



Tough Terrain!

Let's explore how tough our Sphero RVR really is! In this activity, students will discover different types of terrain for our RVR to drive over. This activity will start by driving Sphero along a flat surface, and then adding additional "obstacles" such as grass, concrete, rocks, etc. Students will then determine if different speeds are needed to drive over each material.

Materials

- Sphero RVR Robot
- Device to control Sphero (iPad, cellphone, etc.)
- Sphero Edu App
- Internet access
- Different materials for Sphero to drive over

Student Objectives

- Students will be able to set up obstacles for the RVR to drive over
- Students will be able to develop an understanding of how different types of terrain impact the movement and speed of the RVR
- 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

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 the activity for today, which will task students with the challenge of driving the Sphero RVR over different types of terrain.
2. Once students have an overview of this activity, they will be ready to take on the “Tough Terrain” challenge using the RVR.
3. Students will start by driving the Sphero RVR along a flat surface, using the Sphero Edu app.
4. Then, they will add additional "obstacles" such as grass, concrete, rocks, gravel, etc.
5. Students will then determine if different speeds are needed to drive over each material.
6. This can continue until several terrains have been tested. During this process, students can document the effectiveness of each speed setting and how this impacts the movement of the RVR.
7. This lesson will conclude by having a group discussion about which terrains were most difficult to drive over 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 drive over. This can be done using classroom or household objects. The additional objects will be used to add difficulty to the activity and promote discussion on how easy or difficult it was to drive over certain materials.
- Challenge students by having them create a story to go along with the activity. These stories can be written by hand or done digitally. Once they are created, students can share them out with their peers and have one another read them.