

Photon



Official catalog

Build Your Students' Futures With Photon





Empowering educators
to shape the future
of humankind

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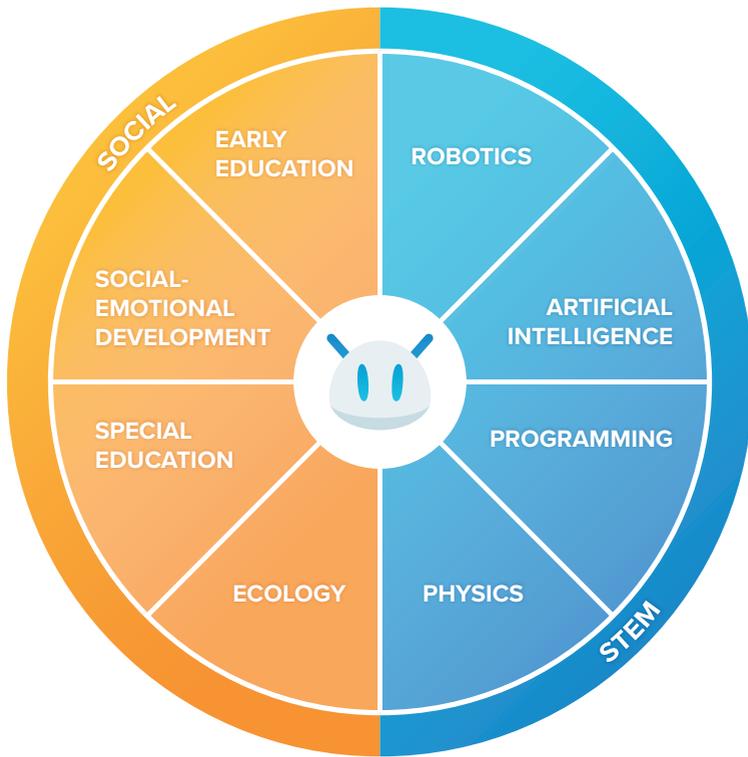
Empowering educators to shape the future of humankind

With great technology comes great responsibility. Here at Photon, we understand that children are the key to a better future. We aim to employ modern technologies not only to raise the next generation of great inventors but, most importantly, to give an equal start to all students. We firmly believe that utilizing the latest technology in education is not just the best way to tackle the future, but also the only way to do it.

Our products can help you make your classes more enjoyable and interactive, improving your students' focus and engagement.



Photon Education has been on the market since 2017. Our products are currently used by more than **6 000 institutions** and over **300 000 students** on **6 different continents**.



Our Vision for Education

We believe that technology and science are the future and that by teaching our children to code, we are teaching them the language of tomorrow.

However, we also believe that we must not forget to discuss our feelings and emotions. We must teach about the importance of compassion and effective communication. That is why our solutions target two key areas of development:

Social Development - a curriculum that strongly stresses the importance of observing and modeling the proper behaviors and social attitudes, including the emotional reactions of others and is focused on building self-management and relationship skills.

STEM - a curriculum that offers a different approach to teaching **S**cience, **T**echnology, **E**ngineering, and **M**athematics. Instead of teaching each subject separately, it integrates all four into a comprehensive learning model based on real-world experimentation and use.



A Universal Didactic Tool

The Interdisciplinary Photon Robot was designed to work with both younger and older students. Teachers can either use the specifically prepared lesson plans or create their own to teach anything from humanities and science to basic & advanced coding. History, art, language arts, math, geography, and physics are just a few examples of what the robot can help teach. What's more, the robot can be used at every level of education; from kindergarten, all the way to grade 12.

One Robot, a Whole Curriculum

Teach basic subjects in a new, interactive way. Introduce project-based and integrated teaching to your classroom. Some of the subjects you can breathe new life into:

- Mathematics
- History
- Geography
- Coding
- Language Arts, Storytelling and Foreign Languages

Beyond Traditional Education:

All you need to conduct electrifying classes:



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.



All a Teacher Needs in One Box

Photon Teaching Kits make education more engaging, exciting, and real. Each Kit was designed in close cooperation with world-leading experts, teachers, parents, and children. Inside, you will find at least one robot along with compatible resources and accessories. Learn more about each Kit in the later section.

The Robot included in each Kit can be used separately, during any class.

Social Development

-  Social-Emotional Learning
-  Special Education
-  Early Education
-  Sustainable Energy

STEM Development

-  Robotics & Coding
-  Artificial Intelligence
-  Physics

Comprehensive Development

Photon products guarantee a comprehensive approach to developing students' competencies.

We understand the crucial role that teachers play in our society and the impact they have on children, communities, and the entire world. Our main objective is to facilitate the all-important and often difficult work of educators by making their tasks more interesting, enjoyable, and lasting, allowing them to achieve their full potential. Each Kit addresses different challenges in STEM and Social areas, giving teachers everything they need to carry out their tasks with ease. What's more, they become members of a group of committed educators actively cooperating and exchanging ideas every day.

Benefits of Using Our Products



Photon is an interdisciplinary robot that helps teach core subjects from kindergarten all the way to grade 12.



Ready-made lesson plans for each subject - no need to spend extra hours preparing them for each class.



A technologically advanced toolkit that keeps students occupied, entertained, and eager to learn.



Parents pay special attention to the teaching aids available, and the robot raises the status of the institution.

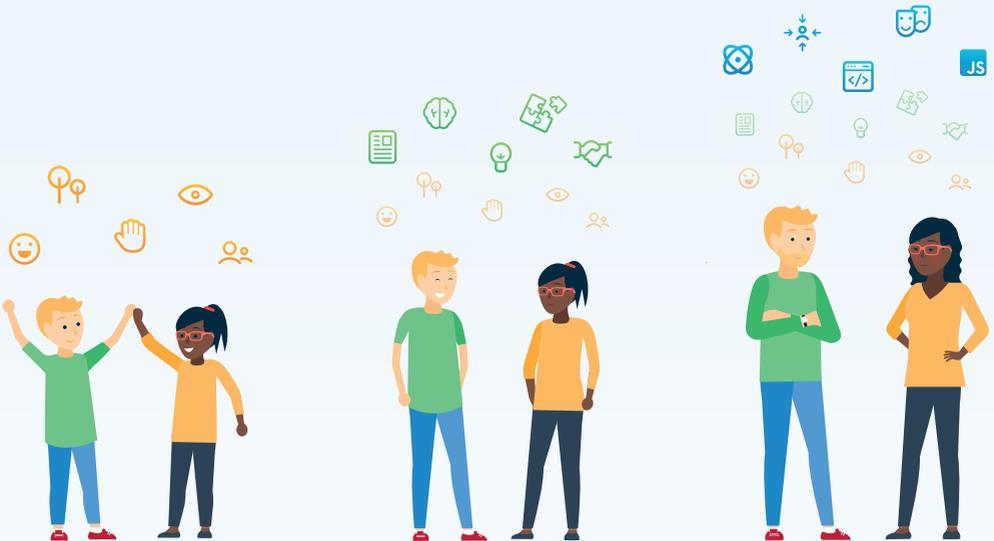


One Photon Robot can be shared between teachers, independently of what they teach.



By setting up a personal profile, teachers may save lesson plans which can later be shared with educators from across the globe.

Photon is an interdisciplinary robot that helps teach core subjects from kindergarten all the way to grade 12.





Pre-Kindergarten and Kindergarten

Children eagerly engage in controlling the robot's movements by using simple interfaces. They can use a tablet to draw the robot's route with their fingers, stack symbol blocks, or improve their fine motor skills by using a simple joystick interface. It's entirely up to the user whether the robot moves through space, shops at a local mall, or takes a walk through a forest. Plan how the robot interacts with children; it can express happiness when petted, respond to touch by changing the color of its antennae, show fear in response to noise, or sound an alarm when it detects an obstacle.



Acquired Skills

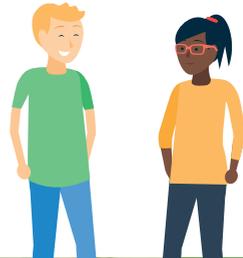
- + eye-hand coordination
- + manual skills
- + spatial orientation
- + emotional development
- + social skills

Elementary Education

At this stage, we can use the robot in a range of subjects, such as history, language arts, biology, or geography. Students use intuitive Photon apps to program the robot using symbols or by stacking text blocks. All activities have elements of project-based and integrated teaching and can be complemented by educational mats and flashcards. For example, students can program how the robot should react when encountering an obstacle. They can also transform it into handy objects, such as a bedside lamp or a decision-making assistant.

Acquired Skills

- + planning and anticipation
- + teamwork
- + creative thinking
- + problem-solving
- + logical thinking





Secondary Education

In this age group, Photon products are used primarily in teaching advanced physics, robotics, and programming. Students can build on the skills acquired in previous years by creating more advanced programs using Photon Code, Scratch, or MakeCode. Moreover, the more advanced students may write authentic, text-based code in Python or JavaScript!

Acquired Skills

- + science and observation skills
- + basic and advanced coding skills
- + programming languages (JavaScript, Python)
- + versatile reasoning
- + project-oriented skills



We Aim to Help Teachers Every Day

We understand the importance of mutual trust. We continue to do our best to make sure we support educators with everything they need to carry out their tasks. That's why when purchasing our products, teachers receive our full support right from the very start by getting access to:



Resources

All the teaching aids and other resources can be found on our web portal. Find ready-made lesson plans, video tutorials, a user guide, and lesson ideas. To get started go to:

www.portal.photon.education



Community

Our international community is always willing to help new members. Join the conversation at:

www.facebook.com/groups/PhotonGlobalCommunity/



Training Courses

Still not sure where to start? All users are welcome to take part in both online and offline basic, or advanced training courses for professional educators and parents.



Technical Support

Haven't found an answer on our website or within our community? Photon experts are always available to help.

support@photon.education



A Deep Dive Into Photon Products

Products



Photon Robot

An interdisciplinary robot that can be used with Teaching Kits or independently.



Social-Emotional Learning Kit

Support social and emotional development of children aged 6-11.



Special Education Kit

Facilitate teaching students with ASD (autism spectrum disorder) as well as other social and emotional disorders.



Early Education Kit

Support the social and cognitive development of kindergarteners.



Sustainable Energy Kit

Shape an attitude of respect for the natural environment and promote pro-environmental behaviors.



Robotics & Coding Kit

Introduce the concepts of coding and robotics simultaneously.



AI Discovery Kit

Build AI systems with your students.



Physics Kit

Introduce your students to the concepts of uniform motion, force, work, energy, sound, light, and more.

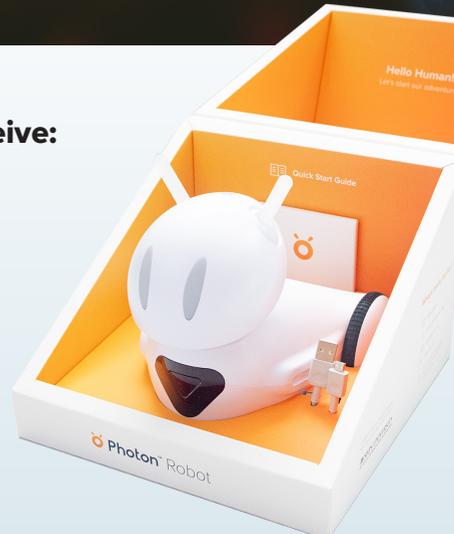
Kindergarten	Elementary	Secondary	Category
✓	✓	✓	<div data-bbox="852 233 991 276">Social</div> <div data-bbox="852 284 991 327">STEM</div>
✓	✓		<div data-bbox="852 427 991 470">Social</div>
✓	✓	✓	<div data-bbox="852 587 991 630">Social</div>
✓			<div data-bbox="852 746 991 790">Social</div>
✓	✓		<div data-bbox="852 906 991 949">Social</div>
		✓	<div data-bbox="852 1066 991 1109">STEM</div>
	✓		<div data-bbox="852 1225 991 1268">STEM</div>
		✓	<div data-bbox="852 1385 991 1428">STEM</div>

The Ultimate Teaching Aid

Photon Robot helps teachers during everyday school activities. It's simple to operate thanks to its intuitive mobile and desktop apps. The robot sparks students' innate curiosity and engages their emotions, keeping them absorbed during every lesson.

With the Basic Bundle, teachers receive:

-  Photon Robot,
-  Photon EDU app (mobile and PC),
-  Digital database full of lesson plans and additional teaching materials,
-  MicroUSB cable, user's manual.



Interdisciplinary Development with Photon

The interdisciplinary Photon Robot was designed to work with both younger and older students. Teachers can either use specifically prepared lesson plans or create their own, to teach any subject. Furthermore, the robot can be used at every level of education, from kindergarten, all the way to 12th grade. Teach about planets and the solar system by taking the robot for a walk in space; take it onto a meadow to learn about plants and bees; take it into a city to talk about road safety. The robot can be used to introduce colors, animals, or geometrical figures, or even to explain the concept of sustainable energy.



Natural Sciences

From basic information about plants and animals to learning about the entire natural ecosystem, different chemical reactions, or even the solar system. The robot can be used in teaching any of the science subjects to help introduce new topics and explain new phenomena.



Language Arts

Photon is an excellent tool for teaching both native and foreign languages. Using educational storytelling mats and illustrations, children can improve their storytelling skills by talking about the robot's adventures.



Arts

A 3D printer can be used to make classes more fun. Print out accessories that make the activities more interesting and give the robot a new use. A great example would be the permanent marker holder that allows children to program the robot's movements and create their own drawings. Children may also create masks, costumes, and accessories for the robots to wear. Then, they may dress the robots in costumes and have them perform specific roles, such as acting out a scene from a story or dancing to a previously discussed music genre.



Physical Development

Use Photon Robot as a guide to conduct various motor activities and promote children's physical development. Children can imitate the robot's movements and dances. They can also lead it towards a specific field on the mat representing a physical or an everyday activity (like tying shoelaces, fastening buttons) and then performing it.



Expanding Scientific Minds

The robot can move around its axis with an accuracy of 5 degrees, which makes it a great tool for introducing concepts of measuring angles and geometric figures. Students can also decide the robot's movements with an accuracy of 0.5 in. Furthermore, by using an attachable permanent marker grip, you can draw any geometrical figure. This creates many opportunities to carry out experiment-based activities on measuring or unit conversion. Photon is also great for carrying out games aimed at consolidating mathematical operations and memorizing numbers. With the robot's help, students can match the result to an operation or decide whether the result is correct or not.

Coding Simplified

The Photon EDU app contains unique programming methods that allow students to gradually discover the world of coding. Each subsequent interface builds on the skills previously acquired and introduces new, more advanced capabilities.

Programming Fundamentals

By purchasing the basic version of the robot, teachers receive a complete toolkit that will support both them and their students in programming classes. We have developed an innovative approach that helps students discover the secrets of programming in a fun, approachable way. Thousands of teachers from all around the world have observed increased enthusiasm and involvement among students when working with Photon.

Our Take on Teaching Programming



Step 1: Photon Draw

Set the robot's route by drawing it with a finger. Perfect for learning the robot's basic capabilities.



Step 2: Photon Badge

Program the robot with the help of instructive symbols. Introduce logical planning of the robot's route.



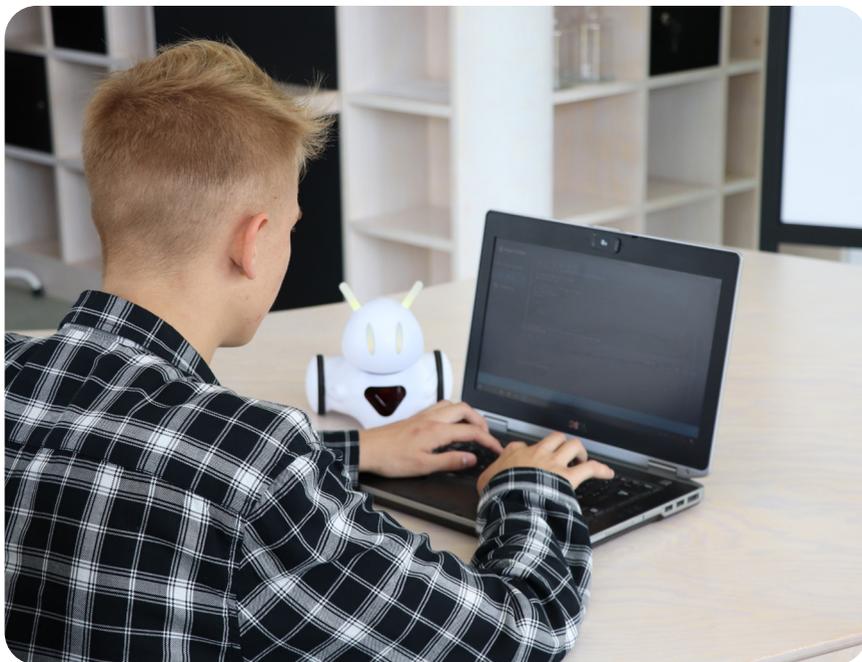
Step 3: Photon Blocks

Program the robot by stacking blocks containing symbols known from previous interfaces. Teaches how to build more complex programs.



Step 4: Photon Code

Arrange text code sequences in form of blocks learned from the previous interface.



Advanced Programming Simplified

Brace Students for the Modern Job Market

When working with our robot, students develop their programming skills by implementing in real life the programs they have created. That way, they grow better acquainted with the technology and have an opportunity to learn scripting languages used by professional programmers. Using the robot stimulates students to create problem simulations, develop the robot's algorithms, and then test their assumptions in a physical setting.

Unlimited Possibilities With the Photon Magic Dongle

Explore the mysteries of advanced programming. Programming via a desktop computer allows one to create sophisticated programs more easily. To connect the robot to a computer, use the Photon Magic Dongle along with the free Photon Magic Bridge app.

Code Using the Most Popular Tools

Scratch



A great entry-level tool for the youngest programmers. Build code in a user-friendly interface. Stack code blocks and program the Photon Robot, create animations, text, stories, music, and more.



JavaScript

One of the most used coding languages. It's widely used in web development and helps create interactive websites and mobile apps.

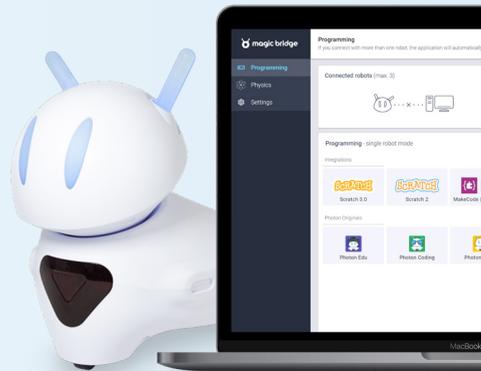


Python

Python is the most popular coding language for new programmers. It has great readability and is one of the entry-level languages. Like JavaScript, Python is one of the most desirable languages on the job market.

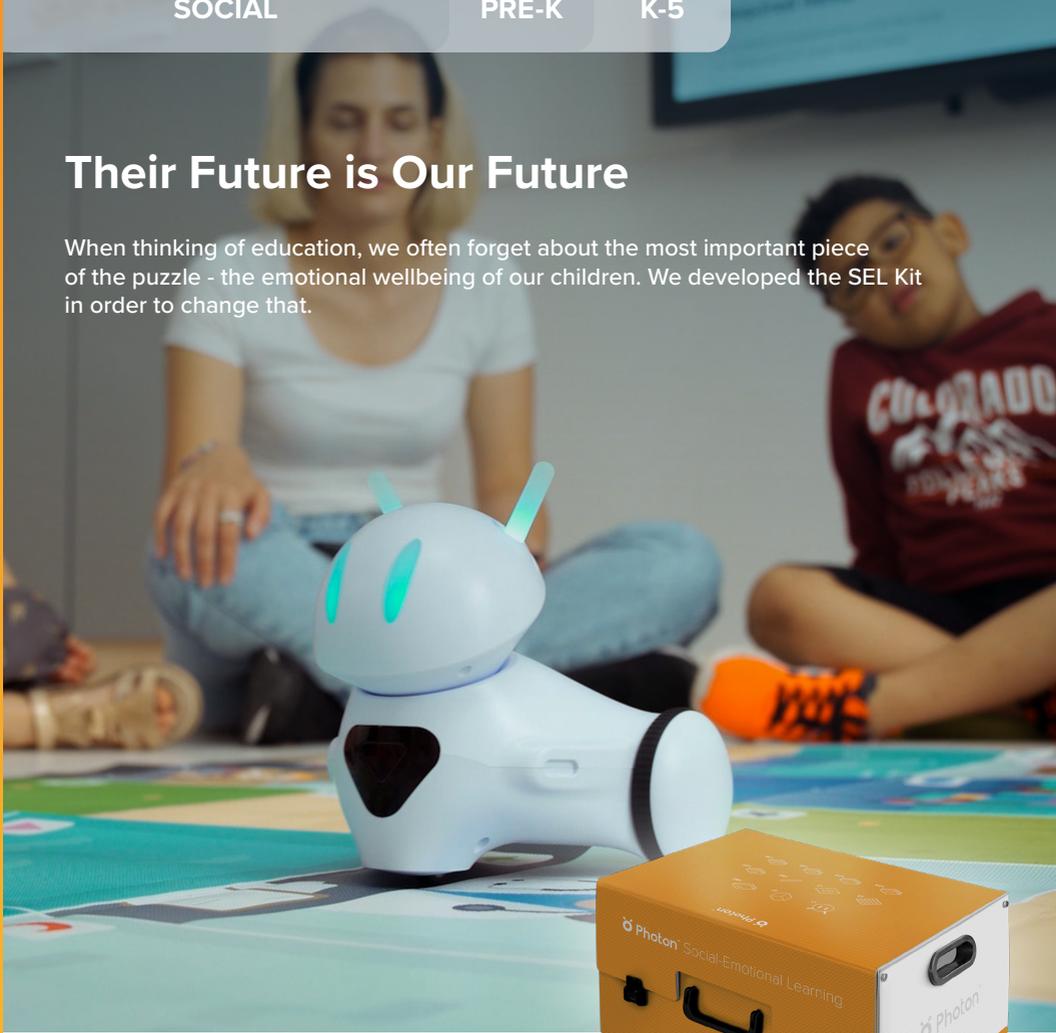
Robot Photon and Magic Bridge help students:

- Learn commonly used programming languages, such as JavaScript and Python.
- Learn to enjoy programming and become a committed team member.
- Learn to participate in project work.
- Develop key competencies required in the modern job market.



Their Future is Our Future

When thinking of education, we often forget about the most important piece of the puzzle - the emotional wellbeing of our children. We developed the SEL Kit in order to change that.



What's in the box?



1x Photon Robot



50x Name Sticks



50x Activities



Flashcards (5 sets)



1x Educational Mat (grid)

- Emotions and Characters
- Situations, Attitudes, & Stress Management
- Objects and Places
- Alphabet and Numbers
- Symbols Used in Our Application



1x Educational Mat (storytelling)



1x Educational Cube

Why the Social-Emotional Learning Kit?

We believe it is our duty to make sure that children grow to be happy and perfectly functioning adults. That's why all activities in the Kit are based on the leading Social Emotional Learning methodology developed by CASEL (Collaborative for Academic, Social, and Emotional Learning). With this Kit, students are going to learn how to deal with difficult situations, function better in family, school, and society as a whole. They are also going to learn how to deal with aggression, stress, and negative emotions and understand the importance of teamwork, self-discipline, and mutual respect.

Competencies and Areas Covered in the Kit

The Kit is designed to work with children between the ages of 6-11. Fifty activity ideas allow for the development and improvement of the following:



Self-awareness

Activities will help students recognize their strengths and weaknesses and build self-confidence.



Self-management

Students will learn how to handle stress and pursue personal and group objectives. They will also learn how to plan individual and group activities.



Social Awareness

Exercises include, but are not limited to, teaching students to properly display respect, concern, empathy, gratitude, and compassion.



Social and Relationship Skills

Exercises include learning effective communication, active listening, group work & problem-solving, as well as interacting in socially and culturally foreign environments.



Decision-making Skills

Teach students to anticipate and evaluate the consequences of their actions. Improve their critical thinking, personal and social problem solving, curiosity, and openness.



How to Work with the Kit?

The teacher receives a box containing the robot, dedicated accessories, and a set of fifty activity ideas. Moreover, each activity can be carried out with the same group of students many times over. The accessories such as Checkered and Educational Mats make the activities more exciting, while the colorful drawings stimulate the students' imagination. There is also an educational cube, name sticks, and five sets of flashcards available for the group to use. After taking their places on the mat, students begin to work with the robot. Accessories make an excellent addition, making learning more fun and effective. Such a structured activity, full of stimuli and colors, ensures full engagement and enthusiasm of the children.

Since many exercises require the entire class to work in groups, it is best to use the Kit in a classroom setting. It is worth considering purchasing two sets to increase students' comfort when working individually or in pairs. The teacher should initially mediate the students' work by supporting them and providing feedback. At first, it may also be wise to involve a supporting teacher, school counselor, or psychologist. As students gain more experience, they can work with two kits in parallel with one teacher's support.



Example class: Emotions As Weather

The teacher will need a Photon Robot, a Grid Mat, and Emotions and Characters Cards. The teacher places the Grid Mat on the floor and puts the cards onto its fields. The children then sit in a circle while the teacher starts the game by asking each child to indicate which card best reflects their mood today. To respond, children direct the robot onto the field with the card of their choice. When they get there, they set the color of the robot's antennae and play the sound they believe the robot should make. For example, if they feel happy that day, they may play one of the sounds they associate with happiness. To finish off, students discuss how they feel that day, learning to communicate and share their emotions openly. During this activity, students learn to recognize and name emotions while improving their group work skills.

Equal Chance for All

With the growing awareness about social disorders such as autism spectrum disorder (ASD), grows the need for new ways of teaching. Each child is unique in their way. The one-size-fits-all education model is not only outdated but also damaging. We have designed the Special Education Kit to help students who struggle with social disorders and improve the overall learning experience of all students.



What's in the box?



1x Photon robot



50x lesson scenarios



1x Educational mat (storytelling)



1x Educational mat (grid)



Flashcards (5 sets)

- Pictograms and Alternative Communication (AAC)
- Emotions, Objects and Activities
- Symbols Used in Our Application
- Alphabet and Numbers
- Directions, Shapes and Colors

Why Special Education Kit?

The Kit was designed in cooperation with a team of seasoned experts who work closely with students who have their own unique learning needs. In this set, the robot plays the role of a student's companion in the world of confusing social norms and other everyday challenges. The robot is patient and can repeat the same activities many times over, but it can also surprise, entertain and motivate students to give their best.

Competencies and Areas Covered in the Kit

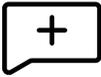
The Kit is suitable for teaching in kindergarten, early elementary, and grades 4-6. Therapists can freely adjust the exercises to the needs of a given student, focusing on developing skills and strengthening the areas they consider key.

With 50 fully developed lesson plans, teachers can:



Support students' emotional development

by enabling students to identify their own emotions and helping them understand how they affect their behavior.



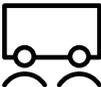
Help develop communication skills

with the included AAC communication system cards.



Increase focus and engagement

using Photon Robot and exciting educational games.



Support balanced development

with activities and methods adapted to their individual needs, abilities, and limitations.



How to Work With the Kit?

The materials in the Kit allow teachers to conduct group and individual classes. The Kit also allows special education teachers to carry out cognitive and social communication lessons. Each activity is supplemented with detailed guidelines for implementation and hints on which elements the teacher should pay special attention to. The teacher receives a box containing one robot, a set of 50 activities, and other accessories. The activities consist of programming the robot's movement, the color of its feelers, and the sounds it makes in a particular situation. Like with every other Kit, the programming part is easy and intuitive and requires no previous experience.

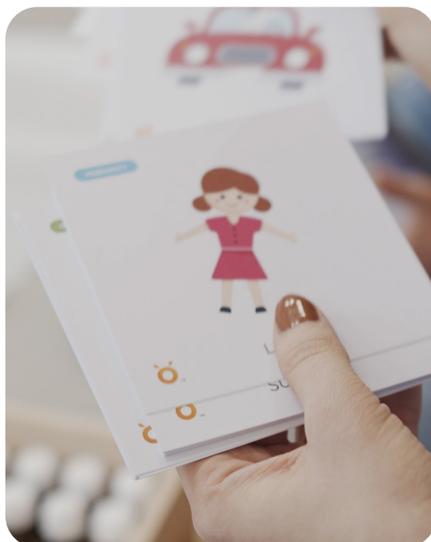


Example class: A Journey To The Land Of Anger, Sorrow, And Joy

To begin the class, the teacher lets students know that they will be going on a journey to the land of emotions and that Photon Robot is going to be their guide. Students line up behind the robot while the teacher prepares the robot's route using Photon Badge. If the class is large, the teacher may use the Photon Joystick, which is easier to operate.

Once the robot sets out on the previously programmed route, the children follow it in single file. When the robot stops, it makes a sound expressing an emotion. The students are to guess which emotional 'realm' they are currently in. Is it a realm full of funny people? Or perhaps all its inhabitants are always angry?

After taking a guess, they illustrate, for example, by gestures or role play, how they think people of a given realm would behave. They continue their journey stopping in different realms and repeating the previously described activities. During this activity, students improve their ability to recognize and name basic emotions.



Teach Through Play

Here at Photon, 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 the youngest. It comprises activities for cognitive, social, emotional, and physical development. Thanks to carefully constructed exercises, it makes an ideal tool throughout kindergarten. Let the fun begin!



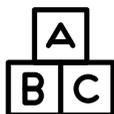
Coming soon

Why Early Education Kit?

We have created the Kit to improve the acquisition in key developmental areas in pre-k and kindergarten. Most of the activities in this set can be used in classes with both younger and older children. We have also prepared materials specifically dedicated to students aged 3-6. Most of the exercises can be repeated many times with the same group of students.

Competencies and Areas Covered in the Kit

The set will take care of the comprehensive development of the youngest pupils. Exercises in the Kit will help with:



Cognitive Development

Thanks to exercises in the set, the youngest will learn about colors, shapes, and letters. They will also learn about ecology, weather, and days of the week.



Social Development

The materials available in the set allow for learning about social norms, polite expressions, and behaving in difficult and stressful situations.



Emotional Development

The set supports emotional development through naming and displaying emotions, learning about empathy, and coping with difficult emotions.



Physical Development

The exercises in this Kit support physical development through gymnastics, dancing, building obstacle courses for the robot, racing with the robot, and much more.



How to Work With the Kit?

Two Photon robots and 50 lesson scenarios make the central part of this kit. Additionally, teachers will find all accessories necessary to carry out the activities, including two educational mats and a deck of flashcards. The lesson plans are organized according to key areas (cognitive, social, emotional, physical). Each plan provides teachers with detailed instructions on how to conduct the activities. Depending on the exercise, the students or the teacher control the robot's actions. They may use the Joystick interface to operate the robot, map its route by drawing it with a finger or program it using Photon Badge. In some activities, children can also interact with the robot through ready-made programs that the teacher can launch with a click. The set includes a comprehensive user's manual to walk the teacher through the first steps of using the robot and describe in detail how to use the Photon EDU app and other materials.



Example class: Spatial Orientation And Directions

In the app, choosing the blue color will make the robot turn right, while choosing the yellow color - left. To begin, the teacher puts a blue and a yellow band on each of the robot's antennae. Similarly, students put the bands on their hands - blue on the right, yellow on the left. Students then map the robot's path from point A to point B, turning along the way to, for example, avoid obstacles. The colors allow them to tell left from right much more easily while observing the robots' movements in the real world helps them grasp the concept of directions much more quickly. Moreover, they learn to predict what the robot will do after they choose a particular color assigned to a specific direction, allowing them to program the robot at will. Finally, children simulate the robots' movements, while the colors help them consolidate their newly acquired knowledge.

Paint the Future Green

Teaching environmental awareness is more important than ever. We have designed the Sustainable Energy Kit to help shape an attitude of respect for the natural environment and promote pro-environmental behaviors in students. The Kit includes 10 lesson plans that can be used as a whole or as individual activities. Promoting environmental awareness is an easy way to actively participate in creating a brighter future for our children.



What's in the box?

- | | |
|--|--|
|  2x Photon robot |  1x Marker holder |
|  10x Lesson plans |  3x Marker |
|  2x Magic Dongle |  Paper notes (1 set) |
|  32x Worksheets |  Dice and game pieces (1 set) |
|  3x Character cutout sheets |  19x Neodymium magnet |
|  1x Drawing mat |  1x Wiping cloth for the mat |

Why Sustainable Energy Kit?

Fostering the right behaviors among future generations is undoubtedly one of the main tasks of all educators. Shaping an attitude of respect for the natural environment in students must find its place on teacher's to-do lists.

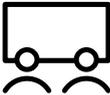
Competencies and Areas Covered in the Kit

The Kit is suitable for teaching in early elementary, and grades 4-6. With it, students will:



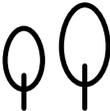
Develop Environmental Awareness and Sensitivity

Activities in this set provide an introduction on why & how to care for the environment and encourage children to become responsible adults who truly care about it.



Indicate Positive Patterns and Behaviors

Students learn what taking care of nature looks like in practice. They begin to understand that simple actions can make a massive impact.



Applying Lessons in the Real World

Before long, students will be able to transfer their newly acquired knowledge into their everyday lives, making our planet a little bit better with each passing day.



Ability to Express One's Own Opinion

Most classes begin with an open discussion. That way, students learn to express their thoughts and opinions, a skill that will prove particularly important in adulthood.



How to Work With the Kit?

With the lesson plans included in the Kit, teachers will be able to develop students' passion for ecology, introduce the concepts of segregating waste, saving energy, recycling, eco-transport, and green cities.

The materials allow for conducting group and individual classes. The Kit also allows special education teachers to conduct cognitive and social communication lessons. Each activity is supplemented with detailed guidelines for implementation and hints on which elements the teacher should pay special attention to.

Example class: Public Transportation

At the beginning of class, the teacher asks students what means of transportation they used to get to school that day and which they think is the most environmentally friendly. The teacher then asks what means of transport they know, writing each answer down on a separate sheet of paper.

If a streetcar and a trolleybus have not been mentioned, the teacher should go ahead and introduce them. If necessary, the teacher should explain how these vehicles work and what are their main characteristics. Then, the students arrange the previously named means of transportation on a scale from the least to the most eco-friendly. The teacher leads the discussion so that the students must give solid arguments for choosing the place on the scale. The teacher distributes character cutout sheets for students and asks them which means of transport would carry the passengers in the most eco-friendly way. The answer should be electric public transport; a streetcar, a trolleybus, or an electric bus. The students then construct a platform that they attach to the robot using a magnet.

Finally, the platform must be tested. Its main purpose is to accommodate all the passengers while ensuring a safe journey. The teacher selects the programming interface to match the groups' proficiency and programs the robot to travel along the route between benches and other obstacles, pausing at the stops designated by the students. The teacher may encourage students to program a specific behavior, like sound or color, to be activated at each stop.



Develop Advanced Programming Skills

Prepare students for the most challenging programming tasks. Use a dedicated mobile app to teach code by stacking code blocks or challenge them to write their own Python and JavaScript code.



What's in the box?

-  2x Photon Robots
-  2x Magic Dongle
-  2x BBC micro:bit v2
-  2x Neodymium magnet
-  2x micro:bit mount (attachable to the robot)
-  2x USB A – microUSB cables (short)
-  2x USB A – microUSB cables (long)
-  1x microUSB – microUSB OTG cable (short)
-  1x microUSB – microUSB OTG cable (long)
-  2x AAA battery box + batteries

Why Photon Robotics & Coding Kit

With this set, students can code and program the Photon Robot using micro:bit. Combining the two technologies allows for both wireless and serial communication between devices. Micro:bit is brimming with technologies, like the temperature sensor, sound detection system, or magnetic field sensor. Fusing the two technologies allows for both wireless and serial communication between devices.

Competencies and Areas Covered in the Kit

The Kit allows for the implementation of selected elements in secondary education. With its help, students develop the following competencies:



Conscious Use of Modern Technology

Students can see how the devices work in practice, which translates into a more conscious use of technology.



Group Work and Problem-solving

Students learn to adapt to their social roles and develop constructive problem-solving skills.



Creativity

Students learn how to be creative by fusing different technologies to develop their unique projects.



Modern Job Market Skills

Working with the Kit teaches students to be flexible and ready to work in different programming environments and different devices.



How to Work With the Kit?

The Robotics and Coding Teaching Kit is a ready-to-go bundle containing 15 rich classroom projects along with accessories and a dedicated app, which will help teachers conduct more than a dozen challenging and engaging computer science lessons.

In the app the teacher will find:

- Separate accounts for teachers and students. These accounts can be activated on any number of computers by entering a combination of codes included in the set.
- A tool integrating the Photon Robot with the micro:bit - a shared programming interface makes coding fun and easy.
- All teaching aids in one place.
- Lesson plans with scripts and sample project solutions.



Photon & micro:bit in Action

Here are just a few examples of what you be achieved by merging the two:



Weather Station

Teach the robot to interpret the temperature sensor values and turn it into an interactive weather station.



Smart Home - Beacons Explained

Turn Photon Robot into a sensor that will recognize your students' presence even through a wall or a closed door.



Robot's Remote

Design and code a brand-new control interface for the Photon robot. Operate it using physical buttons, voice, or motion sensors.

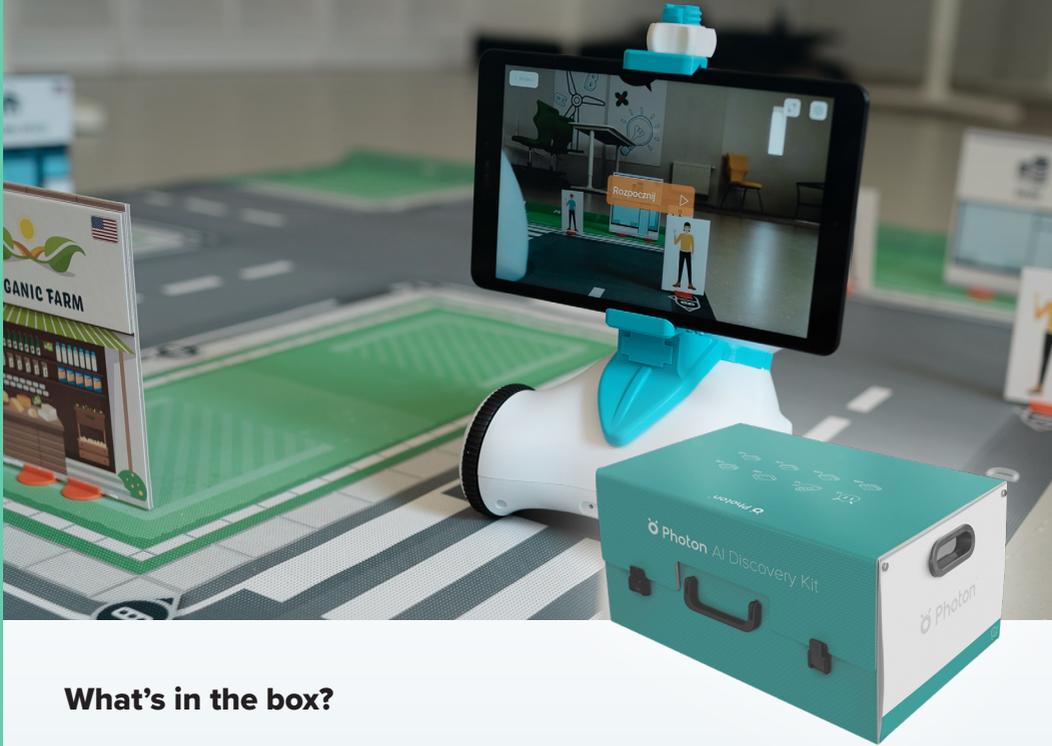


Magnetic Field Detector

Using the right sensors and coding your students can use magnets to make the robot move.

The Future Starts in Your Classroom

Curiosity and the will to explore the unknown are some of our biggest strengths. By discovering new technologies, we open new possibilities and transform the world. Bring the future to your classroom with the Photon AI Discovery Kit.



What's in the box?

- | | |
|---|---|
|  1 x Photon Robot |  9x Building models |
|  10x Lesson plans - Path A |  54x Building signs |
|  10x Lesson plans - Path B |  1x Roadblock |
|  1x Smart City Educational mat |  1x Refrigerator / Tic-tac-toe board |
|  1x Tablet mount |  19x Food / tic-tac-toe cards |
|  19x Character / Traffic lights flashcards |  1x Set of flashcard stands |

Why Photon AI Discovery Kit?

The term artificial intelligence might seem like something straight out of a sci-fi movie. However, in the contemporary world it is not just a norm, but a necessity. Giants like Google, Facebook, Microsoft, or Amazon all use AI to remain competitive. As time passes, we are growing more closely attached to the immeasurable potential of this technology. Understanding AI will help students utilize it more efficiently and responsibly and will prepare them for the modern job market.

Competencies and Areas Covered in the Kit

The Kit is suitable for teaching in early elementary, and grades 4-6. On a course of 10 experiment-packed activities, students will learn what artificial intelligence is, how it works, what determines its performance, what are its real-life uses, and most importantly, they will learn to create their own AI systems.



Creativity & Real-Life Use

Students develop their creative skills by adding different buildings & places to the model of the city and developing their original AI systems. Furthermore, they learn about the uses of AI in real life, such as using AI in supporting the visually impaired.



Mathematical Skills

Students improve their understanding of spatial relationships, perform mathematical operations in memory, and try to outpace the AI at calculating.



Computer Science Skills

Students develop coding skills by programming the robot's actions and create their AI systems. In order to do that, they must first learn basic computer and programming skills.



Modern Job Market Skills

By learning how to program the robot and creating their own AI systems, students prepare for the modern job market in a fun, approachable manner.



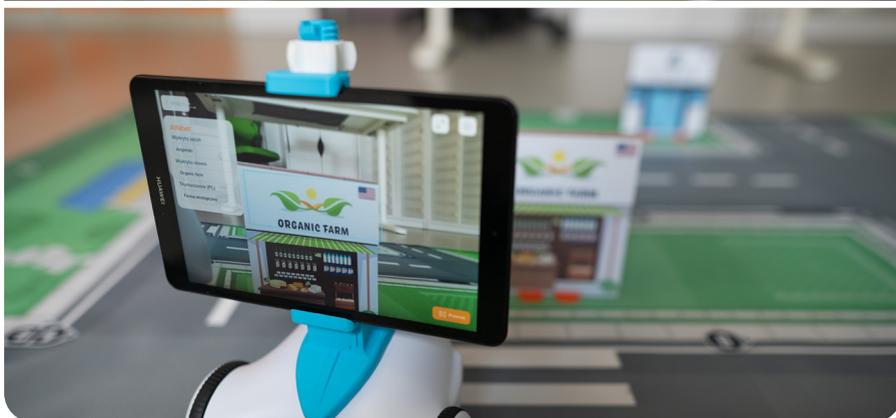
Applying Acquired Knowledge in Real Life

Students learn about a multitude of uses of AI in real life, such as supporting the daily lives of the visually impaired.



How to Work With the Kit?

Students develop competencies through practical activities by constructing a cityscape using ready-made elements, and then, by performing subsequent exercises. They discover various ways of using artificial intelligence in everyday life. Using a dedicated app, they will take part in developing the Photon Robot's AI. Among other things, the robot can transform into an intelligent cash register, a refrigerator, an autonomous vehicle, a police detective, or a chatbot. By performing custom-designed experiments, they will have an opportunity to see the effects of their work in real life, examine the importance of quantity and quality of the training data, and explore the uses of the tested technology in everyday life.



Example class: Catch The Thief

At the beginning of the activity, the teacher spreads out a mat and puts character cards on it. Students teach AI to Photon Robot by defining the characteristics of the people appearing on the cards. They do this through the app by selecting the features of their choice. The robot's task is to find the thief. Students use the app to teach the robot what the thief looks like by identifying its unique features, such as a hat or shirt color. Students run the program making the robot move around the mat and scan different characters. The robot sounds an alarm once it recognizes the thief.

Physics Through Experiments

Physics can be dull. Physics can be fascinating, too. Too often teachers do not have the right tools to work with, which leads to endless hours of discussing theory instead of applying it. With the Photon Physics Kit, your students will enter an entirely new world of experimentation and creativity. Awaken your students' innate curiosity with the Photon Physics Kit.



What's in the box?



x2 Photon Robot



2x Ruler



2x Harness



10x lesson scenarios



2x Tape measure



Weights (10 x 100g)



1x Magic Dongle



1x Stopwatch



Multi-colored base pads
(2 sets)



2x Dynamometer



1x Flashlight



2x Caliper



1x Magnifying glass

Why Photon Physics Kit?

Photon Physics Kit was created to introduce new methods of teaching physics and allow students to rediscover the subject. Physics, as well as many other sciences, is often considered boring and difficult when in reality it is simply taught wrong. Re-ignite your students' curiosity with a modern approach to this fascinating subject. The Kit includes a set of original lesson plans, accessories, as well as an intuitive dedicated app for mobile and desktop devices.

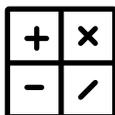
Competencies and Areas Covered in the Kit

The Kit was made to support the development of students in grades 7-8. With the Physics Kit, your students will:



Understand Physics Through Real-Life Experiments

The experiments and the attached teaching aids take the students way beyond the classic textbook-based lessons making physics exciting and easy to grasp.



Improve Mathematical Skills

Math is an integral part of learning physics. The kit deftly integrates teaching mathematics and physics, while ensuring that students never get bored and are eager to improve their mathematical skills along with the physical ones.



Develop Logical Thinking

The combination of theory and experimentation fosters logical thinking, which is crucial in overall academic performance.



How to Work With the Kit?

The physical nature of the robot and the Kit allows for exploring the world of physics through unconventional and exciting experiments, which in turn increases engagement and enhances learning. Teachers can introduce the concepts of uniform motion, force, work, energy, sound, light, and much more. Each student's performance has a measurable impact on the entire team's result, which helps foster responsibility and teamwork skills.

Example class: Uniform Linear Motion

To begin, the teacher activates the robot and programs the length of its path, and asks students to write down as many questions about the robot's movement as possible, such as 'how far did it go?'. Then the teacher explains the concept of uniform motion, speed, and explains the $s = d/t$ formula. Next, the teacher selects volunteers and programs the time and the distance the Photon robot has to travel while instructing the students to measure both. The teacher runs the robot and students measure the distance and time, filling out their worksheets. Students calculate the speed and convert it to two other units of speed specified in the worksheet. Once students have the results, the teacher asks them to draw a distance-time graph. The teacher tells students that the Photon's basic speed is 3.15 in/s. and asks students how far the robot would travel in 10 s, 2 min, or 1 h.

During the activity, students learn to:

- recognize an increase or decrease in values based on table data or graphs,
- read direct proportionality from a graph,
- recognize uniform linear motion, i.e., with constant velocity or zero acceleration,
- determine velocity and distance from a distance-time graph and a velocity-time graph for uniform linear motion and to be able to draw such graphs from the provided information.





Accessories

- 1 Magic Dongle
- 2 Educational Mat
- 3 Stickers Set
- 4 Magnetic Masks
- 5 Flashcards BASIC
- 6 Flashcards Alphabet and Numbers



Photon Magic Dongle

A small device - a big game-changer. Magic Dongle enables the use of Photon Magic Bridge – an app that connects up to 8 Photon Robots to a computer and interactive whiteboard at the same time. By connecting it to a desktop computer, you can program the robot using Scratch 3.0, Scratch, Microsoft MakeCode, JavaScript, and Python.

Educational Mat

The mat consists of 24 square boxes that form a story map. By planning the Robot's route, students shape analytical skills, practice directions, estimate distances, test the developed program in a real-life setting.



Foam Mat

36 square puzzle-shaped boxes that teacher and students can join together however they like. By designing a route and planning the robot's path, students develop planning and analytical skills, practice directions, estimate distances, and verify the program's function in a real-life setting.



Flashcards

Both BASIC, as well as Alphabet and Numbers sets, can be used together with Educational Mats.



Magnetic Masks Basic Set

Give the robot a unique personality with a set of 6 magnetic masks. Inside of it, you will find 5 ready-made masks along with a white mask which your students can design however they like!



Magnetic Masks DIY Set

A set of 6 blank masks for students to design.

Stickers

Various designs and colors of stickers enable to personalize the robot during classes.

Case Study



The overall process:

- Seven Elementary/Middle School Counselors (SCs) were selected to participate in a pilot to strengthen SEL practices with students.
- SCs participated in six after-school trainings with guided support from Eduscape (USA Partner).
- SCs tapped into out-of-the-box thinking to create and navigate through scenarios utilizing the Photon Robot.
- Participants were excited to experience how “friendly” coding and robotics was, and were pleased with how much content they mastered throughout the six training sessions.

Pre-pilot Launch Challenges And Concerns

School Counselors (SCs) were both excited and nervous about this pilot. They were interested in participating in the trainings to learn more about Photon and Virtual Coding. SCs were concerned about not having experience or prior coding knowledge, and were uncertain about how coding would act as a supplemental tool to enhance SEL practices.

A constant question was ‘Do we have to have high level technology skills to understand the trainings and Photon features?’

During Pilot Launch

School Counselors were impressed with the hands-on training and support from Eduscape Staff assigned to this project. Scaffold trainings and building upon skills each session greatly contributed to increased confidence, understanding coding, and infusion into SEL practices.

- SCs were ecstatic to witness they were coding by the second training session!
- SCs took pleasure in seeing how easy it was to code and create realistic SEL scenarios relative to their role with students.
- SCs enjoyed the level of patience of Eduscape Staff and the tailoring of sessions to meet the needs of the pilot participants.
- Group work and collaboration through scenario challenges fostered creative and critical thinking skills.

Post-pilot Launch

- School Counselors had an amazing experience learning how to match Photon features with SEL skill development.
- SCs understand the need to remain open, flexible and creative with integrating Photon into their support services to students.
- Working with the scenario cards provided an opportunity to view demonstrations differently from each group.
- SCs were able to differentiate coding and saw the benefits of incorporating Photon as a source for the special education population as well!
- Students who may experience difficulty expressing themselves would have access to this skill through coding the Photon to turn a specific color, make a certain sound or even travel a different route to express themselves.

Testimonials

We are just beginning to introduce Photon to our students and teachers; and, they are already in love with it. It is simple and intuitive to use for students of all ages. Photon is quickly becoming our new “go-to” robot for our students. Great equipment, interface, and software. I highly recommend it!

Dr. Tammy Seneca

*Supervisor of Information System and Educational Technology
at West Baton Rouge Parish Schools and President of LACUE*

We used to think that we needed a different robotics coding solution for every grade level or range. Photon provides the kind of flexibility that allows us to integrate coding and robotics into any grade and any subject. Even teachers who are apprehensive to use technology have found Photon to be just as friendly to use as its looks suggest. Photon has allowed us to be creative in designing assessments that not only meet the standards of the subject, but integrate the STEM principles that we sometimes struggle to integrate across the curriculum.

Dr. Christopher Caton

Director of Curriculum and Instruction at Moon Area School District in Pennsylvania

Products



Photon Robot



Social-Emotional Learning Kit



Special Education Teaching Kit



Early Education Teaching Kit



Sustainable Energy Teaching Kit



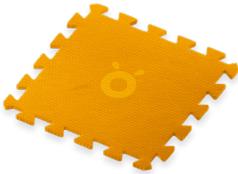
Robotics & Coding Teaching Kit



AI Discovery Kit



Physics Teaching Kit



Foam Mat



Educational Mat



Magic Dongle



Stickers (1 set)



Magnetic Masks Basic Set
Magnetic Masks DIY Set



Flashcards (1 set)

Recommended Bundles

To take full advantage of the robot's capabilities choose one of the bundles below. Each bundle can be expanded by ordering additional robots, depending on the size of the group.

Discover the most popular bundles among teachers!



Basic Bundle

- Robot
- Educational Mat
- Flashcards BASIC set



Robotics Bundle

- 5x Photon Robot
- 5x Photon Magic Dongle
- Free lesson plans
downloadable from our Portal

 Photon Portal



Photon Portal

Kindergarten Bundle

- 2x Photon Robot
- Educational Mat
- Foam Mat
- Magnetic Masks
- DIY Stickers
- Free lesson plans and activities for kindergarten downloadable from our Portal



Photon Portal

Early Education Bundle

- 6x Photon Robot
- 3x Educational Mats
- Flashcards BASIC
- Flashcards Alphabet and Numbers
- Magnetic Masks BASIC
- Stickers
- Free lesson plans downloadable from our Portal



Advanced Robotics Bundle

- 5 x Photon Robot
- 1x Photon Magic Dongle
- Stickers
- Lesson Plans in print



Photon Portal

Comprehensive Science Bundle

- 2x Photon Robot
- 1x Photon Magic Dongle
- 1x Foam mat
- Flashcards Alphabet and Numbers
- Free lesson scenarios are available on our Portal

FAQ

1 **Can one robot be used by more than two teachers?**

Yes. The teachers may exchange robots with each other to conduct personalized classes without losing any of their usability.

2 **How many robots to buy per classroom or school?**

Teachers usually suggest that their classes are the most effective when there is one robot per 5-8 students. A recommended number of robots for a class of 20 students is at least 3 or 4.

3 **How long does the battery last and how long does it take to charge?**

Fully charged, the robot runs for approximately 8 hours. A full recharge takes up to 3 hours.

4 **How to use the robot?**

To get started, download the EDU app onto your phone or tablet. To program more than one robot at the same time, you will need a Magic Dongle adapter.

5 **What can I teach using the robot?**

Using carefully selected lesson plans and other teaching aids, you may use the robot to teach any subject. Teachers are especially enthusiastic about the use of the robot in language, history, geography, math, and art classes.

6 **Where to find resources and training courses?**

Most resources, such as free lesson plans, tutorials, and videos can be found at www.portal.photon.education. We also provide on-site training courses in selected countries. Ask your commercial advisor about availability in your country.

7 **What is the Photon Edu App?**

Photon EDU helps teach to code with five levels of difficulty that can be used even with the youngest students. In the Photon EDU app, educators can access ready-made lesson plans, or come up with their own. Each ready-made plan comes with a unique code. Students enter the code and Photon EDU runs an interface appropriate for their level. The app is compatible with iOS, Android, or the Magic Bridge App.

8 **What operating systems is Photon Robot compatible with?**

Photon Robot is compatible with Chromebooks, laptops (PC and Mac), iPads, and Android tablets.

9 **What else can Photon Robot be integrated with?**

The robot can be easily used in fusion with Makey Makey, Interactive Boards, and Interactive Floors.

10 **How is the SEL Education Module different from the SPE Module?**

The SEL module focuses on post-pandemic classroom reintegration and social-emotional skill development for students ages 6-11. The SPE module was designed for educational therapy and remedial classes with students on the autism spectrum or with other emotional and social disorders. It can be used in teaching individual students or entire classes.

11 **Does the teacher need to know how to code to use the robot? Does the robot need to be configured by the teacher?**

No, teachers do not need to have any coding experience. The robot is ready to use after taking it out of the box and downloading the application.

Contact us!

 +44 330 027 1571

 support@photon.education

 www.photon.education