

Workshop: Interactive Maker Projects with Chromebooks

San Diego CUE Tech Fair 2016

[Saturday, November 5 • 12:15pm - 2:00pm](#)



Presenter: Roger Wagner

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Special workshop price for the Hyperduino Starter Kit:

[\\$55.00 plus CA tax \(\\$59.67 total\)](#)

(purchase not required for workshop)

Regular Retail: \$94.95

School Price \$74.95

Overview of the Workshop Activity

The workshop will give you hands-on experience with inter-connecting digital media on the Chromebook (videos, webpages, maps) with a physical project that you will create in collaboration with your team members. Chromebooks will be supplied and used in the workshop. Macintosh and Windows laptops also work using the Chrome browser.

The objective of these tools is the enhancement of student-made physical projects that students are already making as part of their existing curriculum with the addition of their own explanatory videos and other media.

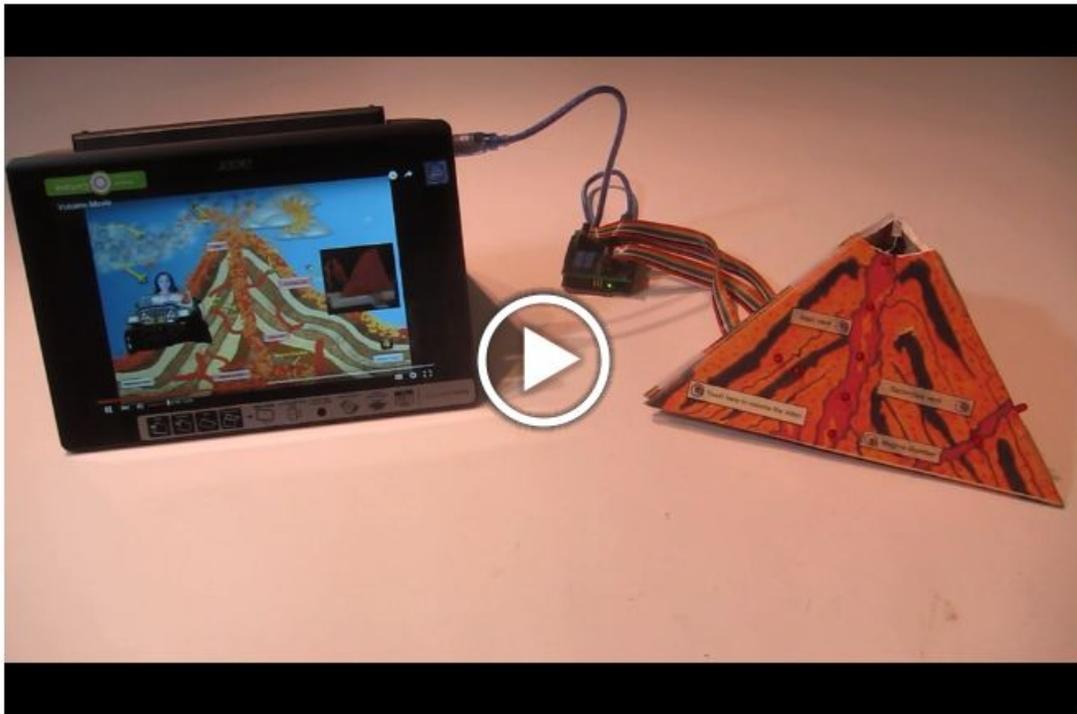
For example, in this project parts of a map are illuminated as a video plays, and touching points (sensors) on the map brings up new media that gives more information on that part of the model.



In this example, a 4th grader has created a project for a Nebraska history assignment.



Here is a model explaining volcanic processes with the help of a student-created YouTube video:



In this workshop, participants will construct an example “[National Parks](#)” project, and use the HyperDuino for Chrome app to interconnect media, sensors and LEDs in a physical models.

 **Alisa Trakulboon**
@MrsTrakulboon Following

HyperDuino!! AMAZING!! Thanks, [@rogerwagner](#)
[@mjdescallar](#) #MakerDayLACOE #rusdshares



<https://twitter.com/MrsTrakulboon/status/746462955563212801>

Interactive Maker Projects with Chromebooks

Three of the biggest trends in educational technology now are makerspaces, coding and Chromebooks.

Three of the biggest challenges are determining the activities and curriculum for the makerspaces, finding ways to teach coding within a curricular context, and how to use Chromebooks in a makespace in a way that enhances the learning that takes place.

Often and with good reason, Chromebooks are viewed as only a keyboard and screen portal to the Internet and Google Apps, with no real-world connectivity. Even directly connecting a printer to a Chromebook is not an easy task.

Makerspaces on the other hand, are all about real-world connections and creativity, and bringing together many different curriculum areas along with many different engineering skills and activities.

Until now though, there wasn't an easy way to connect Chromebooks and digital media to student-made projects and science-related hands-on activities.

And, there is still the obstacle of the complicated breadboarding and circuit-building that must be done to connect the sensors and actuators of a real-world project to the Arduino.

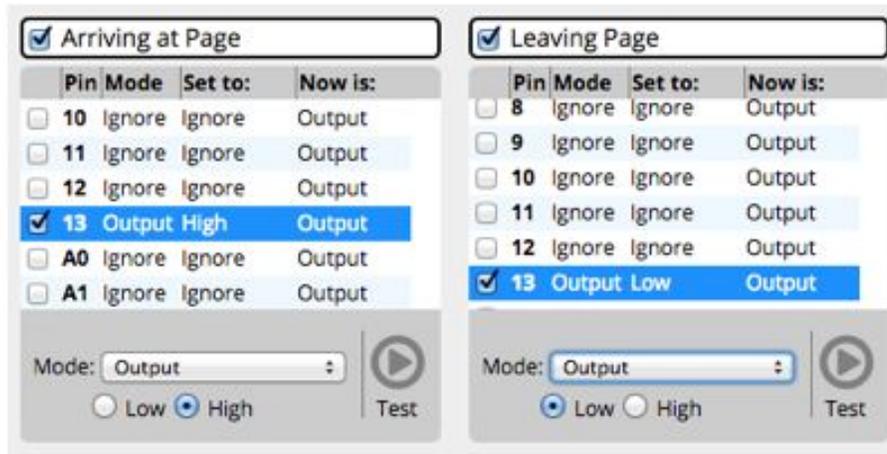
Finally, there is the challenge of framing makerspace activities within required curriculum, and creating projects that are relevant to both the curriculum, and which also demonstrate to administrators and the community the value of the makerspace.

The solution to all of these issues that will be demonstrated in this workshop is to use the HyperDuino for Chrome app, and the HyperDuino shield (piggy-back board) for the Arduino to add existing and student-made videos and other media to physical student-made curriculum-based projects.

The concept behind the HyperDuino system is simple: touch sensors on a model can illuminate LEDs on a model, and with the addition of a Chromebook, display digital media that explains the concepts shown by the model.

With the HyperDuino app for Chrome, students use the logic of programming to monitor sensors, and take actions based on both media content and sensor inputs, rather than having to immediately deal with the syntax and peculiarities of written Arduino coding.

Students simply create Playlists with configured actions and sensor inputs to watch for such as this:



Rather than having to write C-like coded programs like this:

```

Blink
/*
  Blink
  Turns on an LED on for one second, then off for one second, repeatedly.

  This example code is in the public domain.
  */

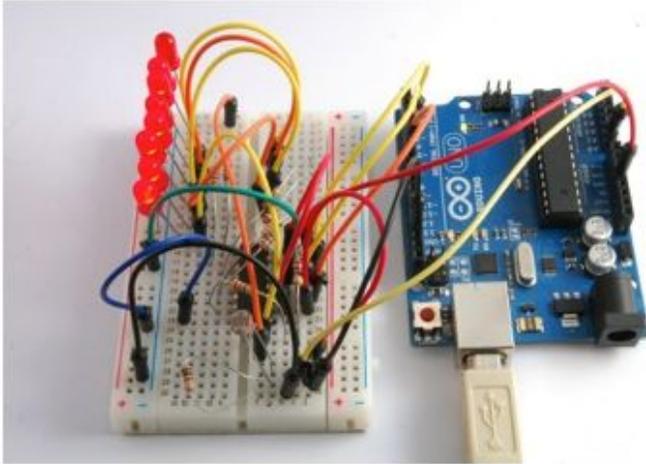
void setup() {
  // initialize the digital pin as an output.
  // Pin 13 has an LED connected on most Arduino boards:
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH); // set the LED on
  delay(1000);           // wait for a second
  digitalWrite(13, LOW); // set the LED off
  delay(1000);           // wait for a second
}

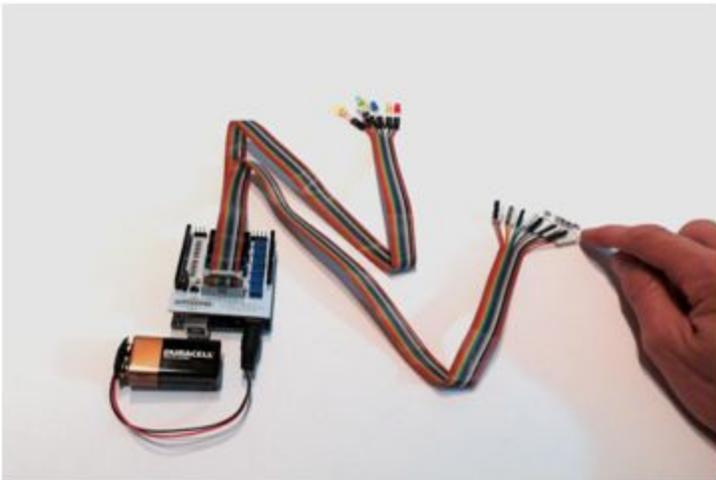
```

The HyperDuino Shield for the Arduino is a simple piggy-back board for the Arduino that eliminates the need for a breadboard for many common sensor and output configurations in student projects. Now, hours need not be spent setting up a breadboard and resistors.

With the HyperDuino Shield, this:



Is now just this:



The HyperDuino for Chrome app is free, and can be used with any Arduino-compatible microcontroller.

The [HyperDuino Starter Kit](#) contains the HyperDuino shield (piggy-back board) for simplifying the set up of sensors and outputs, as well as the Funduino (an Arduino-equivalent microcontroller) along with an assortment of LEDs, sensors and easy-connect wires for one or more projects.

You can open the Google Doc of the HyperDuino for Chrome Tutorial here: <https://goo.gl/8m0FEu>

Also be sure to follow @hyperduino on [Twitter](#), [FaceBook](#), and [Pinterest](#)!

Do your own Interactive Maker Projects workshop!

If you would like to do your own workshop similar to this one, you are welcome to use the resources linked to in this document.

Workshop Activity Cards: <https://goo.gl/iwMMX>

Workshop Preparation Guide: <http://goo.gl/10u2i0>

National Parks project instructions: <https://goo.gl/4rNkAE>

We can also provide loaner sets of the HyperDuinosaurs and sample National Parks projects. Your own cost is the return postage for the HyperDuinosaurs and National Parks projects.

Contact Roger Wagner for more information: roger@rogerwagner.com