

CAS Physical Computing Community

LEGO Robotics

What do I do with this kit I've got?

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Brian Egles



- 25 years in industry:
 - Chemical Engineer, Logistics, IT
- 2010-now Self-employed STEM Days
 - LEGO/VEX Robotics activity days
 - Cars Maths in Motion
 - FunMaths Roadshow
 - Water Rockets
 - Space Ambassador



Current LEGO Spike range – 2020 onwards

- Spike Prime



- Windows and App
- <https://education.lego.com/en-gb/products/lego-education-spike-prime-set/45678/>
- Block and Python coding

- Spike Essentials



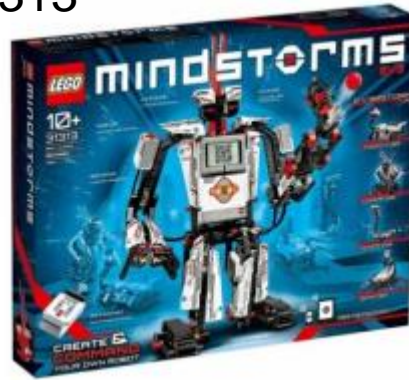
- Windows and App
- <https://education.lego.com/en-gb/products/lego-education-spike-essential-set/45345/>
- Icon or Word Blocks

LEGO Mindstorms EV3 2013-2022

45544



31313



Both kits compatible but slightly different sensors. Same “brain” and software.

4 outputs (motors, 2 sizes), 4 inputs (sensors).

Reasonable compatibility with older NXT kit.

Software for Windows, Mac still available:

<https://education.lego.com/en-gb/downloads/retiredproducts/>

App versions for tablets and chromebooks only extended until July 2026

Reasonable “on brick” programming without PC/tablet

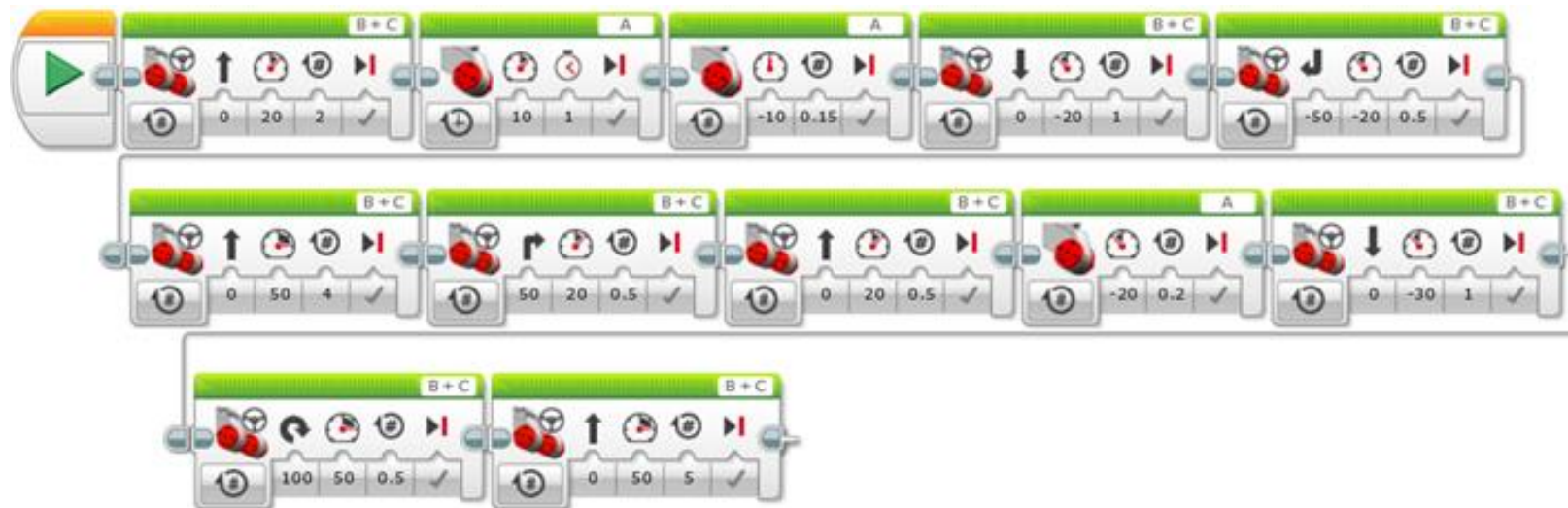
EV3 block programming very intuitive. Also compatible with older NXT kit.

Good building instructions built-in

Limited curriculum content in software beyond tutorials – use external:

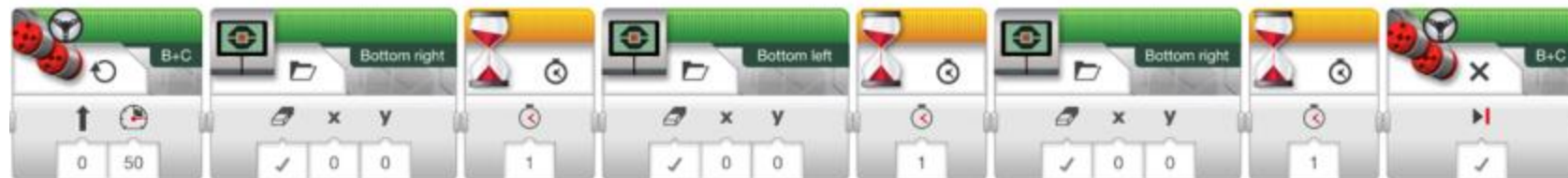
<https://ev3lessons.com/en/>

<https://education.lego.com/en-gb/downloads/retiredproducts/mindstorms-ev3/curriculum/>



EV3 tablet app similar but discontinued 2026

Better curriculum content in software



LEGO WeDo 2.0 2016-2022

45300



No compatibility with older WeDo kit.

Software for Windows, Mac still available:

<https://education.lego.com/en-gb/downloads/retiredproducts/>

App versions for tablets and chromebooks only extended until July 2026

Good curriculum content built in.

Uses low energy Bluetooth (not all laptops have it – buy BLE112 dongle)

https://www.youtube.com/playlist?list=PLXNn7QnqINpi4FxGDuQySokXqc9_a5zy9

Rechargeable batteries expensive

Should also work with Scratch extensions: <https://scratch.mit.edu/wedo>

LEGO Mindstorms NXT 2006-2013

9797



3 slight variations
(Peg colours, batteries, converter cables)

8547



8527



Best robot kit LEGO made – long battery life, fast start, reliable if careful with screen
All kits compatible but slightly different sensors/parts. Same “brain”.

3 outputs (motors, lights), 4 inputs (sensors)

Software for Windows, Mac still available:

<https://education.lego.com/en-gb/downloads/retiredproducts/>

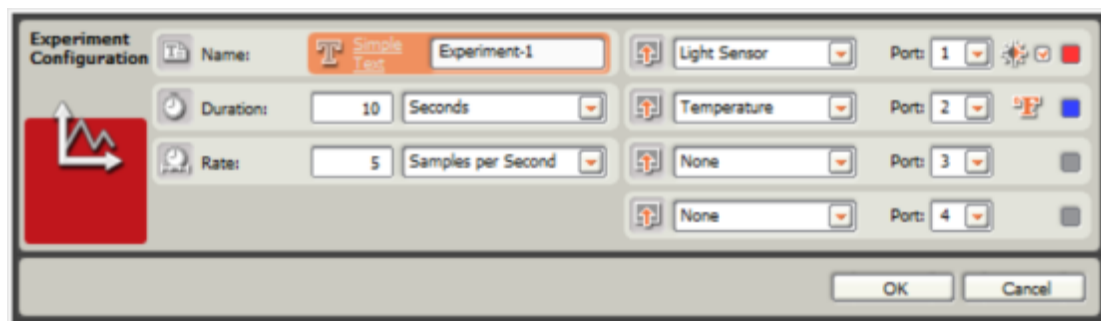
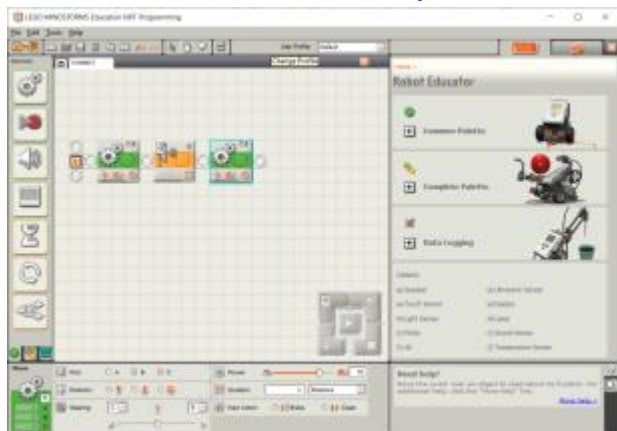
Different versions for each kit but only the build guides differ.

Also works with EV3 software (light sensor tricky)

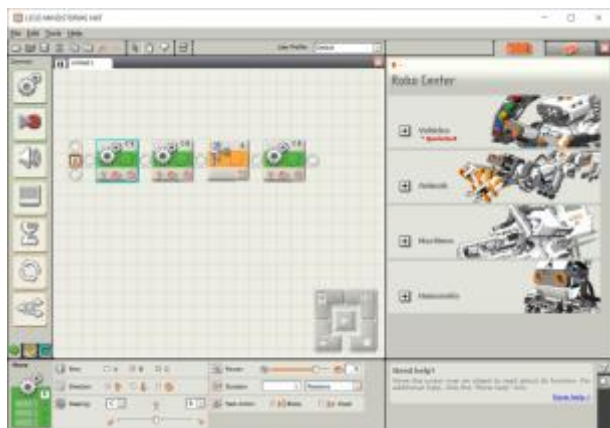
Not compatible with tablets or chromebooks

NXT software: education v home version and resources:

Education version: <https://education.lego.com/en-gb/downloads/retiredproducts/nxt/software/>



Home version: <https://www.lego.com/en-gb/themes/mindstorms/downloads>



NXTPrograms website: <https://www.nxtprograms.com/index.html>

LEGO WeDo – 2009-2016

9580



Excellent simple and compact kit – USB powered = no batteries

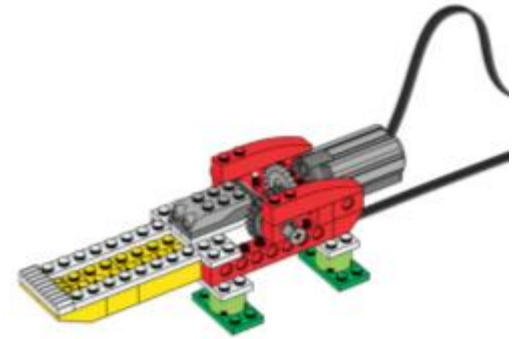
Software for Windows, Mac still available:

<https://education.lego.com/en-gb/downloads/retiredproducts/>

Not compatible with tablets or chromebooks

Supposed to work with Scratch. Scratch1/2 offline may be needed.

Scratch been problematic since Adobe Air support ended



LEGO RCX/RoboLab/RIS – 1998-2006

9793 and multiple others including themed kits house/transport/amusement



Software not available from reputable downloads (I have some CDs)

3 outputs (motors, lights buzzer), 3 inputs (sensors: rotation, touch, light, temperature)

Largely impractical for classroom use due to I/R download not “shielded”

Only RCX 1.0 had power supply, later chewed AA batteries and lost Firmware

Infrared download towers were serial initially then USB

Motors don't have rotation sensor so can only control time and power not rotations

But...popular with adult LEGO railway track enthusiasts at brick shows etc

Worth listing for sale on Bricklink: <https://www.bricklink.com/> (good for spares and kit)

Spybotics



Boost



Cybermaster



Robot Inventor

<https://www.brothers-brick.com/tag/lego-history/>

First LEGO League Challenge



<http://firstlegoleague.co.uk/>

Annual competition
Regional>National>Global
Age 9-16, 40%+ Girls
New theme each year
Run in UK by IET
Enter in advance for Sep start
Regionals Jan-Feb
Min 2 hours/week really
Can just use “at school”
Team of up to 10 members
“Explore”, “Discover” for KS1/2

Personally I use two robotics kits almost exclusively:

- NXT Mindstorms kit 9797 (alongside FLL kits, mostly “Space”)
- WeDo kit 9580

Free videos if you are lucky enough to have the same kits:

- <https://bit.ly/BJPCE-NXT> (Car parking barrier system ~8 lessons)
- <https://bit.ly/BJPCEWeDo>

And “shameless unforgiveable plug” for my workshops:

- <https://bjpce.co.uk/lego/>
- <https://bjpce.co.uk/lego-robotics-kit-rental/>



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Thankyou!

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