

LEGO® Education

SPIKE™ Prime

Accelerate STEAM learning for every student
with a new intuitive, naturally adaptive, and highly
inclusive hands-on solution from LEGO® Education.

Welcome to STEAM Learning for Secondary Education

Welcome to LEGO® Education SPIKE™ Prime – the learning solution specially developed to support STEAM learning in secondary school.

In this overview, you'll find the highlights of SPIKE Prime, including the learning outcomes, how to work with it in a classroom setting, and the many tools and training opportunities available to both educators and students.

Have fun getting to know SPIKE Prime!



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Building Confidence

Confidence is believing in your ability to do your best to accomplish something. It's being comfortable with trying something you've never done before.

Confidence is being willing to explore and take risks. It's the ability to try something new without being fully aware of the outcome, to embrace the process of learning.

Confidence is knowing that failure is a part of learning. It's being willing to get out there and try, putting ideas on the line, believing in yourself, and knowing that you're capable of achieving your goals.



LEGO® Education

Cross-Curricular Learning Solutions for All Levels

LEGO® Education offers hands-on, cross-curricular STEAM solutions for early learning, primary and secondary education. LEGO Education SPIKE™ Prime has been developed to cater to the learning aptitudes of students in secondary school.

All solutions are designed to support progression and to help students hone their creativity, collaboration, and problem-solving

skills, using a combination of guided and open-ended standards-aligned activities.

Our goal is to build confidence in students and teachers by offering inspiring and engaging learning tools with a clear vision and purpose for all grades.



Early Learning

Stimulate curiosity to explore together and learn through play.



Primary

Ignite enthusiasm for effective lifelong learning.

LEGO® Education's mission is to **inspire and develop the builders of tomorrow**, enabling every student to succeed. We do this by using the most compelling and creative STEAM learning tools to facilitate more active engagement and successful achievements through hands-on learning.



Secondary

Grow creative
problem-solving skills.

Develop college and career
readiness skills.

Meet LEGO® Education SPIKE™ Prime

LEGO® Education SPIKE™ Prime **accelerates STEAM learning** by consistently engaging students to think critically and to solve complex problems, regardless of their learning level.

From easy-entry projects to limitless creative design possibilities, SPIKE Prime helps students learn the essential STEAM and 21st century skills they'll need to become the innovative minds of tomorrow. All while having fun!

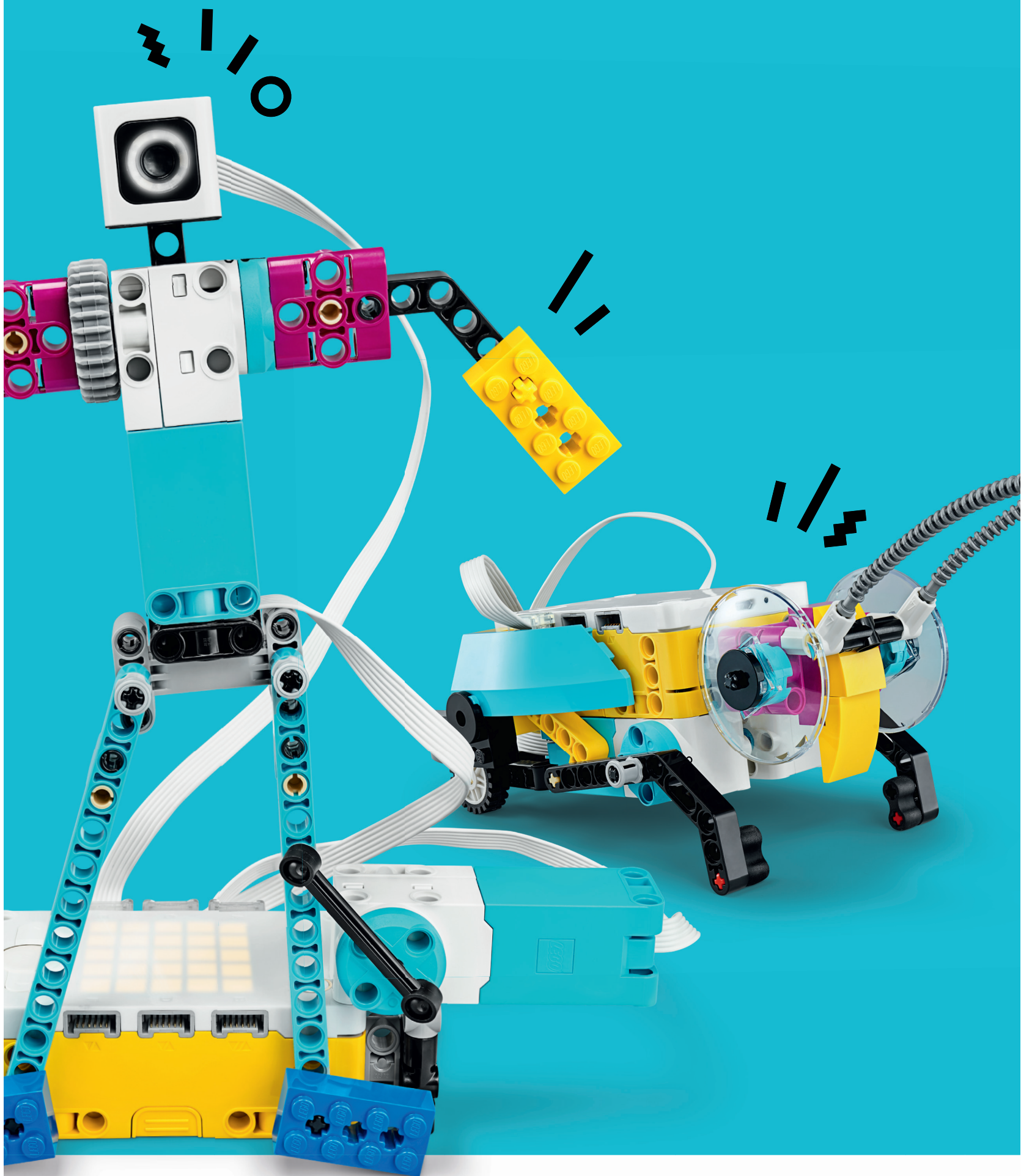
SPIKE Prime is an engaging learning tool for students in grades 6-8. It combines colorful LEGO® building elements, easy-to-use hardware, and an intuitive drag-and-drop Scratch-based coding language.

SPIKE Prime comes with standards-aligned lesson plans featuring age-appropriate themes that can be

easily integrated into existing curricula. Most of the lessons can be completed within a 45-minute class period – from building the model to coding and bringing the model to life. The online lesson plans and in-app how-to guides make implementation a breeze!

Optional face-to-face training is available to provide even more in-depth support (*see pages 18-19 for a detailed description*).









Learning Outcomes

Value Every Step of the Way

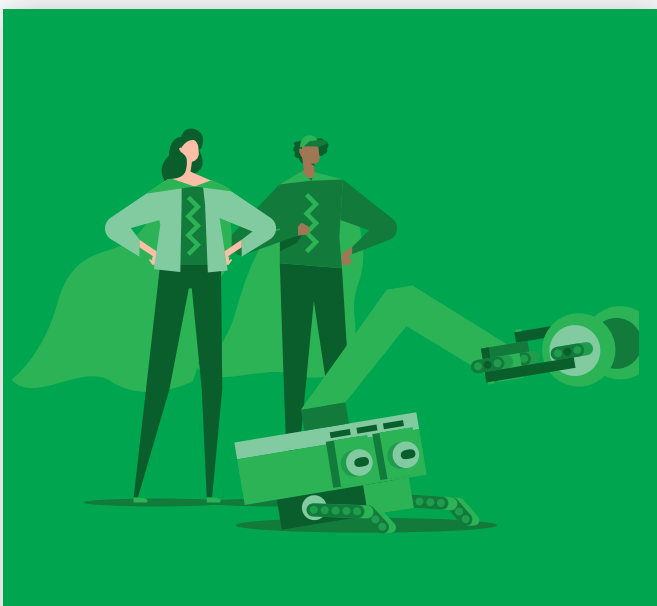
With LEGO® Education SPIKE™ Prime, students will develop abstract thinking and reasoning skills through STEAM units with real-world relevance. SPIKE Prime is made up of four units with curriculum-aligned STEAM-related content focusing on **engineering, computer science, technology, and competitions.**

Key Learning Values

- Apply engineering design skills in each step of the design process
- Develop efficient problem-solving and coding skills through decomposition of problems and algorithmic thinking
- Design projects combining hardware and software components to collect and exchange data
- Work with variables, data arrays, and cloud data
- Learn the basics of creating and programming autonomous robots using sensors
- Develop teamwork and collaboration skills to build a competition robot
- Systematically test and refine programs
- Use problem-solving skills to complete missions
- Apply critical thinking and develop life skills for the careers of tomorrow

Units

LEGO® Education SPIKE™ Prime offers four units, each with a specific theme and focus. All of the units, which are based on fun and exciting themes, are designed to develop students' critical thinking skills as they complete complex, engaging, and personally relevant STEAM challenges.



Invention Squad

Students will apply their engineering design skills in each step of the design process by defining a problem and success criteria, making different prototypes, establishing systematic testing procedures, analyzing data to improve their solutions, and describing why a particular solution is the best.



Kickstart a Business

Students will develop efficient problem-solving skills by breaking down problems into smaller parts, using pseudocode as a tool for sequencing actions, using existing code with attributions in order to recognize patterns, systematically identifying and fixing bugs, and using conditions and compound conditions to program encoded devices.



Life Hacks

Students will create clearly named variables and lists representing different data types, and perform basic math operations on their values. They'll learn how to make cloud data useful and reliable, improve their programs in order to refine a solution, and design projects that combine hardware and software components to collect and exchange data.



Competition Ready

Students will enter the world of robotics competitions as they gradually learn the basics of building and programming autonomous robots using sensors. Working together to build an effective competition robot, they'll systematically test and refine programs, using the design process to develop a solution in order to complete missions, all the while developing skills related to collaboration and teamwork, and life skills for their future careers.

! This unit requires the LEGO® Education SPIKE™ Prime Expansion Set.

A library of content and support for teachers
can be found at: www.LEGOeducation.com/lessons

What's in the box?

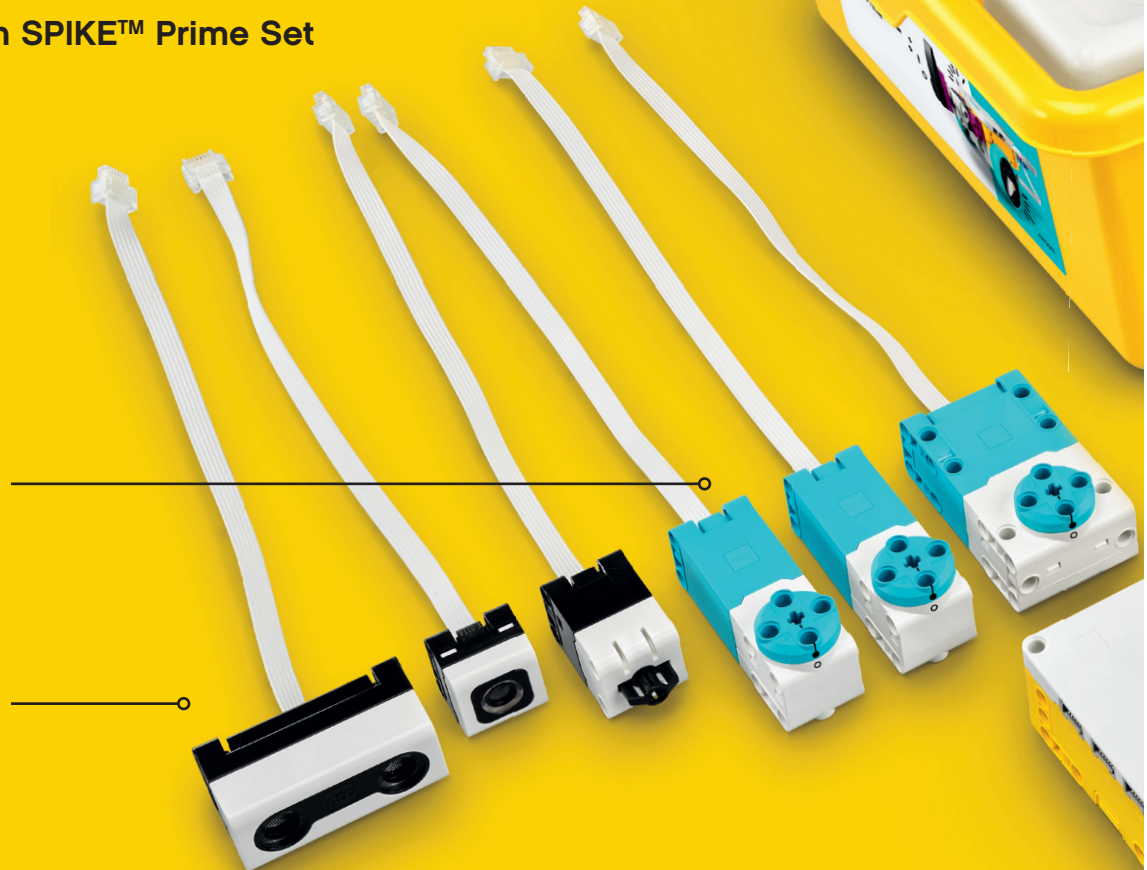
LEGO® Education SPIKE™ Prime Set

Motors

Large Motor
2 Medium Motors

Sensors

Distance Sensor
Force Sensor
Color Sensor



LEGO® Education SPIKE™ Prime Expansion Set

- Contains LEGO® Technic™ and System elements in a fresh color palette, including two large wheels, banana gears, a Large Motor, and a Color Sensor.
- Build bigger and more advanced LEGO Education SPIKE™ Prime models!
- Requires the LEGO Education SPIKE Prime Set.



Box

Sturdy storage box with sorting trays and over 500 LEGO® Technic™ and System elements in a fresh color palette



New Bricks

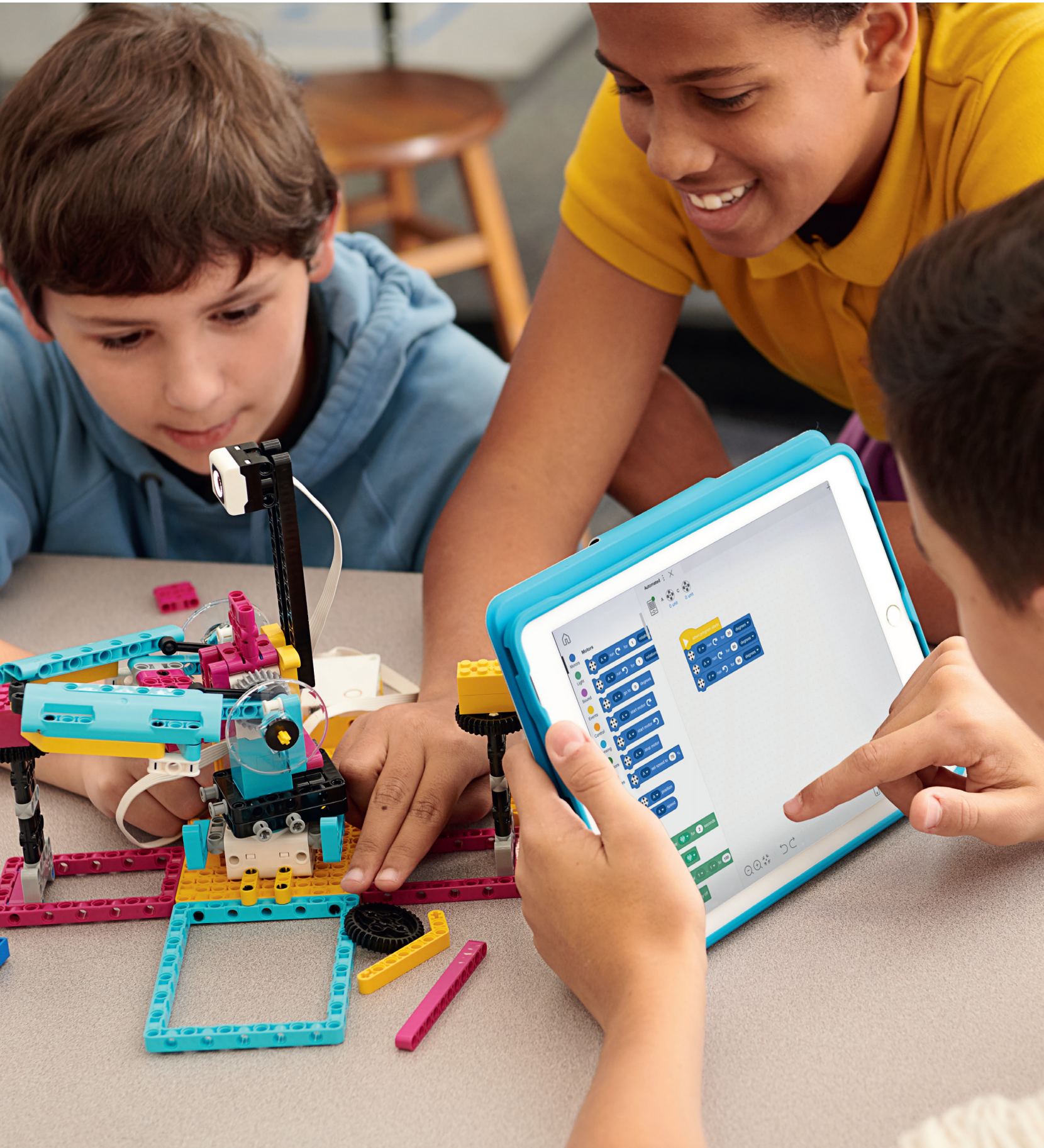
Brand new LEGO Technic elements

Hub

Programmable Hub featuring a 5x5 LED Light Matrix, integrated 6-axis Gyro Sensor, speaker, 6 Input/Output Ports, Bluetooth connectivity, and Rechargeable Battery

Minifigures

Kate and Kyle Minifigures



The Digital Experience

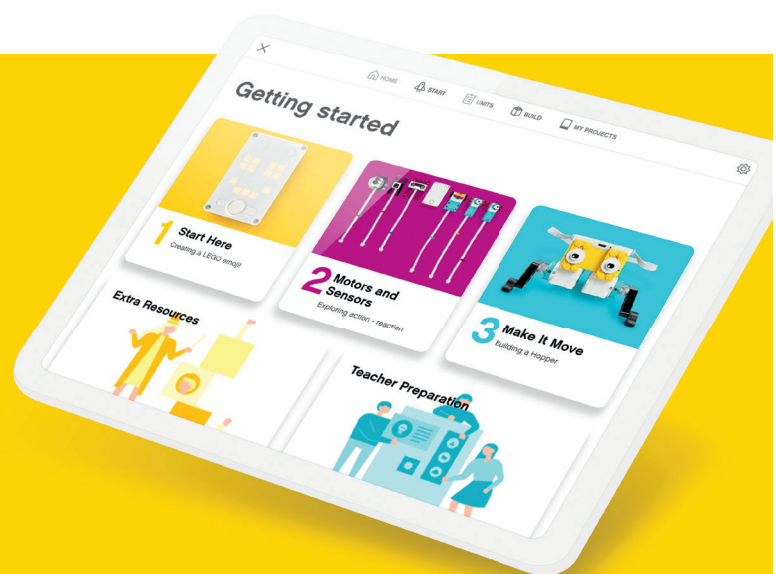
The LEGO® Education SPIKE™ App

The SPIKE App provides an intuitive coding environment, taking the best elements from the popular coding language based on Scratch, which – when combined with the LEGO Education experience – creates a system that teachers and students will love to use. Scratch is used by millions of students worldwide, has a proven track record, and is the most widely used graphical programming language in teaching.

Students will find the primarily student-facing SPIKE App intuitive, exciting, and fun.

Getting Started

The Getting Started material in the LEGO® Education SPIKE™ App offers three simple steps to help students and teachers get to know SPIKE Prime and what it can do.





Professional Development

Supporting Educators in Delivering Effective Classroom Experiences

LEGO® Education SPIKE™ Prime Professional Development supports educators in acquiring the competencies necessary to foster student success and engagement. Three collaborative, hands-on courses offer educators the opportunity to learn, practice, and master new skills that will help them to deliver effective STEAM experiences using LEGO Education solutions.

All of the SPIKE Prime Professional Development sessions are facilitated by certified LEGO Education Academy Teacher Trainers.

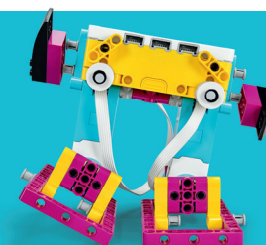


LEGO® Education SPIKE™ Prime Introduction

Theme: STEAM

Duration: 1 day

The LEGO® Education *SPIKE™ Prime Introduction* course introduces SPIKE Prime and equips participants with the knowledge and skills necessary to implement this solution from “day one,” actively involving their students in discovery and experimentation.



LEGO® Education SPIKE™ Prime Introduction – with Competitions

Theme: STEAM & Competitions

Duration: 1 day

The LEGO® Education *SPIKE™ Prime Introduction with Competition* course teaches participants how to get started with SPIKE Prime as a team coach in a competition context.




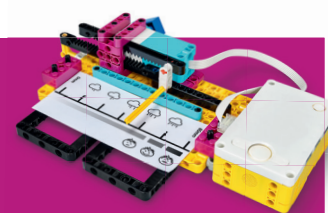
LEGO® Education SPIKE™ Prime Next Steps – Computer Science

Theme: STEAM, Computer Science, Computational Thinking & Coding

Duration: 1 day

The LEGO® Education *SPIKE™ Prime Next Steps – Computer Science* course introduces participants to the skills and strategies they'll need to teach computer science and coding using SPIKE Prime. Participants will become proficient in helping their students to develop skills involving computational thinking and data representation.

 **Prerequisite:** Participants must have completed one of the introduction courses prior to this course.





www.LEGOeducation.com