



## Here Comes Sphero!

In this activity, students will engage in a Sphero RVR driving activity! Students will work on knocking down different objects. Students will set up obstacles in individual spaces across the room. This will lead into a discussion of motion and force as we engage in a unique activity with our Sphero RVR!

### Materials

- Sphero RVR Robot
- Device to control Sphero (iPad, cellphone, etc.)
- Sphero Play or Sphero Edu App
- Internet access
- Household or classroom objects of different shapes and sizes to knock down

### Student Objectives

- Students will be able to set up obstacles for the RVR to knock down
- Students will be able to develop an understanding of motion and force
- 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 Play/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-PS2-1 Motion and Stability: Forces and Interactions- Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-2 Motion and Stability: Forces and Interactions  
Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.



- 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 key motion and force concepts.
2. Once students have an overview of force and motion, they will be ready to take on the “Here Comes Sphero” challenge using the RVR.
3. Students will then set up obstacle courses throughout the room (space permitting) by using classroom/household objects of different shapes, sizes, and weight.
4. Next, students will use the Sphero RVR to knock down the different objects. This will be done by using the Sphero Play or Sphero Edu applications.
5. Students will move through their spaces to knock down the items and determine the impact that the mode (slingshot, tilt, drive, etc.) and speed settings have on the items being knocked down.
6. This can continue until all items are knocked down. During this process, students can document the effectiveness of each setting and how force and motion is impacted.
7. This lesson will conclude by having a group discussion about which method was most effective in knocking down the items as well as key concepts and findings while using the Sphero RVR robot.

## **Extension Activity**

- Task students with the challenge of designing additional obstacles to knock down. 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 knock down 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.