

LEGO® Education Science - Product FAQ

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General Questions

What is LEGO® Education Science?

Designed to drive science learning outcomes, LEGO Education Science features 120+ engaging, standards-aligned (Curriculum aligned) science lessons and ready-to-use class presentations that bring science to life for teachers and students (K-8 or ages 5-11+).

LEGO Education Science comes in 3 different age relevant solutions. Packed with LEGO® bricks, building instructions, intuitive hardware, and a USB charging cable, every hands-on kit engages students. LEGO Education Science includes 120 curriculum-aligned, inquiry-based science lessons that are intuitive to set up and implement, maximizing class time and ensuring instant classroom engagement.

Throughout these age-appropriate lessons, students tackle a scientific inquiry hands-on and collaboratively explore their way to a solution. Get ready to excite students with inquiry-based exploration of real-world science concepts.

What is the target age group?

LEGO Education Science is designed for K-8 with three SKUs for the grade bands; K-2, 3-5, and 6-8. The target age group may vary between countries based on country-specific curriculum mapping.

When will products be available in the market?

The official date for LEGO® Education Science launch is August 1, 2025. This is when products will be available in the market.

Which products are available for LEGO® Education Science?

LEGO Education Science offers 3 different kits for 3 different age groups and 10 supplemental SKUs.

Core sets:

- **45620: LEGO® Education Science Kit K-2**
- **45621: LEGO® Education Science Kit Grades 3-5**
- **45622: LEGO® Education Science Kit Grades 6-8**

Supplemental

- **45623: LEGO® Education Multi-charger – US**
- **45624: LEGO® Education Multi-charger – LEI**
- **45650 LEGO® Education Single Motor**
- **45651 LEGO® Education Double Motor**
- **45652 LEGO® Education Controller**
- **45653 LEGO® Education Color Sensor**
- **45654: LE Elementary Replacement Pack**
- **45655: LE Middle School Replacement Pack**
- **45656 LEGO® Education AC Cable**
- **45657 LEGO® Education Connection Cards**

What is the recommended number of students per set?

LEGO Education Science is designed for four students to use at a time. In testing conducted by LEGO Education we found groups of four to be ideal for student exploration, collaboration, and peer learning. LEGO® Education Science is uniquely designed to engage students at different stages of their learning and encourage them to learn from each other.

How many kits are needed per classroom?

For every four students one kit is required. To avoid more than 4 students per group it is best to round up the number of kits. For example, in a 22-student classroom, it is recommended to use 6 kits rather than 5. Classroom bundles can accommodate different classroom sizes.

What is included in the LEGO Education Science Kits?

Each kit includes everything needed to work out of the box. This includes building instructions, bricks and the relevant tech elements for use in the grade band covered by the kit

Each kit for 4 students contains the following elements:

- Grade K-2/5+: 272 elements, including 1 double motor and building instruction booklets, 1 charger cable (USB-C)

- Grade 3-5/8+: 335 elements, including 1 double motor, 1 controller, 2 connection cards, 1 charger cable (USB-C) and building instruction booklets.
- Grade 6-8/11+: 424 elements, including 1 double motor, 1 single motor, 1 controller, 1 color sensor, 3 connection cards, 1 charger cable (USB-C) and building instruction booklets.

Extra connection cards and multi chargers for easy classroom management can be purchased separately or as part of the classroom bundles.

Curriculum

How much learning content does LEGO Education Science offer?

120 lessons in total across grades. This equates to 40 lessons per SKU (K-2, 3-5, 6-8).

How long is each LEGO® Education Science lesson?

Each lesson is designed to fit into the science lesson blocks – And can be taught in the 35-45 min timeslots.

Which educational standards are covered (US)?

LEGO Education Science is designed to support science learning across grades with strong alignment to the Next Generation Science Standards (NGSS) and with additional mapping to individual states for relevant and robust learning in all states.

Which educational standards are covered (International)?

LEGO Education Science is designed to support science learning across age groups with strong alignment to national science standards in several countries.

In which languages is the LEGO Education Science curriculum available?

All learning content is localized into 20 languages and mapped to each available country. These include: UK, Australia, Germany, Denmark, Finland, Norway, Sweden, Italy, Spain, Korea, Japan, China, France, Netherlands, Poland, Greece, Canada, Brazil, Mexico, Turkey.

How should LEGO® Education Science lessons be implemented in the curriculum? Is there a recommended sequence of lessons and timing?

Using LEGO® Education Science as a supplemental science material allows districts, schools, and teachers to choose when and where they integrate it into their classroom experience. They can choose to implement a LEGO® Education Science lesson to start a new unit of study alongside reading in their textbook, as a way to check for understanding midway through the unit, or at the very end as a culminating project. That's the beauty of the simplicity and modularity of the lessons.

US SPECIFIC:

With LEGO® Education Science we provide a "scope" of our lessons. These will be provided as state standard curriculum overviews that shows the lessons and how they link to state standards. This does not include a pre-defined or recommended "sequence" as that depends on the district's Science curriculum.

Teacher Portal

How do teachers access LEGO® Education Science lessons?

All lessons will be available free of charge on a new digital platform for teachers via the LEGO Education website. Teachers will log in to the new platform to access preparation resources as well as lesson plans and student-facing classroom presentations that support facilitation. The platform will be available starting August 1, 2025.

Are all lessons free?

Yes, all lessons are free and available online through the Teacher Portal. Teachers will have to create a free login to see more than the 3 sample lessons.

Why do you need a login to access lesson content?

When a teacher creates a profile, it simplifies the teacher experience so they only see the most relevant content based on where they are located and what ages/grades they teach.

Will the Teacher Portal show country and state-specific standards?

Yes, when a teacher logs in and sets their profile to the country and state they are in, all lessons will show mapped to the standards for that country/state.

Technology elements

What are the technology elements in the kits?

A range of different tech elements are available across the different LEGO Education Science solutions for the different age groups. Each set includes what's relevant for the grades they are to be used in

Tech elements in each different kit are:

LEGO® Education Science Kit K-2:

- Double motor

LEGO® Education Science Kit 3-5:

- Double motor
- Controller
- Connection cards

LEGO® Education Science Kit 6-8:

- Double motor
- Controller
- Single motor
- Color sensor
- Connection cards

The tech elements are powered by a new wireless system where each element can work on their own or as a part of a larger group – all without the need for cables, laptops or any of the traditional hassle.

Single motor. Small, yet precise and powerful – for models that require movement in a compact form factor or require heavy lifting.

Double motor. This is the workhorse, and it is used in a broad range of models but it really shines when things must drive around or move fast.

Controller. Having direct control of a model is always popular with students and relevant in many lessons – but this controller is more than that. Thanks to the compact design and versatility of the two levers, it can just as easily act as a sensor inside a model.

Color sensor. Sensing and reacting to colors has been proven to be one of the most relevant and versatile sensing features out there, and with this sensor, we offer it in an ultra-compact design and with unprecedented sensor performance.

Connection card. This is truly the magic wand of the system. Want to connect a sensor to a couple of motors? Just swipe the card in front of them and see how they instantly pair with no further configuration needed!

Multi-charger. Fast charging at classroom scale has never been easier – and with the multi-charger, students can help their teacher because the charger is not just intuitive, it is also designed to give the highest level of safety.

How are the technology elements used in the lessons?

The tech components help represent many concepts in science. For example, the movement created with the motors can represent a rattlesnake preparing to attack prey, a wave crashing against a cliff to simulate erosion, a laboratory mixer randomizing genetic material from plants, a helicopter's spinning propeller, or an earthquake that spills cups of lemonade. The motors and sensors allow students to build deeper understanding and connect to science concepts by simulating phenomena, modeling concepts in new or different ways, or relating to an engaging story.

Why aren't the technology elements included in all lessons?

Many lessons include motors or sensors in the student builds, but not every lesson model does. The technology elements are only included when it adds value to the learning experience and driving learning outcomes.

How long time does the battery last on elements? How many lessons can I run?

Battery capacity and charge time is constantly being tested and optimized as the product is being developed for launch. The results are at the moment as shown below, however can potentially still be improved towards launch.

The elements have different battery capacity, but also very different use cases. In practice it is possible to conduct minimum two lessons in a row if the elements are fully charged. If the elements are charged in-between lessons, then this number can be greatly increased.

For constant use, we see the following run-times:

- Controller = approx. 90 min of use *
- Color Sensor = approx. 90 min of use *
- Single motor = approx. 240 min of use *
- Double motor = approx. 240 min of use *

* note that the time is greatly dependent on the use case

How long time does it take to charge the elements?

Battery capacity and charge time is constantly being tested and optimized as the product is being developed for launch. The results are at the moment as shown below, however can potentially still be improved towards launch.

Theoretical charge speed 0-100%.

Double motor = 40 min

Single motor = 30 min

Color sensor = 30 min

Controller = 30 min

Note that there are many variables that determine the actual charge time, but this should give a picture of what to expect.

How does the connection cards work? Can a connection card from one set be used for another set? And will 2 connection cards of the same color interfere in class?

You can use any card from any box, and the cards cannot interfere with each other regardless of their color. So, if you have 5 groups that all use a blue card, they will not interfere.

The card contains a unique ID that is scanned by the LEGO hardware – this ID helps it differentiate between groups, even if they are using the same color.

What devices do I need to use LEGO® Education Science?

No devices are needed for students to learn with LEGO® Education Science. Teachers need a computer with internet connection to access the learning content and preparation resources as well as a projector/screen to share the lesson presentation with the class.

Testing

Has LEGO Education Science been tested in classrooms?

Throughout its development it was tested with over 3,000 K-8 students and over 200 teachers in more than 150 classrooms around the world. In the US alone we visited over 100 classrooms across 6 states.* Our classroom tests ensured the products were designed to be fit-for-purpose for **science** instructional time. Testing showed that students were highly engaged, collaborated effectively and teachers reported that students met the science learning objectives in the lessons.

What proof do you have that the learning methodology works?

In a review of integrated pedagogies 'Learning Through Play at School' (Parker & Thomsen, 2019) evidence suggests the impact of inquiry-based learning offers "scientific skills and concepts, mathematics learning, and strong learner engagement and motivation, establishing a positive inclination for lifelong learning". Similarly, evidence suggests students who participate in inquiry-based instruction develop advanced abilities in scientific thinking skills such as experimentation, evaluating evidence and inference (DiMauro & Furman, 2016).

With a proven methodology LEGO® Education Science drives learning outcomes for all students. Inquiry-based, hands-on learning ensures every student achieves meaningful science learning outcomes.

FIRST® LEGO® LEAGUE

Is LEGO® Education Science technology allowed in FIRST LEGO League Explore?

LEGO Education Science is allowed in FIRST LEGO League Explore. However, SPIKE Essential remains the recommended solution for Explore teams because of the requirement for students to demonstrate the code that makes their Explore model interactive and move

Is LEGO Education Science allowed in FIRST LEGO League Challenge?

LEGO Education Science cannot be used in FIRST LEGO League Challenge due to the Robot Game rules with regards to autonomous movement of the robot, as well as restrictions for allowable equipment.

LEGO® Education Science vs. other LEGO Education solutions

How is LEGO Education Science different than BricQMotion?

BricQ Motion was designed as a non-tech complement to the LEGO Learning System whereas LEGO Education Science is entirely new offering for core science subject. BricQMotion was focusing on physical science in the context of sports. With LEGO Education Science we are expanding the offering for science learning to include life-, earth & space-, physical- sciences and engineering & technology. LEGO Education Science covers a significantly greater number of standards through its 120 lessons, while also offering learning experiences that are more robustly connected to science learning outcomes.

How is LEGO Education Science different than SPIKE?

SPIKE remains a strong solution for the STEAM, and we will continue to serve this segment with SPIKE. LEGO Education Science is designed to succeed in core science subject with different needs and requirements.

In which ways is the LEGO Education Science learning experience different from those in SPIKE?

See grid below for a comparison

	SPIKE Optimized for integrated STEAM learning with STEM/STEAM specialist.	LEGO Education Science Optimized for science instruction time in K-5 General education classrooms and 6-8 science classrooms
System/Grade Coverage	Grades 1-8	Grades K-8
Learning/Standards	Partial coverage of CSTA, NGSS, ISTE and Common Core. One lesson touches on multiple standards	Robust coverage of the K-8 NGSS with one lesson focusing on delivering one standard. Localized to select Global Markets' national standards.
Lessons/ Units	Sequences of 5-8 lessons (45-90 minutes) in themed units focusing on different STEAM subjects	120 lessons for K-8 ranging in themes including animals, natural disasters, fantasy stories, real-world scenarios, and more.
Ease-of-use/ Facilitation	Lesson plans with facilitation notes. For SPIKE solutions students use app to support progression through the lesson. Getting started resources embedded in-app.	Lesson plans with facilitation notes to support preparation plus lesson presentation to support whole-classroom facilitation. Getting started resources hosted together with lesson preparation resources.
Student Collaboration	2 students per set. Building Instructions designed in linear sequence.	4 students per set. Building Instructions offer 4 simultaneous builds that integrate to create the full model-intentionally encouraging collaboration.
Building/ Models	Models advance in complexity across grades and include technic elements for middle school to build complex models. BI offer a linear sequence ideal for 1-2 builders at a time.	Uses mostly system bricks to support a simplified building experience. Some lessons require multiple small models
Technology/ Hardware	Assortment of Technic components that include LPF 2.0 connections. Hub required to activate all motors and sensors	Wireless Motors and sensors that do not require coding or screens to activate. Connection cards used to pair multiple components.
Coding	Lessons embed a coding progression from icon block, to word block, to text-based. All within one app.	Coding is not a part of the experience and not embedded in lessons.