

LEGO® Education Elementary School Library Media Center Guide

Hands-on STEAM learning through storytelling



Let's Get Started!

This Library Media Center Guide from LEGO® Education was created to support educators with implementing STEAM concepts in library spaces. Making sure that educators feel supported is the first step in creating engaging learning experiences for students, and we're here to help.

Getting started with LEGO® Education SPIKE™ Essential in your library space is easy and fun! We've outlined all the necessary steps, resources, and materials to help you get started. The most important part is understanding the elements of the set and how they can be used to drive storytelling concepts through STEAM with your students.

As you explore this guide, you'll find descriptions of each element included in the set, biographies of each mini-figure, suggested lesson plans, a step-by-step guide for implementation and more. This guide is meant to help you, as the educator, get familiar with LEGO® Education SPIKE™ Essential and get ready to implement engaging, hands-on learning activities that your students will love!

Questions along the way? Visit <https://education.lego.com/en-us/> for even more information.

Let's build something awesome together!



Why is SPIKE™ Essential a great resource for an elementary school library space?



With familiar LEGO® bricks, easy-to-use hardware, non-consumable materials, and standards-aligned curriculum, the possibilities are limitless. Exploring STEAM concepts with a focus on storytelling, literacy and English Language Arts is easier than ever due to LEGO® Education lesson plans with ELA extension activities and literacy connections.

LEGO® Education SPIKE™ Essential curriculum includes lesson plans for grades one through five that can be completed in 30-45 minutes. Each lesson has a building component and coding component. For the coding component, students will need access to devices (laptops or tablets) with the LEGO® Education [SPIKE™ App](#). However, there are elements of each lesson that can be done without devices. This guide also contains some “unplugged” activities that can be completed with the bricks and building elements of SPIKE™ Essential.

Students will work in pairs to complete each lesson, developing their collaboration, communication, and problem-solving skills. Let's get your students ready to experience the joy of learning!

***Please note that one set serves two students at a time, so students should be paired up and each pair should have their own set.**

Narrative-Based Problem Solving

Each lesson is all about problem solving and overcoming a challenge that the LEGO® Education SPIKE™ Essential minifigure characters are facing. Students will work through each lesson to help their new friends, while learning STEAM concepts!

Meet the SPIKE™ Essential Minifigure Characters!



Maria

Maria is curious, inventive, and shy. She likes math and playing the piano. She loves puzzles and trying to put things together. She also enjoys playing basketball with her big sister. Maria's favorite color is blue. Her favorite animal is the praying mantis. Maria could eat cheese every day! She doesn't like eating oatmeal, and she really doesn't like thunder and lightning. Maria likes playing on her computer. She wishes she was better at coding. She loves going for walks in the woods to look for cool bugs. She gets embarrassed when she gets called on in class and doesn't know the answer. Silly noises always make her laugh! Maria walks to school with her dad and sister. She likes reading stories about superheroes. Maria wants to be a doctor when she grows up.



Sofie

Sofie is funny, creative, and goofy. She really likes to swim and play tennis. Her goal is to win a gold medal at the Olympics one day. Sofie's favorite school subject is writing. She loves writing about famous athletes. Her favorite color is orange. Turtles are her favorite animal. Sofie gets mad when her little sister borrows her things without asking. Her secret talent is that she can do a back handspring. She doesn't like to eat brussels sprouts. Sofie loves being near the ocean. She can name over 100 different types of fish! Cartoons always make her laugh. She rides her purple and orange bike to school. Sofie wants to be a journalist when she grows up.

Narrative-Based Problem Solving

Communication is key when learning with LEGO® Education. Encourage students to continue telling the story while working through the problem. Ask students to share their final solutions to help the minifigure characters, including any details around where they iterated or ran into issues.

Meet the SPIKE™ Essential Minifigure Characters!

Leo



Leo is happy, kind, and a little quiet. He loves to read. He always has a book about aliens or zombies in his backpack. He really likes to run and thinks he's getting super-fast. He knows he could run away from an alien or zombie if he ever had to. He wishes he was better at art. Leo's favorite color is yellow. He thinks frogs are the coolest! He wishes he had a pet frog. Leo has a big brother and a pet cat. Leo doesn't like that he's so short. He can't wait to grow taller. Leo's secret talent is that he can recite the alphabet backwards in three different languages. Spiders creep him out! Big surprises always make Leo laugh. His mom drives him to and from school every day. Leo wants to design video games when he grows up.

Daniel



Daniel is artistic, adventurous, and helpful. He loves building and creating new things. Art is his favorite school subject. His favorite color is green. Daniel has a twin brother. Daniel's secret talent is that he can spin 30 times in a row without getting dizzy. Daniel doesn't like spinach or snakes. He really likes dogs. He likes school but wishes he was better at math. Daniel really likes fixing things. He's curious about how things are built. "Knock-knock" jokes always make him laugh. Daniel doesn't like waking up early to go to school. He takes the bus to school. Daniel loves reading stories about friends who save the day. He wants to be an architect when he grows up.

LEGO® Education SPIKE™

Essential Technical Elements

Using technology elements allows you to bring your models to life. You can use sensors to collect information and cause movement, and you can program outputs, such as lights, using the technical elements that are part of the SPIKE™ Essential set.



The motor

Each set has two motors. The motors are responsible for making parts of your creation move. For example, wheels can be attached to the motors so [Leo's snowmobile](#) can take him to see the polar bears!



The light

The light can be programmed to light up in your favorite colors. This is helpful for our friend, Daniel, when he wants to [build a cave car](#) to explore dark caves!



The color sensor

You can program your creations to react to different colors in certain ways. We need the color sensor when we help Maria keep her school clean with the [trash monster machine](#). It detects types of trash based on the color!



Built-in gyro sensor (the hub)

The hub is a master communicator! All the elements should be plugged in to the hub. The hub connects to a device via Bluetooth and the device "talks" to the hub to relay the programming code. Inside the hub, there's a built-in gyro sensor that registers movement.

Programming

Learning to program allows students to explore and develop computational thinking skills. At LEGO® Education, we are focused on growing skills year-after-year with a progression of coding. Icon Blocks are accessible for young students and beginner programmers who are learning the basics. Moving to Word Blocks allows students to create more complex programs that lead into more complex coding concepts.

LEGO Education's [SPIKE App](#) is available as both a downloadable app and a web-based app, which means it can be accessed on various devices, including Chromebooks, tablets, and laptops.

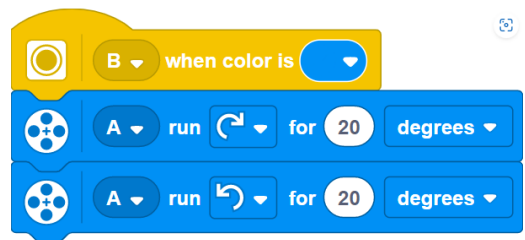
More information: [STEM Coding and Programming in Education](#)

Icon Blocks



Icon blocks are like building blocks for code. Each block has an image that represents an action. They are easy to drag and snap together, creating a visually intuitive way for students to understand how programming works.

Word Blocks



Word blocks empower students to build scripts by dragging blocks and snapping them together to create commands like "move," "turn," and "repeat," enabling them to grasp coding logic and sequencing easily.

Ready for Implementation?

Follow these steps for a successful start to your program!

Step 1: Complete the [LEGO® Education SPIKE™ Essential Tutorial](#). This is your guide to unboxing, set-up, and downloading the SPIKE™ App.

Step 2: Unbox and prepare the sets for your students.

Step 3: Join the [LEGO® Education Educator Success](#) program. This free program will provide tips to support you with your SPIKE™ Essential usage. We'll share innovative classroom ideas, invitations to interactive web events, and opportunities to participate in our LEGO® Education Community.

Step 4: Preview the below tutorials before your students complete them so that you can be familiar with the components. They can be found in the SPIKE™ App. When you launch the app, click "SPIKE Essential" and then "start."

Grades 1-2	Grades 3-5
• The Motor • The Light • The Color Sensor • Built-In Gyro Sensor	Word Blocks

Helpful Links

[SPIKE Essential FAQ](#)
[Download the SPIKE App](#)
[Teacher Community](#)
[Unit Plans](#)



Find Your Lessons

Further explore STEAM through storytelling with LEGO® Education SPIKE™ Essential by accessing the full range of standards-aligned lesson plans.

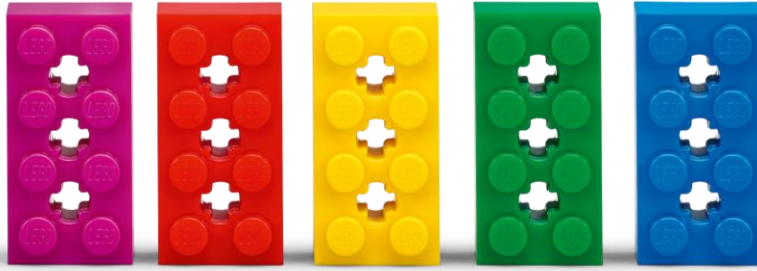
Access all lesson plans here:
[STEAM Lessons for SPIKE Essential](#)



Below are a few suggested lessons to start exploring!

Grade	Lesson	Language Arts Focus
1	Boat Trip	Writing narratives
2	Underwater Quest	Recalling or gathering information to answer a question in writing
3	Taxi! Taxi!	Tell a story or recount an experience
4	Winning Goal	Produce clear and coherent writing
5	Literary Randomizer	Engage effectively in collaborative discussions

Brick Activities



Sometimes, we just want to unplug! These activities are great for when you would rather have students put their devices away and work with the LEGO® bricks from your SPIKE™ Essential set to practice skills.

<u>Back to Back</u>	Communicate step-by-step directions for a LEGO® brick build
<u>Brick-tionary</u>	What can you create with LEGO® bricks?
<u>Characters</u>	How can we describe characters in a story?
<u>Collaborative Retellings</u>	Practice communication skills though collaborative retellings
<u>A Night in the Museum</u>	What is making the eerie sound?
<u>Rivet the Lonely Robot</u>	Can you build a friend for Rivet the Lonely Robot?
<u>Settings</u>	Explore different settings in various stories
<u>What a Great Experience</u>	Recount a fun experience!

Library MediaResources

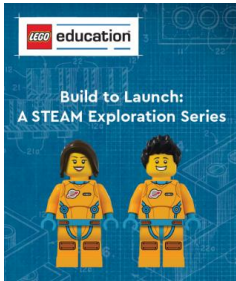
Emphasizing the Literary Arts and Math in STEAM

Interested in emphasizing the literary arts and math in STEAM? Check out LEGO® Education's STEAM program developed specifically to address the literary arts and math. You will find 15 lessons per grade level using LEGO® Education SPIKE™ Essential for K-5 students. Each grade level also includes an opportunity to hold a showcase at the end.

Lessons by Grade Level
<u>Kindergarten</u>
<u>Grade 1</u>
<u>Grade 2</u>
<u>Grade 3</u>
<u>Grade 4</u>
<u>Grade 5</u>



Additional Resources



[Build to Launch](#)

Taking STEAM Learning to new heights! LEGO® Education is teaming up with NASA and the Artemis I team to bring students and teachers an out-of-this-world STEAM learning series. Build to Launch is an exploration of the technology, STEAM concepts and careers behind the Artemis I mission to the Moon.



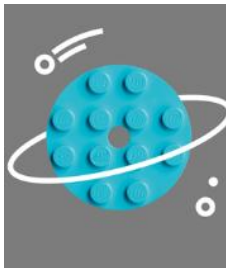
[Rebuild the World](#)

Use Hannah's STEAM Heroes: A Career Toolkit in your classroom and inspire your students to #RebuildTheWorld. Through engaging videos and hands-on challenges, your students will meet Hannah's STEAM Heroes and learn how this diverse group of professionals uses STEAM skills every day.



[Build the Change](#)

Build the Change is all about giving children a voice and allowing them to express their hopes and ideas for a better future. Children use their creativity to solve real-world challenges with LEGO® bricks and other creative materials – and it is all achieved via Learning through Play.



[Learning Progressions](#)

This link contains lesson progressions for Grades 1-5, with each grade level featuring over 50 elements sequencing LEGO® Education lesson content with SPIKE™ App tutorial content and activity prompts to scaffold students' design thinking, science, and computer science skills.

Materials

LEGO® Education offers special bundles for library spaces that will provide you with non-consumable materials to incorporate STEAM learning with your students year-after-year.



Getting Started with STEAM Library Bundle: \$7,455

12 sets of SPIKE™ Essential
(2 students to 1 set)
1 PD session
(in-person, 6 hours, up to 20 teachers)

Ready to take it to the next level?

Expand student learning and embed even more science concepts in your library with [BricQ Motion Essential](#), LEGO® Education's physical science solution with no device required.



Next Level STEAM

12 sets of SPIKE™ Essential
(2 students to 1 set)
12 sets of BricQ Motion Essential
(2 students to 1 set)
1 PD session
(in-person, 6 hours, up to 20 teachers)

Bundles based on class size of 24 students. If you'd like to reconfigure quantities, contact your account manager. [Find your account manager here](#) or email sales@LEGOeducation.us

Each bundle includes the sets listed, a professional development session, standards-aligned lesson plans, educator support resources, and shipping.

Pre-K & Kindergarten

LEGO Education offers [early STEAM solutions](#) for Pre-K and Kindergarten students that reinforce STEAM concepts, storytelling, and community learning. These sets are great additions to any library space!

[Find your account manager here](#) or email sales@LEGOeducation.us



[STEAM Park](#)

Easily adaptable to fit any learning environment, STEAM Park builds on every child's natural curiosity and desire to explore and investigate the world of early science, technology, engineering, art and math through creative play.

[STEAM Park Getting Started Guide](#)

