

STEAM Activities

1. The Internet

- a. Vocabulary/Packet
- b. Creating Strong Passwords
- c. Hacking- How it Works
- d. Icon Show you the World- Create an icon with Photopea/Pixlr/Google Drawing
- e. HTML/CSS [Khan Academy]
- f. Website Creation [Google Sites]

2. 3D Design & Printing

- a. Tinkercad Basics
- b. Tinkercad Project (guided through site)
- c. Tinkercad Design Projects (unguided): Message Tray, Pencil Cup, Phone Case, etc.
- d. Measurements and conversions

3. Video Game Design | Coding with Scratch

- a. Make an account and complete 2 Tutorials [Name & Pong]
- b. What makes a Good Game? Activity
- c. Remix 1
- d. Remix 2
- e. Guided Practice 1: Cross the Road/Tunnel of Gold
- f. Guided Practice 2: Rock Blaster
- g. Debugging Practice 1: Circle Wars
- h. Debugging Practice 2:
- i. Remix 3
- j. Create your own Game- Project
- k. Animation Studio- Project
- l. Enrichment: Debugging Activities, Create your own Game- Design Challenges

4. Little Bits

- a. Beginner: Create a beginner project using makerspace materials and 5-bits following a guide [video]
- b. Craftsman: Create an intermediate project using makerspace materials and 5-bits following a guide [video]
- c. Master: Use up to 10 bits to create an original invention or “turn something on”
- d. Inventor: Use the Cloud Bits or Smart Home kit to create something not mentioned in the instructions- Interact with a game on the computer

5. LED and Copper Tape

- a. Build a mini-lightsaber
- b. Use conductive tape to make a paper circuit with at least 1 LED and turn it into a card/interactive drawing
- c. Use conductive tape to make a paper circuit with at least 3 LEDs & and on/off switch and turn it into a card/interactive drawing
- d. Innovator: Turn one of the cardboard prototypes into an electronic device using copper tape, on/off switches, and LEDs.

6. Digital Photography | Photo Editing | Graphic Arts

- a. Beginner: Use the Chromebook photo app to take selfies and turn them into art using multiple effects- upload to website
- b. Craftsman: Use a digital camera device to document something in digital shop, upload & post to website, write caption and summary

- c. Master: Create an artistic photo or collage using photo editing software- blend, change colors, create layers, add text or layered design, crop, attach/collage, add effects
 - i. Pixlr.com
 - ii. Fotoflexer.com
 - iii. Befunky.com
- d. Innovator: Turn a photo into LINE ART and print it onto a chosen medium using Laser Engraver

7. Makey-Makey

- a. Beginner: Build an interface and play on MakeyMakey.com/Piano [play-doh/video]
- b. Craftsman: Build an interface to makeymakey.com/games
- c. Master: Build an interface with Makey Makey for a game you've created in Scratch
- d. Innovator: Build an interface that replaced the mouse and keyboard of a Chromebook

8. Video Production

- a. Beginner: Create a 1 minute movie trailer for a film about NCS using B-Roll footage
- b. Craftsman: Create a 3 minute movie with at least 3 scenes/settings
- c. Master: Use OpenShot.org on Laptop

Laser Puzzles

- How to use Laser Engraver- turn on, how laser works, adjust preferences (10 xp)
 - How lasers work (5 xp)
- How to use Google Drawings to add effects, resize images, scale vs. stretch/shrink (10)
 - Copy and Paste from Google Images or send from phone/iPad [collage, layout, photo booth] (5)
- How to use Pixlr.com to create a PNG and remove backgrounds
- Creating top coat? (10) Or Spray it on?
- Best Glue for the job (matching game [create]) (5)
 - **DELIVERABLE: Create two-sided puzzle (20)**

3-D Printing Activity Ideas [Tinkercad, Thingiverse, Cura]

- Scale Factor and Room Design CAD
- Sketchup and/or OpenShape
- Pencil Cup
- Toothpaste Clip
- Toothbrush Cover
- Cup Holder so coffee won't fall over
- YOUR house
- Holiday-related ornaments and knick-knacks
- Webcam Covers
- Tray/Stand for important desk items that teachers always lose
- iPad or iPhone stand (do not copy) OR creating a stand out of an everyday object
 - **DELIVERABLE: Original design in TinkerCad and Print on Lulzbot**

Website Design with Google Sites

- Use as Digital Portfolio to track all activities (Gamify)

Website Design with Mozilla

Google Drawing

- Create an [infographic](#)
- Create an [interactive drawing](#)
- Copy and Paste an Image, Scale to fit, View Rulers, Turn image, print with “Fit to Page” unchecked, cut out and add to wood for laser projects

Made w/ Code (girls)

- <https://www.madewithcode.com/projects/>

Sew Electric

<http://sewelectric.org/misc/madewithcode/>

[Make a Movie Poster](#) & Pair with **“Create a Movie Trailer”** activity

Robotics (already have activities)

- <http://robotmagic.org/>

Laser Engraver

- Difference between Raster and Vector- how to decide and adjust
- Speed vs. Power of Laser (intro)
- CorelDraw X8 Illustration App
 - How to convert a Bitmap to Black & White
 - How to convert Black & White Bitmap into a Bitmap Traced Line Drawing
 - How to set preferences

MakerSpaces

Wind Turbine Challenge

Little Bits

Stick Bombs

Legos

Paper Structures

Catapults

Origami

Arts & Crafts for holidays or relaxation