Teacher Guide: Getting Started with Dash & Dot

Welcome to the **Teach Wonder** program! Dash & Dot by **Wonder Workshop** are exciting, hands-on learning tools for students in grades K-8. Targeted at teaching creative problem solving and computational thinking, Dash & Dot help students learn fundamental processes relevant for all 21st century skills.

Here are some helpful tips to set up and manage multiple robots in your classroom. Dash & Dot can't wait to meet your students!

Setting up your classroom

Setting up your robots is easy, and a getting started guide is included in every box! Here are some tips for classrooms that have multiple robots. For additional information, go to makewonder.com/start.

1 **Name your robots.** To connect your tablet to the right robot when using multiple robots with multiple tablets, we recommend naming each with a unique identifier. This can be done simply by labeling each robot with a permanent marker, sticker, tag, or ear color. To make it a collaborative effort, students can nominate and vote on names!
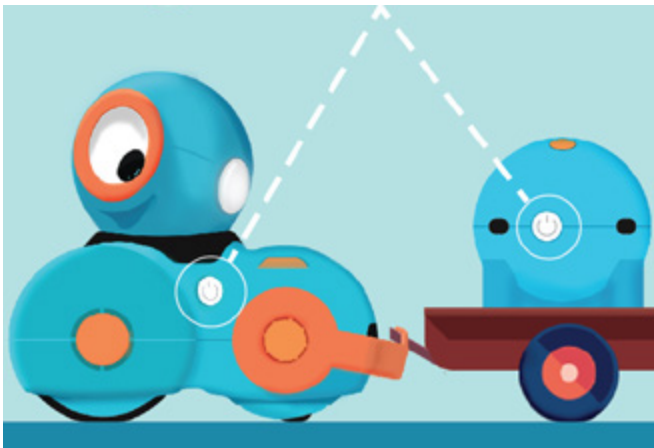
**2** **Download Go for Dash & Dot Robots** from the App Store or Google Play to update and set up their names so that your tablets can identify them. To connect, make sure Bluetooth is enabled on your tablet, and that your robots are powered on. Each robot will have to be set up separately.

3 **Charge your robots.** Dash & Dot have rechargeable batteries, so you never need to replace them. Simply plug them into the wall or a computer! A full charge cycle takes about 60-90 minutes. We recommend a 5 port or 10 port charging station from Amazon for the USB plug if you have multiple robots in your classroom.

When the light on the charging port turns off, your robot is fully charged!
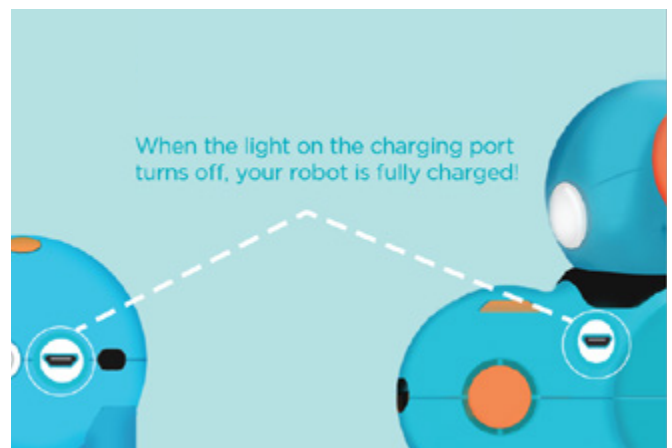
Tech specs for Dash & Dot

Children can program Dash & Dot using intuitive, drag-and-drop interfaces on iPads and Android tablets. here are some of the features they can control!

Dash

Drive - Dash can drive forward, backward, turn left (spin), and turn right (spin). There are two wheels beneath the left and right side of Dash's body. You can steer Dash by changing the speed and/or direction of either wheel.

Head Motion - Dash can look up (25 degrees), down (10 degrees), left (120 degrees), or right (120 degrees).

Lights - There are 12 LEDs in Dash's eye. In Dash's ears (E) and chest (C), there are RGB LEDs. In Dash's tail, there are 2 red LEDs.
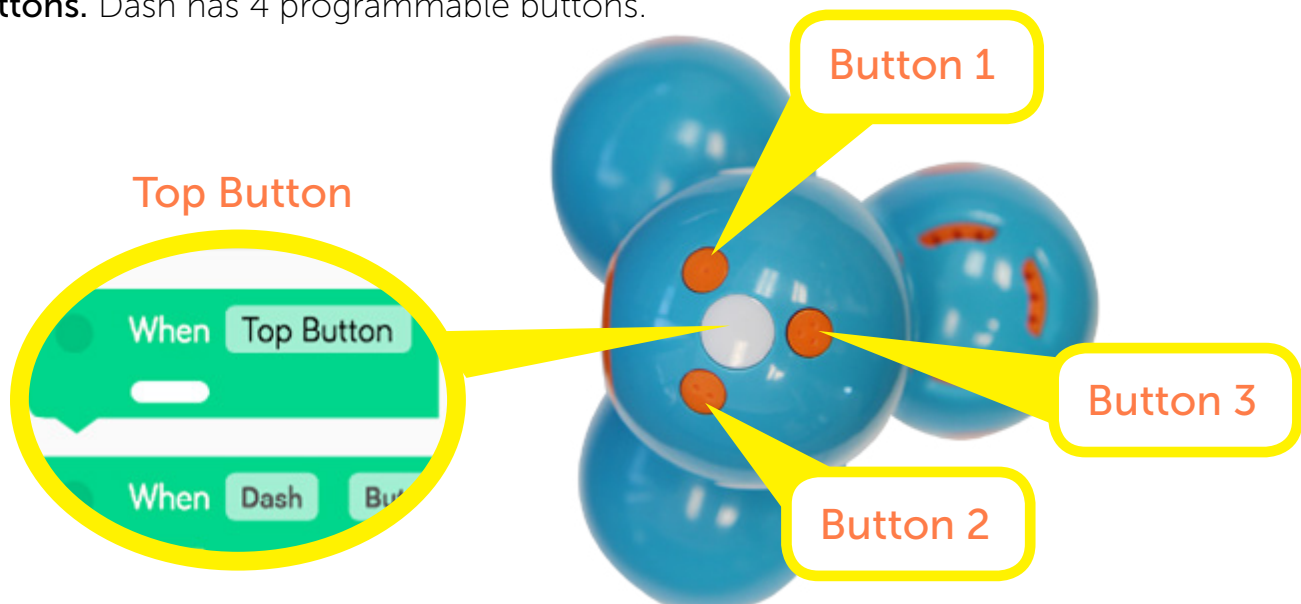
Sounds - Includes a variety of pre-programmed sounds!

Microphone - Dash has 3 microphones, allowing Dash to hear claps and identify the direction of your voice.

Distance sensors - Dash 2 distance sensors in front (F) and 1 in back (B), allowing Dash to detect obstacles in front and objects behind with infrared lights.
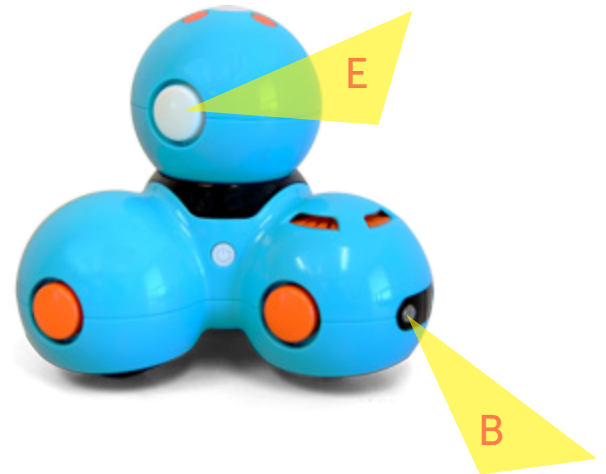
Buttons. Dash has 4 programmable buttons.

Button 1

Top Button

When Top Button

When Dash Bu

Button 3

Button 2

Dot

Lights - There are 12 LEDs in Dot's eye. In Dot's ears and eye, there are RGB LEDs.

Sounds - Includes a variety of pre-programmed sounds!

Microphone - Dot has 1 microphone, allowing Dot to hear claps and voices.

Buttons. Dot has 4 programmable buttons (see above).

Accelerometer - Dot's accelerometer allows Dot to know when you are tossing, shaking, moving, or tilting Dot. Note: Dot's Blockly events are from Dot's perspective, so you should hold it from behind to have the same perspective.

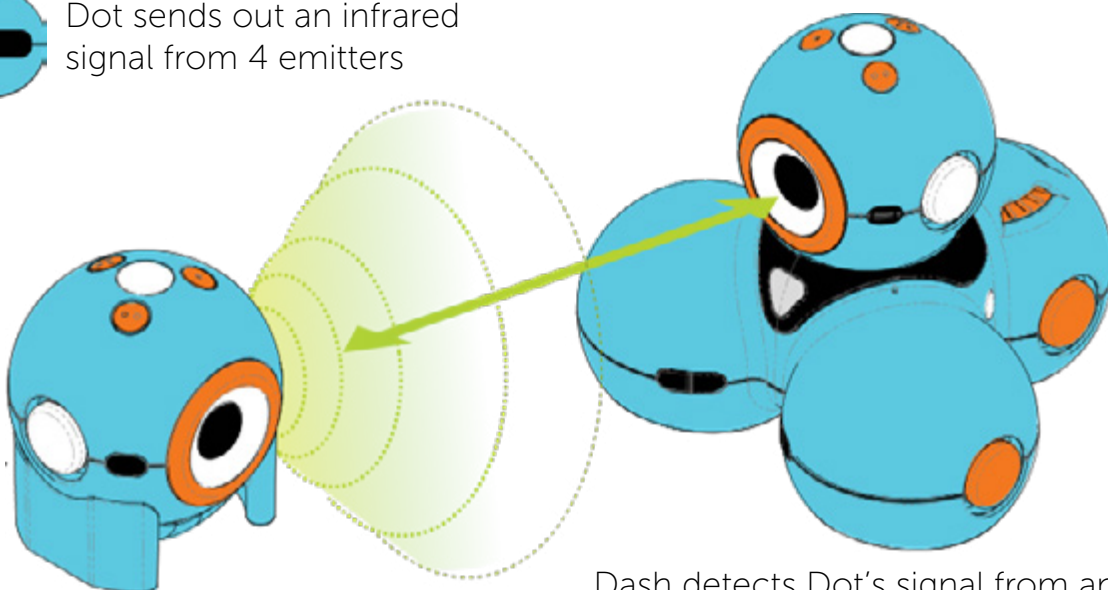### Look Up

Look Down

Lean Right

Lean Left

Dash & Dot

Dot sends out an infrared signal from 4 emitters

Dash detects Dot's signal from an IR receiver in Dash's eye. You can use the See Dot event in Blockly to detect Dot!

Blockly Glossary

Here's the scoop on everything you need to know to use Blockly, a visual drag-and-drop coding tool.

Start

This is where you control how your program will start. Use a block beginning with **"When"** to indicate the event that will start executing your program. Hint: using both Dash & Dot? Try using a Dot gesture like "Shake" or "Toss" and add movement blocks underneath to move Dash around.

When | Top Button
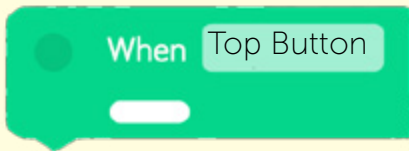
When

This block will start running your program when you press the **top button** on Dash's head or on the **bottom left corner of the Blockly screen**. Drag and stack additional blocks below a When block to write your program.
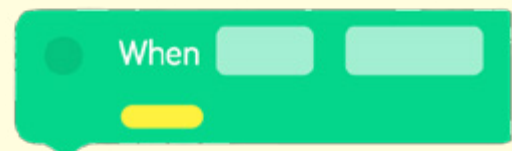
To begin a program with a different event, use the yellow **When** block. Tap on each drop-down menu to select the event that triggers your program. Then, stack blocks underneath to build and run your program!
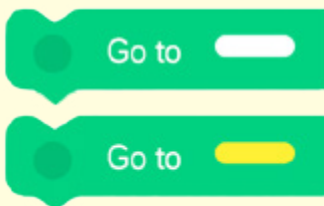
Go to

Go to

Using multiple When blocks? Use **Go to** when you want to repeat a sequence. The yellow or white bar indicates the stack that will repeat. For example, to repeat the sequence under **When Top Button**, use the **white Go to** block.

Drive

Drive blocks control where and how Dash moves! Forward and Backward blocks use **centimeters** as units, and turns refer to **degrees** as the unit of the turn angle.
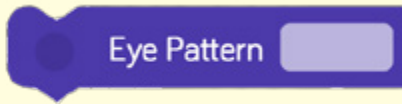
The **Turn to Voice** block allows you to program Dash to turn towards the sound of your voice. This works best in a quiet room with minimal background noise.

Turn to Voice

Set Wheel Speed

Left

Right
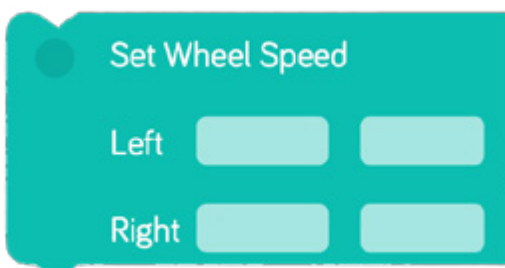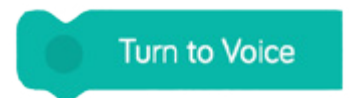
The **Set Wheel Speed** block gives you individual control of Dash's wheels. Forward and backward at the same speed makes Dash **spin**. Forward at different speeds makes Dash go in an **arc**. Try different combinations out! Note: to stop Dash's wheels add the **Stop Wheels** block.

Light

Control Dash & Dot's lights to give your program some color! **All Colors** will light up Dash's ears and chest, or Dot's ears and backlight. **Front** will light up Dash's chest or Dot's backlight.

The **Eye Pattern** block indicates the pattern of the 12 LED eye lights. Tap each light to turn it on in Dash & Dot's eye!

Look

Make Dash's head move any way you want! Units refer to **degrees**. Degree units are absolute, meaning **Left 30** sets the head at 30 degrees left from a neutral straight position.

The **Look towards Voice** block allows you to program Dash's head to look towards the direction of the sound of your voice. This works best in a quiet room with minimal background noise.
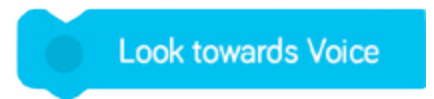
Sound

Dash & Dot love to play sounds—use the drop down menus to add some fun effects to your programs!
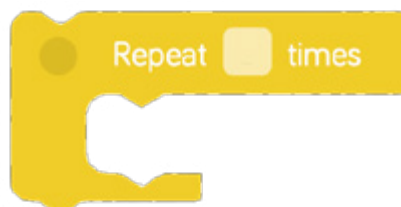
Control

Control how Dash & Dot interact with each other and their environment!

Have Dash & Dot wait for a set **period of time** before continuing your program.
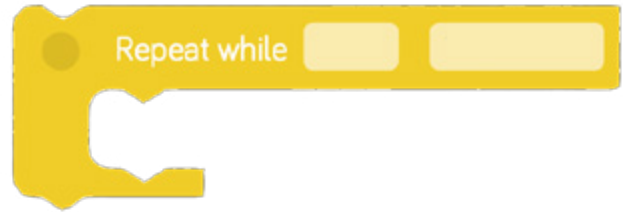
Dash & Dot will **wait for an event** to be triggered before moving to execute the rest of the program.

Dash or Dot will repeat your program for a set number of loops!

Dash & Dot will **repeat** the program inside the brackets **until** the event in the drop-down menu on the right is


Your program will **repeat the whole time while** the event in the drop-down menu on the right is being triggered.


Dash or Dot will run the program inside the bracket **if** the condition in the right drop down menu is present.

Saving and Creating Projects

Blockly allows you to save, create, and load sample projects. This allows students to name their projects and save them to their tablets. If you need to look at their programs for any reason, just tell them what to save it as, and you can easily find it on their tablet.
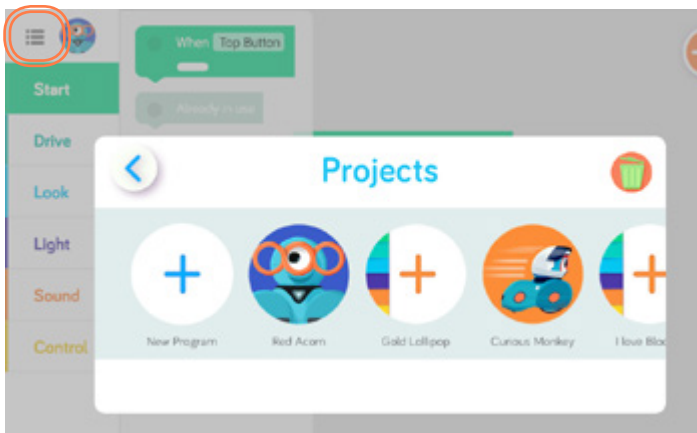
Tap the hamburger menu on the **top left hand side** of the app to create a new project. You can **select a preset** or start off from scratch with a **blank project**!
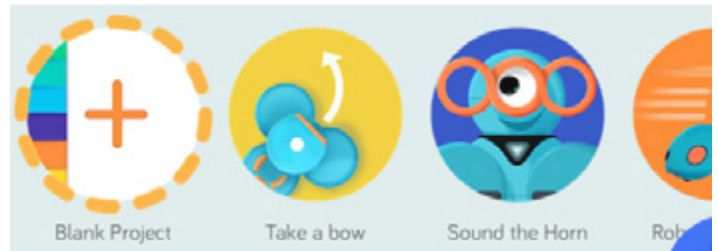
If you start a new project or go into an old project and make changes, your changes will **automatically save**. You can find all your projects in the menu above. When you come back to Blockly, you'll start off where you left off!

To change your project name or icon, tap on the icon next to the hamburger menu!