



modern teaching aids

# LEGO® Education Classroom Solutions 2018



**FREE freight**  
on all orders  
over \$99\*

\*Conditions apply,  
see website for details.

# Professional Learning Inspired through learning!

School Professional Learning is important for the growth of your staff and students.

Modern Teaching Aids offers Professional Development programs to ensure teachers get the most out of their investment in LEGO® Education resources. All MTA facilitators are experienced classroom users of LEGO Education products. Through hands-on workshops participants will learn how to apply LEGO Education resources in the classroom to meet curriculum objectives.

Modern Teaching Aids workshops are designed to enable teachers to better facilitate rather than direct student learning, thereby encouraging students to take a more active role in the learning process.

Workshops and information sessions on offer:

- LEGO MINDSTORMS® Education EV3
- LEGO Education WeDo 2.0

For further information on workshops in your area visit [www.teaching.co.nz/page/mta-lego](http://www.teaching.co.nz/page/mta-lego)



## Useful links

MTA Professional Development Workshops:  
[www.teaching.co.nz/page/mta-lego](http://www.teaching.co.nz/page/mta-lego)

LEGO Education Resources:  
[www.teaching.co.nz](http://www.teaching.co.nz) (Click on LEGO Education)

LEGO Education Curriculum Links  
[www.teaching.co.nz/page/legocurriculum](http://www.teaching.co.nz/page/legocurriculum)

ACARA Curriculum Links for RoboCup Junior Australia (RCJA)  
<http://www.robocupjunior.org.au/acara>

First LEGO League:  
<http://firstaustralia.org/programs/first-lego-league/>

Useful LEGO Community:  
<http://www.legoengineering.com/>

EV3 and NXT related resources:  
[www.damienkee.com](http://www.damienkee.com)

Free NXT & EV3 Tutorials:  
[www.drgraeme.org](http://www.drgraeme.org)

## MTA catalogues

Look out for our main MTA and LEGO Education Early Learning catalogues, or find all of our products online at [teaching.co.nz](http://teaching.co.nz)

## Teachers' Workshop Feedback

Well, what a great workshop for busy teachers who are looking for a relaxed but purposeful training environment! The beginners workshop was just that and the training was pitched at that level. Learning without a presumption of prior knowledge meant that the workshop sessions built skills from the base level up and that we all progressed together at a similar rate. Having the opportunity to network with positive like minded professionals and to work in small groups meant that the workshop wasn't threatening and that we all had a lot of fun on the journey of life long learning. Small and achievable programming challenges meant that you were constantly putting theory into practice and that reinforced the new learning well. There was time and room to experiment and to address challenges in multiple ways. I truly believe that we all had a lot of fun together and that we left the workshop challenged, inspired and motivated to bring our Digital and Design Technologies skills into the classroom when we returned to our schools. Sensible workshop starting and ending times as well as having quality meals provided rounded off a wonderful learning experience. Well done to Joanna and the MTA team.

*Peter Maple – Technology Learning and Teaching Leader – Innanuel College SA*

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Valid until 31st December 2018.  
Promotional value excludes GST.  
Offer excludes export & new projects.

# Contents

In this catalogue you will find a description of our learning solutions listed according to subjects; maths, science, programming and control, engineering, literacy, STEM and more, and segments; primary school and high school.

	SOLUTIONS	SUBJECTS	PAGE
	<b>LEGO® MINDSTORMS® Education EV3</b> Instant STEM learning with best in class robotics solutions	Computing, science, design & technology, maths, engineering	<b>2-22</b>
	<b>WeDo 2.0</b> Make Science come to life	Computing, maths, science, design & technology, language	<b>27-33</b>
	<b>Machines &amp; Mechanisms</b> Discover how the real world works	Science, maths, design & technology	<b>34-47</b>
	<b>Simple &amp; Powered Machines</b> Investigate simple machines, mechanisms and structures	Science, maths, design & technology	<b>34-40</b>
	<b>Simple Machines</b> Build STEM learning skills	Science, maths, design & technology	<b>41-44</b>
	<b>Early Simple Machines</b> Lay the STEM foundation	Science, maths, design & technology	<b>45-47</b>

## Program LEGO Education with any of these platforms!

### EV3 Software:

- Stable software
- Huge amount of resources fully supported
- Ideal for classroom management and assessment



LEGO MINDSTORMS Education EV3 and WeDo 2.0 can now be programmed with 3rd party software. Use any of the software platforms below to access different coding languages. Prepare your students for the jobs of tomorrow by making them more adaptable to the ever changing systems.

- Expand the learning experience
- More flexibility

\*Please note: 3rd party software is not developed, approved or endorsed by LEGO Education.



<b>Piece Count</b> Total number of elements	<b>Available for free download from</b> LEGOeducation.com/downloads	<b>Exclusive</b> Exclusive to MTA
<b>Storage</b> Storage box included	<b>App Available</b> Available for free download in different App Stores	<b>Locally Made</b> Made in Australia or New Zealand
<b>Group Sets</b> Recommended number of students for using a single set	<b>Amount of Activities</b> Included in each solution	<b>3rd Party Product</b> Are not endorsed by LEGO Education
<b>Number of sets</b> Number of sets available in a Solution	<b>Time Required</b> Time required per activity	

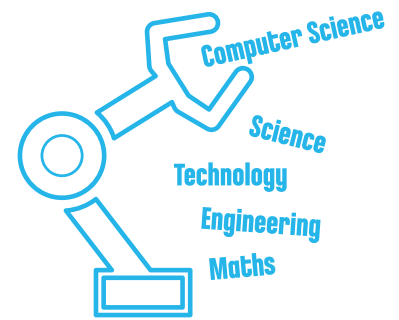
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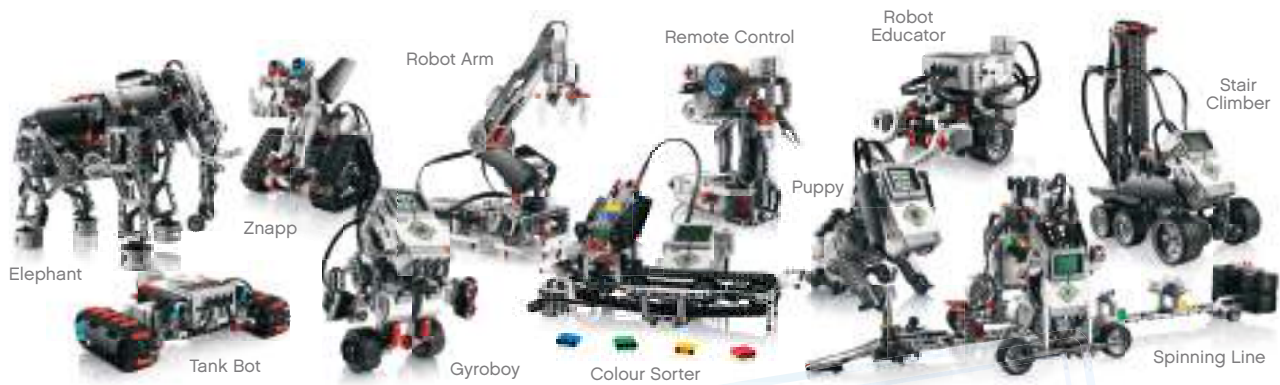
**FREE freight on all orders over \$99.** Conditions apply, see website for details.

# LEGO® MINDSTORMS® Education EV3

## Instant STEM learning with best in class robotics solutions



**LEGO® MINDSTORMS®**  
Education



With LEGO® MINDSTORMS® Education, the greatest challenge you'll face is getting your students to leave the classroom!

LEGO MINDSTORMS Education EV3 grows critical thinking and students' creativity in computer science, science, technology, engineering and maths. You can be up and running in less than 45 minutes with full support from 48 step-by-step tutorials and a guide to the EV3 programming language and hardware functions.

Over the past decade, LEGO MINDSTORMS Education has enabled students to solve authentic design and engineering problems with continued firmware support and software updates.

Ignite students' instant STEM learning with best in class robotics solutions to encourage critical thinking and creative learning through real-life problem solving with LEGO MINDSTORMS Education EV3.



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# Everything educators need to achieve their teaching goals



Save with classroom solutions See P11-13

## LEGO® MINDSTORMS® Education EV3 Curriculum Solution

LEG45544-1 **\$725.95**



This set contains everything you need to start teaching STEM and computer science using the exciting LEGO MINDSTORMS concept. It offers full teacher support, including STEM and computing teaching materials, and a comprehensive eLearning program.

The system includes the Intelligent EV3 Brick, a compact and powerful programmable computer that makes it possible to control motors and collect sensor feedback using the intuitive icon-based programming and data logging software that is delivered with the set.

The set is delivered in a sturdy storage bin with a sorting tray, three Servo Motors, five Sensors (Gyro, Ultrasonic, Colour and 2x Touch), a Rechargeable Battery, connecting cables and Building Instructions. Battery charger (LEG8887) is required and sold separately.

### Solution includes

- LEGO MINDSTORMS Education EV3 Core Set 1
- EV3 Lab and EV3 Programming www
- EV3 Design Engineering Projects Curriculum 15 45-180 www
- EV3 Coding Activities 9 90-135 www
- EV3 eLearning www
- EV3 Maker Activities 8 90-120 www

# How to get ahead in STEM learning

The LEGO MINDSTORMS Education EV3 motivates students to design, build and program robots using motors, sensors, gears, wheels, axles and other technical components, to gain a better understanding of how technology works in real-world applications.

The solution enables students to understand and interpret two-dimensional drawings to create three-dimensional models; build, test, troubleshoot and revise designs; apply maths and science concepts on real-life applications; and master programming and data logging functions.



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# Everything needed to successfully teach LEGO® MINDSTORMS® Education EV3

Ignite student engagement and energise learning through real-life problem solving in computing science, science, technology, engineering and maths. LEGO® MINDSTORMS® Education brings a hands-on, minds-on approach through a comprehensive and inspiring teaching solution, that helps every student reach their curriculum targets.

Based on easy-to-use robotics technology and the EV3 Core Set, LEGO MINDSTORMS Education EV3 offers all teachers need to get started in the classroom, including LEGO building bricks and hardware, programming and data-logging software, student-ready teaching material, online teacher eLearning and more.

## Everything you need to make teaching with EV3 a success

### What's included in the Curriculum Solution?

#### Core Set

Contains all the LEGO bricks and technology elements needed to get students curious and excited about STEM learning and robotics.



#### Curriculum content

Multiple student-ready curriculum materials based on national standards ensure students' learning outcome within STEM and Computer Science.\*

#### Teaching software

Intuitive software and app for easy programming and robot control. Includes student tutorials and teacher support.\*

#### Assessment tools

Asses students' learning using the integrated rubrics, observation checklists, and student self-assessment tools. Student creativity assessment tool is also included.\*

#### eLearning program

15 online courses with self-paced videos will take any educator from novice to classroom ready with EV3.\*

#### Technical support

Ongoing telephone and online support to help you with any questions.

#### Community

Access to the LEGO Education community of teachers for additional ideas, tips and new connections.



### What can I add on?

#### Additional curriculum content

Additional STEM curriculum packs are available to expand the EV3 learning coverage.\*

#### Expansion sets

Additional brick sets are available to expand and deepen the teaching and learning experience.

#### Accessories

Additional sensors, motors and other technology parts are available to supplement the EV3 Core Set.

#### Training and professional development

Check our Professional Learning calendar on [teaching.co.nz](http://teaching.co.nz) to find training near you.

#### Replacement Packs

Replacement bricks are available for each core set.

\*Available for free download from [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

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# Support for every STEM subject

Regardless of which STEM subject you want to teach EV3 provides everything you need to deliver an engaging learning experience, including Quick Start videos and guided Robot Educator tutorials.

## Digital Technologies

Programming for real. Develop computational thinking skills through coding by enabling students to program simple and complex algorithms via an easy-to-use drag and drop interface.

**Example:** Define an algorithm to move a robot across a surface filled with obstacles.

## Science

Learning by doing. Design, build and test robots that can record live data and respond to environmental changes.

**Example:** Carry out experiments to determine melting point by collecting data samples with the Temperature Sensor\*, then track and plot the results via the intuitive graphing environment.

*\*Temperature Sensor (LEGG9749) is sold separately.*

## Technology

Real-world robotics. Actively engage students in the world of robotics in order to solve problems or challenges.

**Example:** Assess technology challenges, then build, program and refine working robotic solutions, developing their critical thinking and collaborative skills at every step.

## Engineering

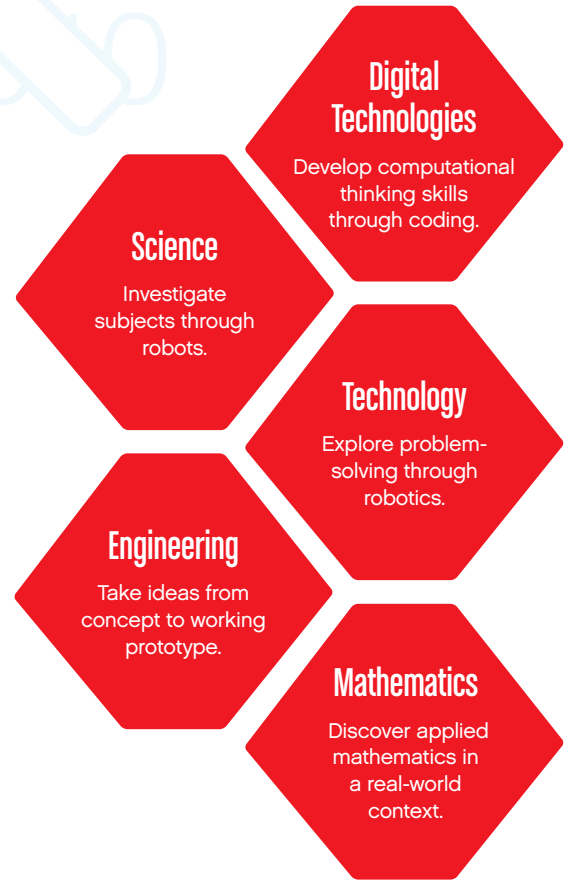
From idea to working prototype. Engage your students in practical, open-ended engineering challenges and open-ended problem solving.

**Example:** Carry out a design process to develop a robot that can grab and move objects as fast as possible.

## Mathematics

Complex numbers simplified. Explore applied mathematics, making abstract concepts tangible by integrating math and science using physical constraints.

**Example:** Calculate the wheel circumference of a robot, then program the robot to move a specific distance using the rotation sensor feedback multiplied by the circumference.



Curriculum content, teaching software, assessment tools and eLearning programs are available for free download from [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

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# Included with every purchase of the EV3 curriculum solution

Included

## EV3 Lab and EV3 Programming



www

LEGO® MINDSTORMS® Education EV3 is available in two versions. The desktop application, called EV3 Lab, offers a complete selection of learning possibilities, including 48 tutorials, built-in content editor and data logging. The touch device application, called EV3 Programming, provides simple programming functionalities, including six tutorials and classroom mobility. Using either version, students learn to program by dragging and dropping icons into a line to form commands. The software allows everyone, students as well as teachers, to get started and to take their programming skills to the next level.

### Get up and running in less than 45 minutes

Robot Educator is the name of both the basic robot and the tutorials included in the software and app. The robot provides students with a quick-build introduction to the world of robotics, while the tutorials takes both the teacher and the students through the essentials of programming, data logging and hardware in a structured and engaging way.

### Program with the tablet app

The EV3 Programming app is a simple and effective way of getting started with LEGO® MINDSTORMS® Education EV3 using the intuitive icon-based programming environment (data logging not available). The app is available for iPads®, Android tablets™ and Chromebooks.

### The EV3 Software for desktop

Offers the same simple programming environment to get started and includes even more functionality for both teachers and students. The built-in content editor enables teachers to customise the curriculum and create their own lessons. It enables students to capture their work directly inside the software creating their own digital workbook, making classroom management and assessment easier.

The EV3 Software and Programming app both offer guided tutorials to get started and a lesson plan.



The EV3 Programming app is compatible with iOS and Android tablets as well as Chromebooks. The EV3 Software is compatible with Windows and Mac desktop/ laptop. Please check system requirements at [LEGOeducation.com.au](http://LEGOeducation.com.au)



## Tutorial Flow



1. Understand the objective



2. Build and program your robot



3. Test your robot



4. Modify your robot



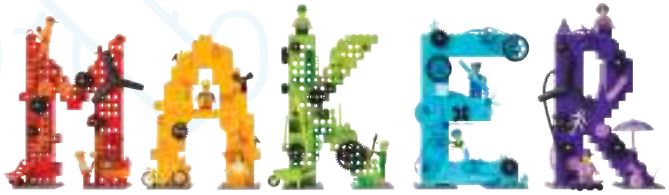
# Harness the creative power of Maker

**Included**

## EV3 Maker Activities



Teach primary school students how to combine the building, coding and learning power of LEGO MINDSTORMS Education EV3 with the creative freedom of Maker. This curriculum pack puts teachers in the role of facilitator, as they guide their students through series of open-ended, problem-based design brief challenges linked to real-life scenarios. They go hands-on to share creative ideas, define design criteria, tinker with advanced prototypes and bring them to life using the advanced coding capabilities of the LEGO MINDSTORMS Education EV3 Core Set. Students also document and reflect on their progress using the worksheets included in the pack, which teachers can use to assess the progress of their students throughout the course of each challenge.



**NEW**



# Bring physical science to life

## EV3 Science Curriculum



This curriculum pack consists of physical science experiments centered on energy, heat and temperature, force and motion, and light. Developed together with Fraunhofer IAIS, Europe's largest application-oriented research organisation, and real science teachers, the pack utilises the data logging capabilities of the hardware and software.

This curriculum is included in the LEG45544-1 LEGO MINDSTORMS Education EV3 Curriculum Solution. The Renewable Energy Add-on set (LEG9688) and the Temperature Sensor (LEG9749) are required and not included.



**Included**

### Force and motion

Experiments relate to mechanical and kinematic phenomena, including gears, friction and inclined planes and free fall.



### Light

The phenomenon of light intensity is investigated using this experiment.



### Energy

Experiments related to energy – from manual energy transfer, to wind and solar energy, to electric vehicles.

### Heat and temperature

The heat and temperature experiments are used to study the phenomena of insulation and heat transfer.

The following additional products are required to be able to perform the EV3 science experiments of the EV3 science curriculum:

- Renewable Energy Add-on Set (LEG9688) Please see page 16
- Temperature Sensor (LEG9749) Please see page 19



# Students become real engineers through problem solving with LEGO® MINDSTORMS® Education EV3 Design Engineering Projects

## EV3 Design Engineering Projects Curriculum



Included

This curriculum pack presents students with open-ended problem solving activities, in a context that makes it fun and engaging to learn science, technology, engineering and maths. Each activity provides a design brief and culminates in a final project that can be presented and shared.

Students capture their work with the built-in digital workbook, making it easy to follow and assess their progress.

This curriculum is included in the LEG45544-1 LEGO® MINDSTORMS® Education EV3 Curriculum Solution.



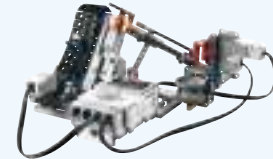
### Make it move

Design and build autonomous robots that move and measure distance and speed, up an incline or in a regular polygon pattern. Program the motor using the built-in Rotation Sensor.



### Make it smarter

Design and build smarter autonomous robots that react to the environment. Program the EV3 brain to use Colour, Gyro, Touch and Ultrasonic Sensors to sense a range of data.



### Make a system

Design and build robotic systems that perform complex tasks. Identify tasks within the design brief and use subsystems to target smaller behaviours so the whole design brief task can be completed accurately and reliably.

15 projects

45-180min each

LEGO MINDSTORMS Education EV3 Design Engineering Projects are designed to fit within your class time and bring real-world scenarios to life. Students design, build, and test robots to complete a variety of tasks. LEGO MINDSTORMS Education EV3 Design Engineering Projects challenge students by asking them to:

## Design & Build

Students design and build an autonomous robot that will accomplish the lesson's goal. They work to understand how to engineer an effective model.

## Test & Modify

Students then program their robot to achieve the goal. They modify and test the design and the code to make the model smarter and able to react to its environment. Students practise how to improve the code and design to perform complex tasks that work as a system.

## Develop & Present Conclusions

Students determine the most effective design and code for their robots to accomplish the goal and present their findings to their peers.



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# Students become real engineers through problem solving

## EV3 Coding Activities



This curriculum pack provides extensive content to deliver the Digital Technologies curriculum, providing ample cross-curricular opportunities in design and technology, science and maths. The material will enable students to apply and develop their programming knowledge and inspire them to discover the importance of coding in their everyday lives.

This curriculum is included in the LEG45544-1 LEGO MINDSTORMS Education EV3 Curriculum Solution.

## Key Learning Values

- Understand several key algorithms that reflect computational thinking
- Make appropriate use of data structures such as lists, tables and arrays
- Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems



# Develop the skills to code

9 activities

60-135min each

LEGO MINDSTORMS Education EV3 Coding Activities challenge students to solve problems using their creativity and technology tools. Over the course of these activities, students develop design skills and go through the five steps of computational thinking including:

## Decomposing the Problem

Students are presented with a situation that guides them to a problem or something which needs improvement. Students break down the problem into smaller parts to make it easier to understand. Evaluate your students' Decomposition skills by asking: Are students able to explain the problem and divide it into parts that are more manageable?

## Generalisation

Students consider different solutions to the problem, including thinking of ways that similar problems have been solved. Students investigate different functionalities of the sensors, programs, and robot design to see what known solutions might work for the new problem. Evaluate your students' Generalisation skills by asking: Are students able to identify parts of an existing program that they could reuse?

## Algorithmic Thinking

Students create a step-by-step process to follow. Students make a detailed plan and outline the steps needed to reach the solution using graphical programming language. The program activates their LEGO models. Evaluate your students' Algorithmic Thinking skills by asking: Are they able to code the model using sequence, loops, conditional statements, etc.?

## Evaluation

Students test their program to evaluate if their automated car reacts the way they planned. If it did not, they make modifications to their program until their program solves the problem. Understand your students' abilities to use Evaluation skills by asking: Are they able to judge if their program provides an effective solution to the problem?

## Abstraction

Students reflect on their solution to see if a generalisable rule can be abstracted, which will support solving future problems. Evaluate your students' abilities to generalise rules by asking: Are they able to anticipate future use of this solution or program?

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# Expanding learning possibilities

## EV3 Expansion Set

LEG45560 **\$197.95**



ADD-ON

This set contains a wide range of supplementary elements to continue the theme of critical thinking and creativity featured in the EV3 Core Set. Students deepen their robotics experience with new structural and mechanical elements, and additional building instructions and programs.

Requires the LEG45544-1 LEGO® MINDSTORMS® Education EV3 Curriculum Solution.



## Program EV3 with 3rd party software\*

The LEGO MINDSTORMS Education EV3 Core Set can, besides with the LEGO Education EV3 software, also be programmed with Apple Swift Playground, CoderZ and Roberta. This allows students and teachers to use both block-based and text-based programming languages.



CoderZ

Roberta

### Apple Swift Playground

- Apple's playful learn to code language
- Text based programming, using Swift programming
- Free to download, with a great free tutorial
- Only compatible with iPads
- The EV3 and Apple Swift Playground Curriculum is jointly developed between LEGO Education and Apple and is LEGO Education endorsed.
- Requires no prior experience
- Download from <https://www.apple.com/au/swift/playgrounds/>

### CoderZ

- Online learning environment where students worldwide learn STEM by coding virtual 3D robots
- Block-based language and text-based programming
- Browser based platform
- Configure the virtual robot to match a physical robot: test your program first, before downloading them onto the actual robot
- Visual programming interface: see the Java code behind the blocks. More experienced students can program directly in Java
- Download from <http://gocoderz.com/>

### Roberta

- Write programs for LEGO MINDSTORMS Education EV3 and NXT
- Cloud-based integrated programming environment that requires no registration and is completely open source
- Completely free
- Requires USB WiFi Dongle and a micro SD card
- Implementation languages are Java, JavaScript and html (NEPO)

\*Please note: 3rd party software is not developed, approved or endorsed by LEGO Education.

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LEG45544-6S

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## Classroom Solutions

### EV3 Curriculum Solution Packs

LEGO Education EV3 Curriculum Solution  
LEG45544-1

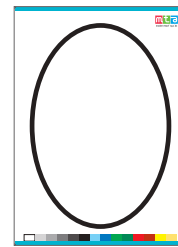


Battery Charger  
LEG8887



Robotics Training Mat  
ROB014

exclusive 3rd party product



MTA Storage System Double  
SUN8327

exclusive 3rd party product



<b>LEG45544-1K</b> 2-3 students <b>\$769.95</b> <b>SAVE \$21.95</b>	1	1		
<b>LEG45544-4</b> 8 students <b>\$3,076.95</b> <b>SAVE \$206.60</b>	4	4	1	
<b>LEG45544-4S</b> 8 students <b>\$3,299.95</b> <b>SAVE \$264.75</b>	4	4	1	1
<b>LEG45544-5</b> 10 students <b>\$3,846.95</b> <b>SAVE \$228.50</b>	5	5	1	
<b>LEG45544-5S</b> 10 students <b>\$4,018.95</b> <b>SAVE \$337.65</b>	5	5	1	1
<b>LEG45544-6</b> 12 students <b>\$4,604.95</b> <b>SAVE \$262.40</b>	6	6	1	
<b>LEG45544-6S</b> 12 students <b>\$4,777.95</b> <b>SAVE \$370.55</b>	6	6	1	1

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LEG45544-10S

# Classroom Solutions

## EV3 Curriculum Solution Packs

LEGO® Education EV3 Curriculum Solution  
LEG45544-1

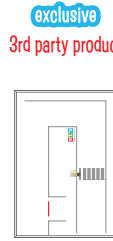
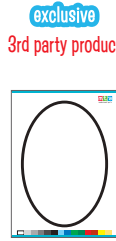
Battery Multi-Charger  
WLMC01

Robotics Training Mat  
ROB014

Robotics Challenge Mat  
ROB15

MTA Storage System Double  
SUN8327

MTA Storage System Triple  
SUN8337



exclusive  
3rd party product

exclusive  
3rd party product

exclusive  
3rd party product

exclusive  
3rd party product

exclusive  
3rd party product

x2

Product Code	Students	LEGO Curriculum Solution	Battery Multi-Charger	Robotics Training Mat	Robotics Challenge Mat	MTA Storage System Double	MTA Storage System Triple
LEG45544-8	16 students	\$5,899.95 SAVE \$375.55	8	1	1	1	1
LEG45544-8S	16 students	\$6,128.95 SAVE \$509.30	8	1	1	1	1
LEG45544-10	20 students	\$7,149.95 SAVE \$577.45	10	1	1	1	1
LEG45544-10S	20 students	\$7,713.95 SAVE \$575.75	10	1	1	1	2
LEG45544-12	24 students	\$8,718.95 SAVE \$812.30	12	2	1	1	2
LEG45544-12S	24 students	\$9,063.95 SAVE \$1,029.60	12	2	1	1	2
LEG45544-15	30 students	\$10,559.95 SAVE \$1,149.15	15	2	1	1	2
LEG45544-15S	30 students	\$10,999.95 SAVE \$1,434.65	15	2	1	1	2

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LEG45544-10CS

# Classroom Solutions

## EV3 Curriculum Solution Packs

LEGO Education EV3 Curriculum Solution  
LEG45544-1

Battery Multi-Charger  
WLMC01

Robotics Training Mat  
ROB014

Robotics Challenge Mat  
ROB15

EV3 Expansion Set  
LEG45560

MTA Storage System Triple  
SUN8337

exclusive

3rd party product

exclusive

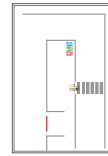
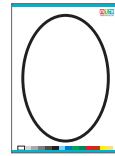
3rd party product

exclusive

3rd party product

exclusive

3rd party product



Product Code / Student Count	LEGO Education EV3 Curriculum Solution	Battery Multi-Charger	Robotics Training Mat	Robotics Challenge Mat	EV3 Expansion Set	MTA Storage System Triple
<b>LEG45544-8C</b> 16 students \$6,563.95 SAVE \$503.35	8	1		1	4	
<b>LEG45544-8CS</b> 16 students \$7,020.95 SAVE \$771.85	8	1		1	4	2
<b>LEG45544-10C</b> 20 students \$8,194.95 SAVE \$522.20	10	1		1	5	
<b>LEG45544-10CS</b> 20 students \$8,689.95 SAVE \$752.70	10	1		1	5	2
<b>LEG45544-12C</b> 24 students \$9,784.95 SAVE \$1,049.95	12	2	1	1	6	
<b>LEG45544-12CS</b> 24 students \$10,242.95 SAVE \$1,317.45	12	2	1	1	6	2
<b>LEG45544-15C</b> 30 students \$12,099.95 SAVE \$1,308.70	15	2	1	1	8	
<b>LEG45544-15CS</b> 30 students \$13,199.95 SAVE \$1,296.95	15	2	1	1	8	3

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# Teach STEM with a Mission to Mars using LEGO® MINDSTORMS® Education EV3 Space Challenges

## EV3 Space Challenge Curriculum

**Included**



This curriculum conforms to national curriculum standards and contains challenge and learning missions based around the theme of space. Three research projects, co-developed with space experts, providing rich opportunities for students to explore and create innovative solutions to current space exploration topics. The EV3 Space Challenge Set\* includes three learning mats, a challenge mat, dual lock tape and all of the LEGO® elements required to build the challenge models\*. The accompanying digital content provides student-ready materials, teacher notes and Building Instructions. \*Not included and sold separately.



The EV3 Space Challenge Curriculum is only available for desktops with EV3 Lab. It requires the LEG45570 EV3 Space Challenge Set.

## Classroom Solutions Space Challenge Packs

LEGO Education EV3 Curriculum Solution  
LEG45544-1



EV3 Space Challenge Set  
LEG45570



Battery Charger  
LEG8887



LEG45570-3	<b>\$1,146.95</b> SAVE \$73.90		3	
LEG45570-6	<b>\$2,242.95</b> SAVE \$198.75		6	
LEG45544-SP4 8 students	<b>\$3,823.95</b> SAVE \$157.55	4	2	4
LEG45544-SP8 16 students	<b>\$7,573.95</b> SAVE \$389.05	8	4	8

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# Teach STEM with a Mission to Mars

## EV3 Space Challenge Set

LEG45570 **\$406.95**

16 1418

This set conforms to national curriculum standards and contains challenge and learning missions based around the theme of space. Three research projects, co-developed with space experts, provide rich opportunities for students to explore and create innovative solutions to current space exploration topics. The set includes three learning mats, a challenge mat, dual lock tape and all of the LEGO elements required to build the challenge models. The accompanying digital content provides student-ready materials, teacher notes and building Instructions.

The curriculum material for the EV3 Space Challenge Set is included in the LEG45544-1 LEGO MINDSTORMS® Education EV3 Curriculum Solution.



## Explore space through hands-on missions

LEGO MINDSTORMS Education EV3 Space Challenge lessons are designed to fit within your class time and bring real-world scenarios to life. Students explore problems that space researchers are actually trying to solve. LEGO MINDSTORMS Education EV3 Space Challenge curriculum guides students through the following categories:

### Gear Basics

1 lesson

45-90min each

Learn the basics of gears so students can build robots by applying knowledge of physical science and mathematical principles.

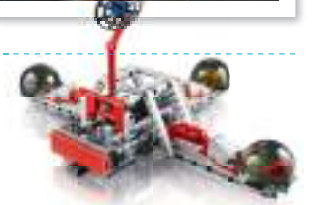


### Learning Missions

9 missions

45-90min each

The Learning Missions encourage students to investigate, observe, calculate, and apply knowledge to solve specific tasks.



### Challenge Missions

7 missions

60-180min each

The missions challenge students to apply and creatively adapt programming and problem solving skills to construct robots that solve actual space exploration challenges.

### Research Projects

3 projects

45-90min each

Projects were co-developed with NASA and are designed to familiarise students with the planning process for space exploration. One aspect that makes the Space Challenge curriculum so appealing to students is the fact that the three Research Projects are 100% real. Developed together with actual NASA engineers, they focus on three key problems that space researchers around the globe are striving to solve:

- How to ensure humans can survive in space
- How humans can create energy in space
- How robots can help humans explore space



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# Explore renewable energy further with LEGO® MINDSTORMS® Education

The Renewable Energy Add-On Set is also compatible with our EV3 Science Activity Pack. Using physical science experiments, this versatile pack explores energy, heat and temperature, force and motion, and light.

Also compatible with LEGO Education Simple & Powered Machines

## Renewable Energy Add-on Set

LEG9688 **\$239.95**



Developed together with science teachers and Fraunhofer IAIS, Europe's largest application-oriented research organisation, students use both hardware and software for their data-logging capabilities. The set provides a range of elements including a solar panel, turbine blades, a motor/generator, LED lights, an extension wire, and a LEGO® Energy Meter.

The EV3 Science Activity Pack also requires the EV3 Core Set, Battery Charger, the EV3 Science Activity Pack (free download) and Temperature Sensor.



## Classroom Solutions Science Activity Add-on Packs

LEGO Education EV3 Curriculum Solution  
LEG45544-1



Temperature Sensor  
LEG9749



Renewable Energy Add-on Set  
LEG9688



Battery Charger  
LEG8887



LEG9688-T1	<b>\$306.95</b> SAVE \$27.95		1	1	
LEG9688-T4	<b>\$1,154.95</b> SAVE \$184.65		4	4	
LEG9688-T8	<b>\$2,309.95</b> SAVE \$369.25		8	8	
LEG45544-RE4 8 students	<b>\$4,259.95</b> SAVE \$247.25	4	4	4	4
LEG45544-RE8 8 students	<b>\$8,275.95</b> SAVE \$738.45	8	8	8	8

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# Build and conduct science experiments

LEGO MINDSTORMS® Education EV3 Science lessons are designed to fit within your class time and bring real-world scenarios to life. Students conduct science experiments which explore physical science concepts. LEGO MINDSTORMS Education EV3 Science curriculum challenge students through experiments focused on:

Curriculum material, software, eLearning and assessment tools are freely available at: [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

The Science curriculum is available for the EV3 Lab (desktop) and the EV3 Programming (app). Please check system requirements at [LEGOeducation.com.au](http://LEGOeducation.com.au)



## Energy

5 experiments

45-90min each

Students explore manual energy transfer using wind and solar energy while also testing energy efficiency and electric vehicles.



## Force and Motion

5 experiments

45-90min each

Students learn about mechanical and kinematic phenomena using gears and inclined planes to test friction, velocity and the acceleration of gravity.

## Light

1 experiments

45-90min each

Students investigate light intensity through experimenting with the various light sources such as ambient, reflective and colours.

## Heat and Temperature

3 experiments

45-90min each

Students study heat by using a temperature sensor to conduct experiments exploring insulation, heat transfer and convection and learn about the the effects of heat under various conditions.



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# Main Components

## Transformer 10V DC

LEG8887 **\$65.95**



Allows you to recharge your LEG9693 Rechargeable Battery DC, EV3 rechargeable battery LEG45501 or LEG8878 Power Functions Rechargeable Battery Box. \*Only compatible with the white Rechargeable Battery LEG9693.

## EV3 Intelligent Brick

LEG45500 **\$461.95**



It features an illuminated 6 button interface, a high-resolution black and white display, built-in speaker, USB port, a mini SD card reader, 4 input ports and 4 output ports. Also supports USB, Bluetooth and WiFi communication.

## EV3 Rechargeable DC Battery

LEG45501 **\$162.95**



Designed for use with the EV3 Intelligent Brick. The charge time is around 3 to 4 hours. It requires the LEG8887 DC Charger, sold separately.

## EV3 Large Servo Motor

LEG45502 **\$65.95**



Comes with built-in rotation sensor and has a 1 degree accuracy.

## EV3 Medium Servo Motor

LEG45503 **\$52.95**



Comes with built-in rotation sensor and has a 1 degree accuracy. Great for lower load, higher speed applications.

## EV3 Cable Pack

LEG45514 **\$35.95**



Contains the same 7x RJ12 Connector Cables as included in the LEG45544-1 EV3 Core Set & Software. The pack contains: 4x 25cm, 2x 35 cm, 1 x 50cm

# Sensor Elements

## Temperature Sensor

LEG9749 **\$70.95**



The temperature sensor is a digital sensor powered by the EV3 brick. It can be calibrated to measure both Celsius and Fahrenheit (-20 °C to +120 °C/-4 °F to +248 °F).

## EV3 Ultrasonic Sensor

LEG45504 **\$64.95**



Measures distance and detect objects around the EV3.

## EV3 Gyro Sensor

LEG45505 **\$64.95**



Measures angles and measures degrees per second of rotation.

## EV3 Colour Sensor

LEG45506 **\$64.95**



Detects colours and measures light intensity, ambient and reflected light. Auto ID is built into EV3 software.

## EV3 Touch Sensor

LEG45507 **\$40.95**



Has 3 different modes: It can be pressed, released or it counts the number of presses.

## EV3 Infrared Beacon

LEG45508 **\$64.95**



For use with the EV3 Infrared Seeker Sensor. The beacon emits an infrared signal which the sensor can track. The beacon can also be used as a remote control for the EV3.

## EV3 Infrared Sensor

LEG45509 **\$64.95**



Detects proximity to the robot and reads signals emitted by the EV3 Infrared Beacon. Can create remote controlled robots and learn how infrared technology is used.



## Soccer Kit

LEGIB1005K **\$293.95** **SAVE \$13.90**



The kit includes: Elekit IR Ball (LEGIB1005), HiTechnic IRSeeker V2 (LEGNX1042) to locate and provide the direction to the IRBall, HiTechnic Compass Sensor (LEGNX1034) to determine the orientation of the playing field and the heading to the goal.



Enquire about our Professional Learning workshops in your region

## HiTechnic Sensors

### Angle Sensor

LEGNX1030 **\$105.95**



Measure axle rotation position and rotation speed with the HiTechnic Angle Sensor. The Angle Sensor enables you to measure 3 rotation properties: 1. Absolute Angle 2. Accumulated angle 3. Rotation Speed - Perfect for building a distance measuring wheel or a weather station wind vane.



### IR Seeker v2

LEGNX1042 **\$98.95**



With this sensor's ability to work in both DC and AC (pulsed) modes it can detect both the new and old RobocupJunior IR Balls.

### Force Sensor

LEGNX1074 **\$98.95**



The Force Sensor will enable you to build robots that can measure a physical force applied through a LEGO® cross axle. The sensor has a LEGO cross axle receptacle and the value represents the force that is applied to an axle going into the sensor. Note that the force measured is the linear force going into the sensor.



### Compass Sensor

LEGNX1034 **\$98.95**



The Compass Sensor is a digital compass for more accurate navigation.

### Barometric Sensor

LEGNX1036 **\$109.95**



Track your environment with the HiTechnic Barometric Sensor. The sensor measures atmospheric pressure and temperature.



### Colour Sensor v2

LEGNX1038 **\$104.95**



This colour sensor can detect an extended range of more than 15 target colours.



## Actuator

**FIR12-50 \$98.95** 3rd party product

**FIR12-100 \$98.95** 3rd party product

These linear actuators are self contained units and include electric motors. They connect to the EV3 & NXT motor ports and can push loads up to 25N.

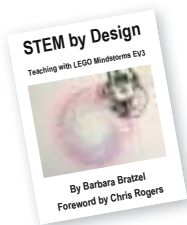
FIR12-50 – 50mm length. FIR12-100 – 100mm length.



## STEM by Design Teaching with LEGO Mindstorms EV3

**C01001 \$131.95** 3rd party product

STEM by Design contains a full range of classroom-tested activities for using the LEGO® Mindstorms EV3 Education Set.



## Classroom Activities for the Busy Teacher: EV3

**LPLEG8 \$84.95** 3rd party product

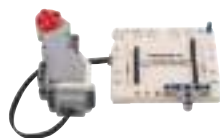
A 10 week curriculum package to implement the EV3 Core Set & Software in your classroom. Containing over 20 chapters that follow a planetary exploration storyline.



## EVShield with Arduino Uno Bundle

**MIND002 N/A** 3rd party product **NEW**

This combination pack contains an EVShield and Arduino Uno which allows you to easily connect and control your LEGO components using the Arduino programming environment. Connect up to 4 EV3 or NXT motors, and 4 NXT or EV3 Sensors, and program for them through Arduino sketch. Attach upto 6 RC Servo motors to EVShield. It also provides ports for I2C devices. Please note: sensors not included.



## 6-AA Battery Holder with EV3 Mount

**MIND004 N/A** 3rd party product **NEW**

6-AA Battery Holder with NXT/EV3 Mounts - This battery holder is designed to hold 6 AA batteries. It has NXT and EV3 compatible mounting.



## Omniwheel

**LEG2051 \$21.90** 3rd party product

For greater freedom of movement and increased stability. The single omniwheel can be modified to fit cross axles. 49.2mm in diameter.



## Rotacasters

**ROT8435G \$47.95** 3rd party product

**ROT8465 \$47.95** 3rd party product

Multi-directional wheels with LEGO compatible hub. Ideal for use in RobocupJunior events.

ROT8435G – 48mm dia, 35A durometer. Packs of 2.

ROT8465 – 48 mm dia, 65A durometer. Packs of 2.



ROT8435G



ROT8465

## Multi-Charger Designed for EV3, NXT & WeDo 2.0 Batteries

**WLMC01 \$351.95** 3rd party product

Charge up to 8 EV3, NXT and WeDo 2.0 batteries simultaneously. It comes standard with 8 leads.

**WLMC03 \$49.95** 3rd party product

50cm cables (if extra length required). Set of 8.



WLMC01



WLMC03

## UI module for EVShield or Arduino

**MIND003 N/A** 3rd party product **NEW**

This 2.2 inch 320x240 TFT Colour Display attaches to the EVShield for easy user interaction. It has a 5 Position Navigation Switch and has been integrated with the EVShield library for easy programming. It also works with just Arduino (without the EVShield).



## EV3 Sensor Multiplexer for EV3 or NXT

**MIND005 N/A** 3rd party product **NEW**

Need more Sensors? Connect up to 3 LEGO sensors on a single port. Works with NXT or EV3. It does not work with third party sensors. Supported Sensors: EV3 Ultrasonic, Gyro, Infrared, Colour and Touch sensor.



## Replacement packs For EV3 & NXT

LEGO Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products.



### Replacement Pack 1 - LEGO® Education EV3

LEG2700 **\$12.70**

This pack includes elements for the EV3 Curriculum Solution (LEG45544-1), and the EV3 Expansion Set (LEG45560).



### Replacement Pack 2 - LEGO Education EV3

LEG2701 **\$12.70**

This pack includes elements for the EV3 Expansion Set (LEG45560).



### Replacement Pack 3 - Ball & Ball Joint for EV3

LEG2702 **\$15.30**

This pack features a ball and ball joint for the EV3 Curriculum Solution (LEG45544-1).



### Replacement Pack 4 - Green City Challenge

LEG2703 **\$15.30**

This pack includes elements for the Green City Challenge Set (LEG9594).



### Replacement Pack 5 - Space Challenge

LEG2704 **\$15.30**

This pack includes elements for the EV3 Space Challenge Set (LEG45570).



### Replacement Pack 6 - LEGO Education EV3

LEG2705 **\$15.30**

This pack features elements for the EV3 Expansion Set (LEG45560) and the EV3 Curriculum Solution (LEG45544-1).



### Replacement Pack 7 - LEGO Education EV3

LEG2706 **\$15.30**

This pack features elements for the EV3 Expansion Set (LEG45560), EV3 Curriculum Solution (LEG45544-1) and NXT (LEG9797-2).



### Replacement Pack 8 - Rubber Bands

LEG2707 **\$15.30**

This pack features four rubber bands in white, red, blue and yellow for the EV3 Expansion Set (LEG45560) and the Simple & Powered Machines Set (LEG9686).

## MTA Storage Systems suitable For EV3

Compatible with LEGO Education Storage Tubs



### MTA Storage Systems & Trays

- SUN8317 **\$175.95** exclusive 3rd party product
- SUN8327 **\$257.95** exclusive 3rd party product
- SUN8337 **\$327.95** exclusive 3rd party product
- SUN832S **\$11.60** exclusive 3rd party product
- SUN831L **\$15.20** exclusive 3rd party product

These MTA exclusive storage systems have been designed to organise your LEGO Education Storage tubs. The storage system also houses its own storage containers in two sizes. Each unit comes with the option of castors or adjustable feet for static storage.

**SUN8317** – Single Storage. Holds 3 EV3 trays.  
**SUN8327** – Double Storage. Holds 6 EV3 trays.  
**SUN8337** – Triple Storage. Holds 9 EV3 trays.  
**SUN832S** – Small Tray. **SUN831L** – Large Tray.

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# RobocupJunior

In 2018 Modern Teaching Aids celebrate 11 years of sponsorship with RobocupJunior in Australia and New Zealand.

The RobocupJunior competition extends coding and computational thinking from the classroom with comprehensive relevant links to the Australian Curriculum - Digital Technology as well as encompassing STEM skills.

The RobocupJunior competition supports local, regional and international robotics events and has experienced exponential growth with over 1000 teams taking part in Australia and New Zealand and played in over 30 countries in the world.

RoboCupJunior encompasses not only engineering and science and technology skills, but extends right across a school curriculum to maths, literacy, music and art. It also addresses social development by encouraging sportsmanship, sharing, teamwork, understanding differences, cooperation and organisational skills.

The competition has been developed with 3 levels of increasing complexity with students programming their robots to compete in Dance, Rescue and Soccer Competitions.



Australian Curriculum - Digital Technology encompassing STEM skills

**RobocupJunior:** Competitive in an encouraging & supportive environment extending coding and computational thinking from the classroom

## Competition Details

### Australian Open:

Melbourne, VIC – September 2018  
Please visit [www.robocupjunior.org.au](http://www.robocupjunior.org.au) for 2018 competition dates and locations.

### New Zealand Nationals:

Please visit [www.robocupjunior.org.nz](http://www.robocupjunior.org.nz) for 2018 competition dates and locations.



## Want to get involved?

Let your students gain an interest in science and technology by competing in one of the many regional competitions, while expanding their social, intellectual and problem solving skills and help them to develop into creative and independent adults.

Contact us for one of the many training sessions and for your nearest regional competitions.

[www.robocupjunior.org.au](http://www.robocupjunior.org.au) or [www.robocupjunior.org.nz](http://www.robocupjunior.org.nz)

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# RobocupJunior Challenges

## RCJ Dance

RobocupJunior Dance is a stunning integration of Science, Technology and the Arts. Participants program their robot or robots to perform to music. Competitors are encouraged to decorate their entries and to motorise robot limb movements, to give their robots real personality. RCJ Dance can be approached in a number of ways with creative new ideas appearing every year. The Dance Challenge is a real team effort where students prepare themselves for the team interview and create their costumes, on top of the programming and building.



## RCJ Rescue & Premier Rescue

The Rescue competition mirrors the real life use of robots that rescue people from life threatening situations. In rescue, robots compete by following a line on a series of tiles encountering obstacles to a designated rescue area locating and rescuing the victim from the chemical disaster spill. Premier rescue involves the same tiles as Rescue, however, this time the robots can encounter some extra more challenging tiles. Once in the chemical spill, the Premier rescue robot is required to find and lift the victim to the safety of a raised platform.

## Standard Soccer

Students are required to design and program 2 robots to compete against an opposing pair of robots by kicking an infra-red transmitting ball into their designated goal. Teams have a choice of using 2 attacking robots or an attacker teamed with a goalie.

For more information on the challenges refer to the RobocupJunior website [robocupjunior.org.au](http://robocupjunior.org.au)



# Robogals

Modern Teaching Aids is proud to support Robogals as Platinum National Sponsor for 2018.

Robogals is an international, not-for-profit, student-run organisation that aims to increase female participation in engineering, science and technology through fun and educational initiatives aimed at girls in primary and secondary school.

They provide free robotics workshops, where the girls construct and program LEGO® MINDSTORMS® Education resources. These workshops have been designed to engage students in a range of engineering topics in a way that is fun and creative.

Furthermore, Robogals organises inspirational talks about studying engineering and working as an engineer, as well as an annual conference for executives from each of our regions, and they provide localised initiatives to meet certain demands and gaps.

Robogals was founded in 2008 by Marita Cheng, the 2012 Young Australian of the Year.

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Inspiring girls around the world



# Suggested RobocupJunior resources using the EV3 Robot

For more details on the competition and rules go to [robocupjunior.org.au](http://robocupjunior.org.au)

For more RobocupJunior Packs go to the RobocupJunior page at [teaching.co.nz](http://teaching.co.nz)

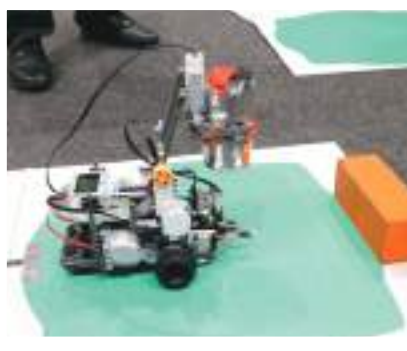


## Dance Pack (2 robots)

RCJ45544-D **N/A** **SAVE N/A**

The kit consists of:

- 2x LEG45544-1 EV3 Core Set & Software
- 1x ROB001 Art & Craft
- 2x LEG8887 Battery Charger



## Rescue (1 robot)

RCJ45544-R **\$976.95** **SAVE \$70.80**

The kit consists of:

- 1x LEG45544-1 EV3 Core Set & Software
- 1x ROB009 Rescue Field
- 1x LEG45506 EV3 Colour/Light Sensor (+colour/light in set)
- 1x ROT8435G Rotocaster (pack of 2 multidirectional wheels)
- 1x LEG8887 Battery Charger

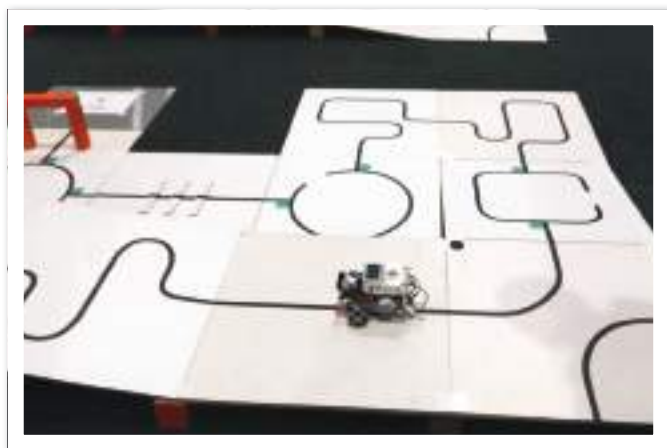


## Standard Soccer (2 robots)

RCJ45544-SN **\$2,199.95** **SAVE \$87.55**

The kit consists of:

- 2x LEG45544-1 EV3 Core Set & Software
- 1x LEGIB1005K Soccer Kit (includes Soccer ball)
- 2x LEGNX1042 Hi Technic IR Seeker Sensor
- 2x LEGNX1034 Hi Technic Compass Sensor
- 1x LEG45560 EV3 Expansion Set
- 2x LEG8887 Battery Charger

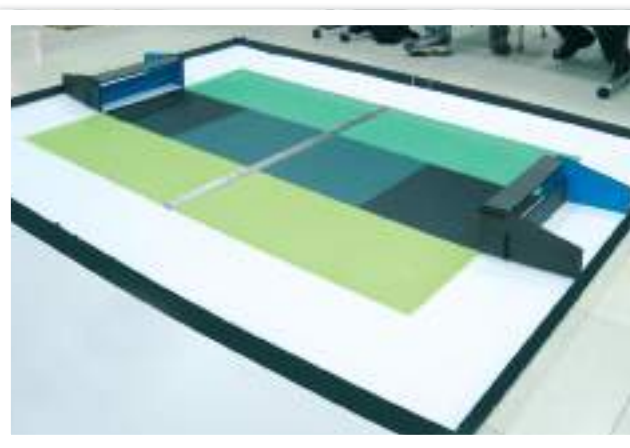


## Official RobocupJunior Rescue Practice Field

ROB009 **\$142.95**

3rd party product

The Rescue Practice Field is a durable and waterproof vinyl resource that has been designed for use in the RobocupJunior Australia competition. The field includes the Premier tiles and can be cut into 15 separate tiles or used as one complete field. 297.8cm(W) x 311.2cm(L). Individual tile size: 594mm x 594mm.



## Robot Soccer Field

ROB010 **\$142.95**

3rd party product

The Robot Soccer Field can be used as an educational activity in the classroom as an introduction to coding and the use of sensors broadening the appeal of robotics to encouraging a wider range of students to explore STEM subjects and careers. The RoboCupJunior Australia Simple Simon Soccer Game could be used with this mat which is an introductory league. Please refer to Simple Simon rules listed under Soccer on the RobocupJunior website.

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## RobocupJunior Resources



### RobocupJunior Soccer Kit

LEGIB1005K **\$293.95** **SAVE \$13.90**



The kit includes: Elekit IR Ball (LEGIB1005), HiTechnic IRSeeker v2 (LEGNX1042) to locate and provide the direction to the IRBall, HiTechnic Compass Sensor (LEGNX1034) to determine the orientation of the playing field and the heading to the goal.



### Art & Craft Pack RobocupJunior Dance

Not available

3rd party product



This Art & Craft Pack is perfect for the Dance competition Pack includes (contents may vary to image shown):

- CL5770 – Large Glue On Eyes 1.5cm
- CL1970 – Fancy Pipe Cleaner Lengths Pk 200
- EC209 – Foam Sheets 30 x 30cm
- CL6227 – Feathers 100
- TH013 – Coloured Petit Fours Cases 100
- PH20 – Pom Poms
- TEB0200 – Sticky Tack

### IR Temperature Sensor for EV3 or NXT

MIND001 **\$109.95**

3rd party product



Measure ambient temperature as well as temperature of surrounding devices.

- Non-contact
- Resolution: 0.1 degrees
- Returns values in Celsius and Fahrenheit
- EV3/NXT Compatible Connector
- Programming blocks available for EV3 or NXT



### Pulsed IR RoboBall

LEGIB1005 **\$109.95**



This Elekit IR ball contains 20 infrared LEDs giving full signal coverage. The ball can run in un-modulated (no pulse) mode to be compatible with existing RoboCup Jr requirements or there are 3 other pulsed modes allowing detection ranges up to 5 metres. Uses 4 AAA batteries (not included).



### HiTechnic Colour Sensor v2

LEGNX1038 **\$104.95**



This colour sensor can detect an extended range of more than 15 target colours.



### HiTechnic Compass Sensor

LEGNX1034 **\$98.95**



The Compass Sensor is a digital compass for more accurate navigation.



### HiTechnic IR Seeker v2

LEGNX1042 **\$98.95**



With this sensor's ability to work in both DC and AC (pulsed) modes it can detect both the new and old RoboCup IR Balls.





# FIRST® LEGO® League

FIRST® LEGO® League (FLL®) is a competition catering for upper-primary and lower-secondary school students. Every year, teams of up to 10 students build, program and compete with a robot, while also learning about a modern problem in science and engineering and developing solutions for it. Tournaments are run with the feel of a sporting event, and teams compete like crazy while having the time of their lives. What FLL teams accomplish is nothing short of amazing. The skills they learn will last a lifetime. Throughout their experience, teams will operate under FLL's signature set of Core Values, celebrating discovery, teamwork, and Gracious Professionalism®.

Each Challenge has three parts: the **Robot Game**, the **Project** and the **FLL Core Values**. Teams of up to ten children, with one adult coach, participate in the Challenge by programming an autonomous robot to score points on a themed playing field (Robot Game), developing a solution to a problem they have identified (Project), all guided by the FLL Core Values. The culmination of research, building, programming and sharing their research are FLL tournaments where teams come together to celebrate their achievements.

For more information on being involved & to register your team for 2018 please visit: **Australia - [www.ausfll.org](http://www.ausfll.org) or New Zealand - [www.kiwifirst.org](http://www.kiwifirst.org)**



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# LEGO® Education WeDo 2.0

## Make science come to life

With real-world science projects, including engineering, technology and coding, students experience how science comes to life. WeDo 2.0 builds students' confidence to ask questions, define problems and design their own solutions, by putting discovery in their hands and their minds.

Designing  
Investigating  
Modeling  
Coding



LEGO® Education WeDo 2.0



## ...enable teaching across science topics

### Life Science

Investigate life cycles, habitats, traits, environmental changes and more.

### Engineering

Design projects involving constraints, prototype and test models. Example project: Create a solution to assist with the rescue of animals in dangerous situations.

### Physical Science

Explore forces and motion, cause and effect, and more. Example project: Investigate the factors that make a car go faster, to help predict future motion.

### Earth and Space Science

Discover the various climates, research of weather patterns and examine weather-related hazards. Example project: Design an automatic LEGO floodgate to control the water level of a stream according to various precipitation patterns.



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**FREE freight on all orders over \$99.** Conditions apply, see website for details.

# Build students' confidence to ask questions and solve problems



## WeDo 2.0 Curriculum Solution

LEG45300 **\$307.95**

This set is based upon the latest science standards and was created to enhance students' curiosity and science skills. The set includes a Smarthub, a Medium Motor, Motion Sensor a Tilt Sensor and enough building elements for two students. The software provides an easy-to-use programming environment and includes the WeDo 2.0 Curriculum Pack, which covers life, physical, earth and space sciences, as well as engineering.

## Solution includes

- WeDo 2.0 Core Set
- WeDo 2.0 Software & Curriculum Pack
- WeDo 2.0 eLearning
- WeDo 2.0 Curriculum, including Life Science, Engineering, Physical Sciences, Earth and Space Science and new Computational Thinking projects



# A captivating science teaching solution

## What's included in the Curriculum Solution?

### Core Set

Containing the LEGO® bricks and technology elements needed to make elementary students motivated and make science projects come to life.



<b>Curriculum content</b> Real life projects based on national standards to develop students practices within science, including engineering, technology and computing.*	<b>Teaching software</b> Intuitive software including integrated curriculum content, easy drag and drop programming and teachers guide.*	<b>Assessment tools</b> Project integrated assessment grids and rubrics for both teacher and student led assessment.*	<b>eLearning program</b> Five eLearning modules to give full teaching support from implementation to activation.*	<b>Technical support</b> Ongoing telephone and online support to help you with any questions.	<b>Community</b> Access to the LEGO Education community of teachers for additional ideas, tips and new connections.
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## What can I add on?

<b>Complementary products</b> Rechargeable power add-on solution for easy battery management is available to supplement the WeDo 2.0 solution.	<b>Training and professional development</b> Check our Professional Learning calendar on <a href="http://teaching.co.nz">teaching.co.nz</a> to find training near you.	<b>Replacement Packs</b> The ideal way to replace key LEGO elements for the WeDo 2.0 sets.
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\*Available for free download from [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

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# Included with each purchase of the WeDo 2.0 curriculum solution

### WeDo 2.0 Curriculum

25 45 www

This Curriculum Pack promotes investigation and experimentation in life, physical, earth and space sciences. Built on the latest science standards, the pack aids elementary educators in delivering key science content, while incorporating activities across engineering, technology and computing.

### WeDo 2.0 eLearning

www

LEGO Education WeDo 2.0 eLearning is an easy, manageable solution with full teaching support from implementation to curriculum activation. Using an accessible blend of text, video, animation and curriculum links, it provides thorough training on using the different teaching tools and activity types.

**Included**

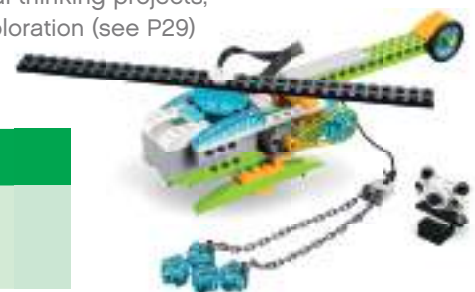
WeDo 2.0 features motorised LEGO models, relevant technology, and clearly structured, standards-based projects.

## There are three types of WeDo 2.0 projects...

- 1 Get Started Project, divided into 4 parts, to teach the basic functions of WeDo 2.0
- 12 Guided Projects linked to curriculum standards, including new computational thinking projects, with step-by-step instructions (see P29)
- 12 Open Projects linked to curriculum standards, including new computational thinking projects, with an initial design brief that inspires open-ended problem solving and exploration (see P29)

## ...which all follow a consistent structure...

Explore	Create	Share
<ul style="list-style-type: none"> <li>• Connect</li> <li>• Discuss</li> </ul>	<ul style="list-style-type: none"> <li>• Build</li> <li>• Program</li> <li>• Modify</li> </ul>	<ul style="list-style-type: none"> <li>• Document</li> <li>• Present</li> </ul>



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# LEGO® Education WeDo 2.0

## Computational Thinking

### Coding is more than code with our new Computational Thinking projects

LEGO® Education WeDo 2.0 now comes with new projects that link into the latest standards, allowing you to not only bring science to life, but also to enhance computational thinking skills in line with the most up-to-date curriculum.

#### The new WeDo projects include

- 4 Guided Projects linked to curriculum standards, focusing on problem solving, with step-by-step instructions.
- 4 Open Projects linked to curriculum standards, with an initial design brief that inspires open-ended problem solving and exploration.



NEW



#### Moon Base (Guided Project)

This project is about designing a solution in which a robot would be able to assemble a base on the moon.



#### Animal Senses (Open Project)

This project is about modeling how animals use their senses to interact with their environment.

## Program WeDo 2.0 with 3rd party software\*

The WeDo 2.0 Core Set can, besides with the LEGO WeDo 2.0 software, also be programmed with Scratch and Tynker. This allows students and teachers to use both block-based and text-based programming languages.




#### Scratch

- Online programming environment
- Based on Blockly (programming blocks with text labels)
- Large active online community with lesson plans and teacher ideas and inspiration
- Free download from <https://scratch.mit.edu/>

#### Tynker

- Similar to Blockly
- Combine WeDo sensors with the tablet's own sensors
- Start with visual blocks and progress to JavaScript and Python
- Subscription based, download from <https://www.tynker.com/>

\*Please note: 3rd party software is not developed, approved or endorsed by LEGO Education.



## Classroom Solutions

### WeDo 2.0 Curriculum Solution Packs

WeDo 2.0 Curriculum Solution  
LEG45300



WeDo 2.0 Add-On Power Pack  
LEG54838



MTA Storage System Single  
SUN8316

exclusive 3rd party product



MTA Storage System Double  
SUN8326

exclusive 3rd party product



<b>LEG45300-2K</b> 4 students	<b>\$592.95</b> SAVE \$22.95	2		
<b>LEG45300-2KP</b> 4 students	<b>\$912.95</b> SAVE \$46.75	2	2	
<b>LEG45300-3K</b> 6 students	<b>\$889.95</b> SAVE \$33.90	3		
<b>LEG45300-3KP</b> 6 students	<b>\$1,352.95</b> SAVE \$86.60	3	3	
<b>LEG45300-5K</b> 10 students	<b>\$1,458.95</b> SAVE \$80.80	5		
<b>LEG45300-5KP</b> 10 students	<b>\$2,199.95</b> SAVE \$199.30	5	5	
<b>LEG45300-5KS</b> 10 students	<b>\$1,594.95</b> SAVE \$109.75	5		1
<b>LEG45300-5KPS</b> 10 students	<b>\$2,364.95</b> SAVE \$199.25	5	5	1
<b>LEG45300-8K</b> 16 students	<b>\$2,287.95</b> SAVE \$175.65	8		
<b>LEG45300-8KP</b> 16 students	<b>\$3,519.95</b> SAVE \$318.85	8	8	
<b>LEG45300-8KS</b> 16 students	<b>\$2,457.95</b> SAVE \$247.60	8		1
<b>LEG45300-8KPS</b> 16 students	<b>\$3,651.95</b> SAVE \$428.80	8	8	1
<b>LEG45300-12K</b> 24 students	<b>\$3,409.95</b> SAVE \$285.45	12		
<b>LEG45300-12KP</b> 24 students	<b>\$5,169.95</b> SAVE \$588.25	12	12	

Check online for more LEGO Education WeDo 2.0 packs which include the multicharger WLMC01

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# Classroom Solutions

## WeDo 2.0 Curriculum Solution Packs

WeDo 2.0 Curriculum Solution  
LEG45300



WeDo 2.0 Add-On Power Pack  
LEG54838



MTA Storage System Double  
SUN8326

**exclusive** 3rd party product



MTA Storage System Triple  
SUN8336

**exclusive** 3rd party product



<p><b>LEG45300-12KS</b> 24 students</p> <p><b>\$3,583.95</b> <b>SAVE \$353.40</b></p>	12		1
<p><b>LEG45300-12KPS</b> 24 students</p> <p><b>\$5,389.95</b> <b>SAVE \$610.20</b></p>	12	12	1
<p><b>LEG45300-15K</b> 30 students</p> <p><b>\$4,179.95</b> <b>SAVE \$439.30</b></p>	15		
<p><b>LEG45300-15KP</b> 30 students</p> <p><b>\$6,489.95</b> <b>SAVE \$707.80</b></p>	15	15	
<p><b>LEG45300-15KS</b> 30 students</p> <p><b>\$4,399.95</b> <b>SAVE \$527.25</b></p>	15		1
<p><b>LEG45300-15KPS</b> 30 students</p> <p><b>\$6,599.95</b> <b>SAVE \$905.75</b></p>	15	15	1

## MTA Storage Systems suitable for WeDo 2.0

### MTA Storage Systems & Trays

SUN8316 **\$164.95** **exclusive** 3rd party product

SUN8326 **\$241.95** **exclusive** 3rd party product

SUN8336 **\$307.95** **exclusive** 3rd party product

These MTA exclusive storage systems have been designed to organise your LEGO® Education Storage tubs. Each unit comes with the option of castors or adjustable feet for static storage.

**SUN8316** – Single Storage.

Holds 6 WeDo 2.0 trays.

**SUN8326** – Double Storage.

Holds 12 WeDo 2.0 trays.

**SUN8336** – Triple Storage.

Holds 18 WeDo 2.0 trays.



Compatible with LEGO Education Storage Tubs

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# Sensors & Motors

## LEGO® Education WeDo 2.0 Smarthub 2 I/O

LEG45301 **\$105.95**



The two-port Smarthub brings WeDo 2.0 sensors and motors to life. Using WeDo 2.0 Software and Bluetooth Low Energy (BLE), the Smarthub transmits data between a tablet or computer and the WeDo 2.0 Construction Set. Require two AA batteries or a Smarthub Rechargeable Battery.

## LEGO Education WeDo 2.0 Motion Sensor

LEG45304 **\$40.95**



Attach a Motion Sensor to the WeDo 2.0 Smarthub and detect objects within a range of 15cm, depending on the design of the object. No set-up is required. Simply connect the Motion Sensor and it will be identified automatically by the WeDo 2.0 Software.

## LEGO Education WeDo 2.0 Smarthub Rechargeable Battery

LEG45302 **\$105.95**



Rechargeable lithium ion battery for the WeDo 2.0 Smarthub. Includes a built-in LED to indicate charge status.

## LEGO Education WeDo 2.0 Tilt Sensor

LEG45305 **\$40.95**



Attach a Tilt Sensor to the WeDo 2.0 Smarthub and detect seven different types of orientation: Tilt This Way, Tilt That Way, Tilt Up, Tilt Down, No Tilt, Any Tilt and Shake. No set-up is required. Simply connect the Tilt Sensor and it will be identified automatically by the WeDo 2.0 Software.

## LEGO Education WeDo 2.0 Medium Motor

LEG45303 **\$40.95**



Get things moving with the Medium Motor. Slotting between three modules, this medium-size, medium-power motor has 2x2 studs on top and a snap interface on the front to allow easy and optimized integration with TECHNIC and WeDo 2.0 constructions. No set-up is required. Simply connect the Medium Motor and it will be identified automatically by the WeDo 2.0 Software.

## LEGO Education WeDo 2.0 Add-On Power Pack

LEG54838 **\$153.95** **SAVE \$17.95**



Avoid the loss of valuable teaching time caused by dead or missing batteries with the Add-On Power Pack, a rechargeable battery and charger designed exclusively for use with the Smarthub. It provides longer run time than AA batteries and has a charge time of around three hours. It is economically beneficial, as well as being more environmentally friendly.

# WeDo 2.0 uses Bluetooth® Low Energy

For WeDo 2.0, we have integrated the latest Bluetooth technology into our solution to let you take 'live' control of the models you create for near-instantaneous response.

To ensure the best-possible WeDo 2.0 experience, desktops, laptops and tablet devices must meet a minimum set of system requirements.

<https://education.lego.com/en-au/support/wedo-2/software-requirements>

# Replacement packs for WeDo 2.0

LEGO Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products.

## Replacement Pack WeDo 2.0

LEG2715 **\$14.90**

Don't let a missing piece spoil your enjoyment of WeDo 2.0. This Replacement Pack includes elements for the LEGO Education WeDo 2.0 Core Set (part of LEG45300).



# LEGO® Education Machines & Mechanisms

## Discover how the real world works



### LEGO® Education Machines & Mechanisms

With Machines & Mechanisms, teachers can ignite STEM learning in scientific inquiry and creative engineering design. We help teachers with guidance, easy-to-use activities, and real-world inspiration, bridging into technology and science textbooks.



**Simple & Powered  
Machines Solution P35**

**Simple Machines  
Solution P41**

**Early Simple Machines  
Solution P45**

Machines & Mechanisms from LEGO® Education is a range of challenging hands-on tools that link book-learning in science, technology, engineering and maths to real-world phenomena.

Using specially compiled LEGO elements to cover advanced topics like pneumatics and renewable energy, Machines & Mechanisms provides a compelling means of investigating mechanical principles, while encouraging students to engage in scientific inquiry and engineering design.

Machines & Mechanisms is easy to incorporate into everyday classwork, where it adds variation and motivates students to acquire curriculum-relevant knowledge and skills.

With Machines & Mechanisms, teachers can ignite learning about basic mechanisms, structures, and power sources in the real world.



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# Facilitate real-world STEM learning

## Simple & Powered Machines Curriculum Solution

LEGG9686 **\$318.95**



This primary and high school level core set contains a brick assortment and full-colour building instruction booklets for 28 models.

Use this set with the accompanying curriculum pack to promote students' fundamental STEM understanding of simple machines, structures and mechanisms. The curriculum pack provides full lessons, extension activities and problem solving tasks, as well as teacher guides and student worksheets.

### Solution includes

- Simple & Powered Machines Core Set 1
- Introducing Simple & Powered Machines Activity Pack\* 48 45-90 www
- Advancing with Simple & Powered Machines Activity Pack\* 28 45-90 www
- Simple & Powered Machines maker activities 6 90-120 www



## A stimulating STEM solution

### What's included in the Curriculum Solution?

#### Core Set

Contains LEGO bricks and gears to create small models to build and explore real world mechanisms and energy concepts, motivating students STEM learning.



#### Curriculum content

The curriculum material is based on national curriculum standards and supports teachers with easy accessible activities to deliver highly engaging STEM learning.\*

#### Assessment tools

Assessment of learning is enabled through creative assessment, teachers checklists and student self assessment tools.\*

#### eLearning program

Step-by-step tutorials to help you get started.\*

#### Technical support

Ongoing telephone and online support to help you with any questions.

#### Community

Access to the LEGO Education community of teachers for additional ideas, tips and new connections.



### What can I add on?

#### Expansion sets

Two add-on packs are available, each with curriculum pack included. These are the Renewable Energy Add-on and the Pneumatics Add-on.

#### Training and professional development

Check our Professional Learning calendar on [teaching.co.nz](http://teaching.co.nz) to find training near you.

#### Complementary products

Technology components are also available as separate products.

#### Replacement Packs

Replacement bricks are available.

\*Available for free download from [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

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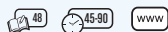


**FREE freight on all orders over \$99.** Conditions apply, see website for details.

# Included with each purchase of the Simple & Powered Machines curriculum solution

**Included**

## Introducing Simple & Powered Machines Activity Pack



Get a fundamental understanding of simple machines, structures and mechanisms. The pack features 37 principle model activities, 14 main activities, including extension activities, and six problem-solving tasks. Flash animations introduce the activities.

### Key Learning Values

- Experimenting with balanced and unbalanced forces
- Experimenting with friction
- Capturing, storing and transferring wind energy
- Measuring distance, time, speed and weight
- Calibrating scales
- Investigating powered forces and motion, speed and pulling power

**Included**

## Advancing with Simple & Powered Machines Activity Pack



Get an in-depth understanding of simple machines, mechanisms, structures and mechanical advantage. It includes 38 principle model activities, four main activities, including extension activities, and eight problem-solving activities. Real-life video clips introduce students to the activities.

### Key Learning Values

- Investigating the principles of simple machines, mechanisms and structures
- Mechanical advantage
- Balanced and unbalanced forces, friction, equilibrium, block and tackle and effect of force on an object
- Calculating speed, distance, time and weight
- Identifying dependent and independent variables

# Use the creative power of Maker to enable playful learning experiences

## Simple & Powered Machines Maker Activities

**Included**


This curriculum pack brings the innovative creativity of Maker into the primary school classroom. Acting as facilitators, teachers guide students through a series of open-ended, problem-based design brief challenges based on real-life scenarios. In a safe, supportive and inspiring learning environment, they team up to brainstorm ideas, define design criteria, tinker with rapid prototyping, and apply their findings to develop and build innovative and achievable solutions using the LEGO® Education Simple & Powered Machines set and materials from around the classroom. They also document and reflect on their progress using the worksheets included in the pack.



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## Classroom Solutions

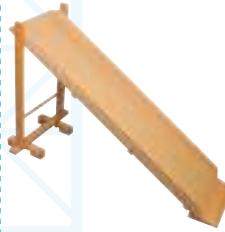
### Simple & Powered Machines Curriculum Solution Packs

Simple & Powered Machines Curriculum Solution  
LEG9686



Track, Ramp & Stand  
EIS0355DYTR

exclusive 3rd party product



MTA Storage System Double  
SUN8327

exclusive 3rd party product



MTA Storage System Triple  
SUN8337

exclusive 3rd party product



LEG9686-3N 6 students	<b>\$934.95</b> SAVE \$21.90	3			
LEG9686-6N 12 students	<b>\$1,836.95</b> SAVE \$76.75	6			
LEG9686-6ST 12 students	<b>\$2,045.95</b> SAVE \$148.90	6		1	
LEG9686-8N 16 students	<b>\$2,342.95</b> SAVE \$208.65	8			
LEG9686-8ST 16 students	<b>\$2,639.95</b> SAVE \$274.40	8			1
LEG9686-12N 24 students	<b>\$3,519.95</b> SAVE \$307.45	12			
LEG9686-12ST 24 students	<b>\$3,959.95</b> SAVE \$429.75	12		2	
LEG9686-12NS 24 students	<b>\$3,988.95</b> SAVE \$529.70	12	1	2	
LEG9686-15N 30 students	<b>\$4,311.95</b> SAVE \$472.30	15			
LEG9686-15ST 30 students	<b>\$4,945.95</b> SAVE \$563.80	15			2
LEG9686-15NS 30 students	<b>\$4,947.95</b> SAVE \$819.70	15	2		2



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# Explore Renewable Energy

Renewable Energy is an add-on set which, when combined with the Simple & Powered Machines Curriculum Solution, enables students to explore solar, wind and water energy, plus meet curriculum goals in science, technology and engineering, by building their own real-life models.

## Renewable Energy Add-on Set

LEG9688 **\$263.95**



When used together with the Simple & Powered Machines Curriculum Solution (LEG9686), this exciting add-on set facilitates the exploration of major renewable energy sources. This set includes a solar panel, turbine blades, a motor/generator, LED lights, an extension wire, a LEGO® Energy Meter, and full-colour building instructions for six real-life LEGO models.

The accompanying curriculum pack includes new lesson plans and problem solving activities, as well as teacher guides and student worksheets.



### Solution includes

- Renewable Energy Core Set

1

- Renewable Energy Activity Pack\*

20

45-90

www



Also compatible with EV3

## Classroom Solutions

### Renewable Energy Add-on Packs

Simple & Powered Machines Curriculum Solution  
LEG9686



Renewable Energy Add-on Set  
LEG9688



Power Functions Battery Box  
LEG8881



MTA Storage System Triple  
SUN8337

exclusive 3rd party product



Pack	Simple & Powered Machines Curriculum Solution (LEG9686)	Renewable Energy Add-on Set (LEG9688)	Power Functions Battery Box (LEG8881)	MTA Storage System Triple (SUN8337)
LEG9688-4		4	4	
LEG9688-8		8	8	
LEG9688-4N 8 students	4	4	4	
LEG9688-8N 16 students	8	8	8	
LEG9688-8NS 16 students	8	8	8	1

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## Investigate with Pneumatics

Pneumatics is an add-on set which, when combined with the Simple & Powered Machines Curriculum Solution, encourages logical and creative thinking, and motivates students to engage in scientific inquiry and engineering design by building air-powered LEGO models such as a scissor lift, a robot arm and a stamping press.



### Pneumatics Add-on Set



LEG9641 **\$131.95**



This add-on set is intended to be combined with the Simple & Powered Machines Curriculum Solution (LEG9686). It includes pumps, tubes, cylinders, valves, air tank, a manometer, and full-colour building instructions for four real-life pneumatics models.

The accompanying curriculum pack provides new lesson plans and problem solving activities, as well as teacher guides and student worksheets.



### Solution includes

- Pneumatics Core Set 1
- Pneumatics Activity Pack\* 12 45-90 www



## Classroom Solutions Pneumatics Add-on Packs

Simple & Powered Machines Curriculum Solution  
LEG9686



Pneumatics Add-on Set  
LEG9641



MTA Storage System Triple  
SUN8337

exclusive 3rd party product



Pack	Simple & Powered Machines Curriculum Solution (LEG9686)	Pneumatics Add-on Set (LEG9641)	MTA Storage System Triple (SUN8337)
LEG9641-4 <b>\$520.95</b> SAVE \$6.85		4	
LEG9641-8 <b>\$1,004.95</b> SAVE \$50.65		8	
LEG9641-4N 8 students <b>\$1,715.95</b> SAVE \$87.65	4	4	
LEG9641-8N 16 students <b>\$3,409.95</b> SAVE \$197.25	8	8	
LEG9641-8NS 16 students <b>\$3,539.95</b> SAVE \$430.00	8	8	1

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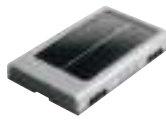


**FREE freight on all orders over \$99.** Conditions apply, see website for details.

# Energy Elements

## LEGO® Solar Panel

LEG9667 **\$109.95**



The Solar Panel provides sufficient power to operate the LEGO® Energy Meter and motors. It delivers: 5V, 4mA in direct light from a 60W incandescent bulb positioned 25 cm from the solar panel (>2000 lux); and 5V, 20mA in direct light from a 60W incandescent bulb positioned 8cm from the panel (>10,000 lux).

## Power Functions Battery Box

LEG8881 **\$27.40**



Give even more power and movement to your models with an extra battery box to supply power to your Power Functions motors! Each battery box can power 2 XL-Motors or 4 M-Motors at the same time. Requires 6 AA (1.5V) batteries, not included.

## Energy Storage

LEG9669 **\$51.95**



This Ni-MH battery with connector is designed to be combined with the LEG9668 Energy Display. When combined, the two elements form the LEGO Energy Meter. Storage capacity: 150 mAh.

## Power Functions Light

LEG8870 **\$27.40**



Add bright LED lights to your models to create glowing eyes, illuminated headlights, and anything else you can imagine and build.

## E-Motor

LEG9670 **\$51.95**



The E-Motor is a 9V motor with an internal gearbox. Its 9.5:1 gearing ratio provides a maximum torque of 4.5 Ncm and approximately 800 rotations per minute without load. It also functions as a very efficient generator.

# Power Functions

## Power Functions Rechargeable Battery Box

LEG8878 **\$159.95**



This rechargeable battery box has built-in Lithium polymer batteries for low weight and maximum power. Use the LEG8887 10VDC LEGO Transformer to charge the battery. Motor speed can be controlled via the battery box speed control dial! Output voltage is 7.4V.

## Power Functions Extension Wire 20"

LEG8871 **\$15.30**



Build your Power Functions-equipped models bigger, better and more mechanised and motorised than ever before by adding this 20-inch (50 cm) extension wire.

## Power Functions Extension Wire 8"

LEG8886 **\$10.90**



Build your Power Functions-equipped models bigger, better and more mechanised and motorised by adding this 8-inch (20 cm) extension wire.

## Power Functions XL-Motor

LEG8882 **\$32.95**



Build an extra medium-strength, medium-sized M-Mot Add an extra XL-Motor to your models! This super-strong motor will give plenty of power to your models, whether it's spinning a wheel or turning a system of gears. Use the "M" Motor to animate larger builds. Requires battery box (Item LEG8881), not included.

## Power Functions M-Motor

LEG8883 **\$27.40**



Build an extra medium-strength, medium-sized M-Motor into your LEGO creations and watch things start moving.

## Transformer 10V DC

LEG8887 **\$65.95**



This standard 10V DC transformer allows you to recharge your LEG45501 EV3 Rechargeable Battery, LEG8878 Power Functions Rechargeable Battery Box and WeDo 2.0 rechargeable battery.

# Build STEM learning with Simple Machines



Simple Machines is an engaging hands-on STEM tool that introduces second and third-graders to the basic principles behind gears, wheels, axels, levers and pulleys, while laying the groundwork for further learning about science and engineering.

## Wheel & Axles



## Pulleys



## Gears



## Lever

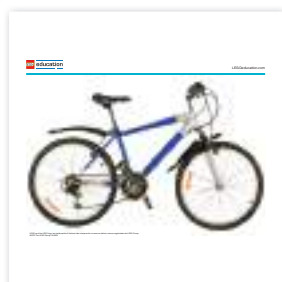


## Discover how the real world works

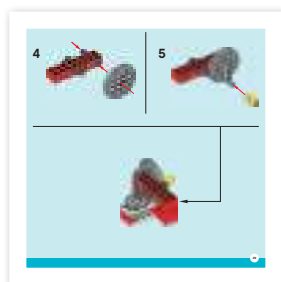
The Simple Machines solution promotes enjoyable and easily accessible classroom tools with which students can develop skills such as creative problem solving, communication of ideas and teamwork. The activities lead students to make initial use of scientific methodology through observation, reasoning, prediction and critical thinking.

Students get an in-depth understanding of mechanical and structural principles built into everyday machines. By building, designing and testing solutions, students work as young scientists and engineers, all while improving design, technology, science and maths skills.

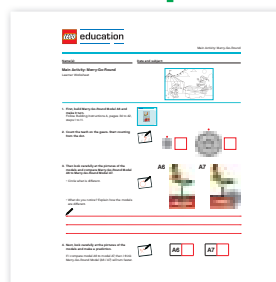
### Connect



### Construct



### Contemplate



### Continue



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# Discover how the real world works with great hands-on learning

## Simple Machines Curriculum Solution

LEG9689 **\$115.95**

This set features a brick assortment that includes gears, wheels and axles, levers and pulleys.

Use this set with the accompanying curriculum pack to engage students in investigating and understanding the operation of simple and compound machines found in everyday life. The support materials provided in this curriculum pack include teacher guides and student worksheets.

### Solution includes

- Simple Machines Core Set
- Simple Machines Activity Pack\*
- Simple Machines Maker Activities



# The Simple Machines Solution

## What's included in the Curriculum Solution?

### Core Set

Carefully selected LEGO® bricks support students motivation to develop basic STEM capabilities, through building and investigation of real life machines and mechanisms models.



#### Curriculum content

Built on national standards and developed by teachers. Lesson materials inspire and support educators and students to develop the foundation of STEM capabilities.\*

#### Assessment tools

Assessment of students' learning is enabled through rubrics, observation checklists, and student self-assessment tools.\*

#### eLearning program

Step-by-step tutorials to help you get started.\*

#### Technical support

Ongoing telephone and online support to help you with any questions.

#### Community

Access to the LEGO Education community of teachers for additional ideas, tips and new connections.



## What can I add on?

### Training and professional development

Check our Professional Learning calendar on [teaching.co.nz](http://teaching.co.nz) to find training near you.

### Replacement Packs

Replacement bricks are available. Please see page 39 for more information.

\*Available for free download from [LEGOeducation.com.au/downloads](http://LEGOeducation.com.au/downloads)

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# Included with each purchase of the Simple Machines curriculum solution

**Included**



## Simple Machines Activity Pack



The activity pack for Simple Machines features 16 principle activities, 4 main activities and 4 problem-solving activities. Enables students to recognise simple machines in everyday use, to understand the principles behind them, and to become familiar with the vocabulary relevant for the simple machine in focus: gears, wheels and axles, levers or pulleys. Includes a comprehensive teacher's guide. This activity pack is included with LEG9689 Simple Machines Curriculum Solution.

## Key Learning Values

- Observing and investigating simple machines: gears, wheels and axles, levers, and pulleys
- Developing scientific inquiry skills
- Following a design brief as part of the engineering design process
- Learning and applying relevant vocabulary for simple machines
- Fair testing, predicting and measuring, collecting data, and describing outcomes

## Simple Machines Maker Activities



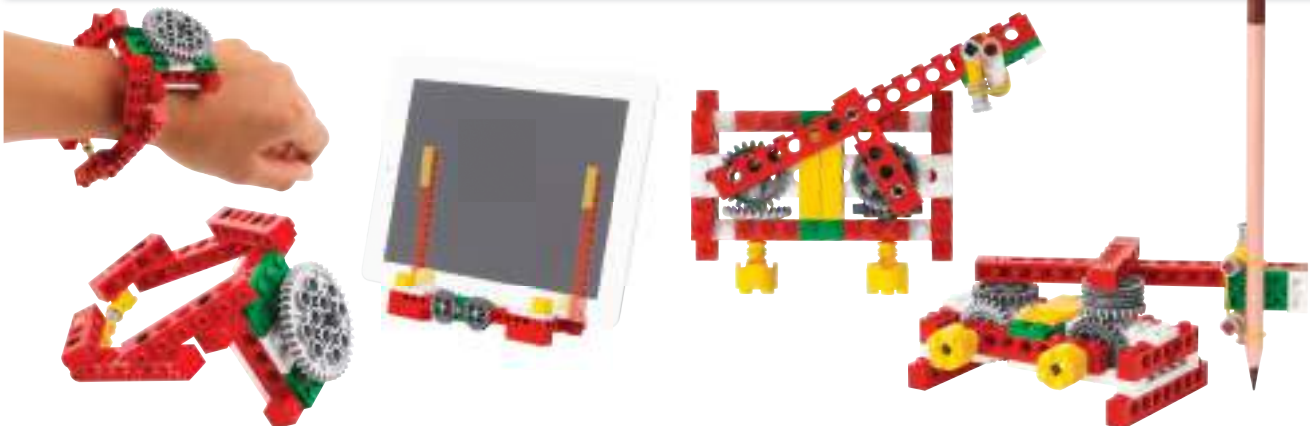
This curriculum pack introduces primary students to the hands-on, creative freedom of Maker. Using open-ended, problem-based design brief challenges that reflect real-life scenarios, teachers can gain the creative confidence they need to help their students think up ideas, tinker with prototypes, and build and develop solutions using the LEGO Education Simple Machines set and other materials from around the classroom. In a safe, supportive and inspiring learning environment, students document and reflect on their work using the included worksheets, which can also be used for teacher assessment.



## Key learning values

**Included**

- Define a clear design need
- Develop the ability to iterate and improve design solutions
- Develop problem solving and communication skills



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## Classroom Solutions

### Simple Machines Curriculum Solution Packs

Simple Machines Curriculum Solution  
LEG9689



Power Functions Battery Box  
LEG8881



Power Functions M-Motor  
LEG8883



MTA Storage System Single  
SUN8317

**exclusive** 3rd party product



<b>LEG9689-4N</b> 8 students	<b>\$449.95</b> <b>SAVE \$13.85</b>	4			
<b>LEG9689-4NM</b> 8 students	<b>\$659.95</b> <b>SAVE \$23.05</b>	4	4	4	
<b>LEG9689-8N</b> 16 students	<b>\$874.95</b> <b>SAVE \$52.65</b>	8			
<b>LEG9689-8NM</b> 16 students	<b>\$1,231.95</b> <b>SAVE \$134.05</b>	8	8	8	
<b>LEG9689-8NS</b> 16 students	<b>\$1,341.95</b> <b>SAVE \$211.60</b>	8	8	8	1
<b>LEG9689-12N</b> 24 students	<b>\$1,264.95</b> <b>SAVE \$126.45</b>	12			
<b>LEG9689-12NM</b> 24 students	<b>\$1,814.95</b> <b>SAVE \$234.05</b>	12	12	12	
<b>LEG9689-12NS</b> 24 students	<b>\$1,924.95</b> <b>SAVE \$311.60</b>	12	12	12	1



#### Power Functions Battery Box

LEG8881 **\$27.40**



Give even more power and movement to your models with an extra battery box to supply power to your Power Functions motors! Each battery box can power 2 XL-Motors or 4 M-Motors at the same time. Requires 6 AA (1.5V) batteries, not included.



#### Power Functions M-Motor

LEG8883 **\$27.40**



Build an extra medium-strength, medium-sized M-Motor into your LEGO® creations and watch things start moving.



# STEM Foundation with Early Simple Machines

Early Simple Machines is an engaging hands-on tool that uses real-life LEGO elements to help kindergarteners and first-graders learn how gears, levers, pulleys, wheels and axels work, while gaining early insight into science and engineering.

## Early Simple Machines Curriculum Solution

LEGG9656 **\$274.95**   

This set features a brick assortment and eight double-sided, full-colour building instructions. The set includes gears, levers, pulleys and wheels and axles, as well as a plastic punch-out sheet with eyes, sails, scales and wings.

Use this set with the accompanying curriculum pack to conduct full lessons, extension activities and problem solving tasks. The support materials provided in this curriculum pack include teacher guides and student worksheets.

### Solution includes

- Early Simple Machines Core Set 
- Early Simple Machines Activity Pack\*   



# The Early Simple Machines Solution

## What's included in the Curriculum Solution?

### Core Set

LEGO DUPLO® bricks, gears, wheels and axles enables easy handling and simple builds, motivating students to explore more.



### Curriculum content

Highly motivating teachers notes and student worksheets are based on national curriculum standards.\*

### Assessment tools

Assessment of students' learning is enabled through rubrics, observation checklists, and student self-assessment tools.\*

### eLearning program

Step-by-step tutorials to help you get started.\*

### Technical support

Ongoing telephone and online support to help you with any questions.

### Community

Access to the LEGO Education community of teachers for additional ideas, tips and new connections.



## What can I add on?

### Training and professional development

Check our Professional Learning calendar on [teaching.co.nz](http://teaching.co.nz) to find training near you.

\*Available for free download from [LEGOeducation.co.nz/downloads](http://LEGOeducation.co.nz/downloads)

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# Included with each purchase of the Early Simple Machines curriculum solution

## Early Simple Machines Activity Pack

**Included**

12 45-90 www

The activity pack for the Early Simple Machines Set includes eight 45-minute lessons, each with extension activities of up to 20 minutes, and four additional open-ended problem-solving activities. Illustrations introduce playful problems that the children must solve. This activity pack is included with LEG9656 Early Simple Machines Curriculum Solution.

### Key Learning Values

- Exploring basic mechanical principles such as gears, levers, pulleys, wheels and axles
- Investigating force, buoyancy and balance
- Solving problems through design
- Working with others and sharing findings



## Classroom Solutions

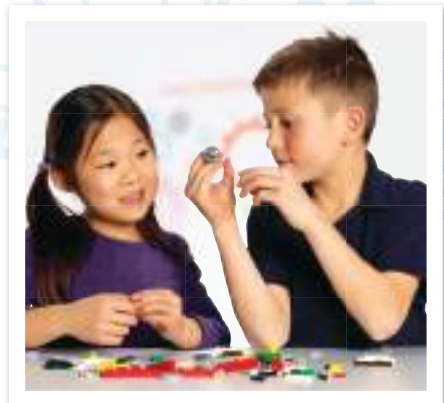
### Early Simple Machines Curriculum Solution Packs

Early Simple Machines Curriculum Solution  
LEG9656



MTA Storage System Single  
SUN8317

exclusive 3rd party product



LEG9656-2N 4 students	<b>\$533.95</b> SAVE \$14.95	2	
LEG9656-4N 8 students	<b>\$1,033.95</b> SAVE \$65.85	4	
LEG9656-8N 16 students	<b>\$2,034.95</b> SAVE \$164.65	8	
LEG9656-8NS 16 students	<b>\$2,177.95</b> SAVE \$209.20	8	1

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# Replacement packs For Machines & Mechanisms

LEGO® Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products.

## Replacement Pack M&M 1

LEG2708 **\$15.30**

LEGO Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products. This pack includes elements for Simple & Powered Machines Set (part of LEG9686).



## Replacement Pack M&M 2

LEG2709 **\$15.30**

LEGO Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products. This pack includes elements for Simple Machines Set (part of LEG9689).



## Replacement Pack 8 - Rubber Bands

LEG2707 **\$15.30**

LEGO Education Replacement Packs are the ideal way to replace key elements for your LEGO Education products. This pack features four rubber bands in white, red, blue and yellow for EV3 Expansion Set (LEG45560), Simple & Powered Machines Set (LEG9686).



# MTA Storage Systems suitable for Machines & Mechanisms

Compatible with LEGO Education Storage Tubs



## MTA Storage Systems & Trays

- SUN8317 **\$175.95** exclusive 3rd party product
- SUN8327 **\$257.95** exclusive 3rd party product
- SUN8337 **\$327.95** exclusive 3rd party product
- SUN832S **\$11.60** exclusive 3rd party product
- SUN831L **\$15.20** exclusive 3rd party product

These MTA exclusive storage systems have been designed to organise your LEGO Education Storage tubs. The storage system also houses its own storage containers in two sizes. Each unit comes with the option of castors or adjustable feet for static storage.

**SUN8317** – Single Storage. Holds 3 EV3 trays.  
**SUN8327** – Double Storage. Holds 6 EV3 trays.  
**SUN8337** – Triple Storage. Holds 9 EV3 trays.  
**SUN832S** – Small Tray. **SUN831L** – Large Tray.

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# Create an innovation destination within your school today!

Create an inspiring, long lasting innovation hub within your school with a variety of LEGO Education Solutions. By creating an open and inviting space to learn and create, it will be hard to get your students to leave! Become a front-running school with an innovative approach to learning. Inquire today on how we can help you to select the right LEGO Education Solutions for your school, ask about our PD options to get you started straight away and inquire about the storage options we have available to make your LEGO Education Solutions accessible yet organised for everyone.

## Getting started today



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# Engage primary and high school students in subjects from science to humanities

LEGO Education provides a continuum of curriculum content that is relevant to students' everyday lives and real-world contexts as well as expandable for teachers. From primary through to high School, the content is created by a full development team of educators and education experts. We offer resources for teaching science, technology, engineering and maths as well as educational resources, to address humanities, language and literacy.

## 2018 School Resource Plan

Resource	Page	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
<b>EV3 Robotics</b>	<b>2</b>					X	X	X	X	X	X	X	X
<b>EV3 Space Challenge</b>	<b>14</b>					X	X	X	X	X	X	X	X
<b>EV3 Science Activity Pack</b>	<b>16</b>					X	X	X	X	X	X	X	X
<b>EV3 Design Engineering Projects</b>	<b>8</b>							X	X	X	X	X	X
<b>RobocupJunior</b>	<b>22</b>	X	X	X	X	X	X	X	X	X	X	X	X
<b>FLL</b>	<b>26</b>				X	X	X	X	X	X			
<b>WeDo 2.0</b>	<b>27</b>		X	X	X	X	X						
<b>Simple &amp; Powered Machines</b>	<b>35</b>			X	X	X	X	X	X	X	X	X	X
<b>Advancing with Simple &amp; Powered</b>	<b>36</b>						X	X	X	X	X	X	X
<b>Renewable Energy</b>	<b>38</b>					X	X	X	X	X	X		
<b>Pneumatics</b>	<b>39</b>					X	X	X	X	X	X		
<b>Simple Machines</b>	<b>42</b>		X	X	X	X	X						
<b>Early Simple Machines</b>	<b>45</b>	X	X										



Computing	Engineering	Technology	Science	Maths
LEGO MINDSTORMS® Education EV3				
WeDo 2.0				
Machines & Mechanisms				

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modern teaching aids

# LEGO® Education Classroom Solutions 2018

EV3 Robotics  
Priced from  
\$704.00

## Digital Technologies & STEM Education Preschool to Year 12



WeDo 2.0  
Robotics  
Priced from  
\$279.00



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P 0800 808 044 F 0800 682 329 **teaching.co.nz**  
Prices exclude GST

MTNLEG18

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