Color Coding with Sphero!

In this activity, students will use colored paper to help program Sphero. Students will use the Sphero Edu app to program code blocks to specific colors. This will lead to a discussion on programming and how to completely change the path of the RVR!

Materials

- Sphero RVR Robot
- Device to control Sphero (iPad, cellphone, etc.)
- Sphero Edu App
- Internet access
- Color Squares (included with the RVR)

Student Objectives

- Students will demonstrate understanding of movement blocks, control blocks and use of the RVR color sensor with Sphero EDU programming.
- Students will be able to write or verbally share their findings
- Students will collaborate with peers to move the Sphero RVR
- Students will learn programming skills to drive their Sphero RVR robots

Teacher Technology Skills Needed

- Understanding of the Sphero RVR
- Understanding of Sphero Edu App
- Understanding of how to push out content digitally to students
- Skills for driving and controlling the Sphero RVR
- Understanding of the Sphero RVR color sensor and movement headings

Standards

NGSS Standards:

- 3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
- 3SL1: Participate and engage effectively in a range of collaborative discussions with diverse peers and adults, expressing ideas clearly, and building on those of others.

- 3SL4: Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Procedure

1. Start the lesson by reviewing the focus of today's lesson, which will be to use colored paper (cards) to add different characteristics to the Sphero RVR.
2. Once students have an overview of the activity, they will be ready to take on the "Color Coding with Sphero" challenge using the RVR.
3. Place a piece of construction paper or a RVR color card on the floor.
4. Connect RVR to the Sphero Edu app and open a new program. Drag out an "on color" event block.
5. Tap the color square in the block and place your RVR on top of the piece of construction paper to set the color.
6. Students can then add in sounds or movement:
    a. Place a play sound block under the "on color" event. Choose a sound to play each time RVR sees the set color.
    b. Program different movements for RVR (Ex: the color green might be 'forward' and the color red might be 'turn right'.)
7. Continue to add more "on color" event blocks and set each one to a different color construction paper or provided color paper from the RVR kit.
8. Test out each color code and then run the program with the sounds and movements.
9. This lesson will conclude by having a group discussion about programming the colors for the RVR as well as key concepts and findings while using the Sphero RVR robot.

Extension Activity

- Task students with the challenge of designing additional obstacles for Sphero to move through. This can be done using classroom or household objects. The additional objects will be used to add difficulty to the activity and promote discussion.
- Have students add LED programming so that when the RVR stops on a color block on the floor,
- it flashes its lights or uses the strobe block.