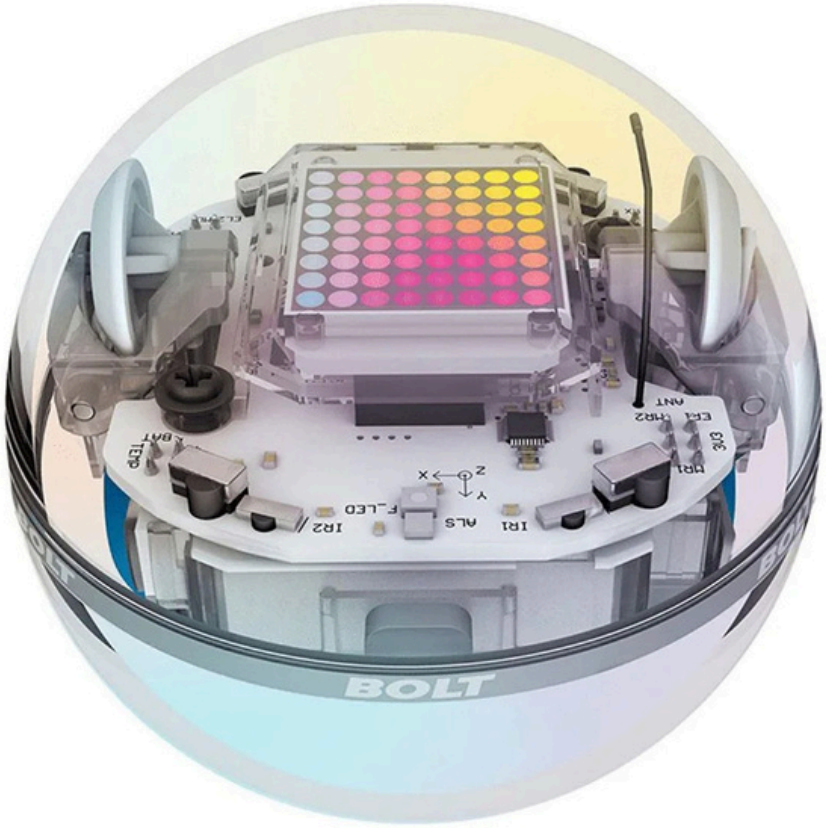
Sphero Bolt



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Sphero Bolt

The Sphero Bolt robotics kit enables hands-on STEM learning through coding and robotics. Students program Sphero robots to complete challenges while developing skills in coding, engineering, and problem-solving. Its versatile design supports activities that foster creativity, critical thinking, and collaboration.

Grade Level

K - 12th grades

Group Size

Up to 3 students per robot

Time Duration

1 hour - multiple sessions

Content of Kits

Components

- 15x Sphero Bolt Robots
- Inductive Charging Case
- Activity Mat
- Sphero Activity Cards
- 15 Tablets

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Usage

Getting Started

1. **Charge the Sphero BOLTs:** Place robots on the inductive charging base to ensure a full charge.
2. **Download the Sphero Edu App:** Install the app on a compatible device to start coding with BOLT.
3. **Explore the Sensors:** Utilize BOLT's built-in sensors and LED matrix to program and view data.
4. **Begin Coding:** Use the app to teach coding through simple blocks or JavaScript.

Storage

Store BOLTs in the charging case and keep accessories organized in a dry, secure location

Troubleshooting

- Check app and robot connectivity issues.
- Ensure robots are properly aligned on the charging base.
- Update firmware through the Sphero Edu app for optimal performance.

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Activity Guide

Beginner

Basic Commands
Students will learn to control the Sphero BOLT by programming it to move in different directions, change speeds, and display simple messages or patterns on its LED matrix. This activity introduces basic coding concepts, logic sequencing, and robotics fundamentals, helping students build confidence in programming and troubleshooting.

Intermediate

Sensor Integration
Students will explore BOLT's sensors to program it to navigate obstacles and respond to environmental changes. They will use light sensors, accelerometers, and gyroscopes to refine movement accuracy and create autonomous navigation routines. This activity reinforces problem-solving, sensor applications, and coding efficiency.

Advanced

Advanced Coding
Students will apply complex coding strategies to develop interactive games or collaborative robot activities. They might program BOLT to follow dynamic paths, respond to user input, or interact with multiple BOLTs through infrared communication. This project encourages creativity, algorithmic thinking, and teamwork in a real-world coding environment.

Extension Activities:

Synchronized Robotics Performance
Students will collaborate to design a multi-robot choreography or synchronized light show, using infrared communication between multiple BOLTs. They will program timing, movement, and LED effects to create a visually coordinated display, reinforcing advanced coding logic, teamwork, and the real-world application of automation in entertainment and engineering.

BOLT-Powered Rescue Mission
Students will design and program a Sphero BOLT to complete a simulated search-and-rescue mission. Working in teams, they will create an obstacle course representing a disaster zone, incorporating challenges like navigating rough terrain, avoiding hazards, and delivering aid (small objects). Using sensors and coded decision-making, BOLT must autonomously or remotely navigate the course to complete the mission. This activity reinforces real-world robotics applications in emergency response, engineering problem-solving, and teamwork under constraints.

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Learning Extensions

STEAM Connections: Tech - Robotics - Computer Science

Learning Objectives:

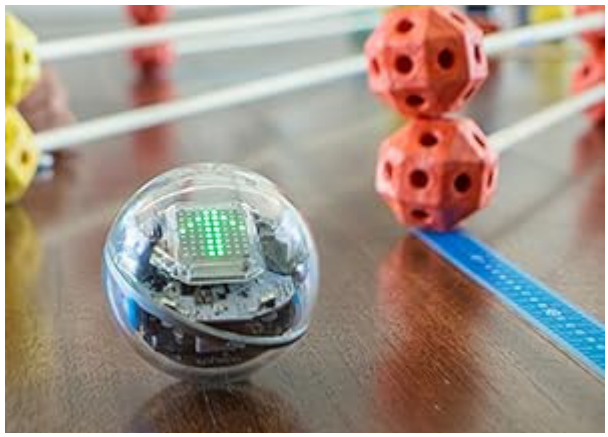
- Introduction to and/or enhance coding skills
- Understanding of robotic sensors and functions
- Foster teamwork through collaborative projects

Career Connections:

- **Software Development –** Programming BOLT enhances skills in coding logic, problem-solving, and algorithm design, essential for careers in app development, AI, and automation.
- **Robotics Engineering –** Learning how BOLT interacts with sensors and executes commands builds foundational knowledge for designing and programming robots used in industries like manufacturing, healthcare, and space exploration.
- **Systems Design –** Understanding how different components work together in BOLT's navigation and communication supports careers in embedded systems, IoT development, and smart technology design.
- **Game Development & Interactive Media –** Using BOLT for interactive games and simulations introduces concepts used in game design, virtual environments, and user experience (UX) engineering.
- **Autonomous Vehicles & AI –** Exploring sensor-based navigation and decision-making connects to careers in self-driving technology, drone programming, and AI-driven robotics.

Essential Employability Skills:

- Problem-Solving
- Logical Reasoning
- Teamwork
- Technical Literacy
- Analytical Thinking



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Resources and Accessibility

Safety Guidelines

- Monitor all interactions with robots to ensure safe handling.
- Keep the play and learning area free from water and other liquids, despite the waterproof capabilities.

Accessibility

- Provide additional support for students with physical or sensory challenges to engage in coding activities.
- Adapt learning environments to be accessible for all students.

Library Catalog

Library Resources

Feedback

QR to feedback survey