
  – contains 16GB of storage space

• Battery life: Up to 10 hours
  – Tablets can become very hot when plugged in, so we do not recommend charging them in enclosed spaces or while unattended.
• Your Samsung Tab® 4 Galaxy Education Edition has limited coverage under Samsung’s warranty for a period of one year. Information on utilizing coverage is available in the Setup Guide.

• Please contact Aleach@mww.com for general tech support during the semester.

Technology questions may also be asked now.
Agenda

• Why STEM in your classroom?
• The **Building Blocks** framework
• Program tools
• Participation expectations
• Evaluation
• Next steps
“To succeed in this new information-based and highly technological society, all students need to develop their capabilities in STEM to levels much beyond what was considered acceptable in the past.”

—National Science Foundation
Why Focus on STEM in Your Classroom?

STEM enrichment can:

• Introduce students to new careers.
• Support academic growth and participation.
• Encourage inventiveness, curiosity, and engagement.
The **Building Blocks** program uses hands-on activities and tablet engagement to help students in problem solving and critical thinking that will prepare them to succeed in the global community. It also educates students on careers in STEM fields and highlights STEM careers in the military.
Program Overview

**Building Blocks** is a hands-on program that provides an introduction to engineering by inspiring students to create a concept for innovative engineering that could improve their communities.

The lessons and activities are divided into three units:

- **Unit 1:** Inquiry and Exploration  
  Students use the tablets and mapping activities to learn about civil engineering in the world around them.
- **Unit 2:** Collaboration and Planning  
  Students study existing examples of innovative engineering and create their own innovative engineering ideas.
- **Unit 3:** Project Design and Development  
  Students learn to improve and present their ideas.
Program Framework

Units 1–3 = 9 hands-on challenges

The program takes students through different elements of the engineering and design process. Students then deepen their engagement with hands-on experiments, using digital apps, engaging in group discussions, and completing building activities.

In the final unit of the program, students will have the option to extend their learning by creating a presentation to show what they have learned.
Lesson Structure

• Each lesson starts with **15 to 30 minutes of discussion** time when students will use their tablets to follow along with leaders as they review STEM careers, engineering structures, examples of innovative designs, etc.

• After the discussion, each lesson contains **20 to 30 minutes of hands-on engagement activities** using both tablets and craft supplies.
Planning and Scheduling

Timing and Pacing

• Most lessons take 45 minutes to complete.
• You will need a minimum of 14 to 16 weeks for grades 6–8 to complete the program.
• Some groups may need to move at a slower pace, while other groups may move through the activities quickly, and spend more time on the building and presentation phases of the project.

Sessions

It will be helpful to skim the entire program in advance of your start date so you can have a general sense of how the program is organized and what it will require.
Unit 1 Activities

Unit 1—Inquiry and Exploration

Activity 1 (45 minutes):
• Learn about STEM careers.
• Create digital cartoons about their community.
• Reflect on the needs of their community.

Activity 2 (two 45-minute sessions):
• Learn about civil engineering.
• Practice mapping their neighborhoods.

Activity 3 (three to four 45-minute sessions):
• Build 3D models of their neighborhoods.
• Write letters to the editor about what they learned (optional).
Unit 2 Activities

Unit 2—Collaboration and Planning

Activity 4 (three 45-minute sessions):
• Learn about innovative designs worldwide.
• Practice building a strong structure.

Activity 5 (45 minutes):
• Make connections between innovative design and community needs.
• Identify community needs in their neighborhood.

Activity 6 (45 minutes):
• Create innovations to address community problems.
• Write letters to the city council outlining their ideas for improving their communities (optional).
Unit 3 Activities

Unit 3—Project Design and Development

Activity 7 (45 minutes):
• Troubleshoot their innovations and create solutions for design problems.

Activity 8 (one to two 45-minute sessions):
• Create flowcharts that detail how their innovations will work.
• Develop storyboards that show their innovations in action (optional).

Activity 9 (one to two 45-minute sessions):
• Build models of their innovations.
• Develop a presentation to introduce their innovations to others (optional).
• Write letters to the mayor about their projects (optional).
You can find the Building Blocks program materials at: scholastic.com/STEMbootcamp

Materials are provided for Grades 6–8 in both downloadable and digital formats.
Based on your comfort level, you can view the materials in print or on screen.

**Print**
Use the “Download All Challenges” link if you want to print materials for your own review or if you want to print activity sheets for the students. Files can be saved and printed.

**On Screen**
Use the “Tablet View” link next to the appropriate challenge to see the materials on the tablet.
The **Building Blocks** challenges are presented with full step-by-step instructions, including the following features:

- **A central question** appears at the top of each challenge instruction.
- **Timed sections.**
- **Links on challenge instruction pages to tablet resources and related program materials.**
Materials Required

A complete list of materials is included in the **Get Prepared** section of the challenge. Materials are also listed at the beginning of each challenge, including any related program materials such as *Templates for Writing Letters*.
Activity Sheets

Each challenge has an accompanying activity sheet that can be downloaded and printed.

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**Engineering in Our Community**

If you want to see engineering in action, all you need to do is look around! When you walk through your neighborhood, what types of engineering projects might you spot? Maybe new bike lanes are being built, buildings might have ramps for people with disabilities. These could be street signs with flashing lights for morning drivers to slow down in school zones. Engineering can be found everywhere.

Instructions: As a team, list the types of engineering you've seen in your neighborhood in the middle column of the chart below. Then think of engineering projects that would improve people's lives in your community, and write those in the left column. Imagine what your ideas could do!

<table>
<thead>
<tr>
<th>Types of Engineering</th>
<th>Our community has...</th>
<th>Our community could use...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Buildings (like museums, town halls, post offices, libraries)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structures (like bridges, water towers, dams)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technology (like lighting and traffic control)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities (like sewage systems, storm drains, electrical lines)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Facilities (like parks, plazas, recreational areas)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation (like roads, bike paths, sidewalks, buses, trains)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Activity Sheet A**
At the core of the Building Blocks program are hands-on STEM activities. However, the program has a strong emphasis on the people behind STEM. The STEM Career Flip Book provides a quick snapshot of a wide range on STEM careers with a focus on STEM careers associated with branches of the military.

Careers in science, technology, engineering, and math may seem foreign to some participants. Emphasize to your students that anyone can grow up to be a professional in a STEM field.

Digital or Print? You can use the “View” link to review the careers in flip book mode on screen or you can click “Download” to print it out.
TOOLS: Outreach Letter Templates

Each unit provides students with the opportunity to share what they have been learning. There are templates for letters that students can write to newspapers, city council representatives, and mayors.

This optional letter-writing extension offers students a chance to use real-world communication skills and possibly obtain support for their STEM projects.
For your reference, we’ve compiled a Next Generation Science Standards chart that provides a list of skills that the Building Blocks program supports.
Project Expectations

- Teachers complete training today or via downloading the webinar at [scholastic.com/STEMbootcamp](http://scholastic.com/STEMbootcamp).
- Tablets are inventoried and managed by teacher/school to ensure secure handling.
- Establish a check-in/check-out process for tablets in your classroom.
- Implement full curriculum.
- Share success stories and challenges.
- Take photos/video of students in action, student projects, and presentations.
- Complete Unit 1–3 surveys and Blackboard discussion (January 2016).
Research and Evaluation

Methods of Program Evaluation

• Photos and student testimonials
• Teacher response to online unit surveys
• Teacher participation in live online discussions
Questions

• Program, evaluation, and implementation questions:
  – Milagros Montalvo—mmontalvo-consultant@scholastic.com

• Technical questions:
  – Allison Leach—Aleach@mww.com
Thank You

We hope you have found the preceding presentation helpful. We wish you the best of luck when implementing this program with your students and a productive school year!