Live Demo: LEGO® Education Computer Science & AI
Frequently Asked Questions

Artificial Intelligence (AI)

Does the AI model run locally or is data being streamed? If locally, what are the minimum system requirements?

The AI model is run locally. The LEGO® Education Coding Canvas and lessons run on any device with a webcam and internet connection, excluding mobile phones. For example, laptops, Chromebooks, and iPads are all compatible devices.

Minimum device requirements are:

- BLE 5 recommended
- Webcam or USB camera for AI features
- Chrome: minimum version 114
- Chromium Browser with WebBLE support (e.g., Google Chrome or Microsoft Edge)
- iPad: Minimum version 2

Is the AI model hosted by LEGO® or does it use Teachable Machine by Google?

All model training and execution in the Coding Canvas happens locally on the user's device, so the data used for classification, both training and inference, never leaves the user's device. While Teachable Machine also focuses on classification and is built using TensorFlow, the AI in Coding Canvas does not "use" Teachable Machine.

What is an AI pretrained classifier?

An AI pretrained classifier is a machine learning model that has already been trained on a large, general-purpose dataset to categorize data into predefined classes. This initial training allows the model to learn general patterns and features.

With LEGO® Education Computer Science & AI, students create, or train, their own classifiers by capturing pose data with their webcam. This pose data becomes the dataset for their pretrained classifiers and helps students understand how AI interprets and makes decisions based on data (probabilistic thinking).

What part of the lesson video featured in the webinar involved AI?

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The "Drop from the Top" lesson featured during the webinar is part of the 6-8 grade unit on loops and does not feature AI. Each grade band includes an AI unit comprised of four 45-minute AI lessons and one 90-minute design challenge.

For examples of lessons incorporating AI, you can watch our lesson videos for "Strike a Pose" (3-5) or "Skateboard Stunts" (6-8).

Why is LEGO® Education using AI with students? It's harmful to the environment.

LEGO® Education Computer Science & AI does not use AI on children but rather allows them to open the hood and learn how AI models work. With LEGO® Education Computer Science & AI, all data is processed locally on the student device, meaning no student data is streamed to a data warehouse for processing.

Are student images being saved or streamed to LEGO?

Student images are not captured or streamed. When using their webcam, images are blurred. The data that is captured and recorded is the coordinates of certain body parts (nose, wrist, elbow, shoulder, etc.) on a grid, not images.

Complexity

How does LEGO® Education Computer Science & AI differ from previous kits, like LEGO® Education SPIKE™ Prime? Is it capable of the same complexity?

LEGO® Education SPIKE™ Prime and Essential are designed to deliver engaging, hands-on STEAM learning experiences, whereas LEGO® Education Computer Science & AI is designed to deliver the same engaging learning experience specifically for computer science.

LEGO® Education Computer Science & AI is our most capable platform yet, designed for both classroom use and complex challenges. Innovation drives our design, and our newest kit includes exciting hardware improvements such as:

- Wireless motors and sensors that activate with or without coding and screens
- Hardware enabled for low speed and high torque, allowing for precise movement (e.g. 1 rotation = 360 degrees)
- Low-resistance in gearbox for reduced gear friction, leading to lower power consumption and longer battery life
- Bluetooth pairing for up to eight hardware elements

Additionally, our new Python API offers a more robust text-based coding experience, allowing students to connect with non-LEGO® hardware and software and enabling connections with more than eight hardware

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elements depending on the capacity of the laptop/device in use. Unlike SPIKE™ Prime's embedded MicroPython IDE, this API allows students to write with standard Python.

The classroom experience has also evolved for the better: Lessons are designed to fit in a 45-minute class period while offering optional extensions. Students work in groups of four, allowing them to flex and practice their collaboration skills. For educators, LEGO® Education Computer Science & AI comes with access to classroom slides, facilitation notes, standards alignments, and more within the Teacher Portal, making it easier to plan and structure lessons toward learning goals. LEGO® Education Computer Science & AI was also designed with standards in mind and includes comprehensive coverage of CSTA standards, averaging 80% across the three grade-banded kits.

Is LEGO® Education moving away from building and focusing more on coding and programming?

At LEGO® Education, our goal is to build joyful learning experiences that enable all students, teachers, and classrooms to thrive. Hands-on learning is central to our approach.

To help maximize learning time in the classroom, LEGO® Education Computer Science & AI lessons have been designed to fit within a 45-minute class period. For a richer building experience, educators can extend the Design Challenges at the end of each unit, leverage lesson extensions in the Teacher Portal, and/or get students involved in *FIRST*® LEGO® League.

FIRST® LEGO® League

Was LEGO® Education Computer Science & AI tested in a competition setting (*FIRST*® LEGO® League)?

LEGO® Education Computer Science & AI has been tested in both classroom and competition environments.

Where can we go for updates on *FIRST*® LEGO® League?

FIRST® LEGO® League will continue to make relevant information available through their blog, newsletters, and the FAQ. To be notified of updates, subscribe at the bottom of this *FIRST*® LEGO® League page.

Hardware & Elements

How do we ensure we have enough connection cards?

Each individual kit comes with its own connection card(s).

How does the Bluetooth perform in settings where multiple hardware elements and devices are being used?

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LEGO® Education Computer Science & AI has been tested by over 800 K-8 students, over 80 teachers, and in more than 30 classrooms without Bluetooth performance issues. Testing included classroom and competition environments.

How does the motor torque for the new hardware compare to SPIKE™?

Product	Motor Type	Efficiency Torque	Stall Torque
LEGO® Education SPIKE™ Prime/Essential	Technic™ Medium Angular Motor	Approx. 3.5 Ncm	Approx. 18 Ncm
	Technic™ Large Angular Motor	Approx. 8 Ncm	Approx. 25 Ncm
LEGO® Education Computer Science & AI / Science	Single Motor	25 Nmm (2.5 Ncm)	Approx. 120 Nmm (12 Ncm)
	Double Motor	50 Nmm (5 Ncm)	150 Nmm (15 Ncm)

How long does the hardware take to charge and how long do the batteries last?

The elements have different battery capacity and use cases. In practice, it is possible to conduct a minimum of two lessons in a row if the elements are fully charged.

The current typical expected results are shown below but may be improved further prior to the product ship date:

Theoretical charge speed from 0-100%:

Element	Charge Time
Double motor	40 min
Single motor	40 min
Color sensor	30 min
Controller	30 min

For constant use, expected run-times are:

Element	Run Time
Controller	Approx. 1 hour 20 min
Color sensor	Approx. 1 hour 30 min
Single motor	Approx. 2 hours 30 min
Double motor	Approx. 4 hours 25 min

Note: Many variables determine actual charge time. Run time is greatly dependent on use case.

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How many hardware elements can be connected to a single device? Is there a limit to how many hardware elements can be connected via Bluetooth in the same space?

As long as each group has their own device (laptop, iPad, etc.) and kit, there is no limit to how many groups can be actively working with LEGO® Education Computer Science & AI in the same space. Per device, the LEGO® Education Coding Canvas can connect to a maximum of eight hardware elements. If you are using Python API, the limit could be higher depending on your device's capacity.

With the new LEGO® Education Coding Canvas, we've also improved the Bluetooth pairing experience. With previous kits, when multiple students attempted to pair hardware, it was challenging to find and select the correct hardware from the long list of pairing devices. Now, by using the connection card(s), the LEGO® Education Coding Canvas displays only pairing devices associated with the selected color connection card in the list of available devices. If multiple groups have the same color connection card, students can determine which hardware is theirs using the four-digit number on their card.

Is the hardware battery internal? Can it be replaced?

All hardware components have non-replaceable internal batteries.

What happens if the connection cards are damaged or lost?

The card is heavy-duty plastic. LEGO® Education Computer Science & AI was tested with over 800 K-8 students and over 80 teachers, and no connection cards were damaged in the process.

Replacement cards are available to order if needed; contact support or your Account Manager for assistance.

What hardware (motors, sensors, etc.) is included in LEGO® Education Computer Science & AI?

Each grade-banded kit comes with different elements and hardware (see table below). Additional hardware can be purchased by contacting your Account Manager or support.

Kit Grade Band	Contents
K-2	276 age-appropriate LEGO® bricks, building instructions, single motor, color sensor, connection card, and a USB charging cable
3-5	321 age-appropriate LEGO® bricks, building instructions, double motor, color sensor, connection card, and a USB charging cable
6-8	379 age-appropriate LEGO® bricks, building instructions, double motor, single motor, color sensor, controller, two connection cards, and a USB charging cable

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Coding & LEGO® Education Coding Canvas

Do students need to log in to the Coding Canvas to access lessons?

Students do not log in to access the Coding Canvas. Students access lessons by inputting the lesson pin shared in the classroom presentation.

Do you need an internet connection to use the Coding Canvas?

For devices such as Chromebooks, PCs, and Macs the LEGO® Education Coding Canvas is a web-based app and requires internet connection. For iPads there is a native iOS app that can be used offline.

What devices are compatible with the LEGO® Education Coding Canvas?

The LEGO® Education Coding Canvas is available as a web-based app and iOS app. It can be accessed via browser on devices such as Chromebooks, PCs, and Macs. For iPad there is a native iOS app that will be available in the App Store in April 2026.

Minimum device requirements are:

- BLE 5 recommended
- Webcam or USB camera for AI features
- Chrome version 114
- Chromium Browser with WebBLE support (e.g., Google Chrome or Microsoft Edge)
- iPad generation 2

Lessons

How long is a lesson from start to finish?

Lessons are designed to take 45-minutes from start to finish, including clean up. To help ensure LEGO® Education Computer Science & AI meets your scheduling needs, our team is here to support. Request a meeting to be connected.

Is LEGO® Education Computer Science & AI designed to support only these lessons?

Each grade-banded kit is designed to support the 30 LEGO® Education Computer Science & AI lessons aligned to that grade band.

For students with no prior computer science experience, which kit should we start with?

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For students with no prior experience, we recommend starting with the age-appropriate kit. For example, if you are teaching middle school, start with the 6-8 kit.

Miscellaneous

Can schools or districts use a library or lending model for their LEGO® Education program?

Yes, schools and districts often use a library model for their LEGO® Education program. Since the Teacher Portal is free, all teachers could create an account, access lessons, and then "rent" or "check out" the physical kits for their specific period/class.

Where can I find the webinar recording?

Watch the recording of last week's webinar here.

Purchasing & Funding

Does LEGO® Education offer grants?

While LEGO® Education does not provide grants, our team is here to help you identify relevant funding sources. For more information, visit the Grants and Funding page on our site.

How do I contact the LEGO® Education Account Manager for my school or district?

To be connected with your Account Manager, request a meeting.

We invested heavily in SPIKE™. How are we supposed to afford new kits?

While LEGO® Education SPIKE™ Essential and LEGO® Education SPIKE™ Prime will no longer be available for purchase after June 30, 2026, you can continue to confidently teach STEAM concepts and maximize your investment as the LEGO® Education SPIKE App will continue to be supported until June 30, 2031.

If/when you decide to bring LEGO® Education Computer Science & AI to your classroom(s), our team is here to help identify relevant funding sources. For more information, visit the Grants and Funding page on our site.

Where can I purchase LEGO® Education Computer Science & AI?

LEGO® Education Computer Science & AI is available for pre-order on our website.

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Python

Can students code with Python?

Text-based coding is supported through our Python API. By installing our Python package and an Integrated Development Environment (IDE) of your choosing, students can program LEGO® Education hardware with Python.

Does LEGO® Education Computer Science & AI work with PyBricks?

The LEGO® Education Coding Canvas does not support PyBricks due to enhanced security measures that prevent installing third-party firmware. PyBricks is designed for the LEGO® Power Functions 2.0 platform and using it may break compatibility with LEGO® applications.

What coding formats are supported in the Coding Canvas?

LEGO® Education Computer Science & AI uses icon and word-block based coding via the Coding Canvas. Text-based coding is supported through our Python API.

Other Products

Are LEGO® Education SPIKE™ Prime and Essential losing support?

The LEGO® Education SPIKE App will continue to be supported until June 30, 2031, meaning you can continue to confidently teach STEAM skills and concepts with SPIKE™ for years to come. During this five-year period, we will continue to fix bugs and support the latest versions of supported operating systems, including MacOS, Windows, Chromebook, Android, and iOS. After June 30, 2031, while the software will still be available online, it will no longer receive updates or bug fixes.

For more information visit the SPIKE™ Update page.

Is LEGO® Education Computer Science & AI compatible with previous LEGO® Education kits?

All LEGO® elements included in LEGO® Education Computer Science & AI are part of the LEGO® System in Play, meaning they are compatible with all LEGO® bricks, including those from previous kits or your favorite themed set.

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In theory, hardware from previous LEGO® Education kits and our new hardware elements can all be controlled via Python—though each uses different connectivity methods, so getting them to work together may require some tinkering. The LEGO® Education Python package coming this April is designed for use with LEGO® Education Computer Science & AI and won't support legacy hardware. That said, with the Python API and other Python packages we're excited to see what creative solutions students come up with to keep those timeless builds alive.

Is LEGO® Education Computer Science & AI meant to replace SPIKE™?

For classroom use, LEGO® Education SPIKE™ Prime and Essential are designed to deliver engaging STEAM learning experiences, whereas LEGO® Education Computer Science & AI is designed to intentionally deliver computer science learning specifically.

How does LEGO® Education Computer Science & AI compare to other classroom tools for coding and robotics?

While other coding and robotics learning solutions revolve around solving mazes, LEGO® Education Computer Science & AI offers diverse lesson formats, screen-free content, and high solution diversity, helping students to stay engaged. Additionally, our newest kit often features broader and/or stronger standards coverage.

Does LEGO® Education offer solutions for preschool?

No, LEGO® Education does not offer kits for preschool.

Teacher Portal

Do you have to pay for the Teacher Portal?

The Teacher Portal is free to access with or without purchase.

When will LEGO® Education Computer Science & AI lessons be available in the Teacher Portal?

LEGO® Education Computer Science & AI lessons for 3-5 and 6-8 grade will be available in the Teacher Portal in April 2026. Lessons for K-2 will be available in September 2026. The following six lessons are available for preview today:

Grades 3-5:

- Strike a Pose
- Secret Solver
- Bee-havior

Grades 6-8:

- Skateboard Stunts
- Drop from the Top

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- Music Machine

To preview additional lessons for LEGO® Education Computer Science & AI, request a meeting.

To get a feel for the interface, visit the Teacher Portal, create a free login and explore our existing science lessons.

Will there be a digital version of the building instructions booklet?

Yes, digital building instructions will be available in the teacher portal.

Product Development

What type of feedback did you receive during testing?

LEGO® Education Computer Science & AI was tested with over 800 K-8 students and over 80 teachers in more than 30 classrooms around the world. Testing showed students across all age groups were highly engaged, developed collaboration skills and gained CS knowledge aligned with CSTA standards.

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