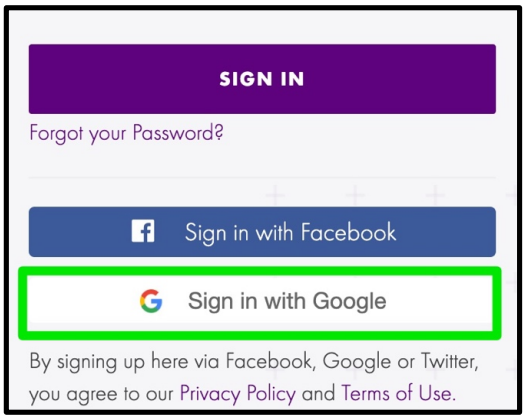
LITTLE BITS CODE KIT TUTORIAL

Required:
On your District Macbook, install the Little Bits OS application.
Mac OS app: https://classroom.littlebits.com/kits/code-kit
Scroll down and download the Mac OS app
Locate the app by clicking on LaunchPad and swipe to find the Little Bits App

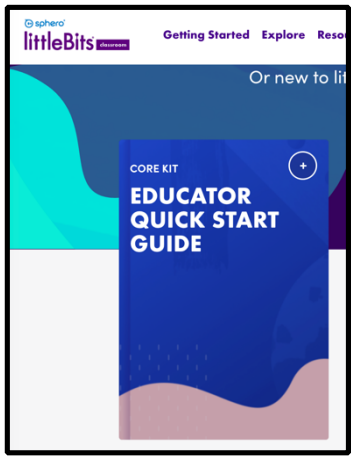
Build, code, play! littleBits puts invention at the heart of learning through play. These electronic building block magnetic "Bits" snap together to turn ideas into inventions, transforming the way kids learn.

This lesson will take you step by step through setting up your account with Little Bits and an overview of the items contained in your Little Bits kit.

Step 1: Create an educator account by logging in to Classroom Little Bits at:
https://classroom.littlebits.com/welcome
Click on Login in the upper right of the browser window.
Then select Log in with Google using your Hickman Mills email address and password.



Step 2: To begin learning about your Little Bits kit, click on Getting Started.



Step 3: Click on the Educator Quick Start Guide for a great overview of Little Bits and how they work.

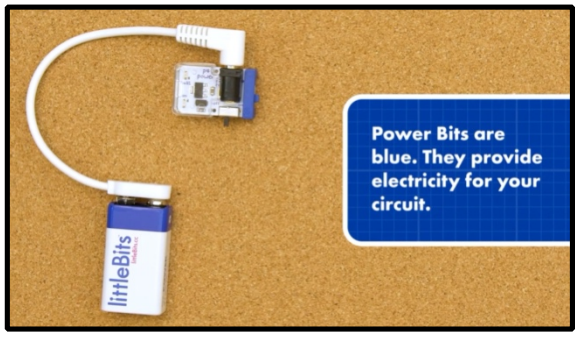
littleBits instruction can be scaffolded with step-by-step instructions and demonstrations for special needs students and English Language Learners

Because littleBits are opened-ended, gifted and talented students can build more complex projects

For group projects, students can assume different roles depending on their skill sets

Bit Basics

Little Bits snap together with magnets so it's impossible to make a mistake, no wires or devices needed.

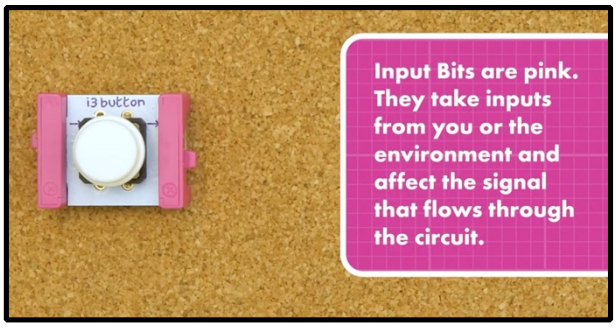


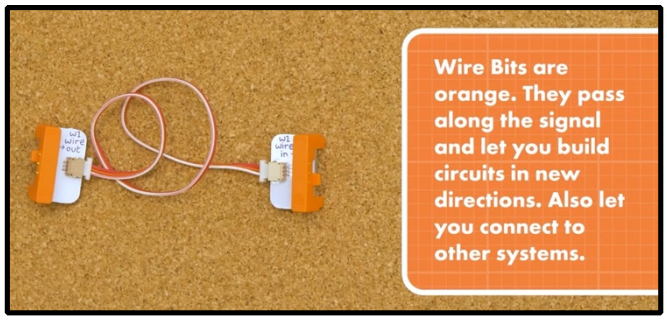
Color Coded - Each Bit is color-coded by its function. There are four colors

Blue bits are the Power Bits and provide the battery powered electricity. (Little Bits now come with a rechargeable battery.

Pink Bits are the Input Bits.
Maybe you don't want your circuit to just be "on" all the time. Simply add a pink between your power and output Bits to add a control.

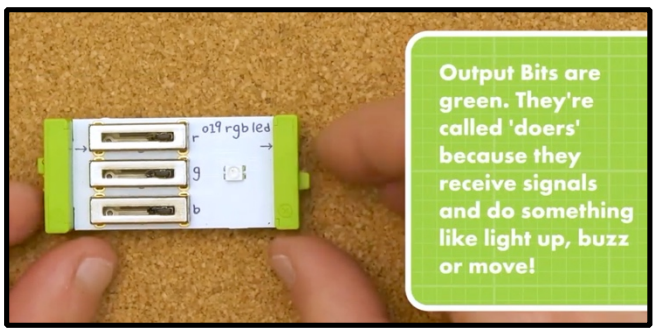
Inputs can be buttons, dimmers, sensors -- things that receive direction from you or the environment.



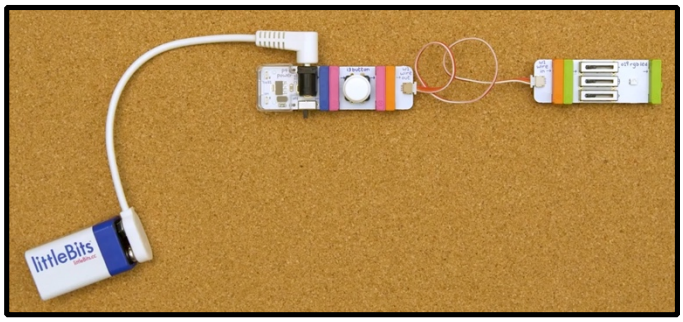


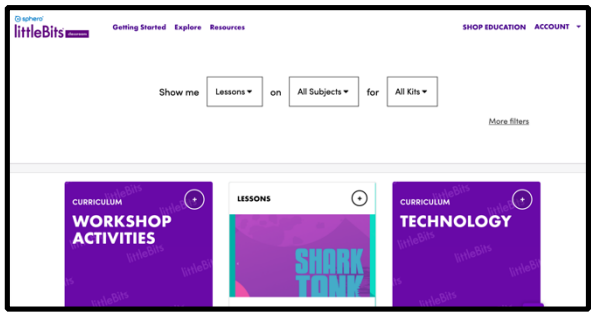
The **Orange Bits** are the wire bits. Orange Bits let you build your circuits in new directions (like with a wire or a fork) or connect to other systems (like coding on a computer).

And the **Green Bits** are the Output Bits. The output bits are the 'doers' because they receive signals and then DO something.



Order Matters
Power Bits (blue) always come first. Input Bits (pink) only affect the output Bits (green) that come after them.





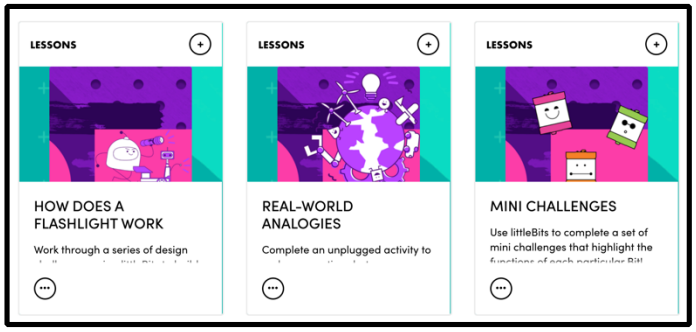
Step 4: Another great resource on the Little Bits website is the collection of lessons.

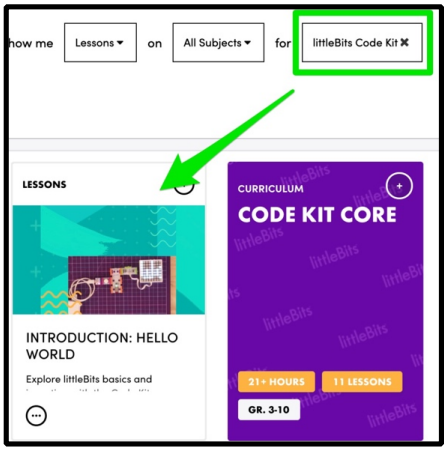
Lessons may be sorted by types, subjects, and by LittleBits kits.

https://classroom.littlebits.com/explore/search?type=lessons

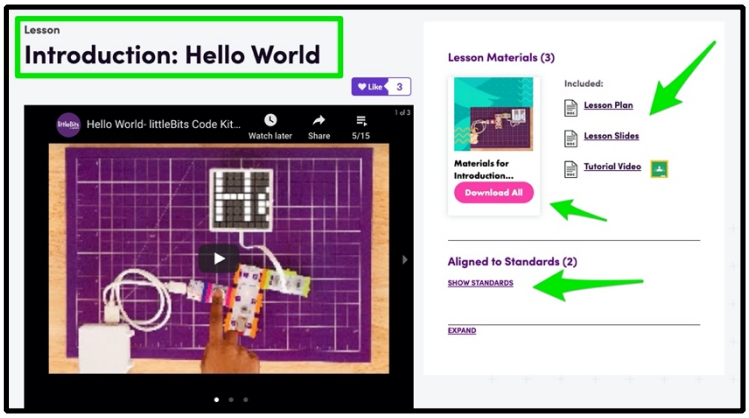
Select a lesson that you wish to use to explore the Little Bits kit that you are working with.

For this guide, I'm going to walk through the Hello World lesson.





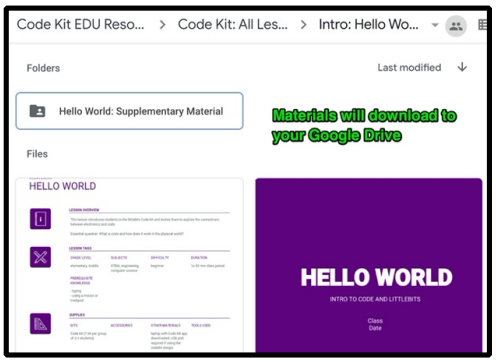
Step 5: Locate and Open the Hello World lesson by selecting the littleBits Code Kit from the kit options.



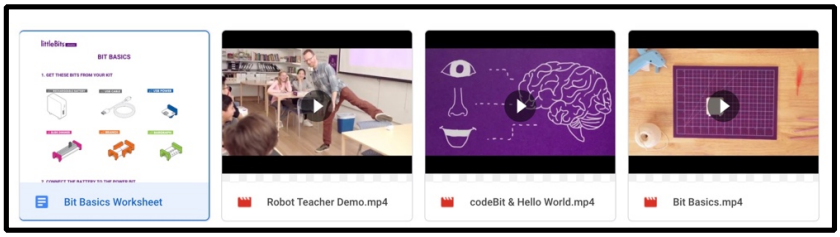
Step 6: The Hello World lesson, as all of the lesson included in the littleBits curriculum contain:

- Lesson Plan
- Lesson Slides
- Tutorial Video

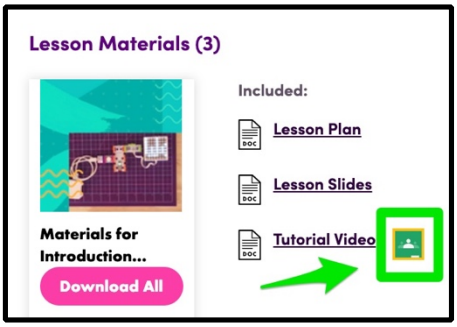
Downloading the lesson materials will bring them into your Google Drive.

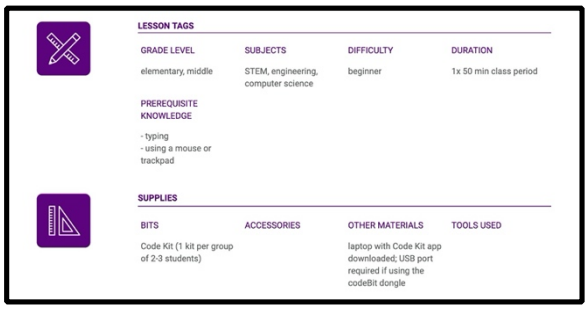


Step 7: Take a look inside the Supplemental Resources folder that you have downloaded for valuable materials.



Step 8: The LittleBits lesson tutorial video can be shared with your students via Google Classroom

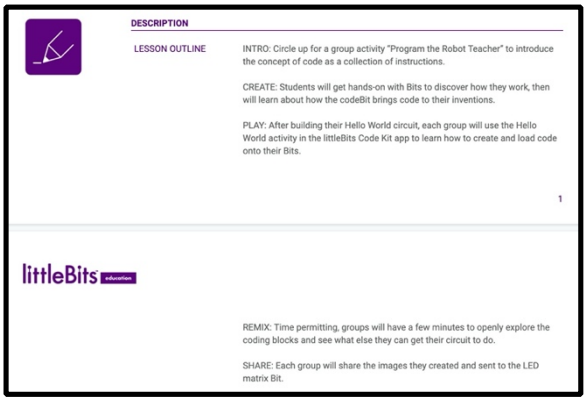


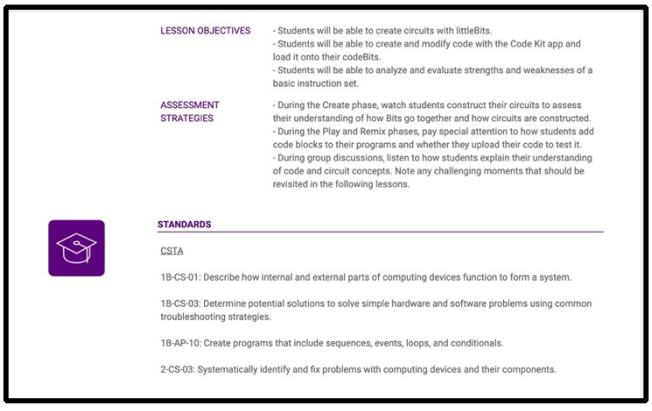


Step 9: The littleBits lessons will help you plan ahead for the lesson by giving you information about everything you will need to have ready.

Step 10: littleBits lessons begin with an outline of what your students will do during the lesson steps.

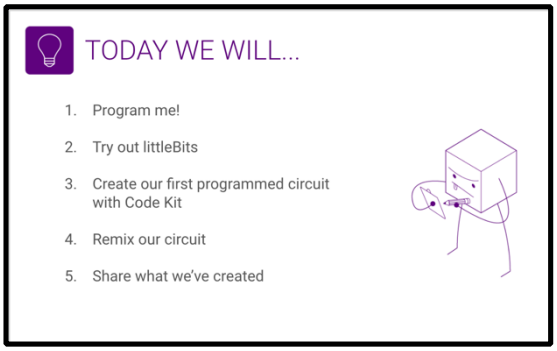
- Intro
- Create
- Play
- ReMix
- Share

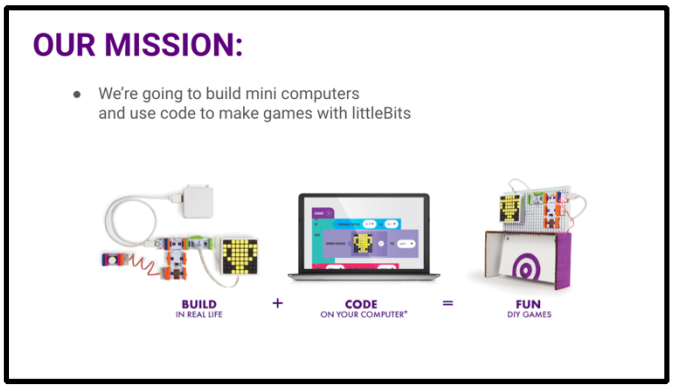




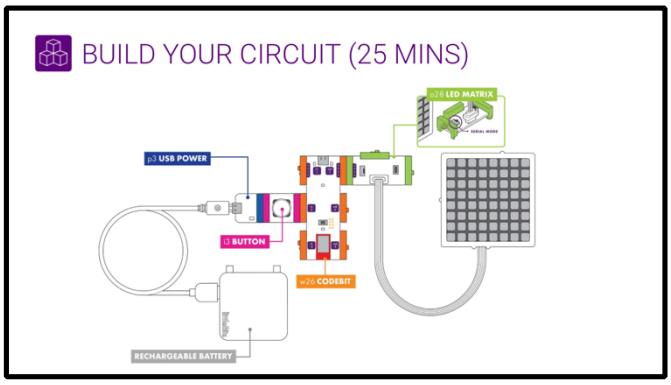
Step 11: Lesson Objective, Assessment Strategies and Standards Connections are stated within the lesson allowing you to fit lessons into your curriculum to support student learning.

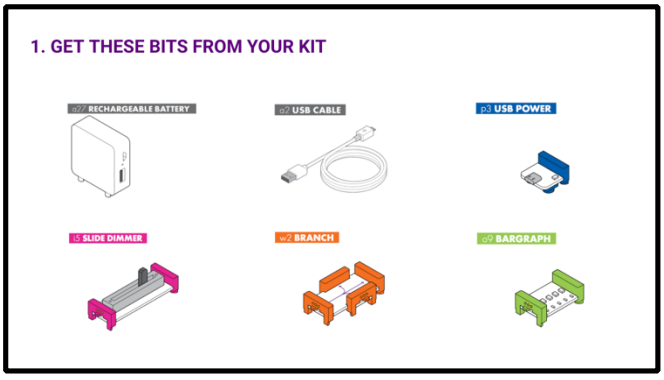
Step 12: The slides contained in the Hello World lesson walk you through the introduction of the littleBits lesson.



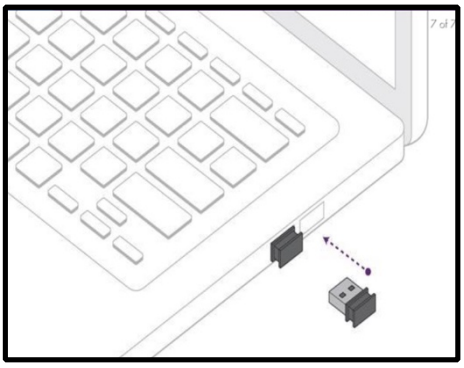


Your students will be challenged to complete a mission, and given a list of needed bits.

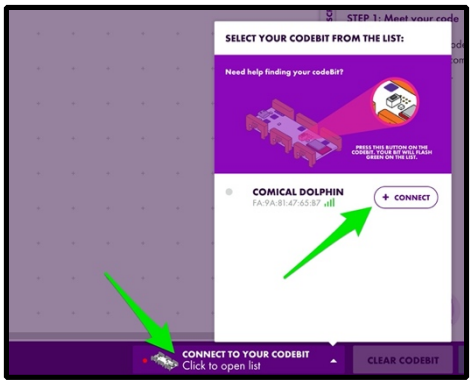




The graphic gives students a visual representation of the circuit challenge. This is also a good time to revisit the colors of the bits and which bits have what function.

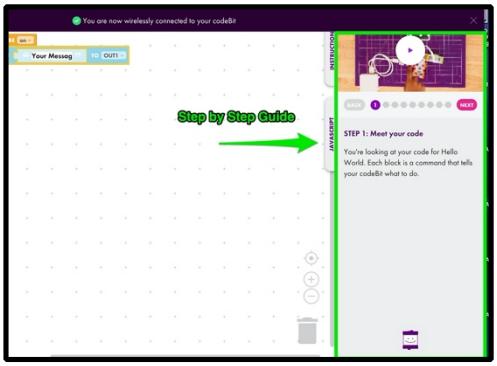


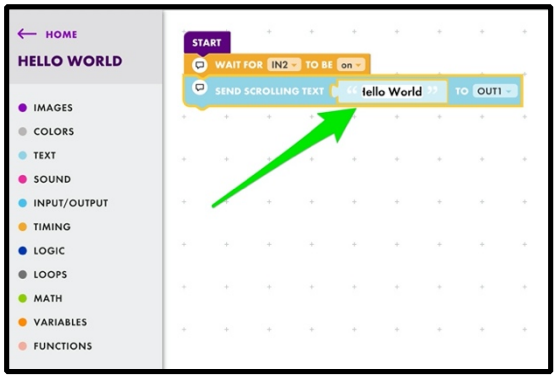
Step 13: Once the circuit has been assembled, plug the **codeBit dongle** into the USB port on the computer. This will allow your code to be sent wirelessly to the circuit.



Step 14: Connect your CodeBit wirelessly to the App by clicking on Connect to Your Codebit. Then locate your CodeBit and click **+ CONNECT**

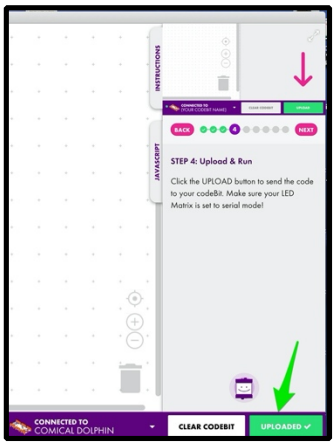
Step 15: The CodeBit app has step by step instructions included with the Hello World lesson.



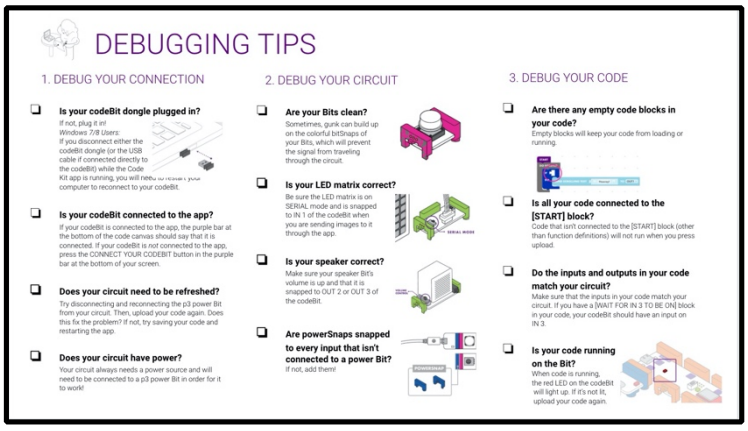


Step 16: To modify the text block so that the matrix will show the words Hello World, tap inside the text box and replace the words with Hello World, or your chosen text.

Step 17: When you are finished with your code, make sure your codeBit is connected and click on upload to send the program to your codeBit.



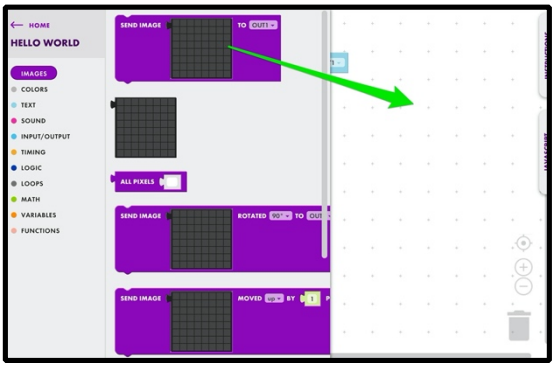
Then press the button on your circuit and your design should show on the Matrix.

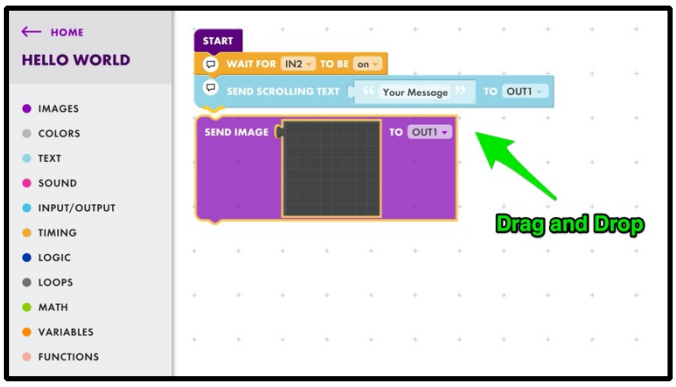


Step 18: What do you do if your students' code doesn't work? This is where the Debugging Tips in the slide presentation come in handy.

Debugging is a powerful piece of computational thinking, celebrate the failures- that's where the real learning takes place!

Step 19: Try modifying your code, drag the text code block to the trash can in the app. Then click on the Image coding blocks and drag the top selection to the programming window.

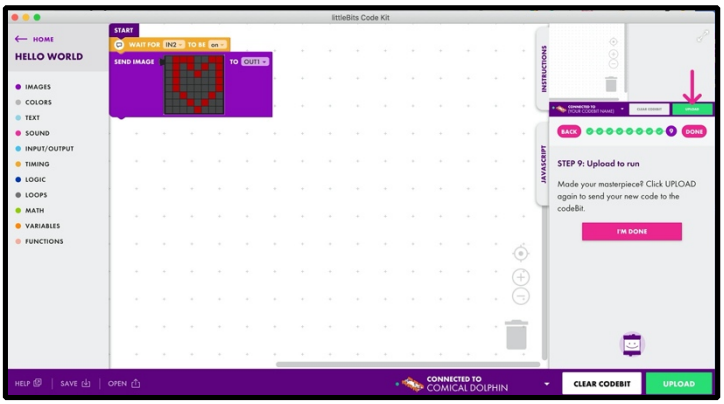




Step 20: Next, drag the image block up to connect it with

Step 21: When finished, click Clear codeBit, otherwise the past code will remain on the device.

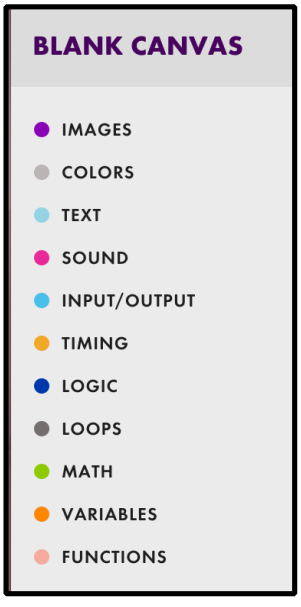
Then click Upload, when you see the green button change to Uploaded. Press the button on your circuit to see your design on the LED matrix.

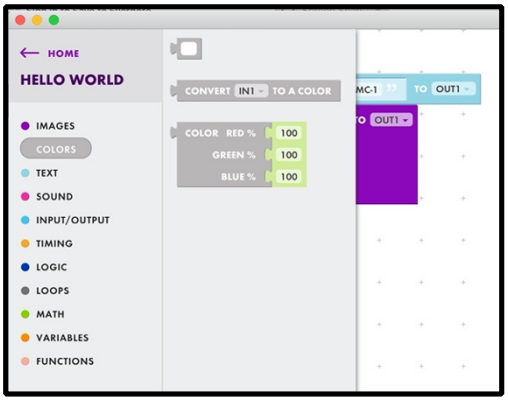


Step 22: The inputs (the pink bits) are the bits that tell the output bits (the green bits) what to do.
Inputs include switch, slide, touch, and push.

The outputs (the green bits) do whatever the pink bits tell them to do. Outputs include lights, sounds, colors, text, sounds, motion and the LED matrix.

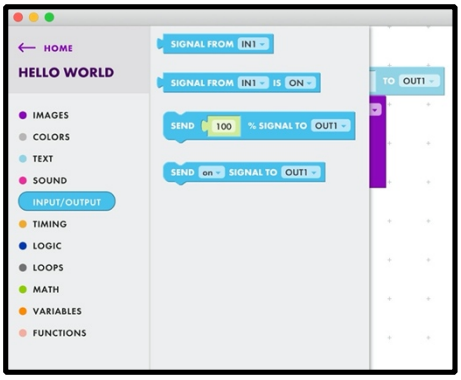
Step 23: Coding blocks within the Little Bits Code Kit App include many options.
Working through the lessons will familiarize you and your students on these options.

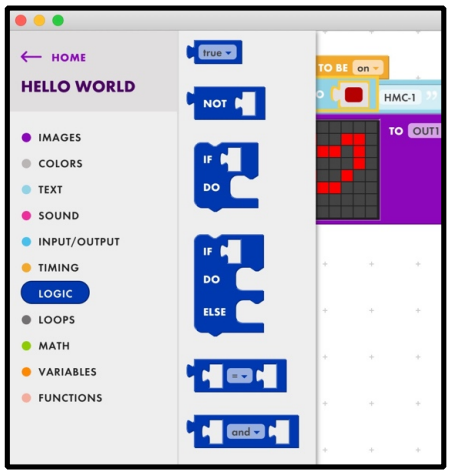




Colors coding blocks

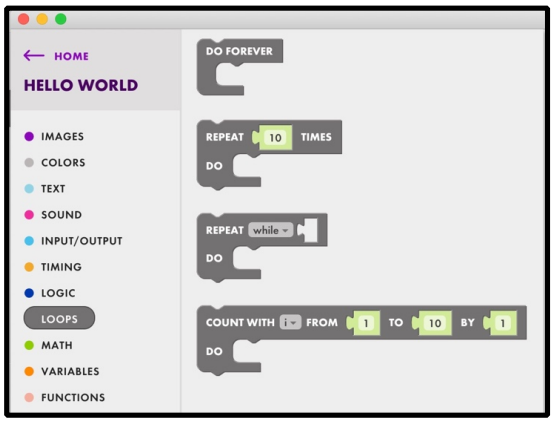
Input/Output coding blocks





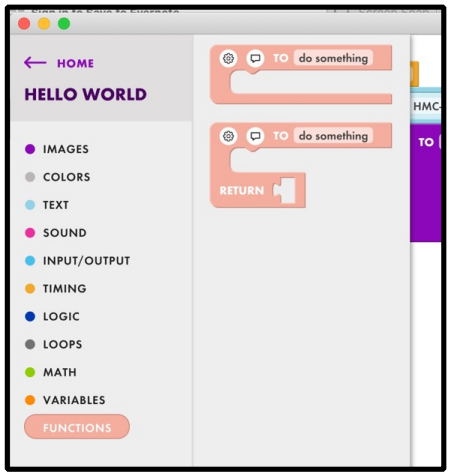
Logic coding blocks

Loops coding blocks



Math coding blocks

Variables coding blocks



Functions coding blocks.

Resources:

Classroom: https://classroom.littlebits.com/explore/search

Lessons: https://classroom.littlebits.com/explore/search?type=lessons

Inventions: https://classroom.littlebits.com/explore/search?type=inventions

Little Bits YouTube channel: https://www.youtube.com/channel/UC_2hEbur8-gPYMYI5Z5_48A

BitoPedia: Describes all the bits and what they do
https://classroom.littlebits.com/bit-o-pedia

Educator Tips
https://classroom.littlebits.com/educator-tips