



education

2019 SOLUTION GUIDE





# Building the Future

In our rapidly changing world it's more important than ever to create an environment that allows every student to learn and grow. Studies show that by 2020, 80 percent of future jobs will require science, technology, and math skills. Educators have the exciting task of shaping the way students learn these skills, and by extension, shaping the minds that make up the future. Not an easy job, but a vital one.

LEGO® Education has spent over 37 years building creative classroom tools for and with educators. We believe in systematic creativity, imagination, and that learning through play helps build lifelong curious thinkers. To do this, we have collaborated with researchers and great minds of all kinds, including educators who work with students all year round. Through our carefully curated systems of bricks, along with a robust hardware and software platform, we empower students to flex their creativity, practice teamwork, and expand emotional intelligence while learning essential 21st-century skills. And with lesson plans, expansion packs, and complementary afterschool opportunities, the possibilities are as limitless as your students' imaginations.

So let's inspire every student to channel their natural curiosity into creative exploration. Let's engage students at every level, and bring wonder back into the classroom. At LEGO Education, we're committed to giving you the tools you need today to shape the thinkers of tomorrow.

Happy building,



Esben S. Joergensen  
President of LEGO Education



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# What is LEGO® Education?

LEGO® Education is dedicated to inspiring the students of today to be the smart, creative, and STEAM-minded leaders of tomorrow. We believe that building skills through hands-on learning is essential to building bright futures. We're committed to fully engaged, imaginative learning.

## Hands-On LEGO® Learning

Studies have shown that being physically engaged before, during, or after learning something helps your brain retain that information. Each hands-on solution incorporates the five characteristics of playful learning experiences as identified by the LEGO Foundation: joyful, actively engaging, socially interactive, iterative, and meaningful.

## Three Levels of Learning

The products in this catalog are organized into three developmental levels: early, primary, and secondary learning. Look for the tabs throughout the catalog to help you find the best solution for your students.



## EARLY LEARNING

Children are born with natural curiosity and creativity, and are eager to learn. Our Early Learning solutions help students understand the world around them by exploring topics like language and literacy, early math and science, physical coding, and social and emotional development. We use guided play and lessons developed using guidelines from national standards to help students ignite a passion for lifelong learning.

EARLY LEARNING

E





## PRIMARY

The hands-on learning tools in this developmental level channel students' creativity and jump-start their STEAM engagement. Our Primary solutions are designed to introduce students to STEAM concepts while improving collaboration, communication, and problem-solving skills. Our lesson plans are aligned to national standards and provide learning opportunities across grades and STEAM subjects.

PRIMARY LEARNING

P



## SECONDARY

Using smart bricks and digital tools, students at this developmental level can explore coding, programming, and engineering. Our Secondary solutions help students develop critical-thinking skills, expand their creativity, and explore real-life STEAM themes. Each engaging lesson plan is aligned to national standards.

SECONDARY LEARNING

S

# The LEGO® Learning Solution

LEGO® Education believes that hands-on learning is an effective way to teach students of all levels skills like problem-solving, critical thinking, and more. Each solution is tailored to a specific grade level and designed to develop STEAM learning in a way that's both understandable and inspirational.

## SKILLS ICONS



Science, Technology, Engineering, Art, Math



Coding



Social & Emotional Development



Early Language & Literacy



Creative Exploration



## EARLY LEARNING

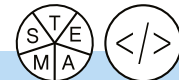
### EARLY LANGUAGE & LITERACY

StoryTales  
Sceneries Set  
Fantasy Minifigure Set



### EARLY MATH & SCIENCE

Coding Express  
STEAM Park  
Tech Machines  
Tubes Experiment Set  
Café+



### SKILLS

### SOCIAL & EMOTIONAL DEVELOPMENT

Build Me "Emotions"  
Our Town  
Community Starter Set  
Animal Bingo  
Community People Set  
World People Set  
Community Minifigure Set  
Let's Build Social Skills  
Together Pack  
Our Community Pack



### SKILLS

### CREATIVE EXPLORATION

XL LEGO DUPLO® Bulk Set  
Creative LEGO DUPLO Brick Set  
Creative LEGO Brick Set  
Wild Animals Set  
Large Farm  
Multi Vehicles Set  
Space & Airport Set  
Vehicles Set



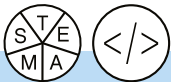




## PRIMARY

### WeDo 2.0

WeDo 2.0 Core Set



### EARLY SIMPLE MACHINES SIMPLE MACHINES

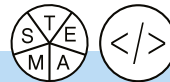
Early Simple Machines Core Set  
Simple Machines Core Set



## SECONDARY

### LEGO® MINDSTORMS® EDUCATION EV3

LEGO® MINDSTORMS® Education EV3 Core Set  
EV3 Space Challenge Set  
EV3 Expansion Set



### SIMPLE & POWERED MACHINES

Simple & Powered Machines Core Set  
Renewable Energy Add-On Set  
Pneumatics Add-On Set





## What Is a Solution?

When you invest in a LEGO® Education solution, you receive comprehensive unit plans, teacher support materials, opportunities for professional development, and endless possibilities for your classroom. To get even more out of your solution, you can purchase add-on components or replacement parts. Graphics like the ones below appear throughout this guide to help you figure out what comes standard in each solution and what can be added to it.

### SOLUTION INCLUDES

#### CORE

A tailored brick set for building engaging, meaningful, hands-on learning experiences.

#### SOFTWARE

Easy-to-use software and apps for a range of devices.

#### UNIT PLAN

Subject-specific lessons and activities aligned to national standards.

#### TEACHER SUPPORT

Tools, rubrics, and teacher guides.

#### TECHNICAL SUPPORT

Online and phone support to address your inquiries or questions.

### ADDITIONS

#### EXPANSION SETS & UNIT PLANS

Additional unit plans and brick expansion sets to help take the LEGO® Education experience to the next level.

#### PROFESSIONAL DEVELOPMENT

Face-to-face training is available, as well as the opportunity to become a certified trainer.

#### ACCESSORIES

Additional accessories are available to build on core and expansion sets.

#### REPLACEMENT PACKS

Replacement bricks are available just in case some of your original bricks go missing.



education
















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## Icons

	Recommended number of students per set		Science, Technology, Engineering, Art, Math
	Total number of elements in a set		Coding
	Storage box included		Social & Emotional Development
	Suitable age range of set		Early Language & Literacy
	Projects/activities/lessons in a unit plan		Creative Exploration
	Duration of project/activity/lesson		
	Free website downloads		
	Free app available		

A group of students and an adult are cheering enthusiastically at a competition. The students are wearing yellow t-shirts with 'FIRST' and 'LEGO' logos, and blue baseball caps. One student in the foreground is wearing a lanyard with a 'FIRST LEGO LEAGUE' badge and a 'Global Innovation Award Semi-Finalist' tag. The adult in the background is also cheering. The scene is set in a large arena with a LEGO robot competition table in the foreground.

## Nonstop STEAM Fun

STEAM competitions are a highly motivating and engaging way for students to develop and showcase their science and technology skills. These competitions help students learn the cooperation, collaboration, and teamwork skills they'll need to be successful in a changing workforce. Throughout the strategic partnerships with *FIRST*®, and as a premium partner of the World Robot Olympiad Association, LEGO® Education proudly develops and supports programs and events that bring these learning opportunities to students all over the world.






education





The focus of *FIRST*® LEGO® League Jr. is to encourage the spirit of discovery in young children. This program ignites their natural curiosity by introducing them to real-life science concepts, inspiring their sense of wonder via collaboration, research, and building. With the help of adult coaches, students use LEGO Education WeDo 2.0 technology to build and program a moving model based on an exclusive *FIRST* LEGO League Jr. Inspire Set. Get involved at [www.FIRSTLEGOLeaguejr.org](http://www.FIRSTLEGOLeaguejr.org).

<b>FIRST LEGO LEAGUE JR.</b> <small>Ages 6-10 (Grades K-4)</small>	
	<b>86,000+</b> PARTICIPANTS
	<b>14,300</b> TEAMS
	<b>14,300</b> MODELS
	<b>454</b> OFFICIAL EVENTS
	<b>41</b> COUNTRIES



Since today's students are the leaders of tomorrow, this competition puts them to work solving real-world science and technology challenges. Teams design their own solutions to a current scientific problem, building and coding autonomous LEGO MINDSTORMS® robots to perform a series of missions based on an annual theme. This helps students develop their creativity and problem-solving skills, gain confidence in their ability to overcome obstacles, and open their eyes to the wide world of career options in STEAM. Get involved at [www.FIRSTLEGOLeague.org](http://www.FIRSTLEGOLeague.org).

<b>FIRST LEGO LEAGUE</b> <small>Ages 9-14 (Grades 4-8)</small>	
	<b>280,000+</b> PARTICIPANTS
	<b>35,200</b> TEAMS
	<b>35,200</b> ROBOTS
	<b>1,455</b> EVENTS
	<b>85</b> COUNTRIES



This worldwide robotics challenge gives young thinkers a chance to compete on a global scale. Students from more than 60 countries participate in four categories to solve specific challenges, construct solutions to thematic problems, and create robots using LEGO MINDSTORMS Education EV3 and LEGO Education WeDo 2.0 technology. Get involved at [www.WRO-association.org](http://www.WRO-association.org).

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“The things that kids do for 45 minutes at a time in a maker space permeate into the rest of their life.”

MIKI VIZNER  
TUFTS UNIVERSITY DEVTECH  
RESEARCH GROUP

## LEGO® EDUCATION INNOVATION STUDIO

# A Place for Technology Explorers

Tomorrow's scientists, engineers, and other creative thinkers are sitting in your classroom today! Your LEGO® Education Innovation Studio is a place that will help them actively engage in their education. An Innovation Studio includes a core range of products backed by unit plans and other teacher support materials. Each product is designed to bring STEAM concepts out of the pages of textbooks and into the hands of students in a wholly engaging way. Your Innovation Studio will become a hub for the local community, bringing together schools, teachers, parents, and companies to provide an education that will last your students a lifetime.

## Three Steps to Getting Started

Choose your resources

Choose your training

Build your learning environment

## Create Your Own LEGO® Education Innovation Studio

Please contact your local LEGO Education distributor for more information.

### WHAT'S INCLUDED

Four-day training in the first year

Follow-up training in years two and three

Classroom sets of LEGO® Education resources

Teacher guides, lesson plans, and unit plans

Three-year service agreement, including support and replacement parts





## Five Innovation Studio Principles

### FULL SUPPORT

Each Innovation Studio comes with a three-year service package that includes ongoing support like teacher training.

### FULL FLEXIBILITY

An Innovation Studio hub provides a flexible classroom that helps teachers harness the power of playful learning. From interactive learning zones to group-work settings, the optional furniture solution adapts quickly and easily to every type of teaching style.

### VISUALLY STIMULATING

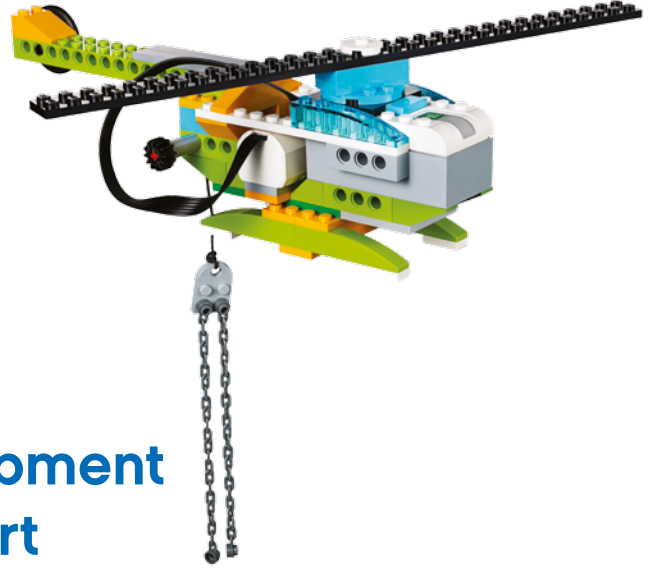
With this inspiring wall graphic, you can make sure your Innovation Studio is a hub for creativity, curiosity, and playful learning.

### FORWARD-THINKING

An Innovation Studio, combined with teacher training from LEGO® Education Academy, helps teachers guide their students through solution-based activities and projects based on real-life scenarios.

### RAISING STANDARDS

By having an Innovation Studio, you're raising the standards for innovative learning in your community. Alongside everything else, promotional material is included to help share the news of your Innovation Studio hub.



## Professional Development and Ongoing Support

At LEGO® Education, we understand that you go out of your way to support your students. This is why we strive to go the extra mile to help you feel confident with our solutions. Here are three tangible ways we support teachers on their LEGO Education journey.

### Professional Development

Our face-to-face training is conducted by LEGO Education-certified teacher trainers. These trainers will give you step-by-step guidance on how to incorporate LEGO Education solutions into your preexisting unit plan.

### Global Consumer Service Team

This team is available by phone or email to answer all your questions. Think of it like tech support for your classroom.

### Online Resources

Each LEGO Education solution gets you access to free online support in the form of FAQs. Some solutions even include video tutorials and more! You can also use this training to fuel professional development.



EARLY LEARNING



education





**EARLY MATH  
& SCIENCE**



**SOCIAL &  
EMOTIONAL  
DEVELOPMENT**



**EARLY LANGUAGE  
& LITERACY**



**CREATIVE  
EXPLORATION**

## Four Categories of Early Learning

The preschool years are an exciting time in students' education because they lay the foundation for their future character. At this age, children learn primarily through play, so it's up to preschool educators to make sure that play is infused with effective learning experiences that help children build essential life skills while having fun in the process.

Our unique solutions are built for this. Using LEGO® and LEGO DUPLO® bricks and rich teaching resources, we help preschool educators develop strong foundations in four key categories: Early Math & Science, Social & Emotional Development, Early Language & Literacy, and Creative Exploration.

### FOR SPECIAL EDUCATION EDUCATORS

The Early Learning portfolio offers unique ways to meet the needs of special education students. LEGO Education solutions leverage hands-on education in a way that helps students of all levels learn and smile.

#### BRICK SIZES

With bricks suited to their unique needs, children are invited to flex their full creativity and gain the self-confidence to build their own creations.

##### LEGO® BRICKS

These are our standard bricks. They're smaller than LEGO® DUPLO® bricks and are designed with slightly older builders in mind.

##### LEGO DUPLO® BRICKS

These bricks are twice the standard size, making them perfect for smaller hands and easier for classroom management.

#### EARLY LEARNING SOLUTIONS INCLUDE

##### CORE + ACTIVITIES

BRICK SETS  
BUILDING INSPIRATION CARDS  
GETTING STARTED ACTIVITY CARDS

##### SUPPORT

ONLINE TEACHER GUIDES  
TUTORIAL VIDEOS  
PLUS: ASSESSMENT TOOLS & TECHNICAL SUPPORT

#### ADDITIONS

##### ACCESSORIES

TRAINING & PROFESSIONAL DEVELOPMENT







EARLY MATH  
& SCIENCE

## A Hands-On Introduction to STEAM

From experiencing the gears and forces of a Ferris wheel, to predicting how far a car will go, to finding out how to get a train to drive to the castle instead of the beach, math and science fundamentals are all around us. Our portfolio uses colorful LEGO® DUPLO® bricks to inspire students to explore early STEAM learning and develop problem-solving and collaboration skills. Every set uses games, simple tools, and more to inspire young minds to explore numbers, shapes, colors, and simple addition and subtraction.

### SYSTEM REQUIREMENTS

Coding Express supports a range of Android and iOS devices. To find out if your device is supported, please visit:

[LEGOeducation.com/start](https://LEGOeducation.com/start)

CORE / LEGO® DUPLO® BRICKS

## Coding Express

45025

This intuitive solution brings students all aboard to learn the basic language of the digital age in a creative way. Coding Express combines digital and physical elements like action bricks and switches to introduce early learning students to coding concepts like sequencing, looping, and conditional coding. Students will learn collaboration, language, critical thinking skills, and more as they explore and create play scenarios using a classic train set.

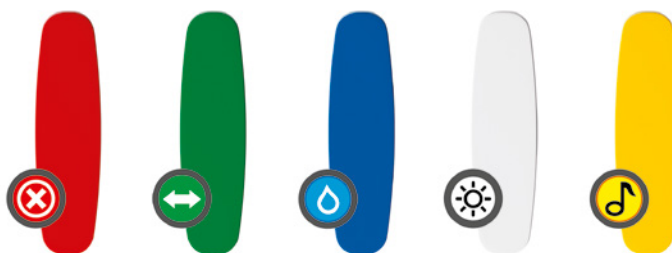
### KEY LEARNING VALUES

Sequencing, looping, and conditional coding  
Express ideas using digital elements  
Language and literacy  
Collaboration  
Problem-solving and critical thinking

1-6 234 2-5 8 ↓

### New Action Bricks Bring the Train to Life

The five colored action bricks will make the train come to life as students place them around the tracks to sound the horn, turn the lights on and off, pause and refuel, change direction, and stop the train wherever they like.



Action bricks affect train behavior



**SOFTWARE****Child-Directed App**

The free optional app combines physical play with digital intervention and is designed to enhance the learning experience. When you introduce the app, the four different themed activities change the way the action bricks behave, altering their effect on the train.

**JOURNEYS**

Explore destinations and traffic signs. Learn about the sequencing of events, making predictions, planning, and problem-solving.

**CHARACTERS**

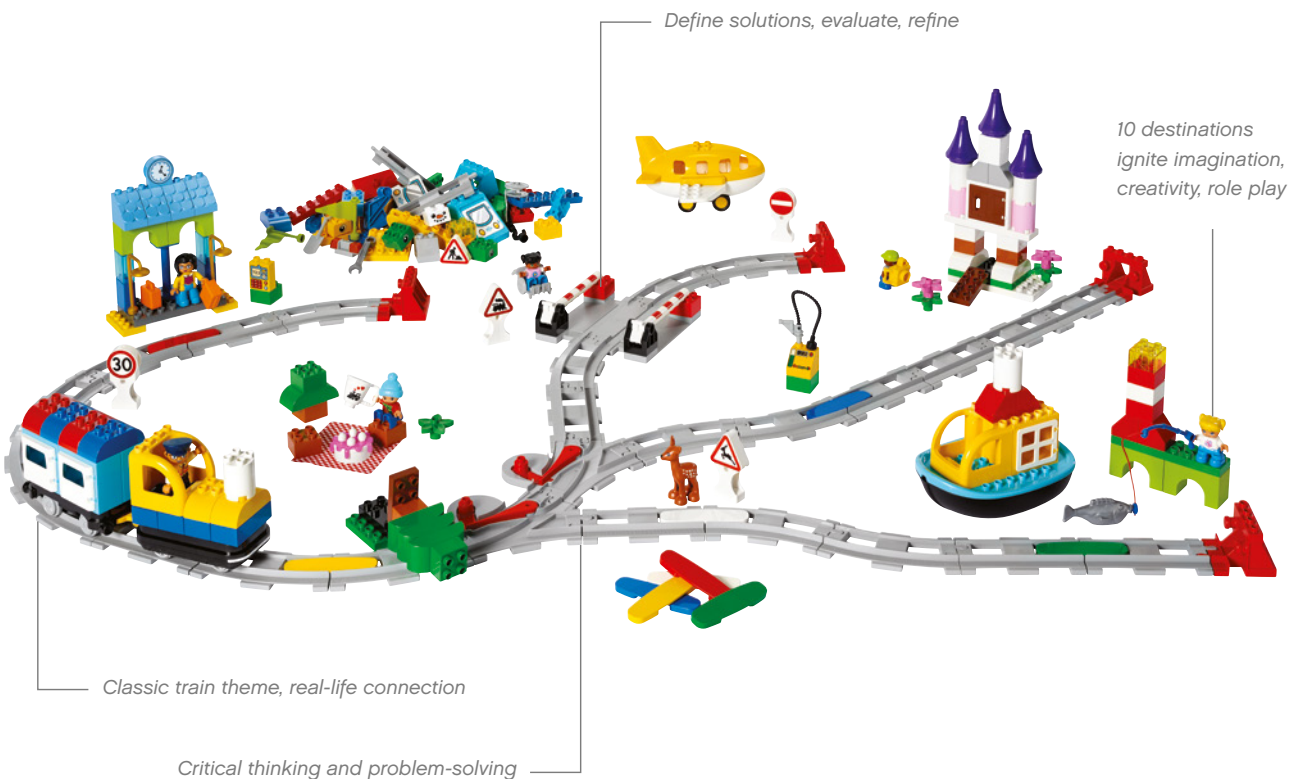
Support children's social and emotional development. Children identify and examine the feelings of characters, considering the consequences for others.

**MATH**

Explore and understand how to measure, estimate distance, and identify numbers.

**MUSIC**

Learn about sequencing and looping. Compose simple melodies, and explore different animal and instrument sounds.



## LEGO® DUPLO® BRICKS

**STEAM Park**

45024

STEAM Park builds on children's natural curiosity and desire to create, explore, and investigate the world of early science, technology, engineering, arts, and math (STEAM) through creative play. The possibilities are endless as they construct a park full of dynamic rides, fun games, and scenes using a special selection of LEGO® DUPLO® bricks. With every trip to STEAM Park, students expand their understanding of gears, motion, measurements, and problem-solving in a fun and engaging way.

## KEY LEARNING VALUES

Cause and effect and problem-solving  
Observing and describing  
Early math and science  
Developing imagination  
Role play and collaboration

1-6 295 3-5 8



## LEGO® DUPLO® BRICKS

**Tech Machines**

45002

Lots of preschoolers like to play with cars and trucks, and Tech Machines uses that love to inspire learning. Students can develop their fine motor, design, and problem-solving skills while simultaneously unleashing their creativity as they construct classic machines. Each lesson is designed to spark STEAM curiosity and drive math and science learning.

## KEY LEARNING VALUES

Fine motor skills  
Problem-solving  
Engineering

1-6 95 3-6 8





## LEGO® DUPLO® BRICKS

**Tubes Experiment Set**

9076

This solution sets out to help answer a question kids ask all the time: "How does that work?" The Tubes Experiment Set helps children develop their fine motor skills while discovering creative ways of constructing the tubes. The set also ignites their inner scientists as they investigate, construct, and test important concepts like cause and effect.

## KEY LEARNING VALUES

Cause and effect  
Scientific method  
Problem-solving  
Creativity

1-6 147 1.5+



## LEGO® DUPLO® BRICKS

**Café+**

45004

Get imaginations working and tummies rumbling with Café+! Students can learn about counting, early math, and patterns using colorful bricks and recipe and menu cards. This engaging set includes role-playing games and simple math/money exercises to help ignite creative thinking and collaboration.

## KEY LEARNING VALUES

Mathematical language  
Counting with money  
Collaboration

1-6 131 3-6 7



**SOCIAL &  
EMOTIONAL  
DEVELOPMENT**

## A Sense of Self and Community

Building social skills is one of the most critical factors in children's development and it will influence the rest of their lives. LEGO® Education uses bricks, fun faces, stories, and more to help students develop a sense of self as they collaborate to understand similarities and differences in the world around them.

**LEGO® DUPLO® BRICKS**





## Build Me “Emotions”

**45018**

An important part of growing up is recognizing and understanding the emotions of ourselves and others, and learning that our emotions have nuances beyond good vs. bad. This solution invites students to explore emotions and physical characteristics in a fun and engaging way. Using face bricks, students can recognize feelings and identify similarities and differences, all while learning collaboration skills. Building cards and comprehensive lesson plans help kick-start lessons that build new vocabulary and expand emotional intelligence.

### KEY LEARNING VALUES

Vocabulary  
Self-efficacy  
Empathy  
Problem-solving

 1-8  188  3-5  12









## LEGO® DUPLO® BRICKS

## Our Town

45021

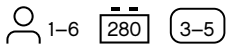
With its variety of buildings, people, and activities, Our Town is a busy place. Students can construct different urban environments and learn the roles and responsibilities that make up a community. This set can help students intuitively discover what it means to be part of a community.

## KEY LEARNING VALUES

Understanding relationships

Roles and responsibilities

Teamwork



## LEGO® BRICKS

## Community Starter Set

9389

So many pieces, so many learning possibilities! This set encourages students to find creative ways to collaborate. They'll learn valuable social skills and practice fine motor skills while constructing imaginary communities.

## KEY LEARNING VALUES

Fine motor skills

Collaboration



See page 30 for additional products.

LEGO® DUPLO® BRICKS

## StoryTales

45005

With this engaging set, students never have to say “the end” to learning and literacy. StoryTales promotes creativity, imaginative storytelling, and language development in a hands-on way. With StoryTales, students can flex their listening, presenting, and collaboration skills.

### KEY LEARNING VALUES

Storytelling  
Speaking and listening  
Language and literacy



LEGO® BRICKS

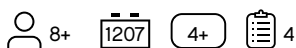
## Sceneries Set

9385

A box of LEGO® bricks is bursting with potential. This set lets students build models and characters as big as their imaginations and learn collaboration skills while they're at it. This set also inspires early language learning and storytelling skills.

### KEY LEARNING VALUES

Collaboration  
Storytelling  
Creativity



See page 30 for additional products.



EARLY LANGUAGE  
& LITERACY

## A Creative Start to Storytelling

Children learn about communication as they begin to express their thoughts and ideas. Asking children to construct fairy tales, imaginative short stories, and more helps encourage this development and introduces them to the skills of storytelling. These solutions let students stand in the spotlight and share their creations and stories with each other.





CREATIVE  
EXPLORATION

## Unleashing Imagination & Creativity

Without creativity, these bricks are just, well, bricks. Our solutions invite students to discuss ideas and negotiate roles, learn communication skills, and develop an understanding and appreciation of each other's ideas and contributions. Many of the sets have activity suggestions, and combined with the LEGO® bricks and LEGO DUPLO® bricks, the potential is as limitless as your students' imaginations.

LEGO® DUPLO® BRICKS

## XL LEGO® DUPLO® Bulk Set

9090

With 562 elements, this set lets students dream big and flex their creativity by building all sorts of environments and models. Along the way they'll also build self-confidence and strengthen their skills as creators—while having fun! This set features illustrations of suggested models and other figures, and special elements to help kick-start students' imaginations.

### KEY LEARNING VALUES

Gross and fine motor skills  
Creativity and collaboration  
Shapes and colors

10+ 562 1.5+



**LEGO® DUPLO® BRICKS****Creative LEGO®  
DUPLO® Brick Set****45019**

This set, like preschool students, is bursting with potential. Students are encouraged to explore self-expression, develop gross motor skills, build, deconstruct, and build again. Building cards provide support and inspiration so the creative fun never has to stop!

**KEY LEARNING VALUES**

Gross and fine motor skills  
Creativity and collaboration  
Shapes and colors

1-6 160 3-5

**LEGO® BRICKS****Creative LEGO®  
Brick Set****45020**

When you combine students' natural curiosity with 1,000 LEGO® bricks, the creative possibilities are endless. This set helps students develop their fine motor skills while building all the structures and figures their imaginations can concoct. There's no telling what this set will inspire!

**KEY LEARNING VALUES**

Self-expression  
Creativity

1-8 1000 4+

## LEGO® DUPLO® BRICKS

## Wild Animals Set

45012

Students can explore the world through animals, animal families, and habitats without grabbing their safari gear. As students construct a home for each animal, they learn about what each animal needs to survive, and start to recognize similarities and differences. This set is a great way to introduce early math using categorizing and sorting activities.

## KEY LEARNING VALUES

Understanding relationships  
Exploring the world  
Sorting and categorizing

1-6 104 2-5



## LEGO® DUPLO® BRICKS

## Large Farm

45007

This farm has more than just livestock—it's also packed with early language and math activities. Students can explore and construct a colorful farm, all while building their collaboration and language skills through role play.

## KEY LEARNING VALUES

Speaking and listening  
Role play

1-6 154 2-5



See page 30 for additional products.





## LEGO® DUPLO® BRICKS

## Multi Vehicles Set

45006

Get your students' creative wheels turning with this set! By role-playing both familiar and new travel scenarios, they will learn about transportation, discover the importance of interpersonal relationships, and explore their place in the wider world. This is also a great way of expanding existing LEGO® DUPLO® sets.

## KEY LEARNING VALUES

Exploring the world  
Roles and responsibilities

1-6 32 2-5 4



## LEGO® BRICKS

## Space &amp; Airport Set

9335

Students' creativity can blast off to new heights as they use these bricks and special elements to construct unique buildings and vehicles! With projects aimed at exploring airports or more out-of-this-world locales on distant planets, this set encourages collaboration and helps speaking, listening, and fine motor skills soar.

## KEY LEARNING VALUES

Exploring the world  
Fine motor skills

1-6 1176 4+

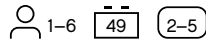
See page 30 for additional products.

## Additional Products

### SOCIAL & EMOTIONAL DEVELOPMENT

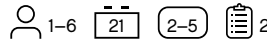
#### LEGO® DUPLO® BRICKS

##### Animal Bingo


**45009**

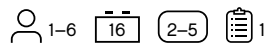
Using colorful bricks and double-sided game cards, students can build a menagerie of animals, and explore collaborative play. They'll also get hands-on lessons in matching, color recognition, and counting.

##### Community People Set


**45010**

The Community People Set allows students to role-play with 20 different characters, and learn lessons about age, relationships, gender, and the unique roles people have in their communities.

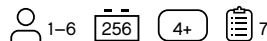
##### World People Set


**45011**

This set invites students to role-play with four different families, exploring culture, gender, age, and family relationships. The World People Set is an engaging way to encourage discussions about respecting similarities and differences all around the globe.

#### LEGO BRICKS

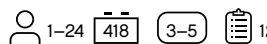
##### Community Minifigure Set


**45022**

Explore all the different types of people who make up a community with this solution. Students will use game cards and creative characters to explore different roles, professions, and cultures.

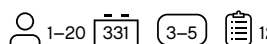
### LARGE GROUP SOLUTIONS

##### Let's Build Social Skills Together Pack


**5005054**

Includes: Animal Bingo (45009), Community People Set (45010), Build Me "Emotions" (45018), Creative LEGO® DUPLO® Brick Set (45019) and Social Skills Teacher Guide.

##### Our Community Pack

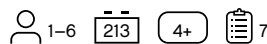

**5005272**

Includes: Our Town (45021), Community People Set (45010), Multi Vehicles Set (45006) and Our Community Teacher Guide.

### EARLY LANGUAGE & LITERACY

#### LEGO BRICKS

##### Fantasy Minifigure Set

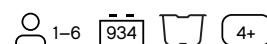

**45023**

Unlock your students' imaginations with 21 unique fantasy minifigures. These characters, taken from make-believe and history, will teach students storytelling, collaboration, and role-playing skills.

### CREATIVE EXPLORATION

#### LEGO BRICKS

##### Vehicles Set


**9333**

Students can explore the exciting world of wheels while they create and role-play using a variety of vehicles that represent transportation and travel. As they're exploring, students are also honing their fine motor skills.

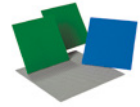
## Accessories

**4+** Unless noted

##### Large LEGO® Building Plates


**9286**

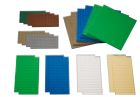
Includes one gray 38 x 38 cm, two green 25 x 25 cm, and one blue 25 x 25 cm building plates.



##### Small LEGO® Building Plates


**9388**

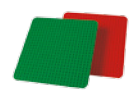
Three different sizes in a variety of colors.



##### Large LEGO® DUPLO® Building Plates


**9071**

38 x 38 cm. One red, one green. LEGO® DUPLO®.



##### Doors, Windows & Roof Set


**9386**

Windows with shutters, doors, and roof tiles. LEGO bricks.



##### Wheels Set


**9387**

Four sizes of tires along with plates, axles, and wheel hubs, for building up to 12 different vehicles at the same time.



## Storage

**5+** Unless noted

##### Large Storage Solution


**9840**

Comes in packs of six, with drainage holes and transparent lids. Stack easily.



##### Small Storage

**45497**

Comes in packs of seven with transparent lids. Stack easily. Similar in size to the WeDo 2.0 storage box.



##### Medium Storage

**45498**

Comes in packs of eight with transparent lids. Stack easily. Similar in size to the Simple & Powered Machines and LEGO® MINDSTORMS® Education EV3 storage box.



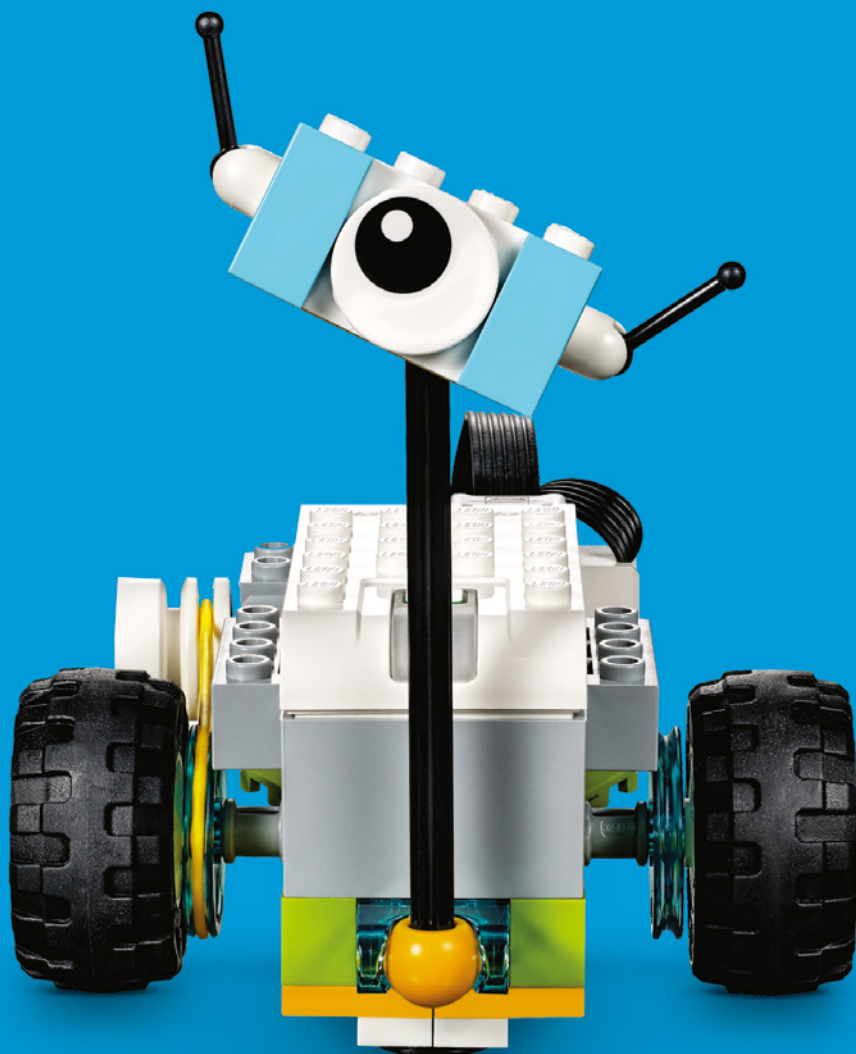
##### Sorting Top Tray

**45499**

Comes in packs of 12. Fits small (45497), medium (45498), and large (9840) LEGO® Education storage boxes.



Please contact your local distributor for information on classroom bundles.



PRIMARY





### BLUETOOTH® LOW ENERGY

WeDo 2.0 integrates the latest Bluetooth® technology to let students take “live” control of the models they create for near-instantaneous responses. To ensure the best possible WeDo 2.0 experience, desktops, laptops, and tablet devices must meet a minimum set of system requirements.

### SYSTEM REQUIREMENTS

WeDo 2.0 supports a range of Windows, Mac, Chrome-book, iOS, and Android devices. To find out if your device is supported, please visit:

[LEGOeducation.com/start](http://LEGOeducation.com/start)

## LEGO® EDUCATION WeDo 2.0

# Making STEAM Come to Life

At its core, science isn't about lab coats and research papers. It's about asking questions and investigating the answers. It's about wonder.

WeDo 2.0 encourages students to put those aspects of scientific discovery to work by solving real STEAM problems. Using LEGO® bricks, sensors, and motors, students can use this solution to ignite their creativity, develop critical-thinking skills, explore career possibilities, and simply get hands-on STEAM experience. This set helps make abstract engineering and science concepts concrete, and improves students' collaboration, problem-solving, and computational thinking skills.

### SOLUTION INCLUDES

#### CORE & SOFTWARE

WeDo 2.0 CORE SET  
WeDo 2.0 SOFTWARE

#### UNIT PLANS

WeDo 2.0 SCIENCE & ENGINEERING  
WeDo 2.0 COMPUTATIONAL THINKING  
WeDo 2.0 MAKER

#### SUPPORT

WeDo 2.0 TEACHER GUIDES  
GETTING STARTED TUTORIALS  
PLUS: ASSESSMENT TOOLS & TECHNICAL SUPPORT

### ADDITIONS

#### ACCESSORIES & REPLACEMENT PACKS

#### TRAINING & PROFESSIONAL DEVELOPMENT







## GETTING STARTED



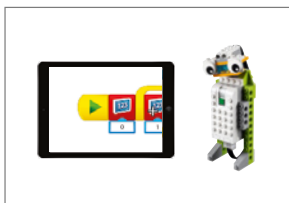
Get started with four quick-and-easy activities.



Build your LEGO® model and connect it to your device.



Build your own code by putting programming blocks together.



Press the play block to bring your model to life.

## CORE & SOFTWARE

# WeDo 2.0 Core Set

45300

The LEGO® Education WeDo 2.0 Core Set is a hands-on solution that helps teach STEAM concepts in an engaging, discovery-based way. Designed with collaboration in mind, this set combines LEGO bricks with classroom-friendly software to introduce students to science, engineering, and computational principles.

## KEY LEARNING VALUES

Investigating, modeling, and designing solutions

Engaging students in science by making it real and relevant

Basic programming skills, critical thinking, and problem-solving

Collaboration and presentation skills






Product packaging may vary. Product remains the same.






**UNIT PLANS****WeDo 2.0 Science & Engineering**

Built on the latest science standards, this unit plan promotes investigation and experimentation in life, physical, earth, and space sciences. This unit plan gives teachers an engaging, hands-on way of introducing engineering, technology, and computing projects.

 24  30–120 




**WeDo 2.0 Computational Thinking**

Computational thinking is a way of solving problems computationally. This unit plan promotes skills such as distilling problems into smaller tasks, performing actions in the right order, evaluating solutions, and communicating ideas in simple and creative ways.

 8  90–120 

**WeDo 2.0 Maker**

This unit plan combines the STEAM elements of WeDo 2.0 with the creative freedom of Maker. These open-ended activities invite students to question, create, tinker, make, innovate, and remake again while exploring early coding and more.

 4  45–90 

**THEME**

WeDo 2.0 allows students to explore and develop solutions to real-life problems.

**CODE**

Block-based coding helps students understand how to combine the digital and physical aspects of the world.

**MOTION**

By experimenting with gears and motors, students can explore the science behind motion.

**CODE CONFIDENTLY**

Build your own code by putting programming blocks together. Different shapes and colors have different actions that help teach students how to build behaviors into their own models.

**FLOW BLOCKS**

These blocks tell the program to start, stop, wait, or repeat.

**OUTPUT BLOCKS**

These blocks define the outcome—like motor action, sound, light, or display.

**INPUT BLOCKS**

These blocks define the input, such as sensor, sound, or text.





## SUCCESS STORY

# Inspiring Students to Reach for the Stars

In April of 1993, Ellen Ochoa became the first Latina astronaut to ever go to space. Today, *FIRST*® LEGO® League Jr. is helping the students at her namesake elementary school learn to shoot for the stars. Elementary school students from Ellen Ochoa STEM Academy in Grand Prairie, Texas participated in the CREATURE CRAZE™ Challenge and learned a lot about the important role of bees in human existence. Using WeDo 2.0 and the annual Inspire Set, the intrepid STEMventors (a team name the students chose together) set to work making a moving model to show how astronauts could potentially harness bee power to make life on Mars a reality.


During the competition, the students also got a chance to visit NASA headquarters and talk about their research. “The experience was life-changing for many of our students and their families who had never been outside our community,” says technology teacher Carmela Brown, adding that her students were excited to see what opportunities lay ahead of them in the STEAM fields. Thanks to their time in *FIRST* LEGO League Jr., the students’ interest in robotics and other STEAM topics was launched into the stratosphere.


## FIRST LEGO LEAGUE JR. Ages 6-10 (Grades K-4)

PROVEN, VERIFIABLE IMPACT  
FOR PARTICIPANTS IN  
*FIRST*® LEGO® LEAGUE JR.™

 **98%**  
SHOWED GREATER  
AWARENESS OF STEM

 **85%**  
WERE BETTER ABLE  
TO EXPLAIN IDEAS

 **71%**  
COULD PROBLEM-  
SOLVE

 **88%**  
SHOWED TEAMWORK  
SKILLS

\*\*FIRST® LEGO® League Jr. Evaluation Study (2014), The Research Group, Lawrence Hall of Science, University of California, Berkeley and Brandeis University, 2013 FIRST LEGO League Evaluation

## EARLY SIMPLE MACHINES & SIMPLE MACHINES

# Powering Exploration and Investigation

Get students' creative wheels turning with two engaging solutions. These two solutions teach the basic mechanical principles behind gears, pulleys, levers, axles, and more. Digital tools and unit plans help launch students' engagement to the next level.

### SOLUTIONS INCLUDE

#### CORE

EARLY SIMPLE MACHINES CORE SET  
SIMPLE MACHINES CORE SET

#### UNIT PLANS

EARLY SIMPLE MACHINES  
SIMPLE MACHINES  
SIMPLE MACHINES MAKER

#### SUPPORT

QUICK-START GUIDES  
PLUS: ASSESSMENT TOOLS & TECHNICAL SUPPORT

### ADDITIONS

ACCESSORIES & REPLACEMENT PACKS

TRAINING & PROFESSIONAL DEVELOPMENT



STEAM

"Because my students are so young, nothing stands in their way when it comes to solving problems together. They are very quick to learn that just because I am the 'teacher,' I do not have all the answers, and soon become confident with their own discoveries."

MARY MEADOWS

HEAD OF SCHOOL AT ANDREWS  
ACADEMY-CREVE COEUR,  
CREVE COEUR, MISSOURI

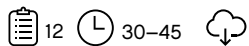




STEAM

**UNIT PLAN****Early Simple Machines**

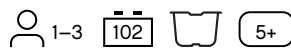
This unit plan contains 12 lessons: six beginner lessons, four intermediate lessons, and two advanced lessons. This unit plan is designed to help kindergarteners through second graders discover how gears, axles, pulleys, and more work by building them using LEGO® DUPLO® bricks.

**CORE****Early Simple Machines Core Set****9656**

This set has all the gears, levers, pulleys, wheels, wings, and more that students need to explore real-world science concepts. With building instructions, student worksheets, and teacher guides, this set sparks engaged learning, problem-solving skills, creativity, and critical thinking.

**KEY LEARNING VALUES**

Basic mechanical principles, such as gears, levers, pulleys, wheels, and axles  
 Investigating force, buoyancy, and balance  
 Problem-solving through design  
 Collaboration and data sharing



## CORE

## Simple Machines Core Set

9689

Use this set to help students investigate and understand the operation of simple and compound machines. This set features an assortment of bricks, gears, wheels, pulleys, and levers to inspire students to explore science and engineering.

## KEY LEARNING VALUES

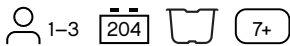
Observe and investigate

Develop scientific inquiry skills

Follow a design brief as part of the engineering design process

Learn to apply relevant vocabulary for simple machines

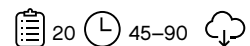
Test, predict, and measure; collect data and describe outcomes



## UNIT PLAN

### Simple Machines

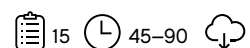
Ignite students' curiosity about science and engineering with this unit plan. The Simple Machines unit plan includes 20 lessons with instructions for a variety of models and problem-solving activities. As they work through them, students will develop critical-thinking skills while investigating simple and compound machines.



## UNIT PLAN

### Simple Machines Maker

Introduce elementary school students to the hands-on creative freedom of Maker. Using open-ended questions and real-life scenarios, students can think up ideas, tinker with prototypes, and build and develop solutions using the LEGO® Education Simple Machines Core Set and other materials from around the classroom. Through worksheets and assessments, students can feel supported and inspired, and teachers can have the creative confidence to help students think up new ideas.



## Additional Components

7+ Unless noted

### Transformer 10V DC

8+

45517

This standard 10V DC transformer allows you to recharge the Rechargeable Battery DC (9693), the EV3 Rechargeable DC Battery (45501), the Power Functions Rechargeable Battery Box (8878), and the Smarthub Rechargeable Battery (45302).



### Smarthub Rechargeable Battery

45302

Rechargeable lithium ion battery for the WeDo Smarthub 2 i/o (45301). Includes a built-in LED to indicate charge status.



### Smarthub 2 i/o

45301

Enables the WeDo sensors and motors to come to life. Using the WeDo 2.0 software and Bluetooth® Low Energy (BTLE) technology, the two-port Smarthub transmits data between a tablet or desktop computer and the WeDo 2.0 Core Set.



### Medium Motor

45303

This medium-size, medium-power motor has 2x2 studs on the top and a snap interface on the front to allow easy and optimized integration with the WeDo 2.0 Core Set elements. No setup is required.



### Motion Sensor

45304

Attach the Motion Sensor to the WeDo 2.0 Smarthub and it can detect objects within a range of 15 cm. No setup is required.



### Tilt Sensor

45305

Attach the Tilt Sensor to the WeDo 2.0 Smarthub and it can detect seven different types of orientation: Tilt This Way, Tilt That Way, Tilt Up, Tilt Down, No Tilt, Any Tilt, and Shake. No setup is required.



## Replacement Packs

### Replacement Pack WeDo 2.0

8+

2000715

Don't let a missing piece spoil your enjoyment of WeDo 2.0. This Replacement Pack includes 109 elements for the LEGO® Education WeDo 2.0 Core Set (45300).



### LE Replacement Pack M&M 2

2000709

LEGO® Education Replacement Packs are the ideal way to replace missing elements of your LEGO Education sets. This pack includes 42 elements for the Simple Machines Core Set (9689).



### LE Replacement Pack Rubber Bands

2000707

This pack features eight rubber bands in white, red, blue, and yellow for the LME EV3 Expansion Set (45560), LME Base Set (9797), LME Resource Set (9695) and Simple & Powered Machines Core Set (9686).

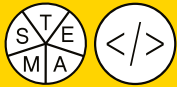


Please contact your local distributor for information on classroom bundles.





**SECONDARY**



STEAM  
CODING

"STEM is important for a ton of reasons. Mostly having to do with the grit that it instills in kids who actually try."

**MARK McCOMBS**  
FOUNDER OF RENAISSANCE  
JAX, AND TEDx TALK SPEAKER,  
JACKSONVILLE, FLORIDA

## SYSTEM REQUIREMENTS

For LEGO® MINDSTORMS® Education EV3, we offer two software versions: EV3 Lab for desktop devices, and EV3 Programming for tablets and Chromebooks. To find out if your device is supported, please visit:

**[LEGOeducation.com/start](https://LEGOeducation.com/start)**

## LEGO® MINDSTORMS® EDUCATION EV3

# Bringing Best-in-Class STEAM and Robotics Tools to the Classroom

LEGO® MINDSTORMS® Education EV3 is a hands-on, cross-curricular STEAM solution that combines LEGO Technic™ elements, classroom-friendly software, and standards-aligned lessons to spark creative confidence and critical thinking. This solution tackles subjects like engineering, coding, and physics with intuitive guides and smart bricks, and puts real-life STEAM topics right at students' fingertips.

### SOLUTION INCLUDES

#### CORE & SOFTWARE

EDUCATION EV3 CORE SET  
EV3 LAB & EV3 PROGRAMMING

#### UNIT PLANS

EV3 DESIGN ENGINEERING PROJECTS  
EV3 CODING ACTIVITIES  
EV3 MAKER ACTIVITIES

#### UNIT PLANS WITH ADDITIONAL PARTS REQUIRED

EV3 SPACE CHALLENGE  
EV3 SCIENCE

#### SUPPORT

GETTING STARTED TUTORIALS  
EV3 TEACHER GUIDES  
PLUS: ASSESSMENT TOOLS & TECHNICAL SUPPORT

### ADDITIONS

#### EXPANSION SETS

EV3 SPACE CHALLENGE SET  
RENEWABLE ENERGY ADD-ON SET & TEMPERATURE SENSOR  
EV3 EXPANSION SET

#### ACCESSORIES & REPLACEMENT PACKS

#### TRAINING & PROFESSIONAL DEVELOPMENT









## GETTING STARTED



Set up by installing software, unboxing and sorting bricks, and powering up the EV3 Brick.



Learn the basics by connecting and building your first program.



Start creating and controlling your robot.

## CORE

# LEGO® MINDSTORMS® Education EV3 Core Set

45544

This set contains all the tools you need to start exploring STEAM and computer science using the LEGO® MINDSTORMS® Education EV3 concept. This system uses the Intelligent EV3 brick, a small, programmable computer that allows students to control motors and collect sensor feedback. When this brick meets the icon-based programming and data-logging software, students get hands-on experience with simple engineering and coding.

## KEY LEARNING VALUES

Create, communicate, collaborate, and code  
Test, troubleshoot, evaluate, and revise designs  
Understand and use science and mathematical concepts  
Apply critical-thinking skills

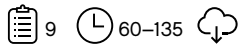
1-3 541 10+



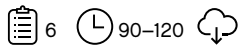
Product packaging may vary. Product remains the same.

**UNIT PLAN****EV3 Coding Activities**

This solution supports a computing or computer science unit plan. EV3 Coding activities also provide cross-curricular opportunities within science, design, technology, and math. With the EV3 Coding activities, students can develop their programming knowledge and discover coding in everyday life.

**UNIT PLAN****EV3 Maker**

When you combine the building, coding, and learning power of LEGO® MINDSTORMS® Education EV3 with the creative freedom of Maker, there's no end to the possibilities of students' imaginations. This unit plan lets teachers guide their students through open-ended design challenges based on real-world scenarios. Students get hands-on experience sharing ideas, defining design criteria, and tinkering with advanced prototypes.

**UNIT PLAN****EV3 Design Engineering Projects**

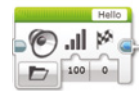
This unit plan turns students into engineers through engaging problem-solving. Projects like building autonomous robots, experimenting with ultrasonic sensors, and constructing robotic systems help students learn STEAM topics in a fun, hands-on way. Each activity includes a design brief and culminates in a final project that can help hone students' presentation skills.

**CODE CONFIDENTLY**

Take complete control of your robot and sensors with the intuitive drag-and-drop programming interface.

**FLOW BLOCKS**

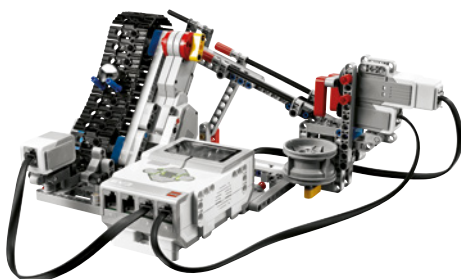
These blocks tell the program to start, stop, pause, or repeat.

**OUTPUT BLOCKS**

These blocks define the outcome—like motor action, sound, light, or display.

**INPUT BLOCKS**

These blocks define the input, such as sensor, sound, or text.



Robotic systems that perform complex tasks.



Measure distance and speed.



Robots that react to their environment.

## SUCCESS STORY

## More Engaged Students One Robot at a Time

A wise woman once said, “Even failure with robots can be engaging.” That woman is Caroline Hanson, the Ascent Enrichment and Robotics teacher at Aspen Middle School who uses LEGO® Education tools to inspire her students every day. Her 6th–8th grade students work on projects inspired by real-world science, engineering, and space challenges.

With LEGO Education, Hanson’s students “get to see the concepts outside of controlled experiments and pieces of paper.” Sometimes they’re so engrossed that they come in after school—like the student who spent days designing and building a robotic chairlift. There’s something in LEGO Education for every student, according to Hanson, who says she loves how each project also hones skills like problem-solving and critical thinking. “Different strengths emerge in robotics,” Hanson says, “and students have a chance to shine apart from their academic work.”

**FIRST  
LEGO  
LEAGUE**
*Ages 9–14 (Grades 4–8)*

PROVEN, VERIFIABLE IMPACT  
FOR PARTICIPANTS IN  
FIRST® LEGO® LEAGUE™


**98%**

IMPROVED PROBLEM-  
SOLVING SKILLS


**95%**

INCREASED TIME  
MANAGEMENT SKILLS


**93%**

INCREASED CONFLICT  
RESOLUTION SKILLS


**OVER 76%**

STRENGTHENED  
COMMUNICATION SKILLS

\*\*FIRST® LEGO® League Jr. Evaluation Study (2014),  
The Research Group, Lawrence Hall of Science,  
University of California, Berkeley and Brandeis  
University, 2013 FIRST LEGO League Evaluation



## UNIT PLAN WITH ADDITIONAL PARTS REQUIRED

## EV3 Space Challenge Set

45570

Take STEAM learning into the stratosphere with this expansion set co-developed with leading space experts. This set conforms to national standards and puts students to work on three space-themed research projects. The EV3 Space Challenge Set includes three learning mats, a challenge mat, dual lock tape, and all the LEGO® elements required to build the challenge models. The accompanying digital content helps teachers and students blast off to hands-on learning. **EV3 LAB ONLY.**

**REQUIRES ADDITIONAL PRODUCTS**

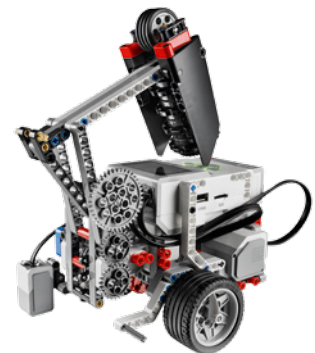
LEGO® MINDSTORMS® Education EV3 Core Set (45544), see page 44

**KEY LEARNING VALUES**

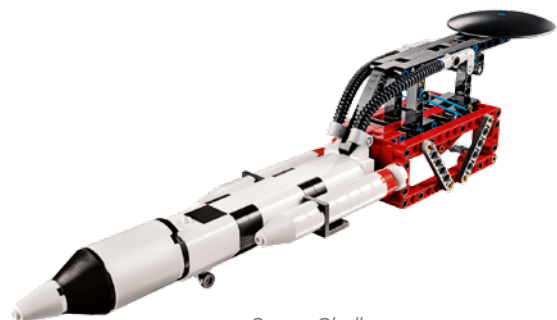
Get started with STEAM and robotics  
Discover real-world applications using problem-solving skills  
Develop solutions through teamwork skills  
Learn to build, test, and evaluate robots  
Gain hands-on experience with programming, sensors, motors, and intelligent units



Space Challenger Mars Outpost



Space Challenger Launcher

Space Challenger  
Rocket and Launcher**BEYOND THE MOON**

If 50+ years of space exploration has taught us anything, it's that there's nothing truly final about the final frontier. In collaboration with space experts, LEGO Education brings Mars rover simulations and more to your classroom with expansion packs and space-themed unit plans. Sparking students' curiosity in space today could inspire the innovations of tomorrow.



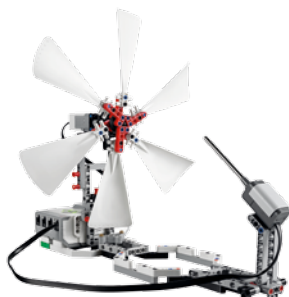
## FORCE & MOTION

Explore mechanical and kinetic phenomena, including gears, friction, inclined planes, and free fall.



## LIGHT

Investigate the phenomena of light and light intensity.



## HEAT & TEMPERATURE

Study the phenomena of insulation and heat transfer through heat and temperature experiments.

## UNIT PLAN WITH ADDITIONAL PARTS REQUIRED

### EV3 Science

9688 + 9749

These add-ons are the tools you need to make physical science experiments centered on energy, heat, force, and motion really lift off. Developed with Fraunhofer, Europe's largest application-oriented research organization, and science teachers, this unit plan uses hardware and software to ignite students' curiosity.

EV3 LAB ONLY.

#### KEY LEARNING VALUES

Ask questions and develop and use models

Plan and carry out investigations

Analyze and interpret data

Use mathematics, computational thinking, and information and computer technology

Construct explanations and design solutions

#### REQUIRES ADDITIONAL PRODUCTS

Start with LEGO® MINDSTORMS® Education EV3 Core Set (45544), see page 44

Renewable Energy Add-On Set (9688), see page 52

Temperature Sensor (9749), see page 54

1–3 12 10+ 14 45–90



## ENERGY

Explore energy—from simple manual energy transfer to wind energy, solar energy, and electric vehicles.



**EXPANSION SET**

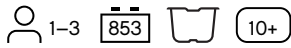
## EV3 Expansion Set

**45560**

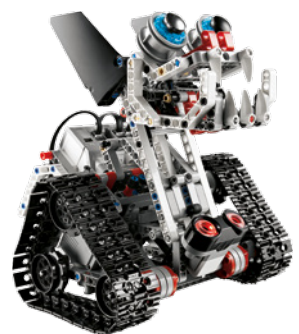
This set contains a wide range of supplementary elements like fun advanced building activities and additional mechanical elements to help students deepen their robotics experience and engage their creative instincts. **EV3 LAB ONLY TO GET THE FULL EXPERIENCE.**

**REQUIRES ADDITIONAL PRODUCTS**

LEGO® MINDSTORMS® Education EV3 Core Set (45544), see page 44



*Stair Climber Robot*



*Znap Robot*



*Tank Bot Robot*





STEAM

“They’re focused.  
They’re asking questions.  
They’re going beyond what  
they’re required to do.”

**LAURA KNAPP**  
K–5 TECHNOLOGY TEACHER,  
GATEWAY SCIENCE ACADEMY  
SOUTH, ST. LOUIS, MISSOURI

## SIMPLE & POWERED MACHINES

# Powering “Aha!” Moments

This solution helps students in grades 6–8 learn about a broad range of concepts, such as force, motion, and energy. Using 396 LEGO® Technic™ bricks and a motor to model physicality, students can get hands-on experience with problem-solving, collaboration, and other 21st-century skills. Watch as these bricks and unit plans spark creativity, ignite career opportunities, and develop critical-thinking and observation skills.

### SOLUTIONS INCLUDE

#### CORE

SIMPLE & POWERED MACHINES

#### UNIT PLANS

INTRODUCING SIMPLE & POWERED MACHINES

ADVANCING WITH SIMPLE & POWERED MACHINES

SIMPLE & POWERED MACHINES MAKER

#### SUPPORT

QUICK-START GUIDES

PLUS: ASSESSMENT TOOLS & TECHNICAL SUPPORT

### ADDITIONS

#### CORE

RENEWABLE ENERGY ADD-ON SET

PNEUMATICS ADD-ON SET

#### UNIT PLANS

RENEWABLE ENERGY

PNEUMATICS

#### ACCESSORIES & REPLACEMENT PACKS

#### TRAINING & PROFESSIONAL DEVELOPMENT

## CORE

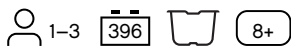
## Simple & Powered Machines Core Set

9686

This is the STEAM tool that helps students investigate everything from basic mechanical principles to advanced motor-powered machines. Let STEAM curiosity rev up with full lessons, extension activities, and problem-solving tasks that help students explore design engineering with more advanced mechanisms, structures, and forces.

## KEY LEARNING VALUES

Investigate the principles of simple machines, mechanisms, and structures  
Experiment with balanced and unbalanced forces  
Experiment with friction  
Transformation of energy  
Measure distance, time, speed, and weight  
Calibrate scales  
Investigate powered forces, motion, speed, and pulling power



## UNIT PLANS

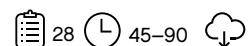
### Introducing Simple & Powered Machines

Using model activities and problem-solving tasks, students get a fundamental understanding of simple machines, structures, and mechanisms.



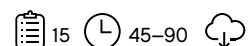
### Advancing with Simple & Powered Machines

Use our unit plan to actively engage students in inquiry, reasoning, and critical thinking. This unit plan is designed to apply students' prior learning in science, technology, and mathematics together with their engineering skills, creativity, and intuition.



### Simple & Powered Machines Maker

Using open-ended problem-based design challenges, teachers can encourage their students to really explore the world of machines and mechanisms.



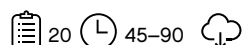


STEAM

## UNIT PLAN

**Renewable Energy**

With six 45-minute lessons and four problem-solving activities, students can get hands-on experience with renewable energy sources like wind, water, and solar. This activity set also includes a range of real-life images so students can see what these energy sources look like beyond the classroom.



## EXPANSION SET

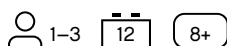
**Renewable Energy Add-On Set**

9688

Part of preparing students for the world of tomorrow is teaching them about renewable energy. This add-on set allows students to explore and understand energy sources like solar cells, wind turbines, and hydro-electric power plants. The Renewable Energy Add-On Set can be used with the Simple & Powered Machines Core Set and LEGO® MINDSTORMS® Education EV3.

## KEY LEARNING VALUES

Explore energy supply, transfer, accumulation, conversion, and consumption  
Understand and use energy variables, volts, amps, watts, and joules





## EXPANSION SET

## Pneumatics Add-On Set

9641

This add-on set, when combined and used with Simple & Powered Machines, helps students understand air-powered systems and explore kinetic and potential energy. Students investigate components such as measuring pressure and building models, all while honing their communication, collaboration, and other 21st-century skills.

## KEY LEARNING VALUES

Explore air-powered systems  
Explore kinetic and potential energy  
Understand pressure measuring in PSI and bar

1-3 31 10+

## UNIT PLAN

### Pneumatics

The activities in this unit plan engage students in the engineering and design stage of pneumatics research. Extended lessons and problem-solving tasks help introduce students to real-life renewable energy scenarios.

12 45-90



## Energy Elements

8+ Unless noted

### Energy Display

9668



### LEGO® Energy Storage

9669



### E-Motor

9670

7+



## Power Functions

7+

### Power Functions Extension Wire 20"

8871



### Power Functions Extension Wire 8"

8886



### Power Functions M-Motor

8883



### Power Functions Light

8870



### Power Functions Battery Box

8881



## EV3 Main Components

10+ Unless noted

### EV3 Intelligent Brick

45500



### EV3 Rechargeable DC Battery

45501



### EV3 Large Servo Motor

45502



### EV3 Medium Servo Motor

45503



### EV3 Cable Pack

45514



### Transformer 10V DC

45517

8+



## EV3 Sensor Elements

10+ Unless noted

### EV3 Ultrasonic Sensor

45504



### EV3 Gyro Sensor

45505



### EV3 Color Sensor

45506



### EV3 Touch Sensor

45507



### EV3 Infrared Beacon

45508



### EV3 Infrared Sensor

45509



### Temperature Sensor

9749

8+



## Replacement Packs

8+ Unless noted

### LME 1

2000700

For the LME EV3 Core (45544), Expansion (45560), Base (9797), or Resource Set (9695).

### LME 2

2000701

For the LME EV3 Expansion (45560), Base (9797), or Resource Set (9695).

### LME 3

2000702

Ball and ball joint for the LME EV3 Core Set (45544).

### LME 5

2000704

EV3 Space Challenge Set (45570) elements.

### LME 6

2000705

For the LME Base (9797), Resource (9695), Expansion (45560), or Core Set (45544).

### LME 7

2000706

For the LME Base (9797), Resource (9695), Expansion (45560), or Core Set (45544).

### LE Replacement Pack Rubber Bands

7+

2000707

Eight each: red, white, blue, yellow. For the LME EV3 Expansion (45560), Base (9797), or Resource Set (9695), and Simple & Powered Machines Set (9686).

### M&M Replacement Pack 1

2000708

LEGO® Education Replacement Packs are the ideal way to replace missing elements in your LEGO Education sets. This pack includes 60 elements for the Simple & Powered Machines Set (9686).

Please contact your local distributor for information on classroom bundles.





education



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Colors of and decorative designs on elements may vary. 6249199



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