



**LIBRARY
LINK UP:
MAKERSPACES**

THURSDAY, OCTOBER 6TH

1:00-2:00 PM EASTERN

12:00-1:00 PM CENTRAL

ROGUES' GALLERY

Presenters:

- **Patrick Yaeger from Bullitt County Public Library**
- **Jesse Knifley from Warren County Public Library**

Moderator:

- **Lauren Abner from Kentucky Dept. for Libraries & Archives**

BCPL's Mobile Makerspace

Planning and presenting a traveling makerspace for the Bullitt County Public Library.

Patrick Yaeger

patrick@bcplib.org

(502) 543-7675 ext. 2554



3D Printed Bulbasaur
Ridgway Memorial Main Library
August 2016

The Makerspace Concept

In libraries a makerspace might function as

- ▶ a laboratory where students can augment STEAM¹ education with practical experiments
- ▶ a community workshop where the mingling of multiple creative minds and talents can inspire innovation
- ▶ a collection of often expensive equipment that can be used by all.²

1. Science Technology Engineering Art Math

2. *Makerspace: A Practical Guide for Librarians* by John J. Burke



Minecraft Makerspace 3D
Lebanon Junction Branch Library
August 2016

Putting It Together, Kit By Kit

I took inventory and made purchase requests:

- ▶ The Library had already purchased several expensive tech kits and a 3D printer for Teen Tech Week and other events.
- ▶ I made purchase requests for additional, relatively inexpensive tech kits and tools including a 3D pen, an Arduino, a Raspberry Pi, and a Google Cardboard virtual reality headset.
- ▶ I already had begun building a Minecraft program at the Library with the purchase of several Minecraft PC/MAC accounts and a monthly subscription to a private multiplayer Minecraft Realm.



Teen Tech Week Celebration
Ridgway Memorial Main Library
March 2016

minecraft Makerspace 3D

Come see a variety of cool tech gadgets, plus explore BCPL's own Minecraft world in 3D!

Saturdays, 11:00 AM-2:00 PM
 August 6th @Lebanon Junction
 August 13th @Mt. Washington
 August 20th @Hillview
 August 27th @Ridgway Memorial
 Middle School Ages & Up

3D PEN & 3D PRINTER
ARDUINO ELECTRONICS KIT
CUBELETS ROBOTICS KIT
GOOGLE CARDBOARD VIRTUAL REALITY HEADSET
MAKEY MAKEY INVENTION KIT
RASPBERRY PI COMPUTER SCIENCE KIT
SNAP CIRCUITS DISCOVERY KIT

MAKE CREATE LEARN INVENT PLAY & BE INSPIRED!

Presented by **BCPL**
 MULTITT COUNTY PUBLIC LIBRARY

NO REGISTRATION REQUIRED; JUST DROP IN!
 For more information, please visit www.bcplib.org or call Patrick at 543-7675 ext. 2554. All programs are free unless otherwise noted. *A parent or guardian must remain on library premises with youth ages 15 and under.

Finalizing Plans

I decided my mobile makerspace would:

- ▶ Be called “Minecraft Makerspace 3D” in order to pique the curiosity of patrons.
- ▶ Offer 10 - 11 stations in an informal open lab setting.
- ▶ Target middle school ages and up.
- ▶ Travel to all four BCPL locations over the four Saturdays in August, beginning with the smaller branches and ending at the main library.
- ▶ Need at least 10 tables (1 table per station) and at least 5 laptops.
- ▶ Giveaway 3D printed objects.



Mobile Makerspace set up in a large meeting room
@ Lebanon Junction Library



Mobile Makerspace set up out in a small library with no meeting room
@ Mt. Washington Library

Cubelets Robotics Kit



- ▶ Build a variety of robots using these modular robotic cubes that snap together. Each cube has a special function, including lights, sounds, movements, and more.
- ▶ Really popular with all ages!
- ▶ \$159 for one box of 6 robot blocks on Amazon.



Cubelets Station @ Lebanon Junction Library



Makey Makey and Cubelets Stations
@ Hillview Library

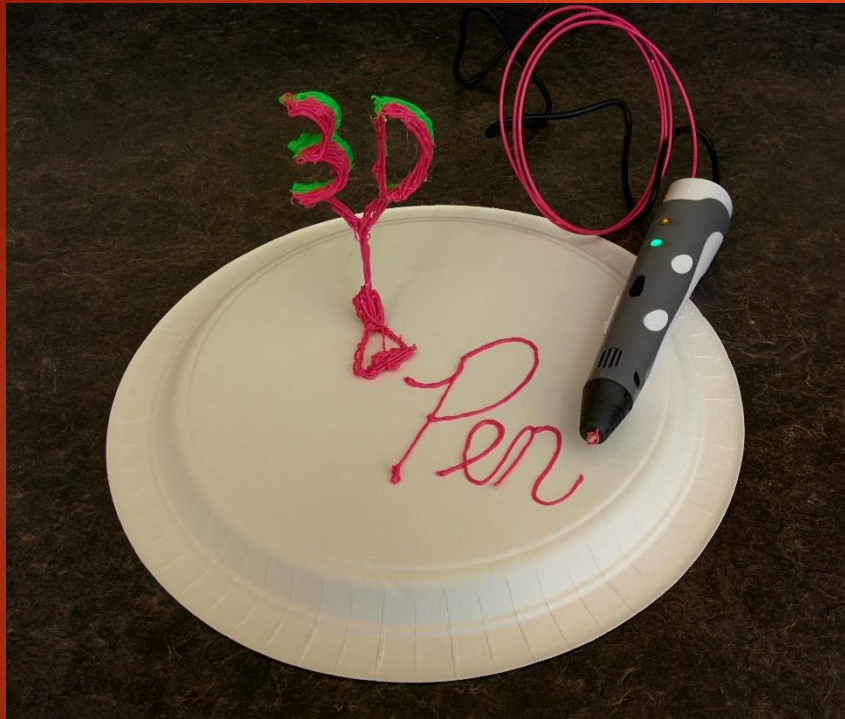


Cubelets Station @ Mt. Washington Library



Cubelets Station @ Ridgway Memorial Library

Soyan 3D Printing Pen



- ▶ Draw anything you can imagine in 3 dimensions with the 3D pen tool and fast drying plastic!
- ▶ \$36 for the Soyay 3D Printing Pen on Amazon.
- ▶ \$35 for 852 Linear Feet of 3d Pen Filament 1.75mm ABS Pack of 26 Unique Colors on Amazon.



3D Pen Station @ Lebanon Junction Library



3D Pen Station @ Mt. Washington Library

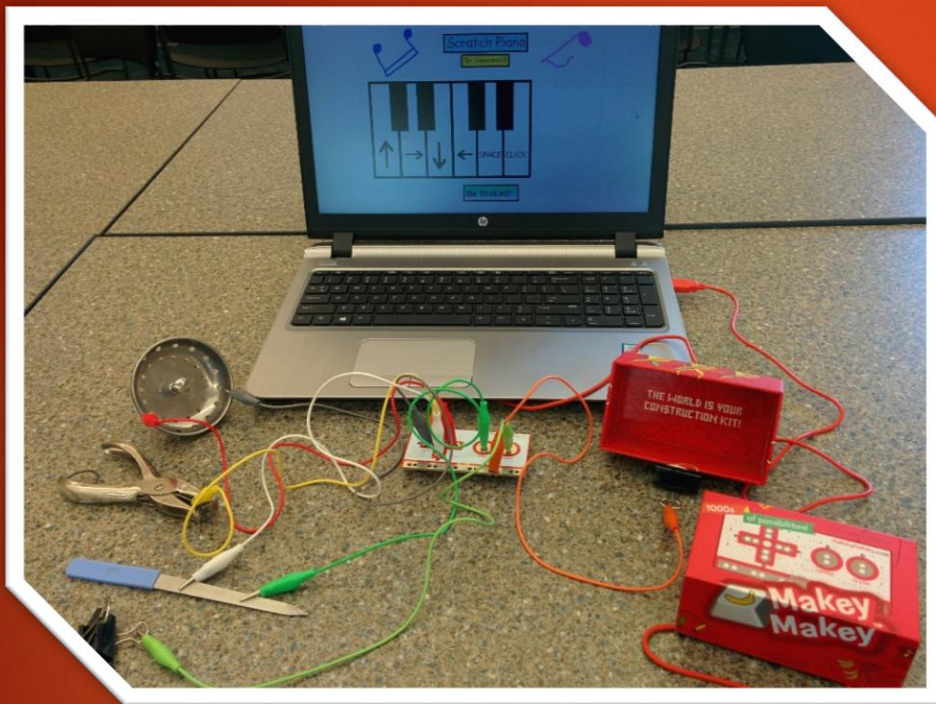


3D Pen Station @ Mt. Washington Library



3D Pen Station @ Ridgway Memorial Library

Makey Makey Invention Kit



- ▶ Make everyday objects come to life electronically. In the photo, common everyday objects have been transformed into a playable keyboard using alligator clips and the Makey Makey controller.
- ▶ \$50 for the Makey Makey Invention Kit on Amazon.



Makey Makey Station @ Mt. Washington Library

Google Cardboard



- ▶ Experience virtual reality in a simple, fun, and affordable way. Transform most modern Android/Apple smartphones into virtual reality viewers by combining them with the inexpensive Google Cardboard headset and free virtual reality apps.
- ▶ \$12 for the D-Scope Pro Google Cardboard Kit on Amazon.
- ▶ Smartphone not included.



Google Cardboard Station @ Lebanon Junction Library



Google Cardboard Station @ Mt. Washington Library



Google Cardboard Station @ Ridgway Memorial
Library

Minecraft: A Virtual Makerspace



Minecraft is a virtual world AND makerspace where players are given a huge palette of materials from which to build most any structure that can be imagined. The powered 'redstone' blocks require computational thinking. Very popular with elementary and middle school ages.

Options:

- ▶ Minecraft for PC/MAC: \$27 per user. Available for game consoles.
- ▶ Minecraft Pocket Edition: \$6 per user. This is for smartphones and tablets.
- ▶ Minecraft Realm: \$8/month subscription for a multiplayer world that supports up to 10 players.
- ▶ Minecraft Education Edition: \$5/year per user for schools and libraries only. Requires Windows 10. Goes on sale Nov. 1st, 2016.



Minecraft 3D Station @ Lebanon Junction Library



Minecraft 3D Station @ Hillview Library

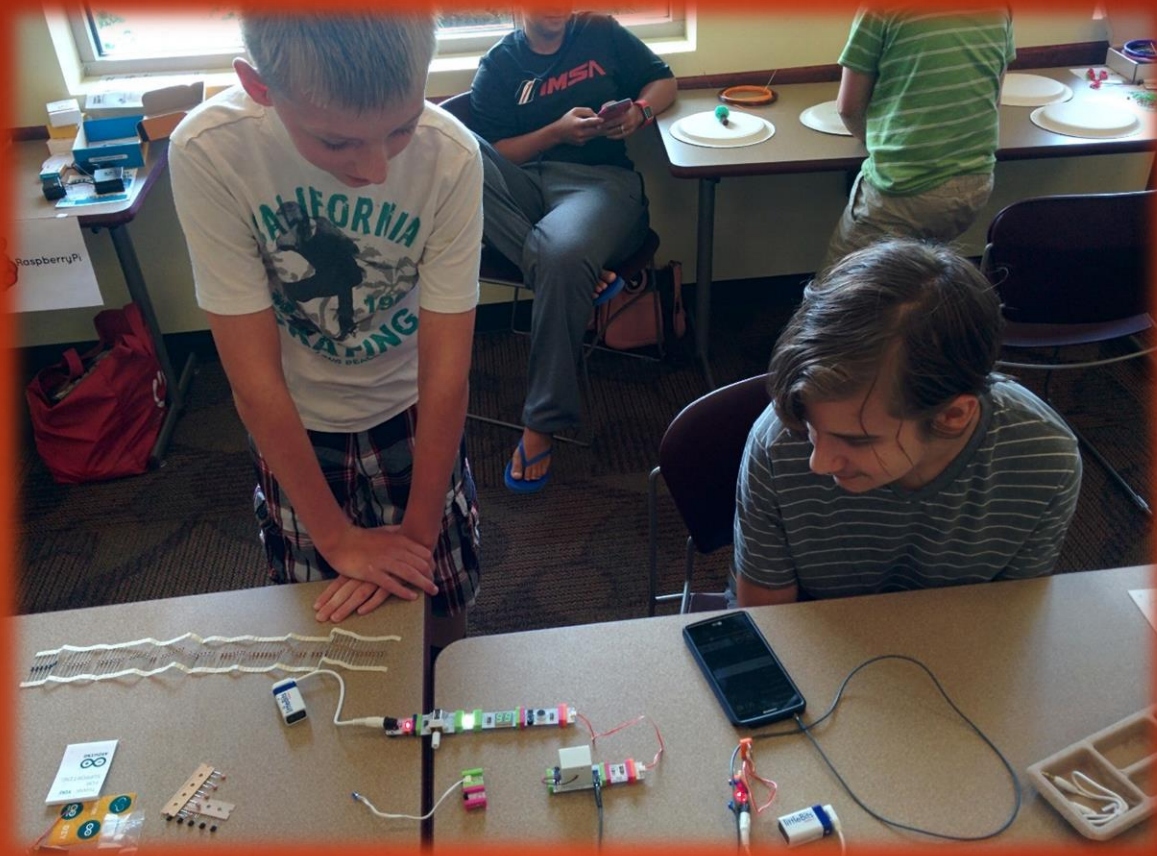


Minecraft 3D Station @ Ridgway Memorial Library

LittleBits Electronics Space Kit



- ▶ Create a variety of projects using parts that easily snap together using magnets. The project pictured on the left is a microphone and speaker. On the right is a light-sensitive circuit combined with a rotating motor, numerical display readout, and bright light LED. The brighter the light, the faster the motor will turn and the higher the readout on the number circuit.
- ▶ \$190 for the LittleBits Electronics Space Kit on Amazon.



LittleBits Station @ Lebanon Junction Library

Snap Circuits Electronics Kit



- ▶ Build over 100 electronic projects by simply snapping together various circuitry parts from the kit. Create projects like an alarm clock, an AM/FM radio, and more. Project #3, the Sound Activated Switch, is shown in the photo. Many schools have these.
- ▶ \$119 for the Snap Circuits Extreme SC-750R Kit on Amazon.



Snap Circuits Station @ Lebanon Junction Library



Snap Circuits Station @ Mt. Washington Library



Snap Circuits and LittleBits Stations
@ Hillview Library



Snap Circuits Station
@ Ridgway Memorial Library

Arduino Electronics Starter Kit



- ▶ Create cool electronics projects—from simple to sophisticated—using the bread board, arduino motherboard, an LED display, and more! Parts and instructions are included for 15 projects involving a DC motor, servo motor, tilt sensor, LEDs and other basic electronic components.
- ▶ \$90 for the Arduino Starter Kit on Amazon.



Arduino Station @ Mt. Washington Library

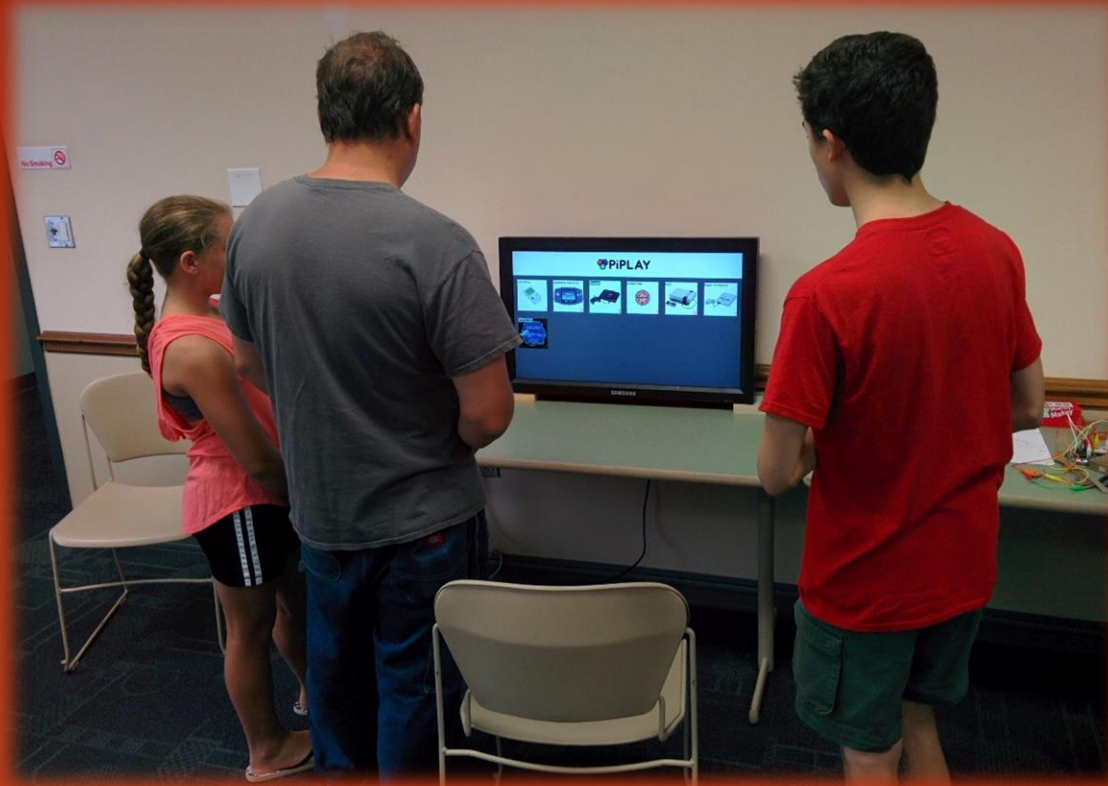


3D Printer, Arduino, and Raspberry Pi Stations
@ Hillview Library

CanaKit Raspberry Pi Starter Kit



- ▶ Create an inexpensive mini-computer using the CanaKit Raspberry Pi Complete Starter Kit. Learn about operating systems and programming. You can plug in a monitor, a keyboard, or speakers—and even access the internet. Combine with a Makey Makey for a retro gaming system.
- ▶ \$75 for the CanaKit Raspberry Pi 3 Complete Starter Kit on Amazon.

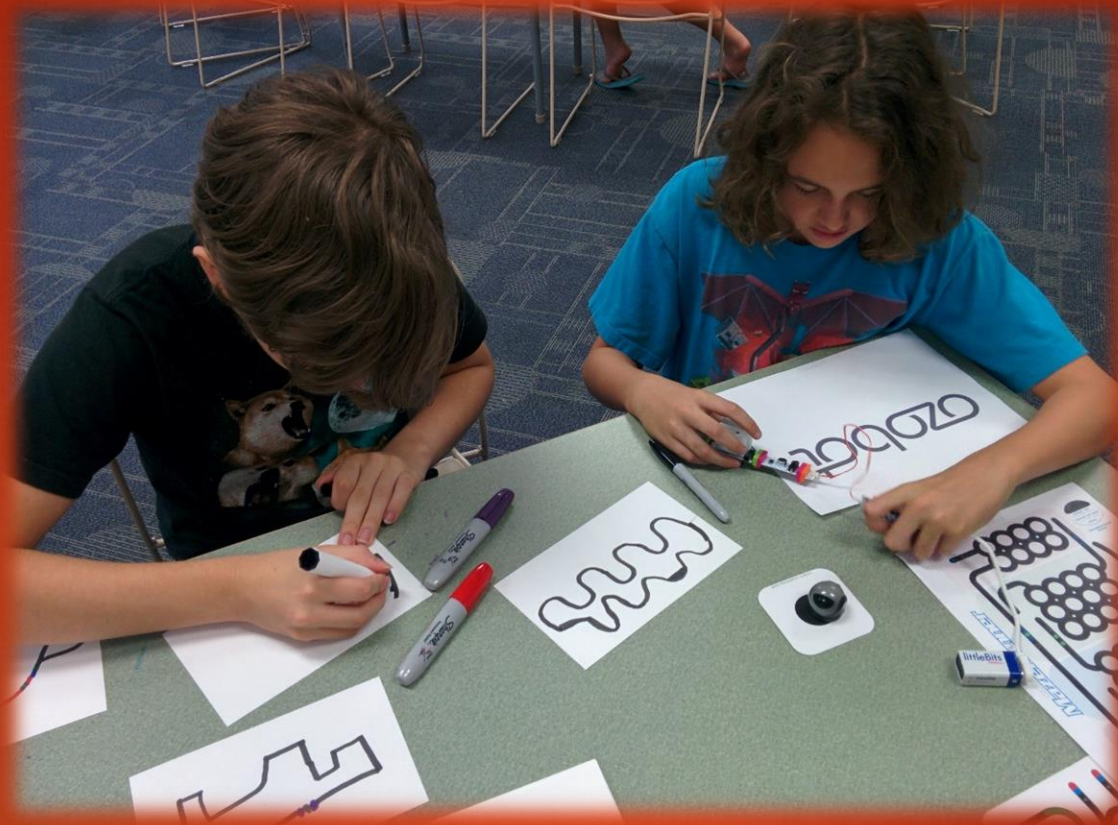


Raspberry Pi Retro Gaming Station
@ Ridgway Memorial Library

Ozobot Robot Kit



- ▶ Program these little robots using colored markers on paper. They follow directions indicated by the sequence of colors. Use pre-printed sheets or create your own!
- ▶ \$125 for the Ozobot Dual Pack on Amazon.

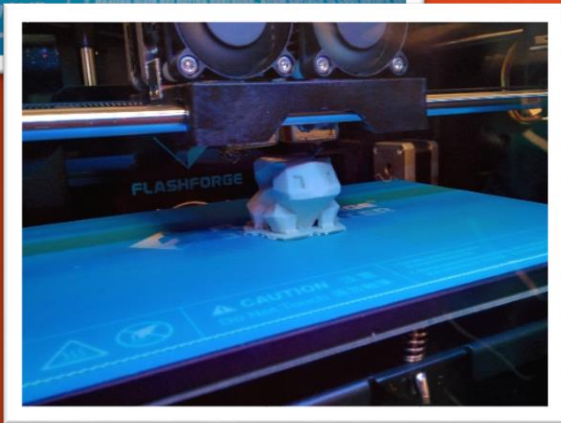


Ozobot Station
@ Ridgway Memorial Library

FlashForge 3D Printer



- ▶ 3D printers are a big draw! We've programmed it to print a number of cool 3D plastic items, from Pokemon badges to a Minecraft sword. I use the free MakerBot Desktop software to run the printer and access thousands of free projects on Thingiverse.
- ▶ \$900 for the FlashForge 3D Printer Creator Pro Dual Extruder on Amazon.
- ▶ \$22 for a spool of 3D printer filament on Amazon.



3D Printed Giveaways: Minecraft Sword, Human Skull, Pokemon Bulbasaur, Pokemon Go Team Badge



Special Makerspace Addition: Piano Station
@ Ridgway Memorial Library

Looking Ahead – Makerspace Plans

- ▶ Outreach Opportunities: Since the debut of the makerspace, several community organizations have requested that the Library's makerspace be a part of their community festival or event.
- ▶ Permanent Makerspace: There are plans to convert a computer lab at Hillview Library into a multipurpose space that will easily accommodate a more permanent makerspace.
- ▶ Building the Makerspace: I am researching more unusual tech invention kits and creative tools to add to the makerspace.
- ▶ Programming More Makerspaces: I plan to implement a regular rotating schedule of makerspace events at all BCPL locations.
- ▶ Teen Volunteers: I hope to find more teen volunteers who are passionate about makerspaces. I had several who kept coming back to help me run the makerspace.



Jesse Knifley
Digital Services Librarian
Warren County Public Library

The Joys (and Pains) of Makerspace Programming for Tweens and Teens

“The maker movement is not about the stuff we can make. It’s about the meaning we can make. Makers are making meaning, which has a reified representation in each person’s network of neurons which I might call ‘worldview.’ By acting on the world, we act on our view of the world. We reform ourselves by reforming our environment.”

“Personal Statements 2016: The Maker Manifesto,” Jay Silver.

Make: Retweeted



John Abella @johnabella · Sep 24

Still using the stickers from @make on new projects. Final revision of an #18650 #fatshark battery pack. #diy #drones #fpv #multirotor



🔗 9 ❤️ 28 ⋮



The Sure-Fire Steps to a Great Program

- 1) Idea
- 2) What's exciting about teaching this?
- 3) What excites the kid in me about this?
- 4) How easy is it to scale this program?
- 5) Special considerations



@ForestLakeWsd

Thank you Mrs. Anszelowicz for our new "Maker" donation bin! @michelelasky @WantaghSchools @Makerspaces_com #makers















MARSHMALLOW CANNON



USE JUMBO MARSHMALLOWS.

BLOW AIR BACK INTO THE PIPE TO PRESSURIZE THE BOTTLE.

PIVOT THE ELBOW JOINT TO AIM THE CANNON.

CUT AND ASSEMBLE LAUNCHER TO SPEC.

SEAL WITH DUCT TAPE.

18" OF 1 1/4" PVC PIPE

1/4" END CAP

90° 1/4" STREET ELBOW

1/4" CROSS JOINT

1/4" PVC PIPE

REDUCING TO 1" MALE ADAPTER

18" OF 1" PVC PIPE

LARGE MOUTH BOTTLE 1 3/8" ID

1/4" END CAP



Tinkercad is a simple, online 3D design and 3D printing app for everyone.

Tinkercad is used by designers, hobbyists, teachers, and kids, to make toys, prototypes, home decor, Minecraft models, jewelry – the list is truly endless!



[Start Tinkering now](#)



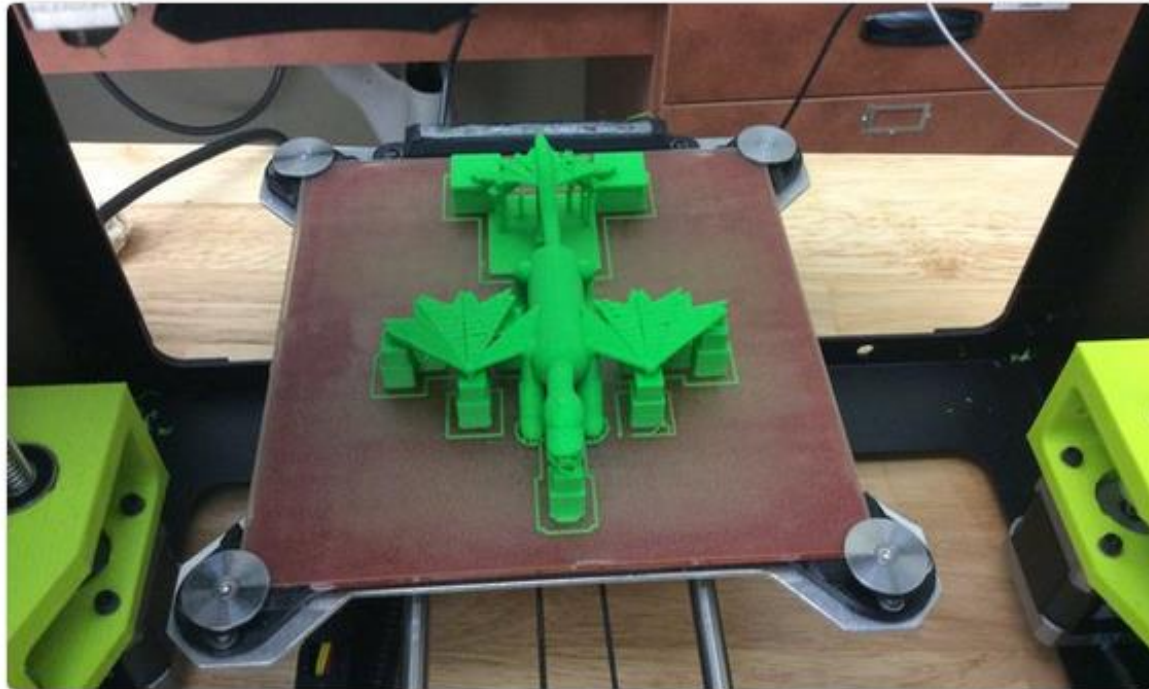
Liane Rae

@lianemrae

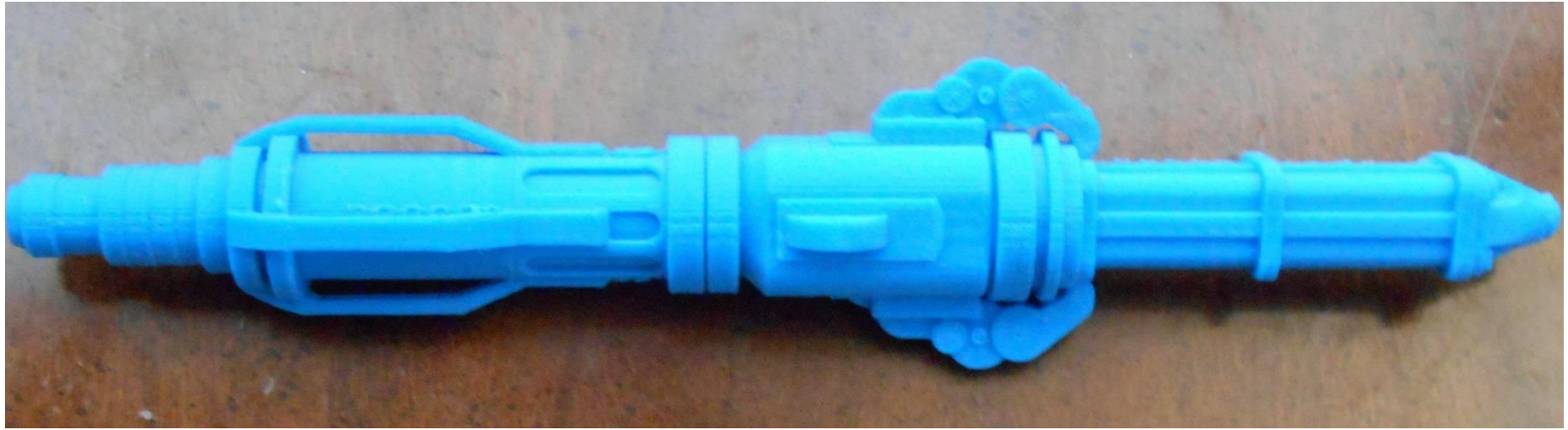


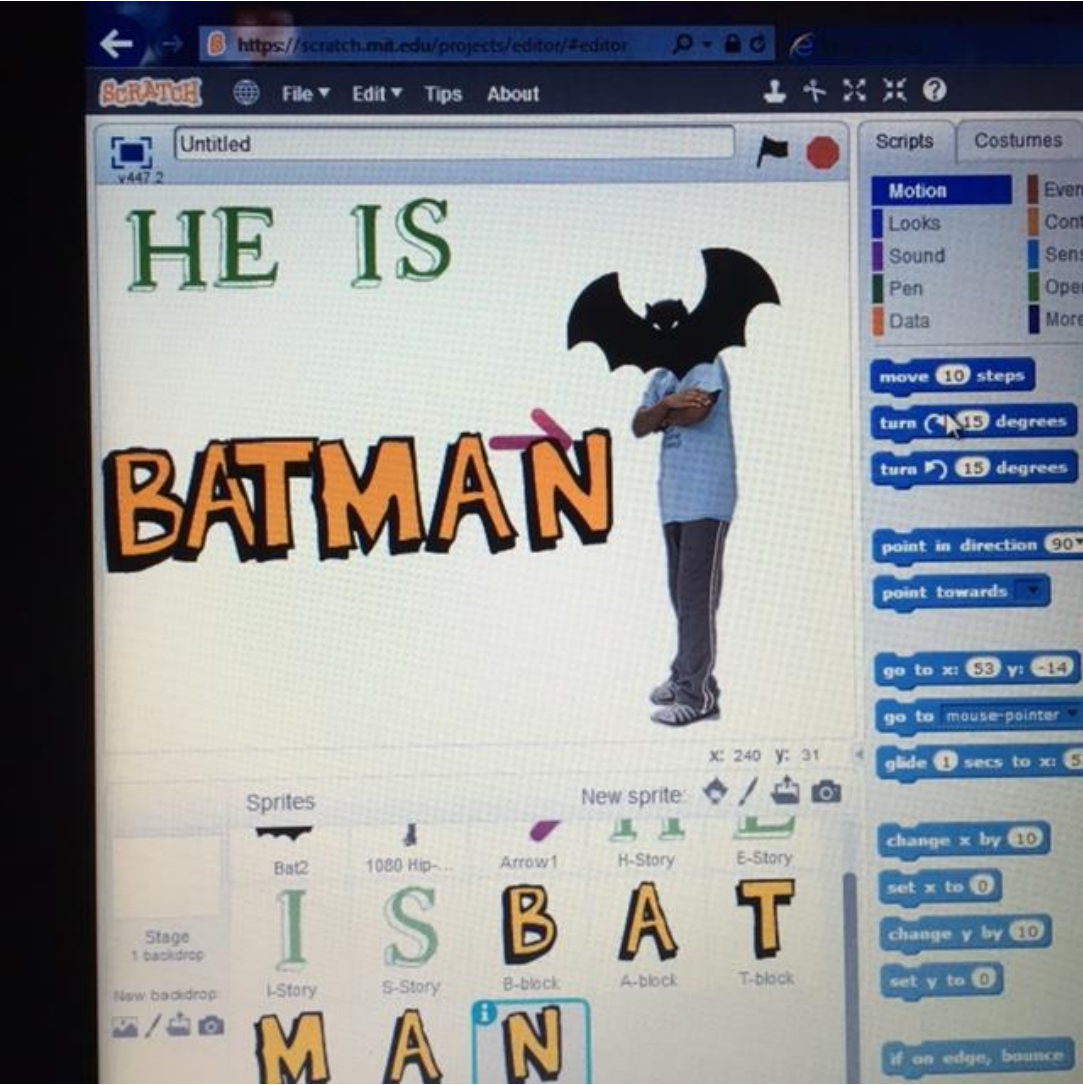
Follow

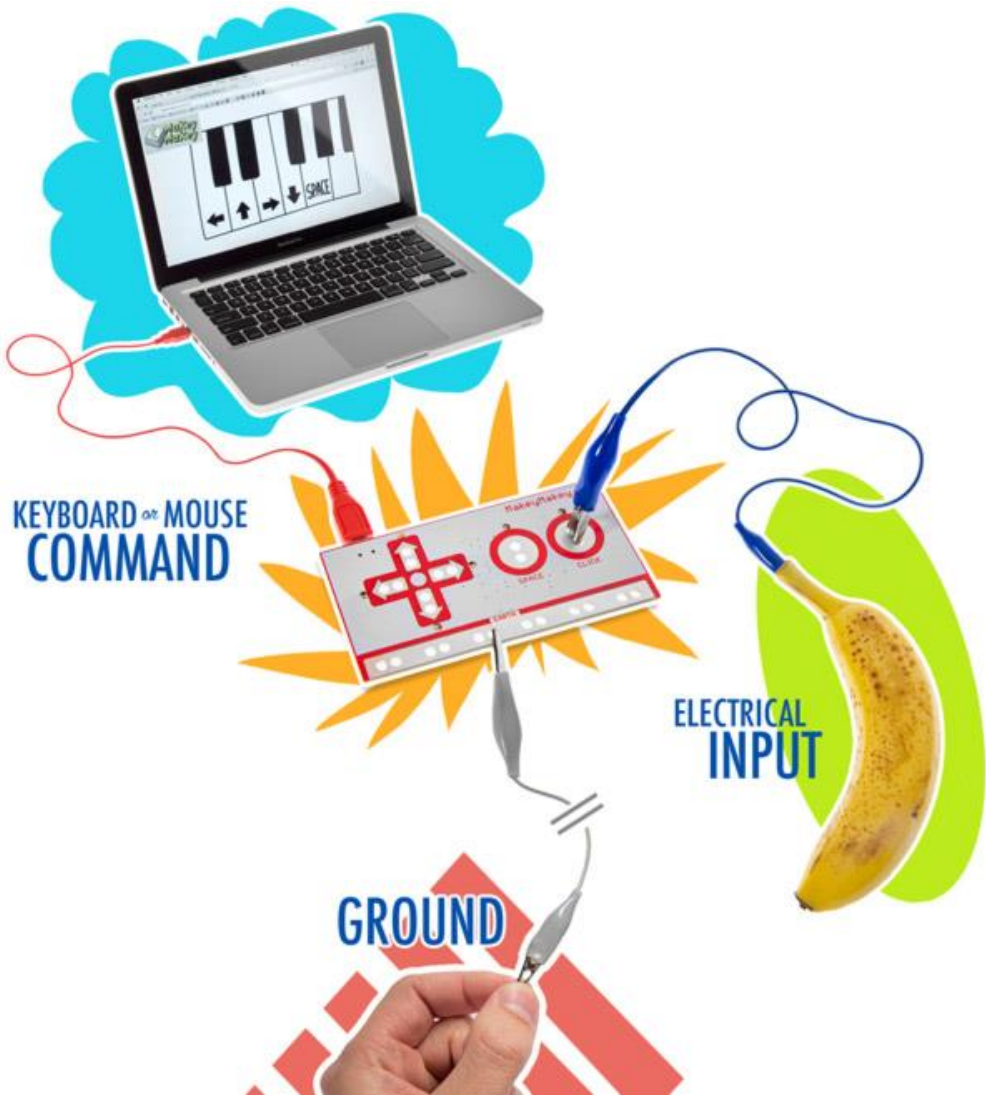
@mrnavas @lulzbot3D @tinkercad His classmate made this dragon. Together problem solved the posts using his design.









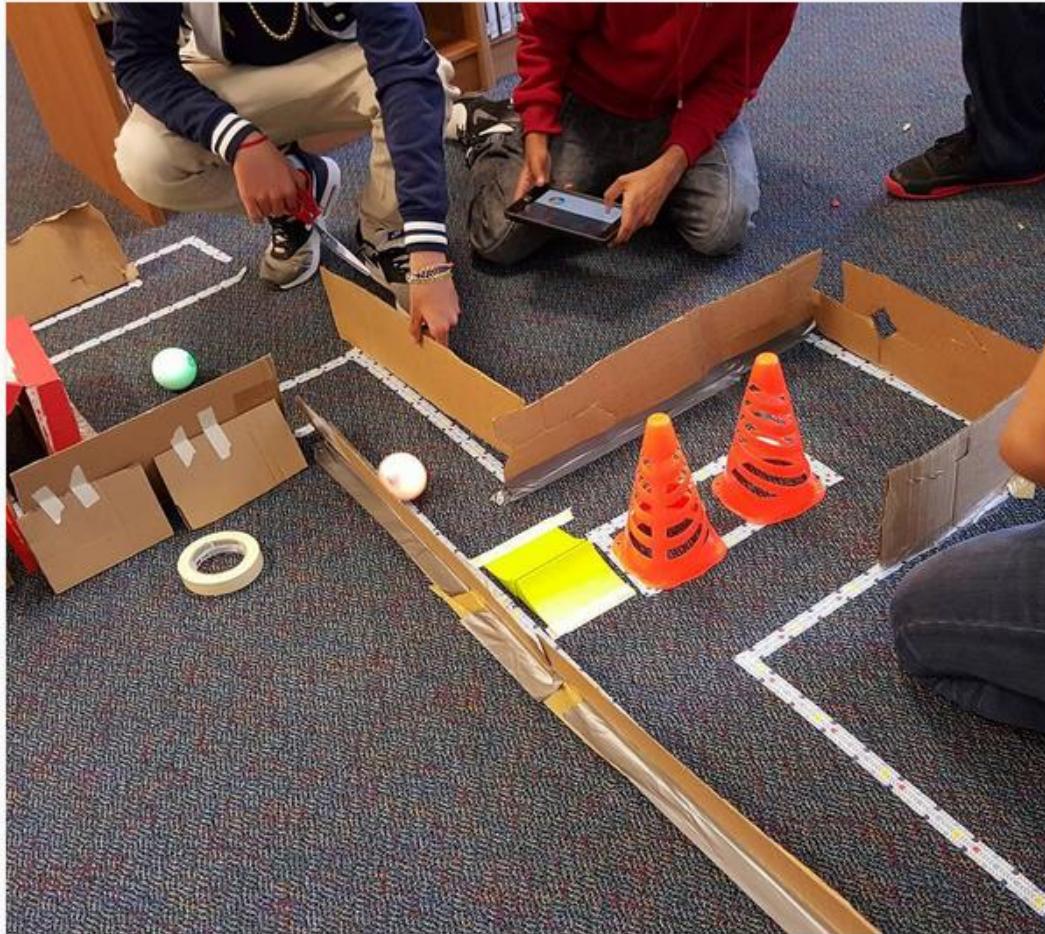




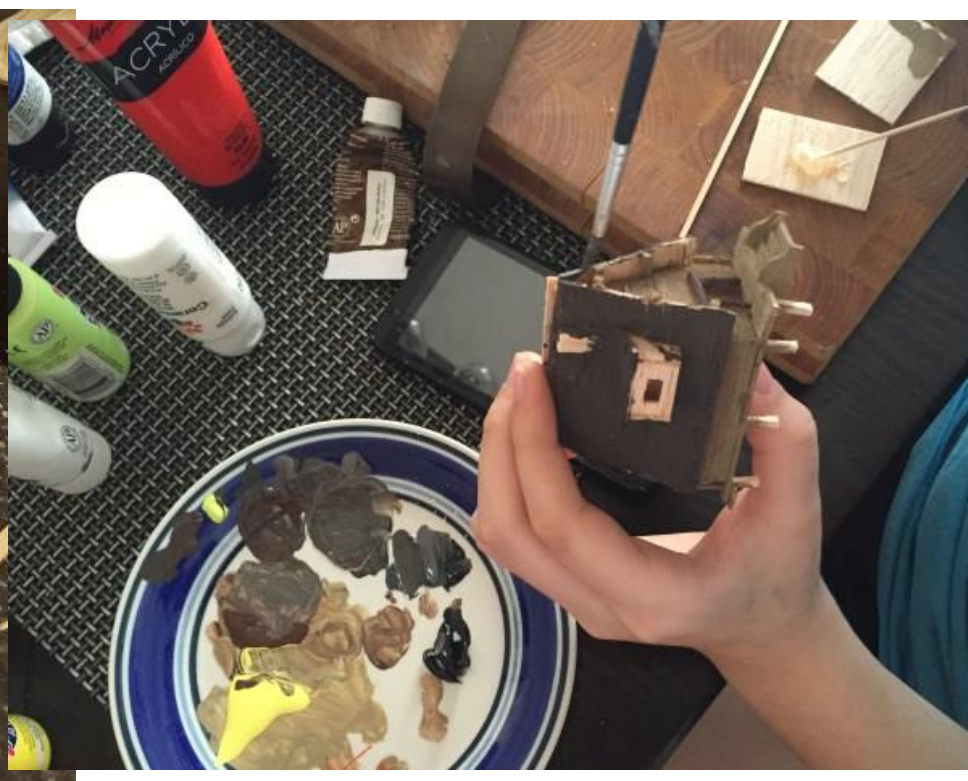


[makerteacherlibrarian](#)

20m









Stop Motion Studio

By CATEATER, LLC

Open iTunes to buy and download





jessek@warrenpl.org



WRAP-UP

KDLA LISTSERVS

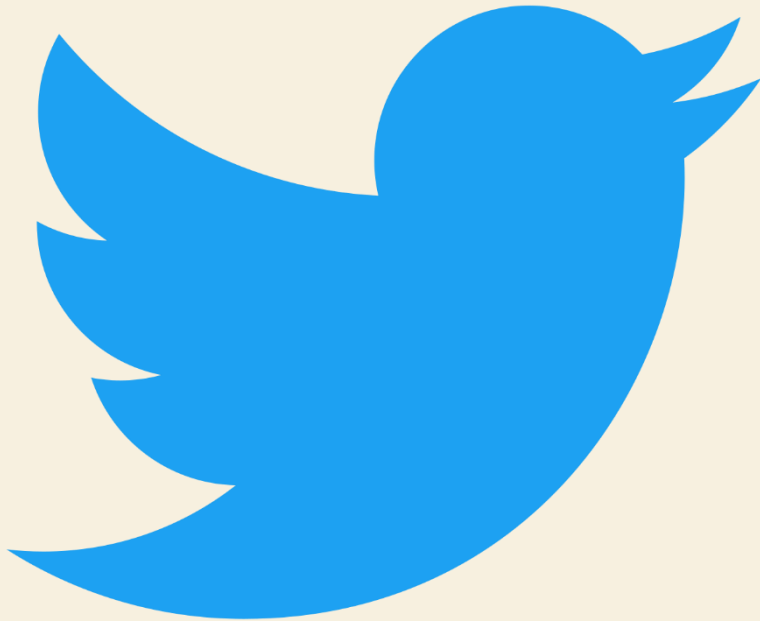
For Public Library Technology Support Staff:

- **KYTECH** is a discussion list devoted to those who work with technology for their library. By using this LISTSERV®, individuals from around the state will have the chance to ask questions, share ideas, voice concerns, and make valuable contacts all through their e-mail.
- TO SUBSCRIBE: Send a blank message to: join-kytech@listserv.ky.gov
- See the [KDLA website](#) for more information on our many listservs – for youth services, adult services, bookmobile/outreach, & more!

<http://kdla.ky.gov/librarians/staffdevelopment/Pages/listservs.aspx>

KDLA SOCIAL MEDIA

[@KDLALIBDEV](#)



[KDLACE](#)



ON THE HORIZON

- More technology training: **Teaching Digital Literacy with TechBoomers.com and Other Online Resources** on Tuesday, October 18th at 2:00 p.m. Eastern/1:00 p.m. Central. [Register](#)
- Next **Library Link Up: Best of 2016** on Thursday, December 1st at 1:00 p.m. Eastern/2:00 p.m. Central. [Register](#)
- Visit KDLA's [Continuing Education Events Calendar](#) to find learning opportunities on a variety of topics.



Questions? Comments? Concerns?
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