RVR+ Summer Camp Guide

Get ready for a summer of fun, hands-on learning with RVR+!

Looking to build a camp that combines engineering design, computer science, and fun? Then RVR+ is the perfect tool for you. RVR+ is Sphero's revolutionary take on the programmable robot and is optimized for middle and high school students. It's drivable right out of the box, packed with sensors, and expandable for meeting the learning needs of beginning and advanced programmers.

What's in this Guide?

The RVR+ Summer Camp Guide includes resources, activities, and ideas to make it easy for you to integrate RVR+ into any camp experience, whether its focus is on engineering, computer science, STEM, or just plain old fun. We know that every camp and every camper is different, so dive into the resources below to prep and customize how you'll use RVR+ this summer:

- Camp Materials
- Curriculum Overview
- Camp Themes
- Tips and Troubleshooting
- Resources

Camp Materials

This summer camp guide was designed for RVR+ and the RVR+ Multi- Pack. We recommend one robot for up to three campers working together.

Sphero RVR+ Programmable Robot

A single RVR+ robot is perfect for up to three students and includes:
- 1 Sphero RVR+ robot
- swappable mounting plates
- color tiles
- rechargeable battery

Sphero RVR+ Multi-Pack

The RVR+ Multi-Pack can accommodate a entire group of campers and includes:
- 6 RVR+ robots
- color tiles
- swappable mounting plates
- rechargeable batteries
- a standards-aligned educator guide

Sphero Edu App

All RVR+ robots must be paired via bluetooth with the Sphero Edu app on an accompanying device. The Sphero Edu platform works on mobile devices and Chromebooks with our mobile app for iOS, Android, or Fire OS, or on laptops or desktops with our Windows or Mac app. Download the app and learn more about device compatibility here: https://edu.sphero.com/d.

Extension Materials

Creativity soars when campers combine their programmed robots with other physical camp materials. We recommend having an assortment of building and design materials on hand for campers to use to augment their programming. We offer the Sphero Craft Pack to get you started with all the necessities.

RVR+'s USB and 4 pin UART connections mean that you can layer other products into your inventions with RVR+. littleBits are modular electronic bits that snap together to learn about circuitry and will make a great addition to your camp experience. If you are interested, look into the littleBits RVR+ Topper Kit.

You can also program RVR with a third party microprocessor like the micro:bit or Raspberry Pi to integrate Python and explore advanced programming applications.

Curriculum Overview

Your RVR+ summer camp curriculum is divided into four sections:

1. RVR+ Essentials
2. Engineering Design
3. Competitions
4. Going Further with RVR+

Pick and choose from the ideas below to customize your own summer camp with RVR+. For more ideas, browse the lessons in the RVR+ Educator Guide.

RVR+ Essentials

These activities familiarize campers with their BOLT robots and programming in the Sphero Edu app. Each introductory activity can be completed in 1 hour, but extended challenges could become longer projects.

- Intro to Sphero Edu
- RVR+ Blocks 1: Movement
- RVR+ Blocks 2: Color Sensor
- RVR+ Blocks 3: Communications and Loop Forever
- RVR+ Blocks 4: Loop Until & Comparators
- RVR+ Blocks 5: Conditionals and the Light Sensor
- RVR+ Blocks 6: Variables
- RVR+ Blocks 7: Functions

Engineering Design

RVR+ is more than a programmable robot, it has a payload capacity of one kilogram and is perfect for building mechanisms and inventions on top of to expand its abilities. Provide engineering design challenges to give your campers the opportunity to flex their engineering design skills. Here is one example:

Engineer and Apple Picker: Turn RVR+ into an apple-picking vehicle. First, you will build a mechanism on top of RVR+ that will collect the apples, and then you will program RVR+ with JavaScript to pick up and deliver the apples to get them packaged up. Learn more on page 65 of the RVR+ Educator Guide.

This activity could be modified in several ways to meet the needs of your campers. For an easier challenge consider driving through the course or using blocks instead of text. For a more advanced activity, make the apple trees different heights.
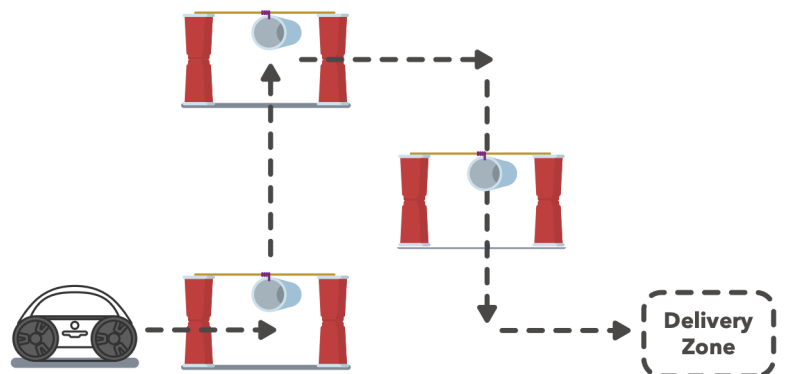
Competitions

Past seasons of the Sphero Global Challenge make for fun, team-based camp competitions. Each season is archived on the Sphero website.

The materials for Season 1, RVR+ littleBits Mars Mission, are available for free and include the following materials:
- Official Rules
- Evaluation Rubrics
- RVR + littleBits Mars Mission Coaching Guide

The materials for subsequent seasons are available for a small fee.

Going Further with RVR+

If your campers are ready to level up their engineering and programming, you can integrate littleBits and third-party hardware like micro:bit and Raspberry Pi into activities with RVR+.

For littleBits, you should consider the littlebits RVR+ Topper Kit and some of the following activities:
- RVR+ & littleBits Topper Kit: Proximity Bit
- RVR+ & littleBits Topper Kit: Remote Trigger Bit

Research how to integrate third party hardware like a micro:bit or Raspberry Pi with RVR+ on the Sphero Public SDK. Then look into the following activities:
- RVR+ & MakeCode: Movement, Light, and Sound
- RVR+ & MakeCode - Proximity Bit and Movement
- RVR+ & MakeCode: Radio Communications

Camp Themes

Camp organizers and counselors have multiple options for integrating RVR+ into their camp schedules. Pick and choose which theme or themes will work best for your situation.

Programming Fundamentals: If your time is limited (10 hours), students may just have time to get to know the basics of programming RVR+. Use the activities listed under RVR+ Essentials above to build student knowledge and skills with the robot. As time allows, encourage students to develop their own programs based on the challenges in the activities.

Maker Camp: If you have a bit more time (20+ hours) consider spending the first few sessions building skills with programming RVR+. Once students are comfortable, tap into students' engineering and design skills with maker challenges. Give them a prompt, like the Apple Picker challenge from the educator guide, and see what students can invent, build, and program to solve the challenge.

Competitions: A camp competition, where students work in groups to accomplish Mission Objectives, can be a fun and fulfilling experience for a weeklong camp. Spend the first day building basic skills and getting to know the robot. Then dive into the challenges and see what students can do. Use the Sphero Global Challenge Season 1 or 2 materials for your Mission Objectives or create your own.
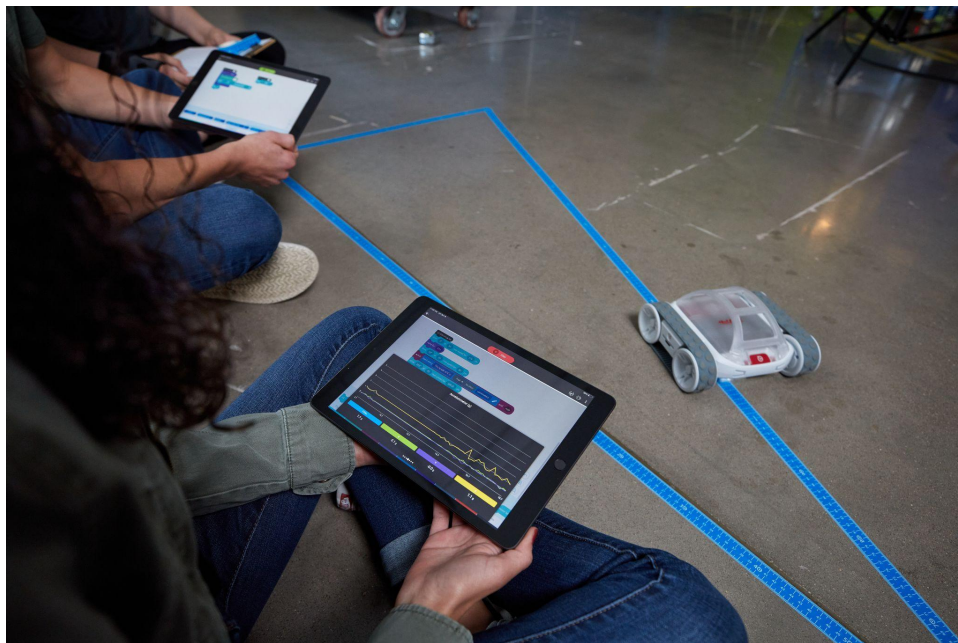
Tips and Troubleshooting

Create an Educator Account

Sign up for Sphero Edu with an educator account to create and manage classes, assign activities, and monitor camper progress.

Assign Class Codes

Simply enter a Class Name (you could name it by camp session groups) and the class code will generate automatically. Give campers the class code to access their assignments and continue working on their programs. However, note that 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/p5sgiis6u8-sphero-edu-class-codes

Connect with Bluetooth

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

From the app home screen, select 'Connect Robot'

Select RVR+ as your robot type, hold your RVR+ right next to your device, and look for the robot with a matching identifier.
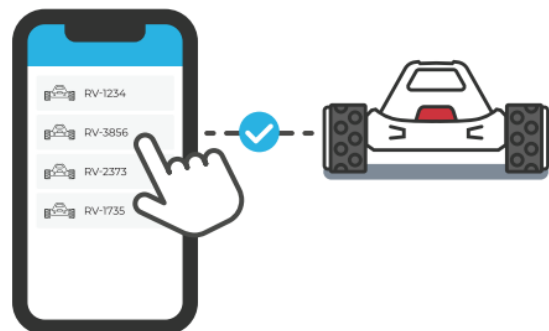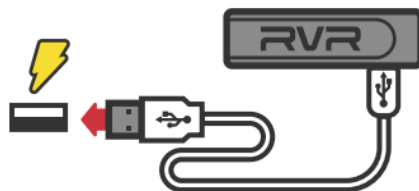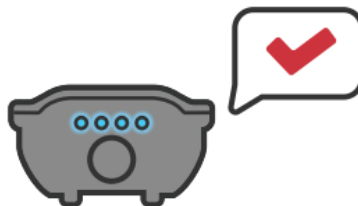
Charging

Remove the battery from RVR+, using the included red key.

Insert the USB-C charging cable into the RVR+ battery charging port. (Wall adapter not included. You will need a USB wall adapter or USB outlet.)

Wait until all four blue LEDs are illuminated to indicate a full charge. If blue lights are off, press the button under the LED lights, to show charge level.

Battery Care: If you are not using your RVR+ for a few weeks or more, like in between camp sessions, use the following storage tips:
1. Turn off RVR+.
2. Remove the battery and leave it unplugged. For battery longevity, it is recommended to store batteries at about 50% charge in a temperature-controlled environment.
3. Close and lock the battery door with the key to ensure no debris gets in the battery compartment.

Questions not answered? Access our full RVR+ support page for more tips, tricks, and answers to frequently asked questions.

Supplemental Resources

Access more resources to support your camp with RVR+ on our RVR+ product page.

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: https://sphero.com/blogs/news
- Support: https://support.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