

MakerBit Activity 2b: Linking Google Drive videos to models

(10 minutes)

Note: This activity assumes you have already the Media Linker app and Parts of a Volcano video installed on the computer that you are using.

If you haven't done that yet, install using this link:

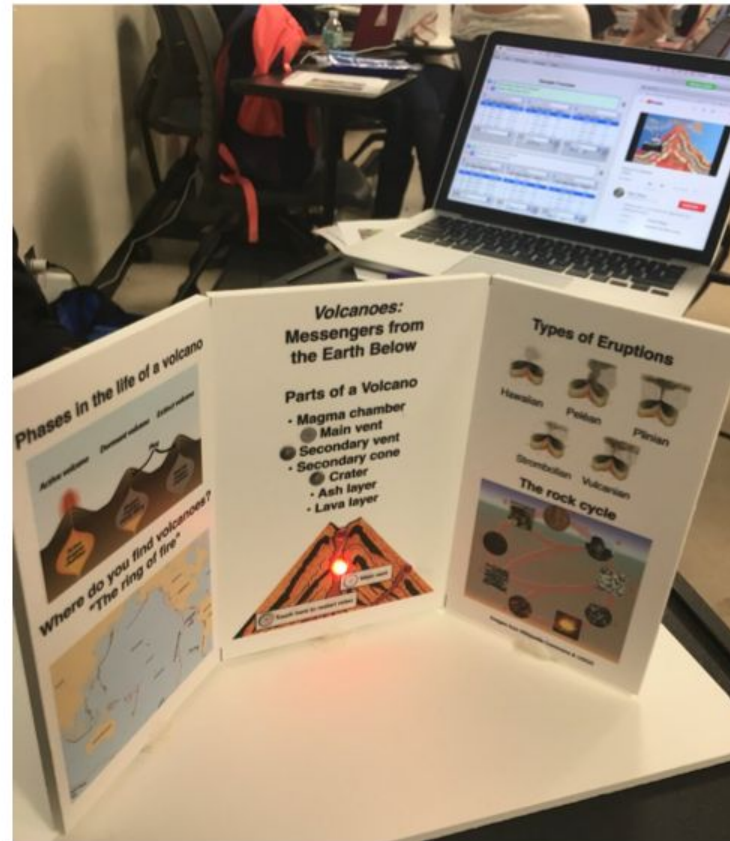
<http://bit.ly/2ImYGIO>

Also, Google Drive videos need to be marked as shared to "anyone with the link".

Look in the makerbit folder in your Google Drive, and mark the video "Parts of a Volcano.mp4" as shared "anyone with link" so that the Media Linker can access the video.



Get shareable link 



The Google Slides version of this is at: <http://bit.ly/2HfJzfs>

The MakerBit Media Linker

How It All Works

Using the MakerBit Media Linker, you will create a media list that does two different things. First, it will link parts of a video to touch sensors on your model. Secondly, it will set up which LEDs should turn on when a certain part of the video is playing.

Using the Media Linker is as easy as 1-2-3! Locate the media you want using the web-view window on the right. Click "+" to add it as a media list item. Choose the touch sensor & LEDs. That's it!

With this basic technique, you can create extraordinary interactive projects, linking all sorts of digital media to your physical projects, even including web-pages, Google Earth, Google Slides, and more!

Media bookmarks
(Google, Drive, Videos, YouTube, Earth, Sample Video)

The screenshot shows the MakerBit Media Linker software interface. On the left is the 'Media list window' titled 'Volcano Parts'. It contains a list of three items: 'main vent (T2, L2)', 'secondary vent (T3, L3)', and 'crater (T4, L4)'. Each item has a 'YouTube' link and start/end times. Below the list are three columns for configuration: 'Input to Respond to', 'Start of Media', and 'End of Media'. Each column has a table with columns for Pin, Mode, Respond, and New is. The 'Input to Respond to' table has row 14 selected with 'Touch' mode. The 'Start of Media' table has row 4 selected with 'Output High' mode. The 'End of Media' table has row 4 selected with 'Output Low' mode. At the bottom of the media list window is a '+ Add new item' button and a text box that says 'Click the + to add new media that is currently open in the web view window to the right.' On the right is the 'Web-view window' showing a YouTube video titled 'Parts of a Volcano'. A red arrow points from the '+ Add new item' button to the video. A yellow callout box with a '1' says 'Find & display your media in the web-view window.' Below the video are like, dislike, share, and save icons. At the bottom of the web-view window is a text box that says 'Web-view window Search & select media'.

3 Configure touch & LEDs

2 Add the new item to the media list.

Add new item

Media list window
Link & configure media

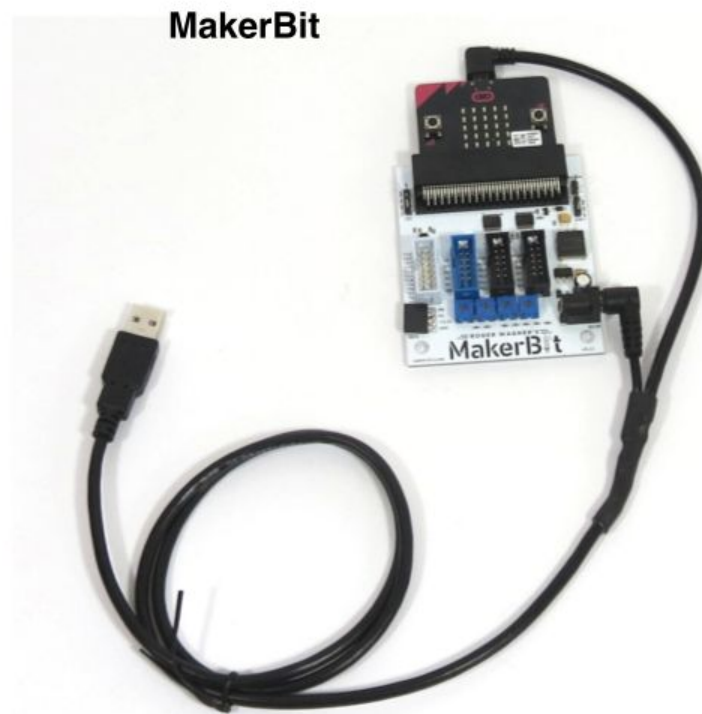
1 Find & display your media in the web-view window.

Web-view window
Search & select media

Connect the MakerBit/micro:bit to the Computer.

1

Disconnect the battery from the MakerBit, and use the special MakerBit USB cable to connect the computer to the MakerBit board. Connect the barrel connector to the MakerBit, and the micro-USB to the micro:bit.

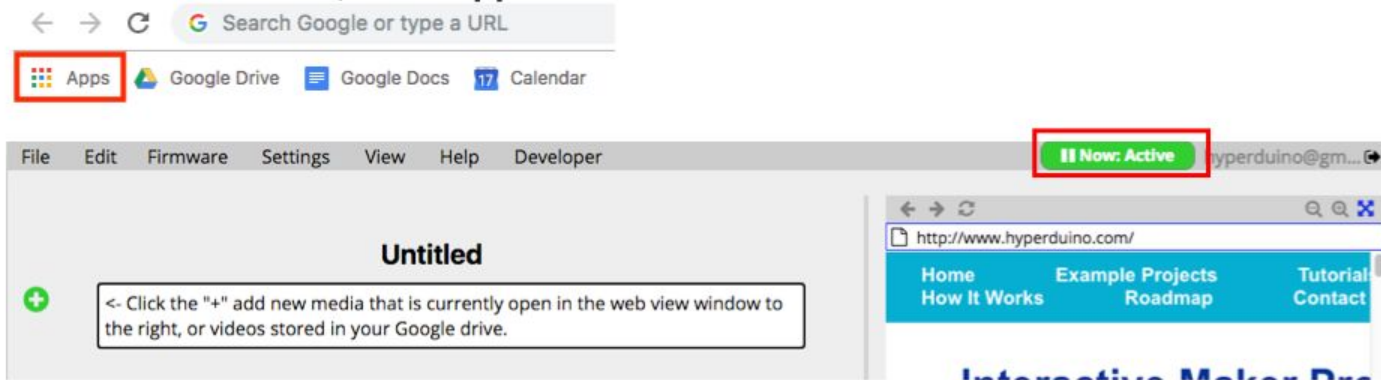


Open the App, New Media List

- 1 Open the MakerBit Media Linker. On Chromebooks, use the search icon or key:



- 2 On Mac or Windows, use "Apps" in the menu bar of the Chrome browser.



Note: If the connection status at the upper-right of the window says, "Now: Idle" use this link to jump to the serial connection section of the MakerBit Tutorial: <http://bit.ly/2yqBf86>

- 3 Give your media list a name by clicking on the name "Untitled" and entering a new name.



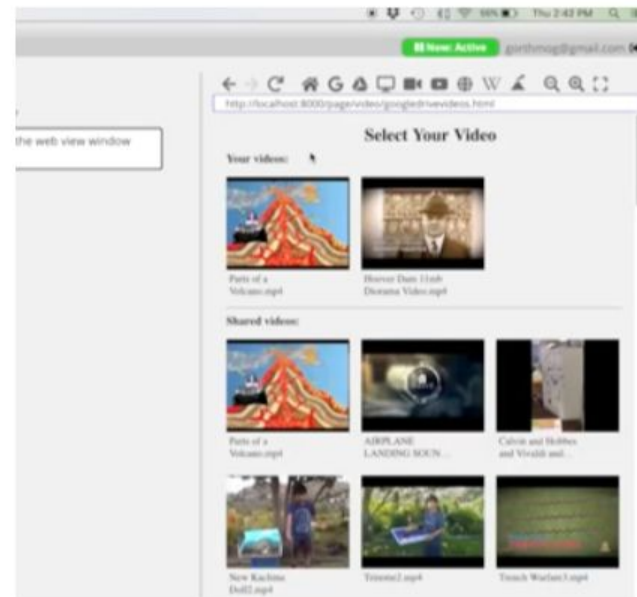
Locate the Google Drive Video

B1

1 In the **web-view window** (at the right) of the MakerBit Media Linker, click on the video camera icon to open the gallery of Google Drive videos.



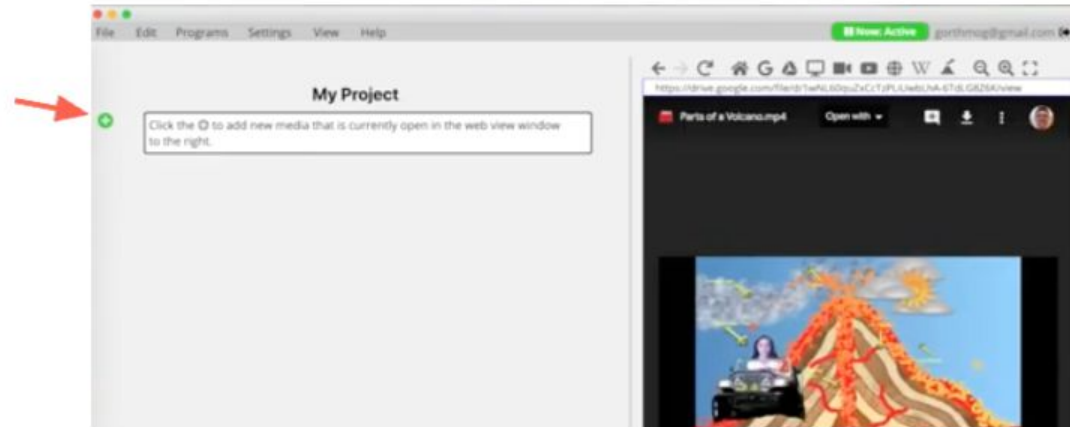
2 Select the "Parts of a Volcano" video.



Link to a Google Drive Video



- 3 Only after the video is displayed, click on the green + icon on the media list side to add a new media list item.



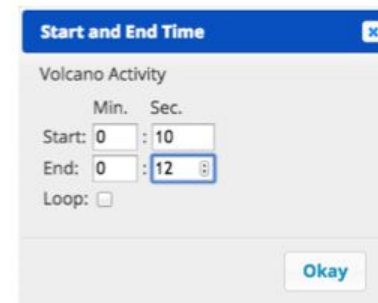
- 4 Enter the **start of 0:10** for the video, and the **end time of 0:12**

Start: 0:10

End: 0:12

This is the time range for where she says "the main vent".

Click OK for the time range



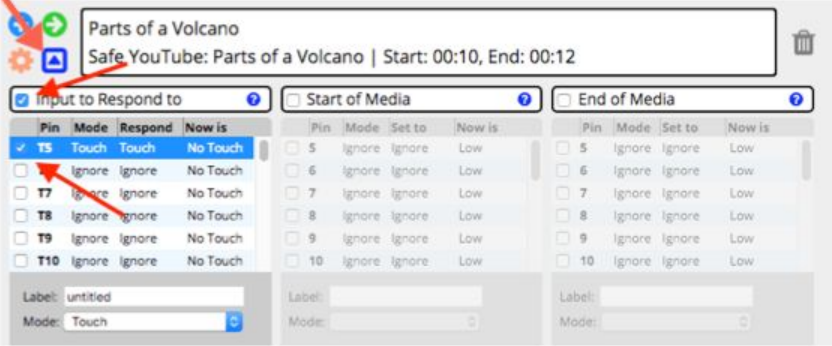


Configure the Sensor & LED

4 Click on the blue triangle to view the settings for the media list item.

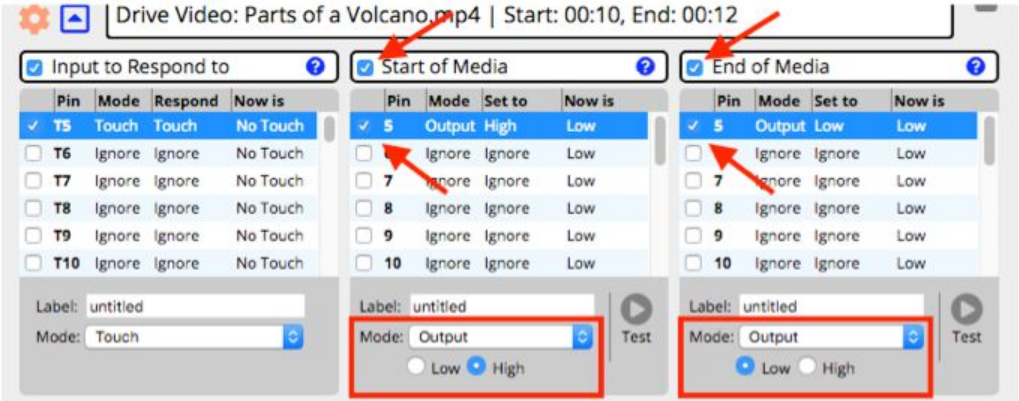
5 Click on checkboxes as shown here for "Input" and sensor "T5".

This will start the video when you touch sensor T5.



Problems getting LEDs or touchpoints to respond? Try resetting the system -> See Card "R"

6 Now click on "Start of Media" and "End of Media", and the checkbox next to "5" for each, to turn on LED #5 between 0:10 and 0:12 seconds in the video, and then turn it off. At the bottom of the window you can see that Start of Media has the Output set to High, and End of Media has the Output set to "Low". In digital circuits, "high" is "on", and "low" is "off".



7 Try it out! Touch the "Main vent" touchpoint. The video will play, and the LED will come on when the student says "main vent"!

Note: Google requires a manual first-time "click" on the play button of the video before auto-play will work. However, after that one time, the video should play automatically for all further touches.



Add Another Video Segment

8


Before adding the next media list item, first close the configuration for the first media list item by clicking on the blue triangle.

Pin	Mode	Respond	Now is
<input checked="" type="checkbox"/> T5	Touch	Touch	No Touch
<input type="checkbox"/> T6	Ignore	Ignore	No Touch
<input type="checkbox"/> T7	Ignore	Ignore	No Touch
<input type="checkbox"/> T8	Ignore	Ignore	No Touch
<input type="checkbox"/> T9	Ignore	Ignore	No Touch
<input type="checkbox"/> T10	Ignore	Ignore	No Touch

Pin	Mode	Set to	Now is
<input checked="" type="checkbox"/> 5	Output	High	Low
<input type="checkbox"/> 6	Ignore	Ignore	Low
<input type="checkbox"/> 7	Ignore	Ignore	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low

Pin	Mode	Set to	Now is
<input checked="" type="checkbox"/> 5	Output	Low	Low
<input type="checkbox"/> 6	Ignore	Ignore	Low
<input type="checkbox"/> 7	Ignore	Ignore	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low

9

Add a new media list item for the secondary vent by clicking on the next GREEN (not blue) "add media" icon  to add a new media list item of the same video, but this one to turn on LED #6 between 0:12 and 0:14 seconds in the video.

Start and End Time

Parts of a Volcano

Min. Sec.

Start: 0 : 12

End: 0 : 14

Loop:

Okay

Pin	Mode	Respond	Now is
<input type="checkbox"/> T5	Ignore	Ignore	No Touch
<input checked="" type="checkbox"/> T6	Touch	Touch	No Touch
<input type="checkbox"/> T7	Ignore	Ignore	No Touch
<input type="checkbox"/> T8	Ignore	Ignore	No Touch
<input type="checkbox"/> T9	Ignore	Ignore	No Touch
<input type="checkbox"/> T10	Ignore	Ignore	No Touch

Pin	Mode	Set to	Now is
<input type="checkbox"/> 5	Ignore	Ignore	Low
<input checked="" type="checkbox"/> 6	Output	High	Low
<input type="checkbox"/> 7	Ignore	Ignore	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low

Pin	Mode	Set to	Now is
<input checked="" type="checkbox"/> 6	Output	Low	Low
<input type="checkbox"/> 5	Ignore	Ignore	Low
<input type="checkbox"/> 7	Ignore	Ignore	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low



And the Crater...

- 10** Close the configuration window for the second media list item by clicking on the blue triangle, and add a 3rd media list item for the crater by clicking on the next **GREEN** (not blue) "add media" icon **+** to add another new media list item.

Set the time to Start: 0:16.7 and End: 0:17.5 (this is where she says "the crater").

Start and End Time ✕

Parts of a Volcano

	Min.	Sec.
Start:	<input type="text" value="0"/>	<input type="text" value="16.7"/>
End:	<input type="text" value="0"/>	<input type="text" value="17.5"/>

- 11** Click on the blue triangle to view, and then click on T7 for Input to Respond to, and Pin 7 for Start and End of Media.

Parts of a Volcano.mp4

Drive Video: Parts of a Volcano.mp4 | Start: 00:16.7, End: 00:17.5

Pin	Mode	Respond	Now is
<input type="checkbox"/> T5	Ignore	Ignore	No Touch
<input type="checkbox"/> T6	Ignore	Ignore	No Touch
<input checked="" type="checkbox"/> T7	Touch	Touch	No Touch
<input type="checkbox"/> T8	Ignore	Ignore	No Touch
<input type="checkbox"/> T9	Ignore	Ignore	No Touch
<input type="checkbox"/> T10	Ignore	Ignore	No Touch

Pin	Mode	Set to	Now is
<input type="checkbox"/> 5	Ignore	Ignore	Low
<input type="checkbox"/> 6	Ignore	Ignore	Low
<input checked="" type="checkbox"/> 7	Output	High	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low

Pin	Mode	Set to	Now is
<input type="checkbox"/> 5	Ignore	Ignore	Low
<input type="checkbox"/> 6	Ignore	Ignore	Low
<input checked="" type="checkbox"/> 7	Output	Low	Low
<input type="checkbox"/> 8	Ignore	Ignore	Low
<input type="checkbox"/> 9	Ignore	Ignore	Low
<input type="checkbox"/> 10	Ignore	Ignore	Low

Label: untitled Mode: Touch

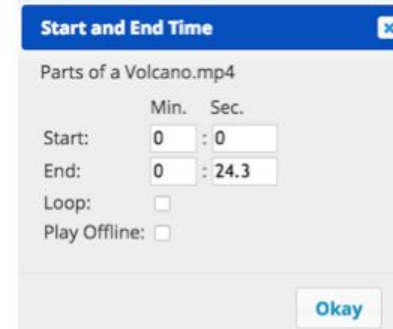
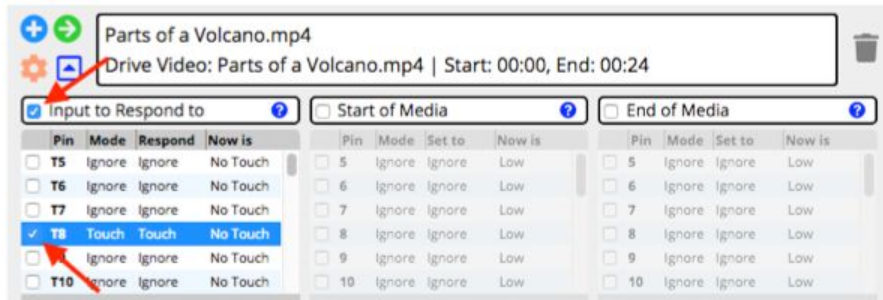
Label: untitled Mode: Output Low High Test

Label: untitled Mode: Output Low High Test

And One More to Play the Entire Video



- 12 Finally, add one more item for playing the entire video, but this time, don't set the LEDs. Only set T8 to play the entire video, Start: 0:00 and End: 0:24.3

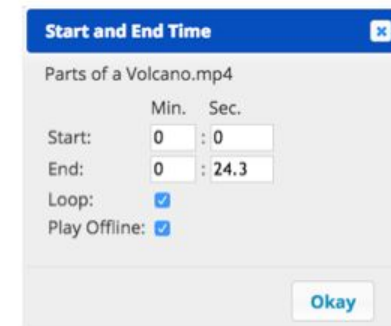


- 13 Now when you touch the "Touch here to start video" touchpoint, the entire video will play, and parts of the model will light up at the matching times during the video!

Open House Mode: To put the video in a continuous loop mode, click on the orange gear (settings) icon, and check "loop". Now when the video plays, it will automatically loop. If one of the other sensors is touched, the video can be put back to looping with the "Touch here to start" sensor.

If you also click "Play Offline", the video data will be cached locally, and even play for the next 24 hours without an Internet connection, or putting any load on the local network!

Media lists can also be saved (and re-opened) locally with the Downloads folder, so that no Internet connection is needed.



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Media list window
Link & configure media

Web-view window
Search & select media

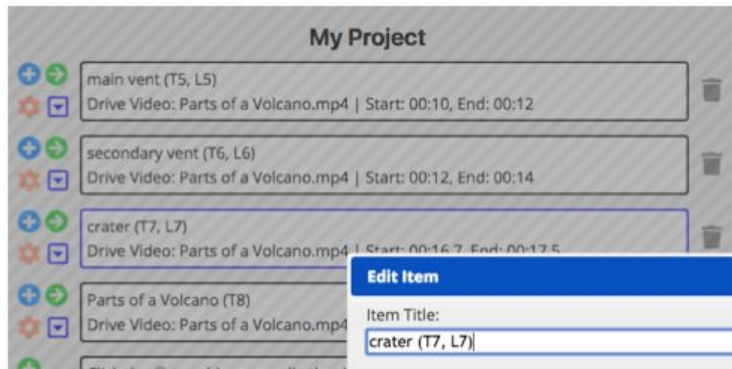
You've Completed Activity 2!

You have now linked videos to physical models and learned how to turn LEDs on and off at the beginning and end of video segments.

This is all that's necessary to use the MakerBit system to create physical-digital interactive models.

For the next activity, you'll learn how to link Google Earth locations to your model!

Tip: You can name each item in the media list by clicking on the default name of "Parts of a Volcano", and renaming them, "main vent", "secondary vent", and "crater". It's also helpful to add something that show whether a touch sensor or LED is associated with that item.

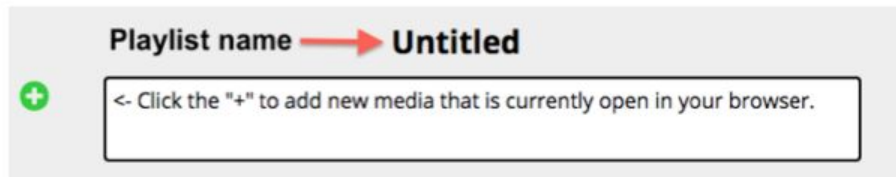


You can learn more about the MakerBit and many different making and learning paths with the resources at Google's Workbench Education Platform <http://bit.ly/MakerBitWorkbench>

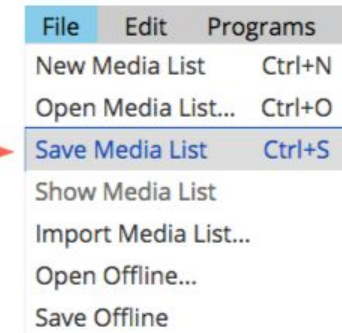


To Reset the System

- 1 If your media list is still "Untitled", click on "Untitled" and name your media list.



- 2 Choose Save Media List in File

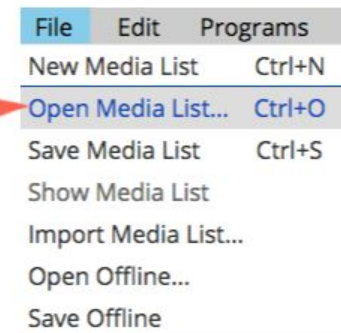


- 3 Quit the MakerBit Media Linker

- 4 Unplug/replug the USB cable and battery

- 5 Re-open the MakerBit Media Linker

- 6 Choose Open Media List in the File menu.



Installing the MakerBit Program on the micro:bit

As originally shipped, the micro:bit in the MakerBit product package is already pre-programmed with the MakerBit program, which will automatically respond to the touch sensors and turn on/off the LEDs. However, if the micro:bit being used with the MakerBit has been re-programmed using MakeCode or some other program, or has been purchased separately from the MakerBit package, then it will be necessary to put the MakerBit program on on micro:bit.

To install the MakerBit program on to the micro:bit, connect the micro:bit to your computer with a microUSB cable. Open the MakerBit Media Linker app, go to the **Programs** menu, and choose **MakerBit Program**.



This will download the makerbit.hex file to the Downloads folder of your computer. Locate the file in your Downloads folder, and drag it on to the micro:bit drive icon on your computer.

That's it! This does not usually need to be repeated in the future, and you're now ready for all the MakerBit activities that use the Media Linker, or the self-running mode without a computer!

If you do wish to read more about installing the MakerBit program on the BBC micro:bit, use this link: <http://bit.ly/2Umcebo>

Instructions for installing the MakerBit Media Linker app can be found at: <http://bit.ly/2ImYGIO>