



EDUCATOR RESOURCE

GUIDE



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Introduction to Sphero

Welcome to the Sphero Educator Resource Guide! Sphero makes undeniably cool programmable robots and educational tools that transform the way kids learn and create through coding, science, music, and the arts. The Sphero ecosystem of tools and content gives kids, teachers, and parents of all learning and coding abilities a blank canvas to solve challenges at home, in school, and beyond. So how can Sphero Edu be used in your pedagogy?

Although the possibilities are endless, the Educator Resource Guide is designed to help you achieve the following objectives:

- Learn about who Sphero is and how it can enhance computational thinking in your classroom.
- Understand how Sphero uses project and problem based learning to enhance the learning experience.
- Understand your Sphero robot and how it can be used.
- Dive into the Sphero Edu app to: set-up an educator account, create classes, activities and programs.
- Review Sphero activities and programs to understand how to find the right ones for you and your class.
- Discover ways to make it all work in any classroom environment.



Mission in Education

Sphero provides a toolset that is unbounded in its potential. Our program goes beyond code by incorporating robotics and technology with collaborative STEAM activities, nurturing students' imaginations in ways no other education program can.

How is Sphero Being Used In Education?

Sphero can be used in and out of the classroom in formal and informal learning environments. No matter which level your students are, whether that be Kindergarten or University level, Sphero goes further than teaching math, science, and ELA standards. Sphero is the perfect platform to help students develop computational thinking skills and the mindsets that are necessary to compete in a global, technology-rich economy.



Primary, Secondary, & Higher Education



Start

Students begin their educational journey with Sphero's entry level bots and activities. Whether they are just getting started with programming and inventing or looking to grow their engineering and computational thinking skills, they'll find themselves at home within the Sphero Edu ecosystem.



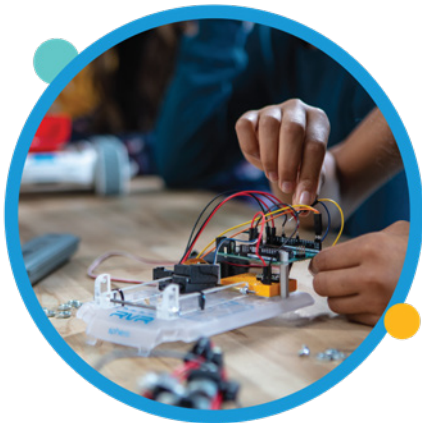
Grow

Expand students' knowledge with Sphero bots and curriculum that further their engineering and programming skills. Intermediate learners can utilize advanced sensors and code blocks to learn more complex logic, enabling advanced programming tactics.



Graduate

Sphero offers advanced programming capabilities through the maker-hacker level including advanced blocks, JavaScript, or even our public SDK library. Seasoned programmers and engineers can utilize the diverse suite of sensors to build, customize, and connect third-party hardware.



Makerspaces

Sphero is well suited to makerspace environments - unique classrooms or studios where "maker-centered" learning experiences occur. With Sphero Edu, students learn by doing and experimenting.

Clubs

Sphero is being used in robotics, coding, and STEM clubs that may meet before/after school or during lunch. Clubs can be an effective way to attract students, especially underrepresented groups, to participate in STEAM-based learning activities and creative challenges.



Competitions

Sphero Global Challenge is the ultimate STEM competition and an opportunity for students to go deeper with computational thinking, engineering, and programming skills. Teams of all abilities are encouraged to identify problems, develop solutions, and work together to accomplish their goals in invigorating sportsmanlike games and challenges.



Why is Sphero a Valuable Educational Tool?

Sphero is incredibly versatile and easily integrated into a variety of learning initiatives such as personalized learning, project-based learning, and more.

Alignment to Standards

Sphero can be used to teach computer science concepts and/or supplement content in any content area. Sphero provides extensive learning activities that are aligned to Common Core ELA and Math, NGSS, CSTA, ISTE standards, and other national and international standards for easy integration into curriculums.

Teachers don't have to be programming experts to integrate Sphero into their classroom instruction. Sphero Edu offers three different coding "canvases" - Draw, Block, and Text - that move from beginner to advanced coding skills. The three coding canvases make it easy for teachers to target learner abilities and even differentiate learning. These three coding options make it easy for teachers to use Sphero with students of all ages and abilities. Teachers do not need additional resources or activities to use these different canvases – the same Sphero used in a first grade classroom can also be used in a high school.



STEAM Education

Sphero robots provide real life learning to science, technology, engineering, art, and math. A few examples of the STEAM integrations built into the Sphero Edu learning activities are:

- Build a bridge and drive Sphero across to test the structural integrity
- Create a long-exposure photograph
- Learn the math and science behind Olympic sports to maximize Sphero's long jump distance

In addition to the learning activities provided by Sphero, review the resources below for some ideas for integrating Sphero into STEAM education:



[Teaching Physics with Sphero Robots](#)



[How to Use Sphero the Robot for Incredible STEM Lessons](#)

Project Based Learning (PBL)

It is easy to expand your Sphero learning activities into PBL or include Sphero robots as a part of PBL. Are you new to PBL? **Visit the Buck Institute for Education website to learn more and find a variety of resources including planning documents and rubrics:**

[Buck Institute for Education](#)

[Buck Institute for Education Essential Project Design Elements](#)



Personalized Learning

Goals, content, method and pace can all vary in a personalized learning environment. The hands-on nature of Sphero makes it a perfect tool to tailor to the preferences, interests and pace of various learners. **Review these resources to learn more about personalized learning:**

[Personalized vs Differentiated vs Individualized Learning](#)

[3 Ways to Personalize the Learning Experience](#)

Computational Thinking

Sphero is the perfect platform to help students develop computational thinking skills and the mindsets that are necessary to compete in a global, technology-rich economy.

Sphero serves as both a coding platform and self-contained robotics system that can be used by any teacher or student, without any background in computer science. In addition, Sphero has a sophisticated set of sensors (called an inertial management unit or IMU) used for measuring forces and gathering data during scientific experiments.

Here are some examples of how Sphero activities help build a computational thinking mindset, with or without writing code.

| Computational Thinking Fundamentals | What This Means | Examples in Sphero Activities |
|---|--|---|
| Decomposition | Does the activity encourage the student to break a larger problem into smaller problems to come up with a solution? | Students solve complex problems through smaller, more manageable tasks. |
| Pattern Recognition | Does the activity encourage the student to identify common patterns? | Students identify common patterns like movement, speed, light, time, or direction of the Sphero. |
| Pattern Generalization and Abstraction | Does the activity encourage the student to make connection about common patterns? | Students connect concepts, such as speed & direction to how far Sphero traveled. |
| Algorithm Design | Does the activity encourage the student to create logical steps that can be automated based on those patterns and connections? | Students create programs to control the Sphero. These often require using patterns like loops, which can be used to automate repeated behavior. |

Explore the following computational thinking resources for more ideas:

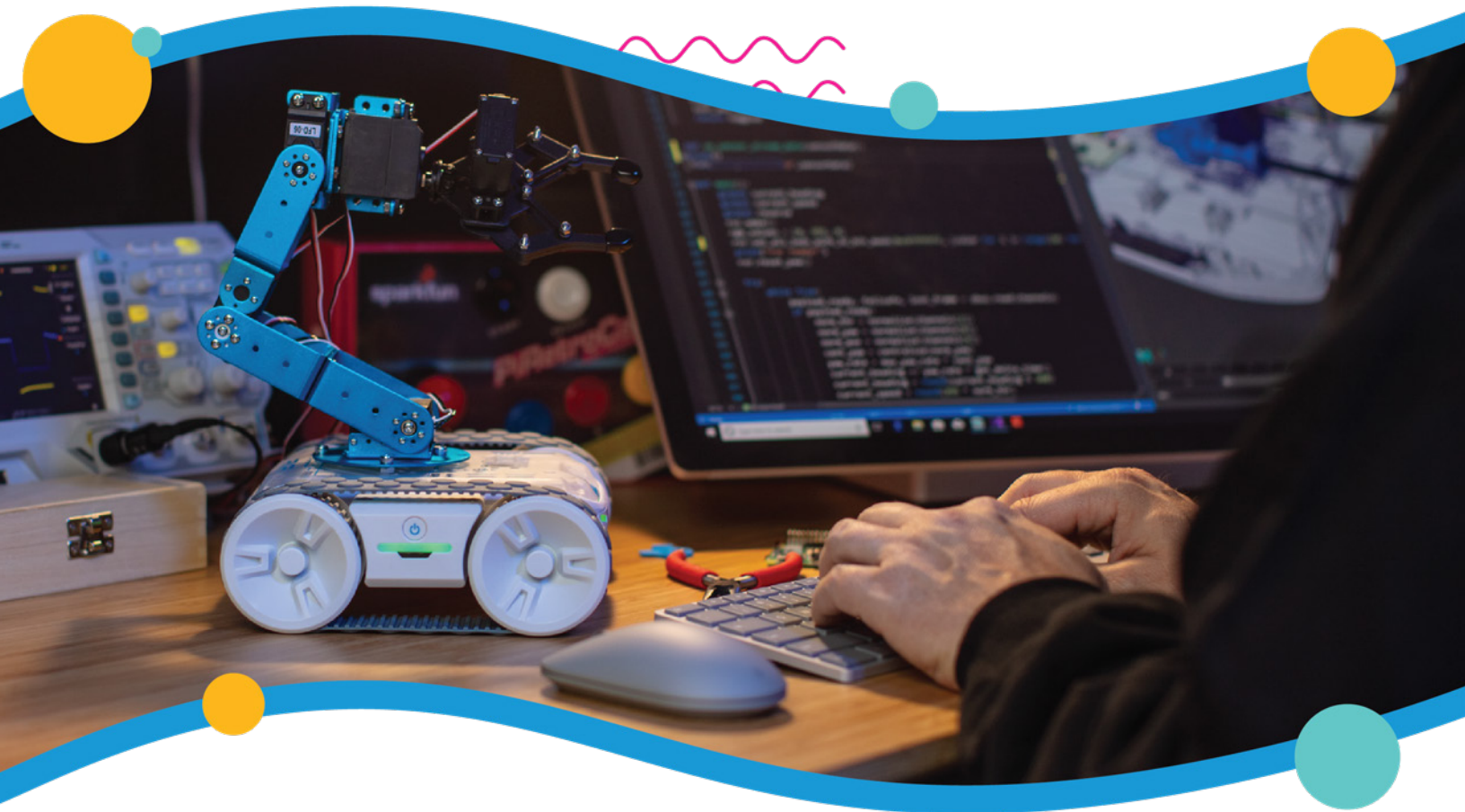
[ISTE's Computational Thinking Toolkit](#)

[Hour of Code Activities](#)

Use Sphero robots to make hour of code activities come to life!

21st Century Skills

Sphero is the perfect platform to help students develop the mindsets that are necessary to compete in a global, technology-rich 21st century economy. Integrating Sphero into learning activities provides an opportunity to enhance 21st century skills such as creativity, collaboration, critical-thinking, and communication. The Sphero Edu App allows collaboration with other users around the globe to innovate the world of education and empower anyone to program. Refer to the Framework for 21st Century Learning for more information and definitions of 21st century skills.



Getting Started

As you are getting started, make sure you have your Sphero robot and Sphero Edu app available. It is also recommended that you use the same device your students will be using for Sphero Edu so that you are familiar with the different interfaces.

Getting to Know your Robots

Sphero robots are approachable and simple to use, yet are packed with incredibly complex tech. Here's the gist of the magic inside your robot.

Sphero Mini Education Pack (16)

[Shop Now](#)



Sphero BOLT Power Pack (15)

[Shop Now](#)



Sphero RVR Multi-Pack (5)

[Shop Now](#)



OVERVIEW

Approachable, easy-to-learn, introductory programmable robot for all ages and coding skill levels.

Sphero's most widely used in school robot. Fully programmable and highly advanced, BOLT provides endless learning opportunities for students of all ages.

RVR takes coding and learning to the next level through its hackable mobile platform.

OTHER OPTIONS

[Mini Single](#)
[Mini At-Home Learning Kit](#)
[Mini Activity Kit](#)

[BOLT Single](#)
[BOLT Power Pack \(15\)](#)

[RVR Single](#)

SKILL LEVEL

Beginner

- Drive modes
- Draw coding
- Block-based coding

Intermediate-Advanced

- Block-based coding
- Javascript

Intermediate-Advanced

- Block-based coding
- Javascript
- 3rd Party Hardware
- Engineering

FREE APPS

[Sphero Edu](#): Chrome, Mac, PC, iOS, Android, Kindle
[Sphero Play](#): iOS, Android, Kindle

[Sphero Edu](#): Chrome, Mac, PC, iOS, Android, Kindle
[Sphero Play](#): iOS, Android, Kindle

[Sphero Edu](#): Chrome, Mac, PC, iOS, Android, Kindle
[Sphero Play](#): iOS, Android, Kindle

INTEGRATIONS

[Google Classroom](#)
[Clever](#)

[Google Classroom](#)
[Clever](#)

[Google Classroom](#)
[Clever](#)

SUPPORT MATERIAL

[Computer Science Foundations](#)
[Sphero Mini Kit At-Home Guide](#)
[15 Sphero Play App STEAM Activities](#)
[15 Sphero Edu App Coding Activities](#)

[Computer Science Foundations](#)
[Sphero BOLT At-Home Guide](#)
[BOLT High School Activity Progression](#)

[Computer Science Foundations](#)
[Sphero RVR SDK](#)

SPHEROCARE

1 to 3 Year Warranty

1 to 3 Year Warranty

1 to 3 Year Warranty



Compatible Devices

All Sphero robots must be paired via bluetooth with the Sphero Edu app on an accompanying device. The Sphero Edu platform works on almost any device through our mobile app (iOS, Android, Fire OS), desktop app (Windows, Mac, Chrome) or website. Some platforms don't support all robots and features so please review our device compatibility: <https://support.sphero.com/article/3tzmrkc6lx-edu>

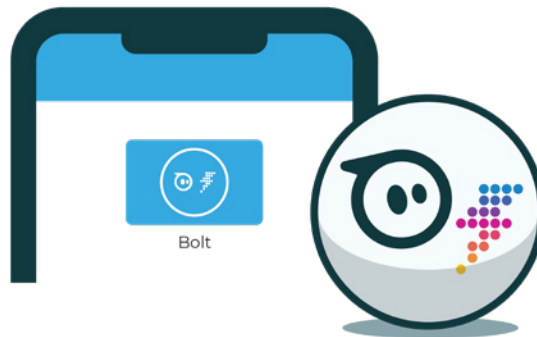
Connect with Bluetooth

When you are ready to connect your robot, open the Sphero Edu app on a compatible mobile device with bluetooth on and sign in to your account.

1. From the home screen, select 'Connect Robot'



2. Hold your robot right next to the device:



3. Select your robot type and look for the robot with the strongest bluetooth signal.

If you are having connection troubles, try the following strategies:

If the robot does not connect to Sphero Edu, charge your robot (or RVR battery) for 15 seconds to ensure it's not in deep sleep, then try again.

If your robot is disconnecting often and you are in a room with a lot of users, try turning off wifi and bluetooth on the devices that are not being used with a robot. Limiting a room to about 20 robots and programming devices or less is a good rule of thumb.

Charging Robots

Follow the steps below to charge robots.

BOLT and SPRK+

- Sphero SPRK+ and BOLT robots charge via inductive charging in the provided cradle.
 - Each cradle is powered through the provided micro-USB cable and a dedicated AC wall plug.
 - Computers can be used to charge Sphero robots as well but typically this will increase charging time due to the lower voltage output of a computer's USB port.
- To charge, place your Sphero robot on the charging cradle heavy side down. It will not charge if they are not placed heavy side down in the charger. You'll see a blue light blinking on the cradle to indicate it is charging. Ensure students know how to place Sphero robots in the cradle for charging.

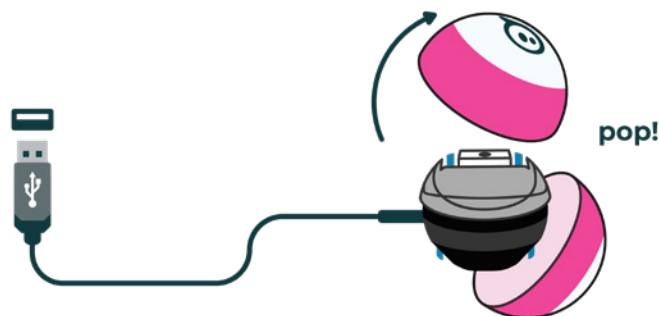


- SPRK+ will require up to 3 hours for a full charge, while BOLT will need up to 6 hours. Charging time will vary depending on the battery's current level and you will know it's charged when the blue light stops blinking. It is safe to keep Sphero robots on the charger for longer than the needed charging time. Remove Sphero robots from the cradle to get the party started.

Note: SPRK+ and BOLT are not compatible with each other's charging cradles.

Mini

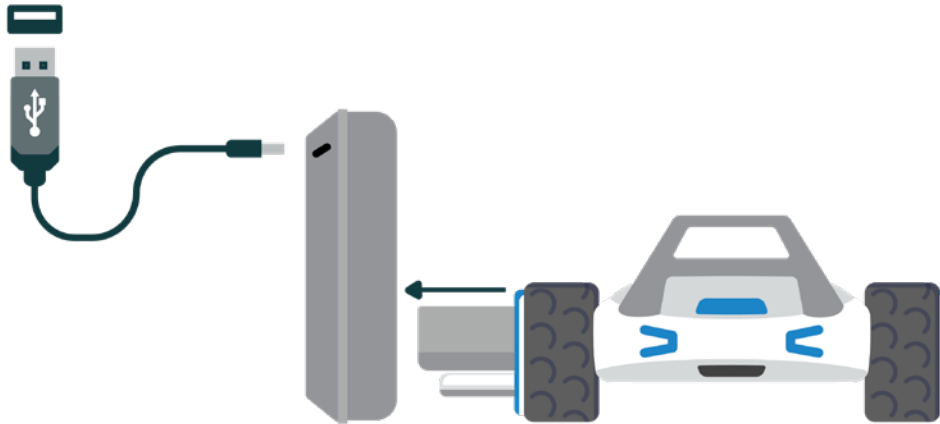
Sphero Mini charges via a Micro USB charging cable. A cable is provided in the packaging but needs a dedicated AC wall plug. To charge, simply remove Sphero Mini's shell, locate the small micro USB charging port, and plug Sphero Mini into the power source.



RVR

Remove RVR's battery in order to charge it. The battery is located in the center of the robot, between the two wheels. The battery can be accessed by using the included RVR key to open the battery door which has two lock icons on it. Once the door is open press down on the blue battery release latch to release the battery from the robot.

Locate the USB-c charger included in your packaging and plug the appropriate side into the battery and the other side into a USB port wall outlet to charge. Charge times will vary based on the output.



Disconnecting and Sleeping your Robot

Follow the steps below to turn off and sleep robots.

Turn off robot: *Long term storage.*

1. Turn off robot: Select this for long-term storage, its best to fully charge and turn off your robot. To wake it from off mode, place it in the charging cradle or plug it in before connecting to the app.
2. You can also turn the robot off by pressing and holding the button on the side of the charging cradle while lifting the robot off the cradle.



Sleeping: *Everyday use.*

1. Sleep Robot: Select this to just disconnect it from the app, your robot will still remain discoverable the next time you try to connect. This is recommended for frequent use.

Storing & Labeling

Here are some tips for storing your Sphero robots:

- Number your Sphero robots with a label maker or permanent marker. Also consider numbering the Sphero chargers and/or case to make for easy matching during clean-up.
 - If you have designated mobile devices for Sphero use, number the mobile devices and always pair the same number mobile device with the same number Sphero (for example, mobile device 1 is always paired with Sphero 1).
- The BOLT Power Pack lets you charge, store, and carry 15 BOLT robots simultaneously. Built with an integrated cooling system, your robots can charge safely all from one place. If you don't have a BOLT Power Pack, carts and powerstrips may help with storage, charging, and organization.
- Assign each student or group a Sphero number. This helps with set-up, clean-up and accountability for taking care of the robots.



Care & Maintenance

Here are some tips for caring for your Sphero:

- SPRK+ and BOLT are waterproof; to clean, simply wipe your robot with warm soapy water and dry it with a towel. MINI and RVR are not waterproof.
- Sphero robots are also shockproof. Pop it, lock it, drop it. Your ball can handle it. That being said, we don't recommend testing this theory from the top of a tall building.

Year Limited Warranty

Sphero warrants the Physical Product, and only the Physical Product, against defects in materials and workmanship under normal use for a period of 1 year from the date of retail purchase by the original purchaser. You also have the option to add an extended SpheroCare warranty so you can explore, play, and learn with reckless abandon!

<https://sphero.com/pages/warranty-information>





The Sphero Edu App

The Sphero Edu app is specifically designed to take advantage of each Sphero robots' features and allow learners to grow with their robot as their understanding of programming develops. The app allows you, as the teacher, to go beyond code by incorporating engaging STEAM activities across the curriculum. It is the perfect hub to create and share with your students and the Sphero Edu community.

Where to Get the App

The Sphero Edu app is available for free in the iTunes, Google Play, Microsoft, and Amazon app stores. The Chrome Extension is available in the Chrome Web Store.



App Features

The Sphero Edu app includes many features, including:

- 3D Models - Learn the inner workings of your robot.
- Learning activities and lessons designed for Sphero, consisting of varying skill levels and content areas, that are all aligned to Common Core and Next Generation Science Standards.
- Pre-created programs for Sphero. Connect your robot and run!
- Add and manage your class list and class rosters.
- Assign activities to your classes. Review assignment progress.
- Find the status of activities and programs you have submitted to the Sphero Edu community.



Create a Teacher Account

Sign up for Sphero Edu with a teacher account to create and manage classes, assign activities, and monitor student progress.

Create Classes

There are three primary ways to set up and manage classes as an educator. All three require a teacher account.

- 1. Standard Class:** Create students accounts manually or by uploading a CSV. These student accounts include individual usernames and passwords for each student. In this model, you can assign activities to students for completion, but cannot directly assign programs. Furthermore, when using standard classes, all student work is saved to their personal account and not the class itself.
- 2. Class Codes:** If you prefer for students to work on assignments without a username and password, distribute Class Codes. Simply enter a Class Name and the class code will generate automatically. Give students the class code to access their assignments and continue working on their programs. Unlike standard classes, student progress is saved to the class rather than an account. This means that work cannot transfer from class to class, no personal data is saved, and students cannot publicly share their programs, or access community programs. Learn more here: <https://support.sphero.com/article/p5sgiiis6u8-sphero-edu-class-codes>
- 3. Google or Clever users:** You can automatically sync your classes to Sphero Edu. View more information here: <https://edu.sphero.com/about>.

Assign Activities

Assign Activities to your students by navigating to the class and selecting the activities you want to assign. You can track individual student progress and add and remove activities at any time.

Sphero Edu Activities

Sphero has created 100+ standards-aligned STEAM and Computer Science lessons and activities that can be teacher-led or self-guided so discovery and learning can continue beyond the classroom. The activities are designed for all ages and skill levels so students can grow with them. As an educator, you can explore and find the right lesson for your classroom.

Introductory Activities

Are you wondering where to start with Sphero in your educational setting? The best way is to jump right in and learn by experimentation and play! The Sphero Edu team has developed a series of activities designed to introduce you and your students to Sphero.

First, we recommend choosing a canvas to learn. The app interface in which you will control the Sphero is called a canvas– and to support a wide range of skills and abilities, we’ve developed three canvases: Draw, Block, and Text. All three canvases are available in the Sphero Edu app.

Here is more information about each canvas:



Draw -

Uses a drawing interface. Best suited for grades K-5 and all class types.



Block -

Uses a drag-and-drop block interface and teaches the logical structure of code. Best suited for grades 3-12 and all class types.



Text -

Uses the programming language JavaScript. Best suited for grades 8-12 and classes that focus on computer science and programming.

The Sphero Edu team has developed a series of activities designed to introduce you and your students to Sphero.

*Use the QR code scanner in the Sphero Edu app to scan the activity QR codes below.
The appropriate activity will load in the app.*



Introduction to Sphero Edu

Introduction to Sphero Edu: This lesson will give you all the tools you need to get started with Sphero Edu. You will practice connecting, aiming, and driving your robot.

Getting Started with Draw

Draw 1: Shapes: This lesson introduces students to Sphero by challenging them to draw shapes that represent code and execute that code through the Draw canvas.



Getting Started with Blocks

Blocks 1: Loops: This lesson introduces students to the Blocks canvas. Learners will be challenged to create a program using block coding and gain an understanding of loops and operators.

Blocks 2: If/Then, Else: In this activity, students will learn their first conditional by building a fun animal sound game with Sphero robots.



Getting Started with Text

Text 1: Hello World: This lesson introduces students to Sphero through an overview of the text canvas, how to use loops and operators, and tips for getting started with their first lines of JavaScript code.

Once you feel comfortable with the programming canvas and BOLT basics, check out the Sphero Edu archive of starter programs that you can try with your kid(s) to learn more and remix to make your own. You can find these programs at <https://edu.sphero.com/remixes>.



Then, scroll through the thousands of community submitted activities on Sphero Edu for endless inspiration for your kid(s). Watch their creativity and curiosity soar!

Sphero Computer Science Foundations

Computer Science Foundations is a dynamic, standards-aligned curriculum designed to be taught in the classroom alongside Sphero robots. Learn computer science and STEAM principles over three courses, with each customized lesson allowing teachers and students to learn and grow together. If you've been looking to integrate CS content into your STEAM classroom, look no further.



Scope and Sequence Activities

Early and Upper Elementary (Grades K-5)

The activities below require knowledge of the Draw or Blocks canvas. Many of these lessons have a slight focus on different curriculum areas as indicated. You can find more lessons designed for grades K-2 or 3-5 on the Sphero Edu app or website.

- [Draw 1 - 3](#) (Introductory Activities)
- [Blocks 1 - 4](#) (Introductory Activities)
- [What a Character](#) (ELA)
- [The Heart](#) (Science)
- [Area of Rectangles](#) (Math)
- [Maze Mayhem](#) (General)
- [Perimeter](#) (Math)
- [Light Painting](#) (Art)



Middle School (Grades 6-8)

Most of the activities below require knowledge of the Blocks canvas. Many of these lessons have a slight focus on different curriculum areas as indicated. You can find more lessons designed for grades 6-8 on the Sphero Edu app or website.

- [Blocks 1 - 4](#) (Introductory Activities)
- [What a Character](#) (ELA)
- [The Heart](#) (Science)
- [Secret Message](#) (Social Studies)
- [Planetary Motion](#) (Science)
- [Helmets for the Win!](#) (Science)
- [Avoid the Minotaur](#) (General)



High School (Grades 9-12)

Most of the activities below require knowledge of the Blocks or Text canvases. Many of these lessons have a slight focus on different curriculum areas as indicated. You can find more lessons designed for grades 9-12 on the Sphero Edu app or website.

- [Blocks 1 - 4](#) (Introductory Activities)
- [Text 1 - 4](#) (Introductory Activities)
- [Circuit Coding Challenge](#) - High School (Science)
- [Atom Tracks](#) - High School (Science)
- [Fun Fun Functions](#) - High School (Math)
- [Morse Code - Data Structures](#) (Computer Science)



Engineering and Robotics Activities

Are you teaching engineering or robotics? The activities below encourage teamwork, collaboration, and creativity. Many of them employ open challenges that require students to practice engineering design principles and make use of room, time, or material constraints.

Activities to explore:

- [Avoid the Minotaur](#)
- [Bridge Challenge](#)
- [Chariot Challenge](#)
- [Maze Mayhem](#)
- [Sphero City](#)
- [Tractor Pull](#)
- [Swim Meet](#)
- [Jousting Tournament](#)
- [Build a Sphero Run](#)



Coding Sequence

Are you teaching your students to code? Follow the sequence below to introduce your students to computer science fundamentals, JavaScript syntax, and industry standards like pseudocoding, debugging, and refactoring.

Note: These activities are considered advanced and are primarily geared for students in grades 9-12. While you do not have to complete these in the order below, many of them build upon the skills gained in previous activities.

Activities to explore:

- [Text 1: Hello World](#)
- [Text 2 - Conditionals](#)
- [Text 3 - Loops & Variables](#)
- [Text 4 - Functions & TDD](#)
- [Morse Code - Data Structures](#)
- [Fun, Fun, Functions](#)
- [Recursion & Ocean Colors](#)



Create Activities

If you would like to create your own activities in the Sphero Edu app, click on **Activities > Create**. Once created, you can find your activities under **Activities > My Activities**. To assign an activity to your class, navigate to the activity and click Assign.

You can follow the Sphero Edu framework for creating activities:

- **Exploration:** Activate learner prior knowledge related to the challenge. Consider starting Sphero activities “unplugged,” meaning learners begin the activity by planning and brainstorming without the Sphero robots.
- **Skill-building:** Follow with learners completing a guided activity with Sphero to learn the skills needed for the challenge. Make sure to build in time for students to play, learn, and discover.
- **Challenge:** Learners use their new knowledge and skills to solve a problem utilizing Sphero.

Whether creating your own activities or using the Sphero Edu learning activities, consider having additional supplies available for your Sphero learning activities. Example supplies could include cardboard, tape, scissors, paint, and other crafting supplies.

In addition, rubrics are a valuable tool for assessing learning when using Sphero robots. A Creativity and Innovation Rubric supplements Sphero well. Below are links to Common Core State Standards aligned Creativity and Innovations Rubrics for different grade levels from the [Buck Institute for Education](#):

- [K-2 Creativity and Innovation Rubric](#)
- [3-5 Creativity and Innovation Rubric](#)
- [6-12 Creativity and Innovation Rubric](#)

Supplemental Resources

Sphero is empowering the future creators of tomorrow and setting them up for success. We couldn't be more excited about the future of education and the part we're playing. For more information about Sphero and to get involved in our community you can find links to additional resources below.

- **Sphero Blog:** Visit our education blog at <https://sphero.com/blogs/news> for updates, tips, and suggestions.
- **Support:** <https://support.sphero.com>
- **Community Forum:** <https://community.sphero.com>
- **Contact Us:** <https://sphero.com/pages/contact-us>
- **Brand Assets:** <https://brandfolder.com/spheroedu>
- **Facebook:** <https://www.facebook.com/GoSphero>
- **Twitter:** <https://twitter.com/spheroedu>
- **Instagram:** <https://www.instagram.com/sphero>

Security & Privacy

We are dedicated to ensuring Sphero Edu is safe and secure to use. Some of our efforts include third party testing, annual audits, and a bug bounty program.

We are COPPA compliant, have signed the Student Privacy Pledge, and publish all of our privacy practice agreements online. Visit <https://www.sphero.com/privacy> for more information.

