EFFECTIVE SCIENCE MANIPULATIVES
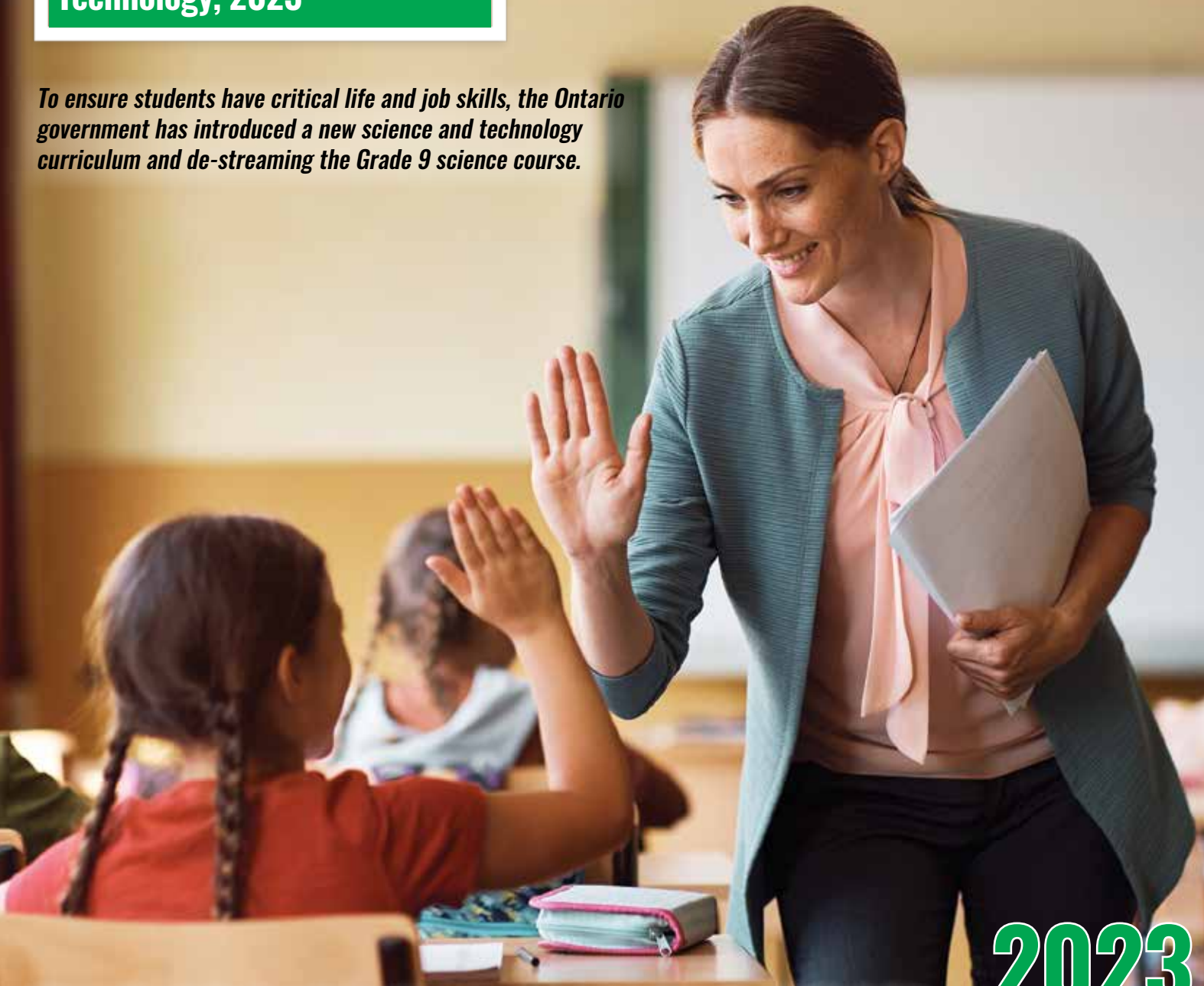
Supporting Connections to the Updated Ontario Curriculum, Grades 1 to 8: Science and Technology, 2023

SPECTRUM
EDUCATIONAL SUPPLIES

To ensure students have critical life and job skills, the Ontario government has introduced a new science and technology curriculum and de-streaming the Grade 9 science course.

"Improved curriculum to emphasize critical life and job skills, including the skilled trades" (1)

(1) https://news.ontario.ca/en/release/1001722/ontario-modernizing-school-science-curriculum

2023
spectrumed.ca

Arduino Education Starter Kit

Ages 11-14 years Teach middle school students the basics of programming, coding, and electronics. No prior knowledge or experience is necessary. The kits guide you through step-by-step, you are well-supported with teacher guides, and lessons can be paced according to your students' abilities. You can integrate the kit throughout the curriculum, giving your students the opportunity to become confident in programming and electronics with guided sessions and open experimentation. You'll also be teaching them vital 21st-century skills such as collaboration and problem-solving. The Arduino Education Starter Kit contains all the hardware and software you need for eight students (in groups of 2). You get step-by-step-lessons, teacher notes, exercises, and for a complete and in-depth class experience there's also extra optional resources including activities, concepts, history, and interesting facts. The online platform contains the teacher content, nine 90-minute lessons, and two open-ended group projects that teach students coding and electronics. Each lesson builds off the previous one, giving students a further opportunity to apply the skills and concepts they have already learned.

Includes:
- 4 Arduino UNO rev 3
- 4 Starter Kit mounting base Easy-to-assemble plastic base
- 4 Battery Snap 9v
- 8 Batteries 9v

- 4 Breadboard 400 points
- 4 Capacitor – 100uF
- 4 Female-male Jumper Wires (red)
- 4 Female-male Jumper Wires (black)

- 20 LEDs (red)
- 20 LEDs (green)
- 20 LEDs (yellow)
- 20 LEDs (blue)
- 4 Multimeters

- 4 Piezo Buzzer [PKM17EPP-4001-B0]
- 4 Phototransistors
- 8 Potentiometer 10kOhms
- 20 Push Button
- 4 Resistors - 1 kOhms

- 20 Resistors - 10 kOhms
- 20 Resistors - 220 Ohms
- 20 Resistors - 560 Ohms
- 70 Jumper Wires
- 4 Stranded jumper wires (red)

- 4 Servo Motor
- 4 Temperature sensor [TMP36]
- 4 USB Cable
- 12 M 3 Screw
- 12 M3 Bolts

735540

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new

All a teacher needs in one box:
- Photon Robot for Education (2 pcs.)
- Photon Magic Dongle (2 pcs.)
- Photon Dry-erase Mat
- 10 Lesson plans
- A marker holder
- A wiping cloth for the mat
- 32 Worksheets

- 3 Character cutout sheets
- 19 Neodymium magnets
- 3 Markers
- Dice and game pieces (1 set)
- Paper notes (1 set)
- A set of cards (1 set)

Teach through play
A Universal Didactic Tool
Photon Sustainable Energy Education Kit

Ages 8 years + / Grades 3 +

Fostering the right behaviours among future generations is undoubtedly one of the main tasks of all educators. Shaping an attitude of respect for the natural environment must find a place on teachers' to-do lists. Students learn about the concepts and phenomena that surround them every day through hands-on projects, developing an understanding of how much impact they have on the environment. The kit is compatible with the core curriculum. One of its general goals is to develop an attitude of respect for the natural environment in children and adolescents, as well as spread knowledge about the principles of sustainable development, and motivate them to take action to protect the environment and develop a passion for ecology. Some of the topics covered within the lesson plans are waste segregation, energy-saving, ecological transport, green cities, and recycling. Duration of one lesson: 45 minutes.

More time to prepare a lesson!
Ready-made lesson plans (10) that are fully compatible with the core curriculum and can be easily implemented in the classroom. You're able to help students learn about such topics as waste segregation, saving energy, ecological transport, green cities, and recycling.

Dedicated app
The kit includes a dedicated App, which facilitates the work of teachers and allows to control the robot through several interfaces tailored to the age and skills of students.

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Ontario Elementary Schools, Are You Ready?

"For the first time in Ontario history, the revised curriculum includes required learning on real-world connections between science, technology, engineering and mathematics. New expectations include:

- *__Coding:__ mandatory learning on coding from Grades 1 to 9, consistent with the math curriculum, to further enshrine Ontario as a STEM leader. For example, in Grade 3, students can learn how to program a small robot.*

- *__Connecting STEM Learning:__ for the first time, Ontario has dedicated learning expectations from Grades 1 to 9 which explicitly connects science, technology, engineering and mathematics to real-world issues.*

- *__Emerging technology:__ students will learn about the rise and application of advanced research, robotics and the development of artificial intelligence (AI) systems. Students can learn about the impact and application of AI in their daily lives, including facial recognition, autonomous vehicles, drones and search engines.*

- *__Skilled trades:__ mandatory learning from Grades 4 to 9 on the relationship between how advancements in science and emerging technologies are enhancing the skilled trades and providing exciting career opportunities.*

- *__Food literacy:__ learning related to food literacy in every grade that empowers students to make decisions that affect physical and mental health, consider local food production, and the scientific processes involved in agriculture."* (1)

(1) https://news.ontario.ca/en/release/1001722/ontario-modernizing-school-science-curriculum

SPECTRUM makes it **EASY** for you to teach this new curriculum!
In consultation with industry leaders, we have prepared recommended product listings on the following pages for each **GRADE 1-8** and each **STRAND**.

Recommended Materials for EVERY GRADE 1 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
STEM Engineering Design Process Flip Chart Set	735701	A1.1, 1.2 1.3, 1.5
Sphero® indi Classroom Pack	735590	A1.5, 2.1, 3.1, 3.2
Spectrum Coding Cards - Unplugged Class Kit	735435	A1.2, 1.3, 1.5, 2.1
LEGO® Education SPIKE™ Essential Core Set	735611	A2.1 & A3.2
Botley® 2.0 The Coding Robot Classroom Bundle	735440	A1.2, 1.3, 1.5, 2.1
Photon Early Education Kit	735662	A1.2, 1.3, 1.5, 2.1
STRAND B: Life Systems Needs and Characteristics of Living Things		
Biomes & Their Food Webs Exploring Nature	731838	B2.1
Growth and Change in Plants	72844	B2.3
Growth and Change in Animals	76668	B2.3
All About Plants Bulletin Board Chart Set of 8	735694	B2.1, B2.2
Child Size Human Body	62820	B2.4
The Human Body Science Kit	730716	B2.4
Look inside Me: MRI Scan	434098	B2.4
STRAND C: Matter and Energy Energy in Our Lives		
Energy Forms and Changes Flip Chart	731821	C1.1 & C2.4
Just Add Sun - Study of Heat	735450	C2.2
Properties & States of Matter Flip Chart Set	731817	C2.1
All About Energy Flip Chart Set	735701	C2.2, 2.3, C2.4
STRAND D: Structures and Mechanisms Everyday Materials, Objects, and Structures		
All Kinds of Structures (Book)	731518	D2
Spectrum STEM Class Kit	730694	D2
Transparent Planks with Octa Joiners	731011	D2
makedo® Invent 360pcs	735509	D2
Go-BOX Classroom Cardboard Construction Set	735639	D2
STRAND E: Earth and Space Systems Daily and Seasonal Changes		
Today's Weather Board	735598	E1
Cloud Dectective, 5pk	730674	E1
SciQuest® Weather Kit	SB22636M	E1
All About Weather Bulletin Board Chart Set of 5	735696	E1
The Seasons Learning Center	735695	E1
Seasons Game	735688	E1
The Orbiter	21565	E2.2
Moon Phases Poster	732612	E2.2

The Human Body Science Kit

Spectrum STEM Class Kit

The Orbiter

1.800.668.0600

Recommended Materials for EVERY GRADE 2 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
STEM Engineering Design Process Flip Chart Set	735701	A1.1, 1.2 1.3, 1.5
Spectrum's Early Learning Essentials Science Kit, Set of 24	E435245	A1.4
Poly Gloves (small sized) - box of 100	SB48963M	A1.4
Safe Test Tubes - set of 15	SB33231M	A1.2
Pocket Microscope	SB20198M	A1.1
Climate Change 3-D Model Making Kit	735476	A1.5 & C1.2
HamiltonBuhl® - STEAM - Green Screen Production Kit	735482	A1.5
LEGO® Education BricQ Motion Essential Set (2 students)	735533	A1.3 & A3.1
Octa-Clip - Set of 50	730755	A1.3
BBC micro:bit Club V2 (10 pack)	735531	A2.1 & A2.2
littleBits® STEAM+ Class Pack	735491	A1.3 & A2.1
LEGO® Education SPIKE™ Essential Core Set	735611	A2.1 & A3.2
Sphero® Mini™ Education Kit	735357	A1.5, 2.1, 3.1, 3.2
STRAND B: Life Systems Growth and Changes in Animals		
Creature Seeker Pond Student Kit	732346	B2.4 & A1.4
What's Inside Animals	444296	B2.5 & B2.2
Giant Magnetic Frog Life Cycle (other life cycles also available)	E732974	B2.3 & A1.5
NewPath Learning® Animal Growth & Reproduction Learning Center	732043	B2.1, B2.4
All About Animals Bulletin Board Charts	735698	B2.1, B2.4
All About Animals Bulletin Board Learning Center	735697	B2.1, B2.4
Growth and Change in Animals	76668	B2.3
STRAND C: Matter and Energy Properties of Liquids and Solids		
Jumbo Test Tubes with Stand	E446394	C2.2 & C2.5
Spectrum Floaters, Sinkers & Water Investigation Kit	E732959	C2.1, 2.3, 2.6
Global Warming: Big Book (3 books: Causes, Effects, Reduction)	733592	C1.2
Safety in the Lab Flip Chart Set	731858	C2.7
STRAND D: Structures and Mechanisms Simple Machines and Movement		
2-in1 Force & Spring Meters - 500g (other capacities available)	731986	D2.5 & A1.5
LEGO® Education BricQ Motion Essential Set	735533	D2.1 & D2.2
Wooden Simple Machines Complete Student Set	SB40569M	D2.3, 2.4, 2.5
K'NEX® Intro to Simple Machines: Levers and Pulleys	77108	D2.1 & A1.3
SciQuest® Simple Machines Multi-Group Kit	SB50709M	D2.4, 2.5, A1.2
Work, Power & Simple Machines Flip Chart Set	731822	D2.1, 2.2, 2.3, 2.5
STRAND E: Earth and Space Systems Air and Water in the Environment		
Ocean Trash Can Kit	SB42134M	E1.1, 1.3
How We Impact the Environment (book)	732484	E1.1, C1.1, B1.2
Water Conservation - Big Book	730725	E1.1, 1.3
Water Cycle Wheels - set of 5	730859	E2.3, 2.4
Earth's Climate Flip Chart	731849	E2.1, 2.2, 2.3
Water Cycle 3-D Model Making Kit	735480	E2.2, 2.3, 2.4
Land, Water & Air Bulletin Board Chart set	735703	E2.2, 2.3, 2.4
Now You See It, Now You Don't, Compost Container	77626	E2.5

Spectrum Floaters, Sinkers & Water Investigation

Please check spectrumed.ca and search the term "**ontarioscience2023**" for the latest prices.

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Recommended Materials for EVERY GRADE 3 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
STEM Engineering Design Process Flip Chart Set Gr 3-5	735702	A1.1, 1.2 1.3, 1.5
Spectrum's Early Learning Essentials Science Kit, Set of 24	E435245	A1.4
Poly Gloves (small sized) - box of 100	SB48963M	A1.4
Safe Test Tubes - set of 15	SB33231M	A1.2
HamiltonBuhl® - STEAM - Green Screen Production Kit	735482	A1.5
LEGO® Education BricQ Motion Essential Set	735533	A1.3 & A3.1
Octa-Clip - Set of 50	730755	A1.3
BBC micro:bit Club V2 (10 pack)	735531	A2.1 & A2.2
littleBits® STEAM+ Coding Class Pack	735491	A1.3 & A2.1
Sphero® BOLT	732091	A1.5, 2.1, 3.1, 3.2
LEGO® Education SPIKE™ Essential Core Set	735611	A2.1 & A3.2
STRAND B: Life Systems Growth and Changes in Plants		
GreenThumb Classroom Greenhouse	79866	B1.2, 2.1, 2.2
Hydroponics Lab	77625	B1.1, 2.1
Growth and Change in Plants	72844	B1.3, 2.3, 2.6
Giant Magnetic Plant Life Cycles	733542	A1.5 & B2.3
Cross Section Flower Model	731178	B2.2
Sprout & Grow Window	732394	B1.3, 2.7
Plant Food Nutrient Deficiency in Plants	C31019M	B2.4, A1.1, 1.2
All About Plants Flip Chart	731836	B2.1, 2.2, 2.3
Photosynthesis & Respiration Bulletin Board Chart Set	731809	B2.5, 2.3, 2.6
STRAND C: Matter and Energy Forces and Motion		
Newton's Laws	730831	C2.1, 2.2, 2.3
Earth Processes Poster Series	SB40701M	C1.1
2-in-1 Force & Spring Meters 500g (various capacities available)	79266SS	C2.3, A1.2
Nasco Rubber Band Cannons Unit	TB16225M	C1.2, 2.2, 2.3
Forces and Motion Flip Chart Set	731820	C2.1 & 2.2
Happy/Sad Ball Kit	731368	C2.2 & 2.3
Spectrum Force & Motion Kit	732975	C2.2, 2.3, A1.2
Force & Motion (Grade 1-3) (book)	731500	C2.1 & 2.4
STRAND D: Structures and Mechanisms Strong and Stable Structures		
Craft Sticks - Pack of 100	731917	D2.5 & A1.3
Small Easy Cutter	76849	A1.4
Mini Glue Gun (Low Temperature)	240086	A1.4
Structures Discovery Kit	70026	A1.3, 3.1, D2.3
makedo® Invent	735509	D2.2 & A1.3
Stable Structures & Functions of Mechanisms	731522	D2.1 & 2.2
Polydron Bridges Class Set	730245	D2.1, 2.4, 2.7
STRAND E: Earth and Space Systems Soils in the Environment		
Elementary Soil Classroom Kit	SB48134M	E1.1, 2.1, 2.2
See-Through Compost Container	77626	E2.6
Lab Aids® Modeling Stream Erosion and Deposition	SB44075M	E2.4
Landforms, Rocks & Soils Learning Centers	732054	E2

Happy/Sad Ball Kit

Please check spectrumed.ca and search the term "**ontarioscience2023**" for the latest prices.

Recommended Materials for EVERY GRADE 4 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
STEM Engineering Design Process Flip Chart Set Gr 3-5	735702	A1.1, 1.2 1.3, 1.5
Poly Gloves (small sized) - box of 100	SB48963M	A1.4
Safe Test Tubes - set of 15	SB33231M	A1.2
Pocket Microscope	SB20198M	A1.1
HamiltonBuhl® - STEAM - Green Screen Production Kit	735482	A1.5
LEGO® Education BricQ Motion Essential Set	735533	A1.3 & A3.1
BBC micro:bit Club V2 (10 pack)	735531	A2.1 & A2.2
littleBits® STEAM+ Coding Class Pack	735491	A1.3 & A2.1
LEGO® Education SPIKE™ Essential Core Set	735611	A2.1 & A3.2
Sphero® BOLT™	732091	A1.5, 2.1, 3.1, 3.2
STRAND B: Life Systems Habitats and Communities		
Food Web Collapse Game	SB47891M	B1.2, 2.3, 2.4
Ecology Bulletin Board Chart Set	731807	B2.3
Animal Bites	731116	B2.5 & 2.6
Growth & Change in Animals	76668	B1.1 & 2.6
Discover Habitats, Communities and Ecosystems	72854	B1.1, 1.2, 2.1, 2.2
Animal Habitats Game	735689	B1.1, 1.2, 2.1, 2.2
STRAND C: Matter and Energy Light and Sound		
Lights and Optics Flip Chart Set	731824	C1.1, 2.1, 2.2, 2.3
Sound Chart Set	731823	C1.1, 2.4, 2.5, 2.8
SciQuest Sound Kits - Multi-Group Kit	SB17861M	C2.6 & A1.2
Tuning Fork Discovery Kits	735599	C2.4, 2.5, 2.6
Ripple Tank for Overhead Projector	SB42192M	C1.2, 2.4, 2.5
Energy Beads	67922	C2.6
Plumber's Candle	SB14283M	C2.7
Cross Section of Human Eye	731062	C2.8
Human Ear 3-D Model Making Kit	735474	C2.8, A1.3
NewPath Learning® Sound & Light Learning Center	732036	C2
Spectrum's Sound, Light & Optics Kit	730679	A1.1, 1.2, 1.4
STRAND D: Structures and Mechanisms Machines and Their Mechanisms		
LEGO® Education BricQ Motion Essential	735534	D1.1, 2.2, A1.3
LEGO® Education SPIKE™ Essential Core Set	735611	D2.1, 2.3, 2.5, A2.1
Roller Coaster Engineering	735607	D1.1, 2.2, 2.4, 2.5
Work, Power and Simple Machines Flip Chart Set	731822	D1.1, 2.3, 2.4, 2.5
Gumball Machine Maker - Super Stunts and Tricks	735604	D2.2, 2.3, 2.4, 2.5
K'NEX® Gears - class pack of 8	77106	A1.3, D2.3, 2.4
Spectrum Jr. Pulleys & Gears Kit	732961	A1.1, 1.2, 1.3, 1.4
STRAND E: Earth and Space Systems Rocks, Minerals, and Geological Processes		
Earth Processes Poster Series	SB40701M	E1.1
Rock Cycle 3D Model Making Kit	735477	E2.1, A1.5
Classifying Sedimentary, Igneous, and Metamorphic Rocks	SB40664M	E2.2 & 2.3
Mineral Test Kit	SB48163M	E2.3, A1.2, 1.4
Life on Earth - A Fossil History Model	SB48459M	E1.1, 2.1, 2.5
NewPath Learning® Rocks & Minerals Learning Center	732045	E2.1, 2.2, 2.4
Rocks, Minerals, & Fossil Board Chart Set	731801	E2.1, 2.2, 2.5
Minerals Flip Chart Set	731855	E1.2, E2.4

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Recommended Materials for EVERY GRADE 5 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
STEM Engineering Design Process Flip Chart Set Gr 3-5	735702	A1.1, 1.2 1.3, 1.5
Poly Gloves (small sized) - box of 100	SB48963M	A1.4
Safe Test Tubes - set of 15	SB33231M	A1.2
HamiltonBuhl® - STEAM - Green Screen Production Kit	735482	A1.5
LEGO® Education BricQ Motion Essential Set	735533	A1.3 & A3.1
BBC micro:bit Club V2 (10 pack)	735531	A2.1 & A2.2
littleBits® STEAM+ Coding Class Pack	735491	A1.3 & A2.1
Sphero® BOLT™	732091	A1.5, 2.1, 3.1, 3.2
LEGO® Education SPIKE™ Essential Core Set	735611	A2.1 & A3.2
STRAND B: Life Systems Human Health and Body Systems		
Dental X-Rays, Set of 15	731918	B1.1, 1.2, 2.4
Child-Size Human Body	62820	B2.1, 2.2, 2.3
Pumping Heart Model	733598	B2.2 & 2.3
Human Body Big Book	731058	B2.1 & 2.2
First Nations, Inuit and Metis Canadian Food Clings Kit	732310	A3.3 & B1.3
5-Minute Food & Nutrition Activities Book	WA27903E	B1.3
Student Blood Pressure Kit	SB10783M	B1.1, 1.2, A1.2
STRAND C: Matter and Energy Properties of and Changes in Matter		
Matter and Interactions Bulletin Board Chart Set	731806	C2.1 & 2.2
Water Cycle Wheels	730859	C2.3 & 2.6
Biofuels: Investigating Ethanol Production & Combustion Lab	C29169M	C1.2, 2.6, 2.7
Just Add Baking Soda® Learning of Bio Chemistry	735444	C2.2 & 2.5
STRAND D: Structures and Mechanisms Forces Acting on Structures		
LEGO® Education BricQ Motion Essential	735534	D1.1, 1.2, 2.1, 2.2
LEGO® Education SPIKE™ Essential Core Set	735611	D2.1, 2.2, A2.1
Roman Arch Kit	731514	D1.1, 2.1, 2.2, 2.3
Triple Beam Balance	50696	D1.2, 2.2, A1.2
Attachment Weights for Triple Beam Balances	SA04482M	D1.2, 2.2, A1.2
Spectrum Force & Motion Kit	732975	A1.1, 1.2, 1.3, 1.4
STRAND E: Earth and Space Systems Conservation of Energy and Resources		
Water Conservation - Big Book	730725	E1.1 & 2.5
How We Impact the Environment	732484	E1.1 & 2.6
Tuning Fork - Large	732632	E2.1, 2.2, 2.3, 2.4
Energy - Forms and Changes Flip Chart	731821	E1.2, 2.2, 2.3, 2.5
Global Warming: Causes	733590	E2.6, 1.1
Plumber's Candle - 1 dozen	SB14283M	E2.1, 2.2, 2.4
Photon Sustainable Energy Education Kit	735667	E1.2, 2.1, 2.3, 2.4
Cubelets Discovery Set	735045	E1.2, 2.1, 2.3, 2.4

First Nations, Inuit, and Mãtis Canadian Food Clings Kit

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Recommended Materials for EVERY GRADE 6 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
Sphero® BOLT™	732091	A1.5, 2.1, 3.1, 3.2
LEGO® Education SPIKE™ Prime Set	735047	A1.2, 1.3, 2.1, 2.2
Arduino Education Science Kit Physics Lab	735541	A1.2, 1.5, 2.2, 3.1
LEGO® Education BricQ Motion Prime Small Group Set	735538	A1.2, 1.3, D2.2
littleBits® STEAM+ Coding Kit	735645	A1.1, 1.2, 1.3, 1.4, 2.1, 2.2
Bloxels Classroom Bundle	732946	A2.1, 2.2, 3.1
Makey Makey® STEM Pack: Classroom Kit	735021	A2.1, 2.2, 3.1
STRAND B: Life Systems Biodiversity		
Creature Seeker Pond Student Kit	732346	B1.1 & B2.4
Diversity of Life Bulletin Board Chart Set	731808	B2.1 & B2.2
Biomes Curriculum Mastery® Flip Chart Set	731831	B2.2
Six Kingdom Study Card Set	731029	B2
Diversity of Living Things	79770	B2
STRAND C: Matter and Energy Electrical Phenomena, Energy, and Devices		
Windpower V 3.0	730319	C1.1, C2.4 & C2.5
Solar Science Station	735280	C1.1, C2.4 & C2.5
Squishy Circuits® Deluxe Kit	730945	C2.6
Snap Circuits® JR. Edition	732646	C2.6 & C2.7
Crazy Circuits 25 Pack	735265	C2.6 & C2.7
Arduino Education Starter Kit	735540	A1.1, 1.2, 1.4, 1.5
Spectrum's Electricity Kit	730682	A1.1, 1.2, 1.4
STRAND D: Structures and Mechanisms Flight		
Straw Rocket Maker Project	735622	D2.2, D2.3 & D2.4
Delta Dart Kits - Pack of 35	9721406	D2.2, D2.3 & D2.4
Whitewings Paper Glider Competition Kit	SB31179M	D2.2, D2.3 & D2.4
Soaring into Flight	778811	D2
Thames & Kosmos Ultralight Airplanes	735602	D2.1 & D2.4
Rokit Kit	731916	D2.1 & D2.2
Hot Air Balloon Kit	SB51903M	D2.1 & D2.2
Characteristics of Flight	77816	D2
STRAND E: Earth and Space Systems Space		
Our Solar System Flip Chart Set	731857	E2.1 & E2.4
Giant Magnetic Solar Systems	732615	E2.1
The Sunspotter	SB46150M	E2.4
Inflatable Solar System	SB37813M	E2.1, E2.2 & E2.3
Motorized Solar System	730730	E2.1 & E2.2
Lighted Basic Planetarium Model	SB15348M	E2.5
Sun-Earth-Moon System Flip Chart	731856	E2.5

NewPath Learning® Diversity of Life Bulletin Board Chart Set

NewPath Learning® Our Solar System Curriculum MasteryÂ® Flip Chart Set

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Recommended Materials for EVERY GRADE 7 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
Sphero® BOLT™ (15-robot Power Pack available)	732091	A1.5, 2.1, 3.1, 3.2
LEGO® Education SPIKE™ Prime Set (expansion kit available)	735047	A1.2, 1.3, 2.1, 2.2
Arduino Education Student Kit (4-set Classroom Kit available)	735548	A1.1, 1.2, 1.3, 1.4, 2.1, 2.2
LEGO® Education BricQ Motion Prime Small group Set	735538	A1.2, A1.3, D1, D2
littleBits® STEAM+ Coding Kit	735645	A1.1, 1.2, 1.3, 1.4, 2.1, 2.2
TETRIX® PRIME Dual-Control Robotics Set	735612	A1.2, 1.3, 2.1, 2.2, 3.3
STRAND B: Life Systems Interactions in the Environment		
How We Impact the Environment	732484	B2.1, 2.3, 2.5
Ecosystems (Book)	731632	B2.1, 2.3, 2.5
Ecological Succession Game	732484	B1.1, 1.2, 2.1, 2.5
Bon Appetit Board Game	731866	B2.1, 2.3, 2.4
Food Chains & Food Webs Learning Center	732044	B2.4, 2.5
Kitronik Lesson in a Box™ - The Environment Kit for BBC micro:bit	735669	A1.3, 3.1, B1.1, 2.8
STRAND C: Matter and Energy Pure Substances and Mixtures		
Matter and Interactions Bulletin Chart Set	731806	C2.1, 2.2, 2.7, 2.8
Characteristics of Matter - Kemtec	731270	C2.3, 2.4, 2.5, 2.6
Just Add Baking Soda®, Learning of Bio Chemistry	735444	C2.1, 2.4, 2.6
STRAND D: Structures and Mechanisms Form, Function, and Design of Structures		
LEGO Education BricQ Motion Prime Small group set	735538	A1.2, 1.3, D1, 2
Structures Discovery Kit	70026	D2.1, 2.2, 2.3
Model Bridge Class PAck	732744	D2.1, 2.2, 2.3
STRAND E: Earth and Space Systems Heat in the Environment		
Global Warming Big Book	733592	E1.1, E2.6 & E2.8
Climate Change 3D Model Making Kit	735476	E1.1, E2.7 & E2.8
Ice Melting Set	731404	E2.4
Heat Transfer Kit	76884	E2.4, E2.5
Radiometer	56852	E2.6
Gas Convection Apparatus	03605	E2.5
Earth's Atmosphere Flip Chart	731848	E1.2, 2.1, 2.2, 2.3
Weather & Climate Posters	731803	E1.2, 2.7

Kitronik Lesson in a Box™ - The Environment Kit for BBC micro:bit

Ages 10 years Designed by Teachers and tested by Pupils to save you time when teaching Computing, Design & Technology, and Biology/Combined Science. The Lesson in a Box - The Environment pack for micro:bit is a complete set of parts & teaching resources to enable successful cross-curricular lessons. Lessons come with a detailed lesson plan, cross-referenced to: class slides, workbooks/worksheets, checklists etc., technician's notes and where appropriate, AFL guidance with answers and plenaries. The Lesson in a Box - The Environment spans Computing, Design & Technology, Biology/Combined Science, and all also contains enrichment day activities. The resources cover personal development by encouraging pupils to view traditional STEM activities as having value across their curriculum. The teaching resources included in this pack are set out in a 'teacher-friendly way', with sufficient detail to enable you to 'lift' them, photocopy them and run your lesson(s) with minimal fuss straight out of the box, and/or to edit and personalise the resources if you wish.
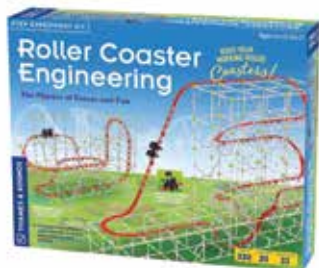
735669

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Recommended Materials for EVERY GRADE 8 Science Classroom

Product	Spectrum Part #	Which Strand topic it relates to
STRAND A: STEM Skills and Connections		
Sphero® BOLT™	732091	A1.5, 2.1, 3.1, 3.2
LEGO® Education SPIKE™ Prime Set	735047	A1.2, 1.3, 2.1, 2.2
Arduino Education Science Kit Physics Lab	735541	A1.1, 1.2, 1.4, 1.5
LEGO® Education BricQ Motion Prime Small group Set	735538	A1.2, A1.3, C2.9, D2
TETRIX® PRIME Dual-Control Robotics Set	735612	A1.2, 1.3, 2.1, 2.2, 3.3
Arduino Education Starter Kit	735540	A1.1, 1.2, 1.3, 2.1, 2.2
STRAND B: Life Systems Cells		
Cells Bulletin Board Chart Set	731811	B2
Plant and Animal Cell Model Kit	731222	B2.1, 2.3
Magnetic Animal Cells	733538	B2.1, 2.3
New Path Learning Curriculum Mastery Flip Chart All About Cells	731826	B2
4D Science Cell Models	SB51409M	B2
Simple Plant Cell 3D Model Making Kit	735472	B2.1, 2.3
Simple Animal Cell 3D Model Making Kit	735470	B2.1, 2.3
Cells (Book)	731636	B2
Mitosis/ Meiosis Poster	731033	B2.3, B2.4
STRAND C: Matter and Energy Fluids		
Spectrum's Pneumatics/ Hydraulics Kit	730683	A1.1, 1.2, 1.3, 1.4
NASCO Speed of a Bubble Tube Test	SB30767M	C2.1, 2.8, A1.2
Just Add Milk™ - Study of Surface Tension	735448	C2.8, 2.10, A1.2
LEGO® Education BricQ Motion Prime Small group Set	735538	C2.9
Overflow Can	15408	C2.2, 2.3
Charles Law Mechanics of Gas' Can with Lid	SB28561M	C2.4, 2.6
Discovery Kit's, Pneumatics	70022	C2.6, 2.9
Caddy Stack Pump it up with Pneumatics & Hydraulics Kit	20068	C2.6, 2.9
STRAND D: Structures and Mechanisms Systems in Action		
Impact Car	732604	D2.4
Gumball Machine Maker	735604	D2.3, D2.4, 2.7
Roller Coaster Engineering	735607	D2.3, 2.4, 2.5
Forces & Motions Flip Chart Set	731820	D2.3, 2.4, 2.5, 2.6
Science Learning Center, Force Motion & Energy	732049	D2.3, 2.4, 2.5, 2.6
STRAND E: Earth and Space Systems Water Systems		
Qualitative Introduction to Water Pollution Kit - Lab Aids No. 19	SA08211M	E1.1, 1.3, 2.6
Climate Change 3D Model Making Kit	735476	E2.3, 2.4, 2.7
Water Treatment and Filtration	SB45473M	E2.7, 2.3, A1.2
Water Conservation - Big Book	730725	E1.1, 1.3
Water Monitoring Kit	SB33597M	E2.3, 2.6
Water Cycle Wheels	730859	E2.1, 2.2
Book Plus Water Cycle Model	69062	E2.1, 2.2

**Thames & Kosmos
Roller Coaster Engineering**

**4D Science™ Cell Models
Complete Set**

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new

Teach through play
A Universal Didactic Tool
Photon Early Education Kit

Ages 3-6 years / Grades PreK-1

We believe that classes should be fun — both for teachers and students. By keeping students enthralled and entertained we make learning seem like play. The Early Education Teaching Kit is designed for the comprehensive development of our youngest students. It comprises activities for cognitive, social, emotional, and physical development. The robot is intuitive in use and ready for work right out of the box. Dedicated free mobile and desktop apps are straightforward and compatible with most devices. Hundreds of lesson plans and ideas are available online and in print.

735662

LEGO® Education SPIKE™ Prime Set

Ages 10 years + The LEGO® Education SPIKE™ Prime Set is the go-to STEAM learning tool for grades 6-8.
Combining colourful LEGO® building elements, easy-to-use hardware, and an intuitive drag-and-drop coding language based on Scratch, SPIKE™ Prime continuously engages students through playful learning activities to think critically and solve complex problems, regardless of their learning level. The heart of the SPIKE™ Prime system is the programmable HUB. This advanced yet simple-to-use, brick-shaped device features 6 input/output ports, 5x5 light matrix, Bluetooth® connectivity, a speaker, 6-axis gyro and a rechargeable battery. The SPIKE™ Prime Set also includes highly accurate motors and sensors that, together with a large variety of colourful LEGO® building elements, lets students design and build fun robots, dynamic devices, and other interactive models. The intuitive coding environment for tablets and computers takes the best elements from the popular coding language based on Scratch, creating a system that teachers and students will love. Includes: Sturdy Storage Box with Sorting Trays, Programmable Hub, Distance Sensor, Force Sensor, Colour Sensor, Large Motor, 2 Medium Motors, Over 500 Appealing LEGO® Technic™ Elements in a Fresh Colour Palette.

735047

Kitronik Lesson in a Box™ Simple Robotics

Complete set of electronics and teaching resources to enable successful cross-curricular lessons with minimal teacher effort. All of the teaching resources are set out in a teacher, user-friendly' way, including technicians notes, lesson plans, resources and workbooks or worksheets. The robots utilize the BBC micro:bit (735529) and a clippable motor driver board designed specifically for this type of activity. The advantages of the microbit are that, while being easy to use, it is feature packed and it can be coded with languages that suit every ability level. There are 10 student and 1 teacher sets of Electronics (11 sets in total) supplied in a large reusable Gratnells tray.

Set includes:

- 1 x Kitronik Klip Motor Driver Board for BBC micro:bit
- 2 x Kitronik clippable TT motor boards (with cable tie and screws)
- 2 x Right Angle Geared Hobby TT motors
- 2 x 5 Spoke Injection Molded Wheels for TT Motors
- 1 x set of 10 clip leads
- 1 x ping pong ball for robot castor
- A simple chassis template

735156

Recommended Materials for EVERY ROBOTICS CLASSROOM

Product	Spectrum Part #
Robotics Platforms for Grades 1-3	
Learning Resources® Code & Go™ Robot Mouse Classroom Set	731935
LEGO® Education SPIKE™ Essential Core Set	735611
Sphero® indi™ Classroom Pack	735591
Sphero® mini™ Classroom Pack	735357
Spectrum Coding Cards	735015
Botley® 2.0 the Coding Robot Classroom Bundle (4 robots)	735440
Codey Rocky - Gr 3+	732029
mBot 2.0 - Gr 3+	735687
Ozobot® Evo Classroom Kit (18)	735064
Robotis PLAY 7000 Ollobot (Gr 3+)	732119
Photon Early Education Kit	735662
Robotics Platforms for Grades 4-6	
LEGO® Education SPIKE™ Essential Core Set - Gr 4-5	735611
LEGO® Education SPIKE™ Prime Set (Gr 5-6)	735047
LEGO® Education SPIKE™ Prime Expansion Set	735048
Sphero® BOLT™ Power Pack (Feature Image)	732089
Artie 3000™	735527
Artie MAX	735822
Sphero® mini™ Classroom Pack	735357
mBot 2.0	735687
Root® Technology Pack – 12 Root® Coding Robots	735524
Kitronik Lesson in a Box™ Simple Robotics Classroom Set	735156
Robotics Platforms for Grades 7-8	
Photon Robotics and Coding Kit	735663
LEGO® Education SPIKE™ Robotics Competition Training Set	735646
Sphero® BOLT™ Power Pack	732089
Sphero® RVR 5-pack	735503
mBot Ranger	730941
TETRIX® PRIME Dual-Control Robotics Set	735612
Robotis MINI	735020
Kitronik Lesson in a Box™ Simple Robotics Classroom Set	735156

Botley® 2.0 the Coding Robot

Sphero® indi™

Root® Coding Robot

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Recommended Materials for **EVERY CODING CLASSROOM**

Spectrum Coding Cards

Ages 6 years +

Practice unplugged coding with these coding cards. Includes Activity, Challenge and Movement cards. Pick an Activity and choose the Movement cards to complete the task. Then use Challenge cards to further test coding skills. These cards can be used to direct the movements of people or robots.

Includes:

• 3 instruction cards
• 10 activity cards
• 10 challenge cards
• 90 movement cards.

A total of 113 cards in the package! Bilingual in English and French. One side is in English, other side in French.

735015

Sphero® BOLT™

Ages 8 +

Sphero® BOLT™ is an app-enabled robotic ball that provides endless opportunities to be creative and have fun while learning. Program with the Sphero Edu app from nearly any mobile or desktop device, discover awesome community-created activities, or just drive and play. BOLT™ was built to shine with a brilliant 8x8 LED Matrix that animates and displays real-time data. Create and customize games and learn to code by drawing on your screen, using Scratch™ blocks, or writing JavaScript text programs. Use advanced sensors to keep tabs on BOLT's speed, acceleration, and direction, or orient and drive BOLT™ with the built-in compass. BOLT™ also features infrared communication, allowing your robot to "communicate" with other BOLTs, enabling brand new games and advanced coding tactics. Equipped with Bluetooth SMART and a durable, waterproof shell, Sphero® BOLT™ establishes a striking new way to learn and play.

What You'll Get:

• Sphero® BOLT™
• Inductive Charging Base with USB cable
• Protractor with heading, directions, and clock
• Sticker sheet
• Quick Start Guide to get you rolling
• Sphero® Edu app available for download on iOS, Android, Kindle, Mac, Windows, and Chrome

732091

Kitronik Discovery Kit for Raspberry Pi Pico

Ages 10 years + Take your first steps in Python and physical computing with the Kitronik Discovery Kit for Raspberry Pi Pico *(Pico included)*. The Kitronik Discovery Kit for Raspberry Pi Pico (Pico included) is a great way to learn about microcontrollers, Python coding, and physical computing.

Note:

• A USB cable is NOT supplied. USB cables capable of data transfer and power are available separately here.
• No soldering is required.

Features:

• This kit offers a great introduction to microcontrollers, Python coding, and physical computing.
• Make the 7 experiments in the step-by-step tutorial book and learn as you go.
• All parts are included to conduct the 7 experiments, including the Raspberry Pi Pico.
• The kit is supplied with a detailed booklet that covers setup and then how to complete the 7 experiments.
• The experiments explore; simple coding, Interrupts, Threads, Digital Inputs, and Analog and Digital Outputs.
• Once you have completed all of the included experiments, you have the perfect prototyping system for further learning/prototyping with the Raspberry Pi Pico board.
• The Raspberry Pi Pico board is a new cutting edge microcontroller that features the Pi designed ARM-based dual-core RP2040 chip.
• Included is a large format breadboard for ease of prototyping.
• The kit is supplied in re-usable packaging suitable for long term storage of the kit.

Contents:

• 1 x Raspberry Pi Pico board
• 1 x Large Prototype Breadboard
• 2 x Red 5mm LED
• 2 x Yellow 5mm LED
• 2 x Green 5mm LED
• 10 x 330Ω Resistor
• 1 x Piezo Element Buzzer
• 20 x Male to Male Jumper Wires
• 2 x Push Switches
• The kit is supplied in re-usable packaging suitable for long term storage of the kit

735584

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Recommended Materials for EVERY CODING CLASSROOM

Kitronik Lesson in a Box - Primary Computing Pack

Ages 7-10 years The Kitronik Lesson in a Box Primary Computing Pack, an all-in-one Laboratory for learning/delivering KS2 computing in the classroom (7 - 10-year-olds) again and again. The Kitronik Lesson in a Box Primary Computing Pack is a complete set of electronics and teaching resources to enable successful Ofsted quality curricular linked lessons with minimal teacher effort. The kit and teaching resources have been tried and tested by real pupils and developed with real teachers to save you time. There are 10 student and 1 teacher sets of Electronics (11 sets in total) supplied in a reusable Gratnells tray.

Each set includes:
- 1 x LAB:bit.
- 1 x 5 spoke injection moulded Wheel and tyre for the motor.
- 1 x 3xAA Battery cage.
- 1 x Printed A4 Piano.
- 1 x Printed A4 Snakes and Ladders style board.
- 1x Printed A3 Build Instructions.

Also included with the Kit is a USB Drive, the drive contains;
- Quick start guide for teachers and technicians.
- Full teaching resources for 11 lessons, including PowerPoint presentations, worksheets, schemes of work, and some printed material.

735901

Kitronik Lesson in a Box™ Visual Computing Pack for micro:bit

Ages 10 years + Designed by Teachers and tested by Pupils to save you time when teaching Visual Computing. The Lesson in a Box Visual Computing pack for micro:bit, available separately here, is a complete set of parts & teaching resources to enable successful cross-curricular lessons. The subject packs come with a detailed lesson plan, cross-referenced to: class slides, workbooks/worksheets, checklists etc., technician's notes and where appropriate, AFL guidance with answers and plenaries.

- D and T - Your visual coding lessons are all about the design of lighting within cultures.
- Computing - Your visual coding lessons are all about seeing loops, learning about selection and conditions.
- Physics/Combined Science - Your visual coding lessons are all about seeing data.
- Geography - Your visual coding lessons are all about seeing earthquake data.
- Enrichments - Both enrichments are challenges designed for experimentation, one is a dance and light challenge and the other is a kaleidoscope build challenge. They can also be used for Open Day activities/displays.

735675

littleBits® STEAM+ Coding Kit

Ages 8-18 years / Grades 3-12 Invent and code with one, easy to use kit. The littleBits® STEAM+ Coding Kit contains 25 Bits, a newly designed durable storage container, printed teacher support materials and 40+ hours of standards-aligned STEAM and Coding curriculum. Compatible with the Fuse app, students can program littleBits® inventions and simulate circuits to level up the learning experience.

- Engage up to 4 students per kit with 25 Bits and 34 accessories
- Run 40+ hours unplugged, cross-curricular lessons and coding tutorials available on littleBits® Classroom
- Compatible with the littleBits® Fuse app, students of all coding abilities can program the codeBit through blocks or Java-Script text and level up their inventions
- Improved durable storage container for easy organization and clean up & printed materials for instructional support and classroom implementation

735645

What can children learn when play has purpose?

Spark primary school pupils' passion for STEAM learning through purposeful play with LEGO® Education SPIKE™ Essential. Hands-on problem-solving and playful storytelling help prepare pupils to be resilient, independent thinkers.

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LEGO education

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Science Curriculum 2023

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