

## Using Spheros, Ollies, and the BB-8

### What are Spheros, Ollies, and BB-8s?



**Sphero** is an app-enabled robot that connects via Bluetooth to mobile devices and can be used with multiple apps. Sphero responds to remote controls, block based coding, and written code depending on the ability level of the user. Spheros are waterproof and work through the use of a gyroscope. Spheros generally retail for \$129.



**Ollie** is also an app-enabled robot, connecting via Bluetooth to mobile devices. It can reach speeds of up to 14mph, has drifting capabilities, a durable exterior to withstand collisions, and can use the Ollie Spine Ramp to reach new heights. One main difference between the Sphero and the Ollie is that the Ollie has 2 independently moving tires which allow it to move differently than the Sphero. Ollies generally retail for around \$99



**BB-8** is an app-enabled robot, modeled after the BB-8 character from Star Wars. In addition to being controlled by an app and Bluetooth, BB-8 can connect to a Force Band and be controlled using wrist movements. BB-8 has an adaptive personality that changes the more you use it and has a range of emotions built into it. You can also create videos that BB-8 can display as a holographic recording. BB-8 connects to a mobile device using the Sphero-BB-8 app. BB-8 Generally retails for about \$129.

### How do they work?

Breaking apart the BB-8- <https://www.youtube.com/watch?v=iAtXdhUT3IM>

### What software/devices will I need to use these robots?

There are several apps that can be used by these devices. Some apps can be used by all three, and some apps are specific to the individual device. See the list we have created below. While the devices can be used with multiple platforms, not all apps are available on each platform. The widest variety of apps are created for iPads running iOS 8.0 or higher.

- On iOS devices, iOS 8.0 + is required. iPad 2 is not compatible with the robots.
- Android devices require 4.4+, however not all devices will support Bluetooth Smart robots.
- Kindle devices require Fire OS 5.0+ running Fire HD 6, Fire HD 8, or Fire HD 10.
- Chrome devices require Chrome 50+, however robots can only use Chrome OS.



### Available apps for Sphero, Ollie, and BB-8

**SPRK Lightning Lab-** Use this app to drive your sphero, code it with blocks, or use text to program your sphero using the Oval coding platform. You can also complete activities within this app as well. This app can be used with the Ollie and BB-8.

**Tickle-** This is a programming app that was not designed for the Spheros but can be used with the suite of products. Tickle is also used to program Lego Wedo, drones, miPosaur, Dot and Dash, and other programmable robots.

### Available Apps for Sphero and Ollie

**orbBasic for Sphero-** This app can be used with both the Sphero and the Ollie. Create basic programs for your robot.

**Sphero Draw and Drive-** Use your finger to draw a path on the screen that your Sphero or Ollie can follow. Clear the slate by giving your device a quick shake. Use the color wheel to make the Sphero or Ollie change colors.

**Tynker-** While this app was not specifically designed for Spheros and Ollies, its simple drag and drop coding blocks can be used to create programs for these devices. For more information on how to pair the Ollies and Spheros with the Tynker app, visit this site- <http://www.tynker.com/blog/articles/ideas-and-tips/programming-projects-for-kids/programming-sphero-and-ollie-with-tynker/>

### Available Apps for Sphero

**Sphero-** This is the original Sphero app. Use it to upgrade the firmware on your Sphero or to drive it. There are missions and tricks to learn within this app.

**Sphero Cam-** Use your mobile device's built in video or camera and drive the Sphero at the same time.

**Sphero Chromo-** Match colors using the Sphero as a controller. Very similar to the Memory game.

**Sphero Color Grab-** Sphero will flash different colors and you must pick it up at the right time to earn points. Compete against the clock or against other friends.

**Sphero Exile-** You do not need a Sphero to play this game, but the game is enhanced with the use of the Sphero. Hold it in your hand to control a spaceship as you help Sphero get back to its home planet.

**Sphero Golf-** Create your own golf holes and then "hit" Sphero with a flick of a finger on your mobile device.

**Sphero Macrolab-** Create basic, repeatable commands using this app.

**Pass the Sphero-** (\$1.99) Play this game similarly to the game Hot Potato.

**Sharky the Beaver for iPad-** Turn your Sphero into an augmented reality beaver.

**The Rolling Dead for iPad-** Use your Sphero as a fireball shooting warrior and rid the world of a zombipocalypse.



### Available Apps for Ollie

**Ollie App-** Learn how to use your Ollie using this app. Drive your Ollie or have it complete tricks.

**Ollie Customizer-** Build hubcaps and armor for your Ollie and then print them on a 3D Printer or send them off to be built for you.

### Available Apps for BB-8

**BB-8 App Enabled Droid Powered by Sphero-** Use this app to control the BB-8. Drive the BB-8 or send him on patrol to look around the area. In Draw and Drive mode, trace with you finger within the app and watch BB-8 follow your path. Record messages and watch BB-8 replay them as a virtual hologram.

**Star Wars Force Band by Sphero-** Control the BB-8 with a wave of your hand. Unleash your Jedi powers with this app.

## Spheros

### Connecting the Sphero to an iPad/iPhone

- Activate Sphero by tapping the logo twice (it should blink a glowing blue color)
- On Your iPad/iPhone
  - Go to settings
  - Open the Bluetooth setting and make sure it is turned on
  - In the devices menu for Bluetooth, you should see that the iPad/iPhone is searching for an object to pair with. Wait 30-120 seconds, and you should see the name of the Sphero displayed on the screen. Our current Spheros are named PPY, OOW and OOR.
  - Click the name of the Sphero to pair it with the device. You will see the word *Connected* to the right of the sphero's name when connected properly
  - You will see that the Sphero turns a solid glowing blue when it is paired with a device.

### Troubleshooting- if the Sphero does not pair to the device

- Make sure the Sphero is not connected to another device. (If it is glowing a solid blue color, it probably is.) If the Sphero is connected to another device, you will need to find that device and disconnect it through the Bluetooth setting
- Try turning Bluetooth off, then back on
- Try turning the mobile device off and then back on
- Put the Sphero back on the charger, then click the button on the side of the base to reset the Sphero
- Sphero has a troubleshooting section to their website which can be found at <https://support.sphero.com/support/home>

## Using the Sphero App

When you enter the Sphero app, you will see the option to PLAY! This option allows you to learn how to move the Sphero around.



Clicking PLAY! will bring you to the control screen pictured above. This can be a confusing screen, so let's explore a few options.



Use the Aiming button to make sure you align the Sphero to where you are in the room. This will help you to move it around the room properly. Click the icon and read the directions. You will aim the blue light at the "back" of the Sphero so it is facing you. If the Sphero is not driving in the proper direction, then you might want to stop and re-aim the Sphero.



The Drive Joystick in the middle of the screen will allow you to drive the Sphero in the direction of each of those arrows. Press and drag in the direction that you would like the Sphero to move.



The Art Palette button gives you the ability to change the color of the Sphero. Click and drag your finger through the color wheel that opens to change the color of your Sphero. If you have multiple Spheros, this allows you to tell the difference between them as you are using them at the same time. Click the arrow in the upper left corner to go back to the main

screen.



The Speed button allows you to change the speed of the Sphero as you drive it.



This icon is the Level Up icon. As you use the Sphero and complete activities, you will unlock more points that can be used to make your Sphero faster or allow it to do special tricks. The more you use the Sphero, the more points you will earn.



The Tilt button allows you to use the motion of the iPad/iPhone to control the Sphero. When the button is white, you have the tilt feature enabled and can tilt the device to drive the Sphero.



The Settings button will allow you to access more advanced features of your Sphero. Clicking this button opens a new screen. Here you have access to the Mac Address of the Sphero, which you can send to Sphero technical support if you need help.

The Settings menu also shows you the Sphero app software version and the firmware version of the Sphero. Clicking the Force button updates the firmware on the Sphero.

The Redeem button allows you to redeem codes to unlock special moves for the Sphero.

The Right Hand Drive allows you to move the joystick to the right of the screen instead of the middle.

The Video Camera plays a video that explains a little about the planet the Spheros come from.

The Rainbow button allows you to change the color of the controls from blue to green.

The Aim button explains how to aim the Sphero.

The Sleep button allows you to put the Sphero to sleep.

From the Settings menu you can also turn on/off the sound of the Sphero or read the User Manual.



The Core Exchange button allows you to choose a trick from the menu of unlocked tricks. Choose the trick from the available options.



The trick will be displayed on the main menu in the lower right corner. As you drive the Sphero, the trick will be activated. Or you can click on the trick to activate it as well, depending on which trick you chose.



The Boost button will allow you to increase the speed of the Sphero in a special boost of energy.



When the Supply Drop button blinks in the lower right corner of the screen, you can drive the Sphero around to find supplies. Read the directions to warp the supplies to your Sphero.



The Missions button allows you to choose a mission to complete with your Sphero.

Each mission will be different and the more often you use the Sphero, the more difficult the missions will become.

### **Tips for using the Sphero app:**

- Stand in same spot because the Sphero's movement is based off of your location
- Pay attention to settings (can make fast or slow)
- Handling is important (drifting vs tight handling)

### **Activity- use the Sphero app to do the following:**

- Aim the Sphero in the correct direction
- Change the color of the Sphero
- Adjust the speed of the Sphero
- Drive the Sphero around, by following a path you create with tape
- Complete a mission within the Sphero app

### **Activity- use the Sphero Draw and Drive app**

- Use the color picker to choose the color you will be drawing with
- Aim the Sphero in the correct direction
- Use your finger to draw a path on the screen
- Press the Play button to move your Sphero
- Shake the iPad/iPhone to clear the screen and try again

### **Activity- use the Chromo app**

- Complete 25 or more color matches in the Practice mode
- Move on to the arcade mode and other modes and give each mode a try

### **Activity- try one of the other Sphero apps installed on our iPads**

## Ollie

### Connecting the Ollie to an iPad/iPhone

The Ollie is activated through the Ollie app



- Open the Ollie app
- Click Drive, then hold your device over the Ollie to connect it.
- Wait for it to connect.
- If the Ollie does not want to connect, see the troubleshooting tips below



- If this is the first time the Ollie is connecting to this device, you will be asked to name your Ollie
- Follow directions to aim the Ollie by using the same symbol that you would use when aiming the Sphero 
- Click and drag the blue triangle on the aim screen so that it is pointing to you
- When the triangle faces you, the word Ollie above the charging port should be facing you as well
- When you see this, take your finger off of the triangle to see a blue dot in the middle of the gray circle

- Drag your finger in any direction to move your Ollie
- The direction of your finger movement should be the same as the direction the Ollie is traveling in

### Troubleshooting

- If the Ollie cannot be found by the iPad, plug it back in and then unplug it and try again. Sometimes this triggers the Ollie to be found.
- Turning Bluetooth off and then back on again may help as well.
- If the Ollie is not moving in the direction you think it should be moving in, then re-aim the Ollie.

## Changing the Ollie Settings

Click the gear icon in the upper left corner to change the settings on the Ollie.

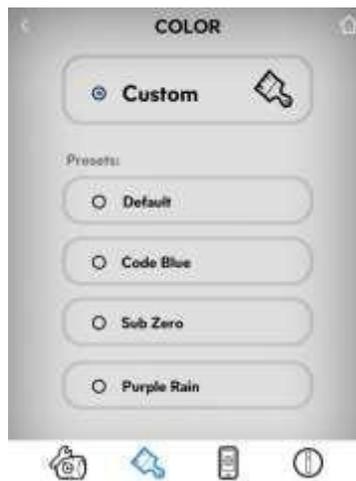


### Tune Screen

This first screen allows you to change the name and performance of Ollie.

This is where you might want to spend some time fine-tuning the Ollie so that its performance matches your driving ability. The slower it goes, the easier it will be to control the Ollie if you are not a good driver.

Drift allows the Ollie to slide across the floor. The more drift, the more sliding



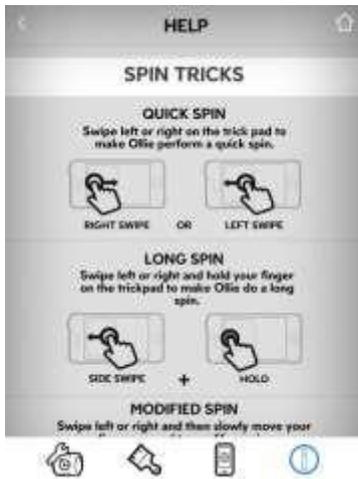
### Color Screen

Change the color of Ollie's lights on this screen by choosing a preset or custom color. By choosing a custom color, the rainbow wheel will show on the screen and you can select any color.



### Orient Screen

This allows you to lock the orientation of the iPad if you wish. You can also change the sound settings and turn on auto heading.



### Help Screen

This screen shows you what the various tricks are and how to perform them. This page continues to scroll down to view more tricks.

To leave the settings menu, click the < button in the upper left corner of the Screen

### Drive the Ollie

Once the aiming and settings are to your liking, it is time to drive the Ollie.



- Turn your iPad so it is horizontal
- The screen will change to the image seen here
- Drag your finger over the white circle on the screen. This will tell the Ollie which direction to go in.
- Use the rectangular pad on the left side of the screen to make Ollie do some tricks (This is where the Help screen comes in handy as it shows you some of the tricks you can do)



**Activity: Use the Ollie App to make Ollie do tricks or complete an obstacle course**

- Rotate the iPad to make Ollie do tricks. The square on the left is the “trick pad” where you would perform certain movements to allow Ollie to do tricks.
- Swipe and hold to Spin the Ollie.
- Try using some of the tricks you learned in the Help Screen. Try making some up with your own movements.
- Set up an obstacle course and move Ollie through the course using the circular drive side

**Activity: Use the Lightning Lab App to Learn the Basics of Programming the Ollie**

- Go to Activities
- Choose the Ollie
- Choose the Blocks 1 Intro
- Log in as the ITC Instructor (ask for username and password)

**Activity: Trace the Shape – use either Tickle app or SPRK Lightning Lab**

- Using blue painter’s tape, outline a shape or some sort of path on the floor
- Using the Sphero app, code the Sphero to trace the shape
- This would be a time to introduce not only coding to your students but to also reinforce shapes, especially with younger students

## BB-8

### Connecting the BB-8 to an iPad/iPhone

- The BB-8 is activated through the BB-8 app
- Open the app, then hold your device over the BB-8 to connect it
- Aim the BB-8 so that the blue light faces you

### Troubleshooting

- If BB-8 cannot be found by the iPad, place BB-8 back on its charger, remove it, and then try again. Sometimes this triggers the BB-8 to be found.
- You can also try turning Bluetooth “Off” in the iPad’s Settings, and turning Bluetooth back “On.” Then go back into the App and try connecting to BB-8 again.

### Using the Sphero BB-8 App

When you enter the Sphero BB-8 app, there will be several options to control and play with your BB-8. Select DRIVE to learn how to control BB-8.



Use the holographic BB-8 image to realign the BB-8 to where you are in the room. Press and hold your finger on the center of the BB-8 image and slowly drag your finger around until the blue light on the BB-8 is facing you. If the BB-8 is not driving in the direction you want it to, you may need to stop and realign the BB-8 again.



The Drive Joystick on the left side of the screen will allow you to drive the BB-8 in the direction of each of those arrows. Press and drag in the direction that you would like the BB-8 to move.



Use the BB-8 command button to bring up a panel of commands to give BB-8. Tapping each command will cause BB-8 to follow those commands and perform various tasks. Swipe left and right over the commands to move to different panels.



On the first panel of commands, BB-8 can respond in the affirmative, respond in the negative, rotate its body 360 degrees, and patrol back and forth in a straight line.



On the second panel of commands, BB-8 can move in a square shape, move in a Figure 8 pattern, run a self-diagnosis of threat in the area, and perform a threat assessment.



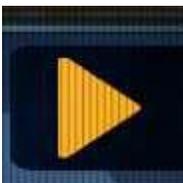
On the third panel of commands, BB-8 can display anger, frustration, joy, and confusion.



In the bottom left hand corner, tapping on the BB-8 tab with an arrow pointing to its side will let BB-8 move in reverse. Tapping on the “?” will display an explanation for all of the commands on the DRIVE screen.



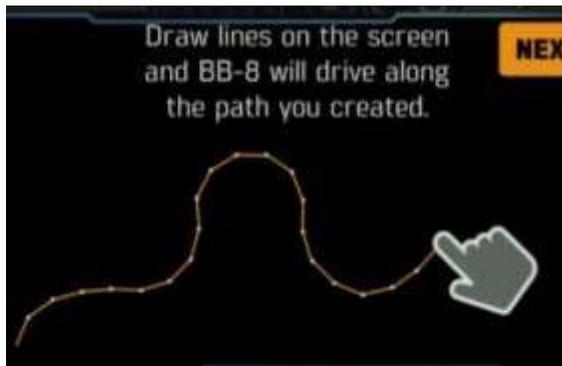
In the bottom right hand corner, tapping on the BB-8 tab with lines behind it will increase the speed at which BB-8 moves for a short time.



In the top right hand corner, the arrow takes you to drive settings. You can change the speed override of BB-8's motions, and control the auto heading adjust as BB-8 moves.



From the Home Screen of the Sphero BB-8 app, you can scroll down to the **DRAW AND DRIVE** activity.



This allows you to draw the path that you would like the BB-8 to follow

It is important to note that if the BB-8 runs into anything (wall, chair, etc.) it will immediately stop and blink red.



The **MESSAGES** icon to allow BB-8 to use your device's camera and microphone. Tap the video camera icon to record a new message. Send your message to BB-8 and it'll transform your video into a virtual hologram. Holograms can only be up to 12 seconds long.

The **PATROL** icon allows you to send the BB-8 on a patrol of the area. It will look around, and report what it finds. There are different screens to look at that will show the information about the speed, mood, and other things that are affecting the BB-8.

The **SETTINGS** icon allows you to change the settings of the BB-8, including the sounds.

The **FORCE BAND** icon takes you out of the BB-8 app and into the Force Band app. Here you will find videos that help you use the BB-8 with the force band.

Note that we have found that if you are using the force band with the app, then you are affecting the images on the iPad. If you want to use the force band to control the BB-8, don't use the app. Just connect the force band directly to the BB-8.

### **Tips for using the BB-8 app:**

- Stand in same spot because the BB-8's movement is based off of your location
- Pay attention to settings (can make fast or slow)
- Handling is important (drifting vs tight handling)



### **Activity: Use the Lightning Lab App to Learn the Basics of Programming the BB-8**

- Go to Activities
- Choose the BB-8 as the device to connect to
- Choose the Blocks 1 Intro
- Log in as the ITC Instructor (ask for username and password)

### **Other Activities for the BB-8**

- Create an obstacle course on the floor with blue painter's tape. Navigate your BB-8 through the course.
- Carry out races with your BB-8s. Record time and distance for math or science experiments.
- Divide into two teams and set up team flags. Put crumpled paper balls around the room. Use your BB-8s to push the balls towards your team's flag. The one with the most paper balls at their team's flag after 5 minutes wins.

### **Activity: Try using the Force Band**

#### **Connecting the BB-8 to a Force Band**

- Put the force band on your wrist
- Hold the Force Band over the BB-8 and press the center button to connect
- Once the band is connected, click once for the **Control Your Droid** option
- Aim the BB-8 so that the blue light faces you and press the button again

#### **Using the Force Band- Control Your Droid**

- Bring your palm upward towards your shoulder, then point it straight out to drive the BB-8 forward (you will hear a sound when the droid is ready to move forward.)
- The speed of the droid corresponds roughly to the height of your hand from the ground
  - raising it increases BB-8's speed
  - lowering it decreases the speed
- Move your entire arm horizontally to the left and/or right to move the BB-8 in the direction you are pointing
- Rotate your wrist so that the force band is facing away from you, then pull it toward your chest to recall the BB-8 back to you
- Rest your hand at your side to stop the droid

There is also a Force Awareness Mode and a Combat Training Mode. These modes unlock more activities that can be done with the BB-8 while using the force band such as special maneuvers and augmented reality Star Wars missions. The more you use the droid, the more you will unlock.



## How can you apply this to your classroom?

- Coding
- Science—showing motion, speed, acceleration
- Collisions (testing structure)
- Obstacle courses
- Hand-eye coordination
- Problem solving
- Sequencing (step by step directions)
- Painting

### Curriculum

The SPRK Lightning Lab has Activities and programs for students to complete.

<https://sprk.sphero.com/signin> or <http://www.sphero.com/education>

Timberdoodle has some beginning lessons and curriculum ideas for using the Sphero.

<http://www.timberdoodle.com/Articles.asp?ID=387>

Check out some of the books in the iTunes store. Here are some to look at:

<https://itunes.apple.com/us/book/activity-ideas-with-sphero/id1021372161?mt=13>

<https://itunes.apple.com/us/course/introduction-to-coding-sphero/id1018564315>

### Other ideas

<http://mytechadventure.weebly.com/sphero.html> <http://www.ipadmonthly.com/single->

[post/2015/07/21/Sphero-Unit-Saving-Superman](http://www.ipadmonthly.com/single-post/2015/07/21/Sphero-Unit-Saving-Superman) <https://elenikyritsis.com/2016/08/20/spheros-in-the->

[classroom/](https://elenikyritsis.com/2016/08/20/spheros-in-the-classroom/) <https://itunes.apple.com/us/course/full-steam-ahead!-introducing/id1011832065>