THERE'S A NEW ROBOT IN CLASS...
EVERYTHING YOU NEED...  
...JUST STEP INSIDE

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EVERYTHING YOU NEED…… JUST STEP INSIDE

WE HAVE WORKED WITH LEGO MINDSTORMS PRODUCTS SINCE THE LATE 90’S AND HAVE FOUND THE ROBOTICS PLATFORM HAS SIGNIFICANT BENEFITS IN STUDENT MOTIVATION, STUDENT UNDERSTANDING OF MATHS, SCIENCE, AND ENGINEERING SKILLS. OUR RESEARCH WITH BOTH 8-YEAR-OLDS AND 18-YEAR-OLDS PROVIDES EVIDENCE THAT WITH THESE ROBOTICS SETS, STUDENTS ARE ABLE TO SOLVE AUTHENTIC ENGINEERING PROBLEMS IN MANY DIFFERENT WAYS.

Chris Rogers, Professor, Tufts University, USA
OUR HISTORY IN EDUCATIONAL ROBOTICS
– PROVIDING EFFECTIVE LEARNING EXPERIENCES

1998

LEGO® MINDSTORMS® Education
RCX and ROBOLAB™ Software

In 1998, LEGO® MINDSTORMS® Education for Schools revolutionised the world of educational robotics with the RCX intelligent brick. The RCX microcomputer is the brain of the LEGO® MINDSTORMS® for Schools system. It processes programs for the LEGO® MINDSTORMS® software which was developed by Tufts University’s Center for Engineering Educational Outreach (CEEO). Despite being nearly 15 years old, the RCX intelligent brick and ROBOLAB software is still used across many schools around the globe.

2009

LEGO® Education WeDo

The LEGO® Education WeDo platform was developed for all younger students to experience control technology using robotics. Students are able to build LEGO models featuring working motors and sensors; program their models using the LEGO® Education WeDo Software and explore a series of interactive, theme-based activities.

LEGO® Education NXT

2006 saw the world of robotics revolutionised with the LEGO® MINDSTORMS® Education NXT set and software. With LEGO® MINDSTORMS® Education students can build bricks and use software to plan, test and modify sequences of instructions from a variety of real-life robotic behaviours. They gather and analyse data from sensors using data logging functionalities such as graph view.

F=ma
Ignite student engagement and energise learning through real-life problem solving. Engage your students in Computer Science, Science, Technology, Engineering and Mathematics. Boost learning and help all your students reach their curriculum targets. With the LEGO® MINDSTORMS® Education hands-on, minds-on approach, the only challenge you’ll have is getting your students to leave the classroom!
THE CORE SET

BUILD, PROGRAM AND LEARN USING REAL-LIFE ROBOTICS TECHNOLOGY

A heart of the LEGO® MINDSTORMS® Education EV3 Core Set is the EV3 brick, the programmable intelligent brick that controls motors and sensors, as well as providing wireless communication (Wi-Fi and Bluetooth). Features include:

— Sturdy storage box and sorting tray for easy classroom management
— Building instructions
— Three motors and five sensors
— Rechargeable battery
— Large collection of carefully selected LEGO® elements.

THE EV3 INTELLIGENT BRICK

+ Auto detects and controls sensors and motors
+ Play round display, graph, right
+ On-brick programming interface
+ Wi-Fi and Bluetooth
+ On-brick programming and data logging interface
+ Wi-Fi ready

ONE GYRO SENSOR

+ Measures angles
+ Measures degree per second of rotation
+ Auto ID

ONE ULTRASONIC SENSOR

+ Measures distance
+ Detects objects
+ Auto ID

ONE COLOUR SENSOR

+ Detects colours
+ Measures light intensity, ambient and reflected light
+ Auto ID

TWO TOUCH SENSORS

+ Three different modes
+ Pressed, released, count number of presses
+ Auto ID

TWO LARGE SERVO MOTORS

+ Built-in rotation sensor
+ One degree accuracy
+ Auto ID

ONE MEDIUM SERVO MOTOR

+ Built-in rotation sensor
+ One degree accuracy
+ Auto ID

THE CORE SET ALSO INCLUDES:

+ A rechargeable battery
+ A ball wheel
+ Connecting cables
+ Building instructions
+ LEGO® Technic building bricks for creating a vast variety of models.

ALSO AVAILABLE

+ Temperature sensor
+ IR sensor
+ IR beacon
+ Wi-Fi dongle
+ Bluetooth dongle
+ Transformer
+ And more to come...

INSPIRATIONAL HARDWARE

– WE’VE INCLUDED ALL YOU NEED!

INSPIRATIONAL HARDWARE

WIRELESS
The LEGO® MINDSTORMS® Education EV3 software is based on LabVIEW, the industry-leading graphical programming language used by scientists and engineers worldwide. Our software is optimised for classroom usage and follows the very latest developments in intuitive software design, which results in an extremely user-friendly interface.

— Easy to learn, use and understand
— Intuitive drag-and-drop programming
— From simple to complex programs
— Comprehensive teacher guide
CURRICULUM – WHATEVER YOU WANT TO TEACH

MATHEMATICS
Bringing numbers alive.
LEGO® MINDSTORMS® Education EV3 is an ideal way to explore mathematical problems for real, making abstract concepts tangible and concrete.
Example: Calculate the wheel circumference of your robot. Then program the robot to move a specific distance using the rotation sensor feedback multiplied by the circumference.

ENGINEERING
From idea to working prototype.
Engage your students in practical, open-ended engineering challenges and problem solving.
Example: Carry out a design process, from brief through testing and analysis to creating functional prototypes that can be easily modified to achieve design goals.

TECHNOLOGY
Actively engage students.
Explore real-life application of technology to make analogies, identify real-world concepts, predict outcomes, analyse data, and draw conclusions.
Example: Explore design and functionality by building and programming the LEGO® MINDSTORMS® Education EV3 to carry out controlled actions.

SCIENCE
Learning by doing.
Support classroom teaching by using LEGO® MINDSTORMS® Education EV3 to collect real-time data to verify hypotheses.
Example: Carry out experiments designed to determine melting points – collect data samples with the temperature sensor and plot the results using the intuitive graphing environment.

COMPUTER SCIENCE
Programming for real.
Intuitive, simple icon-based programming language and tools that encourage solution design using algorithmic problem solving.
Example: Define an algorithm to measure and control behaviour of motors.

SCIENCE
CONSTRUCT
2. BUILD AND PROGRAM YOUR ROBOT

COMPUTER SCIENCE
CONCEIVE
1. UNDERSTAND THE OBJECTIVE

TECHNOLOGY
CONTINUE
4. MODIFY

MATHEMATICS
END

DID YOU KNOW...
the unique LEGO® Education teaching methodology is based on Swiss developmental psychologist Jean Piaget’s constructivist learning theory?
FOR STUDENTS
– DIGITAL WORKBOOKS

FOR STUDENTS
– DIGITAL WORKBOOKS

A TRULY INTEGRATED DIGITAL LEARNING EXPERIENCE

Let your students create their own digital workbook. Students write their assignments directly in the workbook by adding text, images, sound and video, making it their personal project. They have plenty of opportunities to create inspiring project reports and document their work. The workbook makes it easy to present their work, to build a portfolio of projects and to share it with the teacher for assessment. A truly integrated digital learning experience.
**FOR TEACHERS**

--- EVERYTHING YOU NEED TO ACHIEVE YOUR TEACHING GOALS ---

**GET STARTED IN ONE CLASSROOM SESSION**

**48 STEP-BY-STEP TUTORIALS**

**AN ESSENTIAL GUIDE TO THE PROGRAMMING LANGUAGE AND HARDWARE FUNCTIONALITIES**

**ONE ROBOT WITH ENDLESS LEARNING OPPORTUNITIES**

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**UP AND RUNNING**

--- IN LESS THAN 45 MINUTES ---

**FOR YOU – CONTENT EDITOR**

All of our content is fully editable. The Content Editor tool allows you, the teacher, to easily edit our content, adapt and customise it – or simply create your own.

You can create activities and tasks targeted directly at your students' needs – offering your class the level of differentiated teaching you want it to have. Feel free to customise by changing text, images, videos, sound, and deleting or adding pages.

**FOR ASSESSMENT**

The digital workbook makes it easy for you to assess your students' work. You can see what your students are working on, how they are progressing, and easily give them feedback and guidance. By assessing their completed work inside the digital workbook, you can create a dynamic and creative classroom for both you and your students.

---

### Software Introduction
- Block interactions
- Hardware page
- Basic programming
- Data entry
- Send and receive exceptions

1 hour of class time

### Hardware Introduction
- EV3 brick
- Sound
- Light
- Sensors
- On-brick programming

4 hours of class time

### Basics
- Get to know how to:
  - Drive
  - Avoid obstacles
  - Color and light
  - Move a specific angle

5 hours of class time

### Advanced
- Get to know how to:
  - Loop
  - Switch
  - Basic Maths
  - Trigonometry
  - Variables
  - Array
  - Logic
  - Sending messages
  - Calibrations

10 hours of class time

### Graphing
- Get to know how to:
  - Data logging
  - Prediction
  - Data set calculation
  - Graph programming

5 hours of class time

### Tools
- Get to know how to:
  - Sound editor
  - Image editor
  - Remote control
  - My blocks

5 hours of class time

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5 hours of class time
EXPAND YOUR LESSONS
– DESIGN ENGINEERING PROJECTS

Let your students work with open-ended problem solving activities in a context which makes it fun and engaging to learn and use Science, Technology, Engineering and Mathematics in compliant with the 21st century skills. The project-based learning environment with creative thinking problem solving, teamwork and communication skills. All projects follow a design engineering process as used by engineers in various industries, structured flow through the activities.

Students are guided through the process starting with a design brief which explains the challenge, using videos of robots in action to make real-life connections, until a final project which can be shared and presented. Throughout the process students gain and use knowledge of Science, Technology, and Mathematics as they engineer a solution. Students capture their work as they move along in the built-in digital workbook, making it easy for you to follow their progress and to assess their work.

EXPAND YOUR LESSONS
– EXPANSION SET

BUILD BIGGER MODELS
WITH MORE FUNCTIONS

Take your robot builds to the next level with a wide range of expansion elements that allow you to build and program more complex models with even more functions than ever before.
LEGO® EDUCATION ACADEMY TRAINING

Learn to use LEGO® MINDSTORMS® Education EV3 for teaching your subject. Our training introduces you to the entire LEGO MINDSTORMS Education solution – matched to your needs and requirements – ensuring your success in the classroom.

All courses cover:
— Hands-on lessons to take back to school
— Hardware and software overview
— Curriculum coverage in an exciting way
— Lesson Planning
— Classroom Management
— Customisable Activities
— 21st Century Learning

All courses are conducted by certified trainers.

PROFESSIONAL SOCIAL MEDIA
Join our Teacher-to-Teacher Forum and work together with your peers to create and share ideas online – visit LEGOeducation.com/MINDSTORMS.

SUPPORTING YOU WORLDWIDE
Visit LEGOeducation.com/MINDSTORMS for comprehensive online support, FAQ, and software updates.

SUPPORT YOUR TEACHER – ACADEMY TRAINING

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CHALLENGE YOUR STUDENTS – TO BECOME TOMORROW’S INVENTORS

Get your students thinking like real scientists and engineers – learn from this LEGO® Education supported FIRST LEGO League. EV3 is engineered for cross-curricular learning at its best! Every year, more than 200,000 children in 70 countries complete FLL. Find out how you can easily and quickly challenge your students to take part at FIRST.LEGOLeague.org.

DID YOU KNOW...
that EV3 is faster than NXT?
It reads sensor values faster,
executes programs faster,
and provides sample rates of up to 1000
samples/second.
SPECIFICATION – LEGO® MINDSTORMS® EV3

CORE SET
Number of Elements
G4
G4
Home
Yes
Classroom
Yes
Storage
Cardboard Box
Plastic Box with Sorting Trays

SENSORS & SPECIAL ELEMENTS
Intelligent P-brick
1
1
Large Motor
2
2
Medium Motor
1
1
Colour Sensor
1
1
Touch Sensor
2
2
Ultrasound Sensor
1
1
GPS Sensor
1
1
Ball Wheel
1
1
Infrared Sensor
1
1
Infrared Beacon
1
1

SOFTWARE
Programmable Software
Robot Educator
All Activities
Digital Workbook
Digital Content Editor
Data Logging
Site Licence Available

ADD-ONS
Wi-Fi Dongle
Expansion Set
Design & Engineering Projects

COMMUNITY – KEEP UP-TO-DATE

FACEBOOK
Like us on Facebook
facebook.com/LEGOeducationUK

BLOG
Visit the blog for the latest comment
and insight from LEGO Education
blog.LEGOeducation.co.uk

YOUTUBE
View the latest videos
from LEGO Education
youtube.com/LEGOeducationUK

TWITTER
Follow us on Twitter
twitter.com/LEGOeducationUK

CONTACT US
phone: 0800 334 5346
e-mail: sales@LEGOeducation.eu
online: LEGOeducation.co.uk

LEGO® MINDSTORMS® EV3
FOR HOME
LEGO® MINDSTORMS® EDUCATION
EV3 FOR THE CLASSROOM

YOU BUILD IT. THEY LEARN IT. THEY THINK IT.

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LEGO® MINDSTORMS® EDUCATION

YOU BUILD IT. THEY LEARN IT. THEY THINK IT.

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LEGO® MINDSTORMS® EDUCATION

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