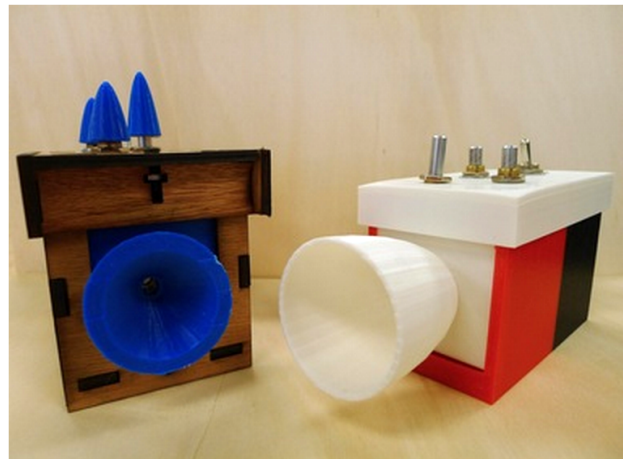
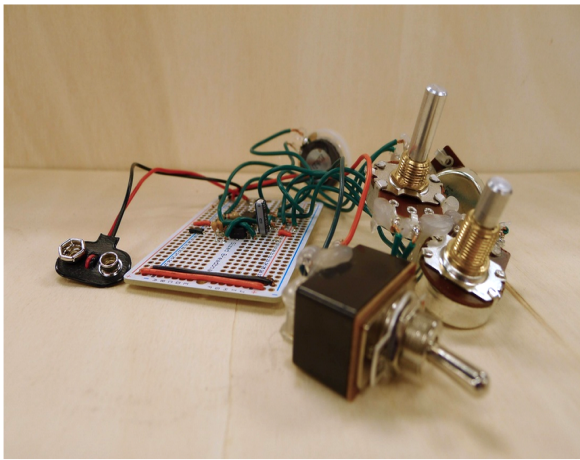


Atari Punk Console

Project notes

Greenwich Academy
Engineering and Design Lab
Facilitators: Ann Decker and Erin Riley
Class: Engineering and Design

Experience: Intermediate
Age Group: 14-18
Group Size: 12-18
Hours: 7-10 days, 60 minutes periods



Overview:

This project was designed for a circuits unit for an Upper School Engineering and Design elective at Greenwich Academy.

Leading up:

The lead up included three exploratory activities: [Circuit boards](#), electronic tear-downs and [paper circuits](#).

Documentation from student maker portfolios:



Documentation:

All student process and learning is documented in their maker portfolio shared with the entire class. Students periodically post blog-style reflections on readings.

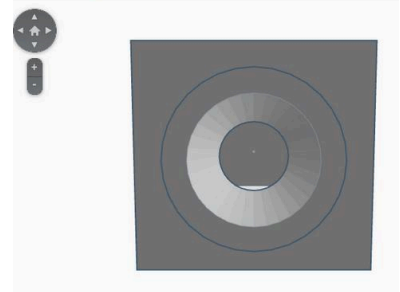
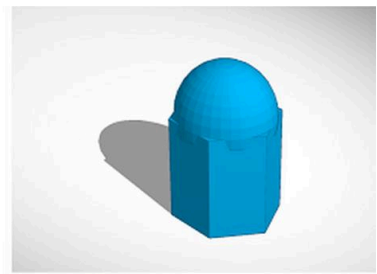
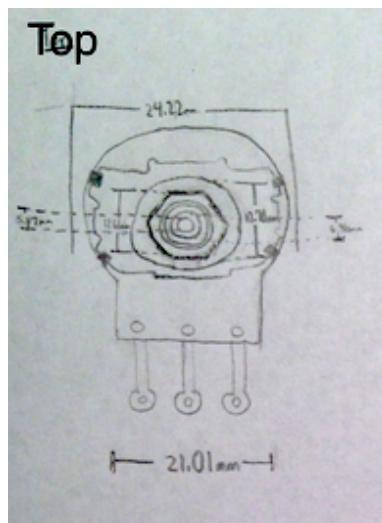
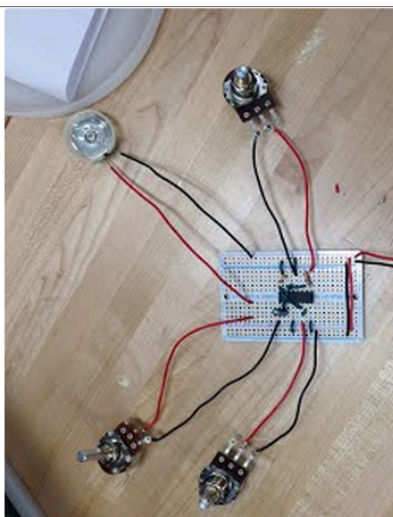
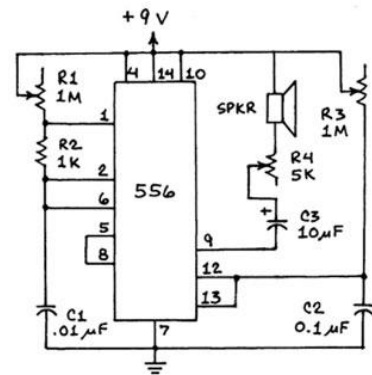
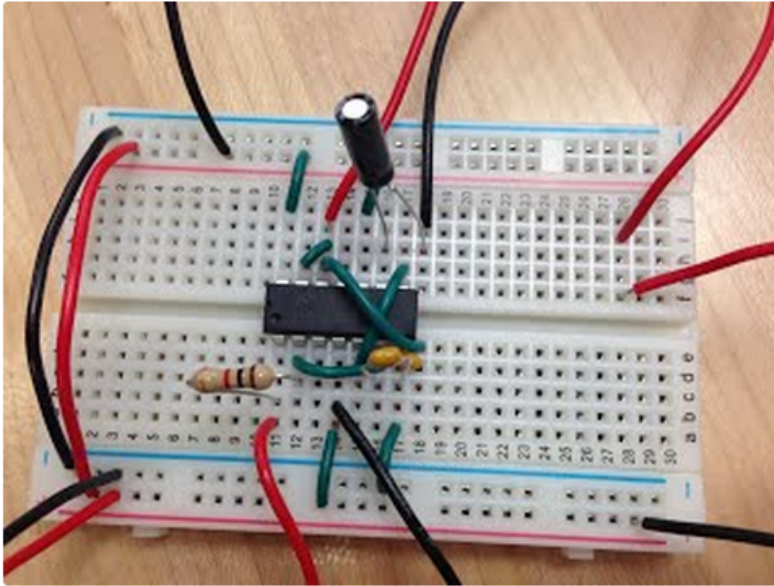
Big learning goals:

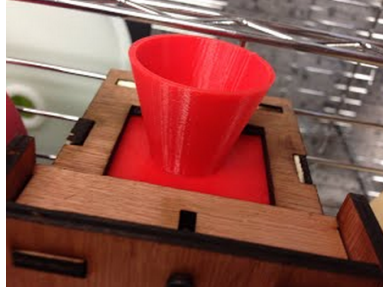
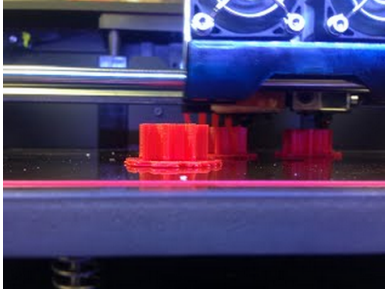
Get an overview of electronics: read schematics, debugging with a multimeter, breadboard to perfboard, soldering, measuring with calipers, 3D modeling and 3D printing

Enclosed is the sequence used for the synthesizer.

1. **Breadboarding and reading schematics:** The class put together their breadboard based on the [Forrest Mim's](#) circuit design. They added a switch to the circuit. They used a multimeter to debug the circuit.
2. **Breadboard to protoboard:** They moved their circuit to a perfboard and soldered all of the pieces.
3. **Sound Research:** Students researched how to design for sound amplification.
4. **Drawing and 3D modeling:** Students drew orthographic projections of the potentiometers using calipers to measure dimensions. They made custom knobs and amplifier to fit the 8 Ohm speaker in the build. To save time we provided a laser cut or 3D printed enclosure option that they could customize.

5. **3D printing:** Students printed their custom knobs and amplifiers.
6. **Bringing it together:** The final step was to bring the piece together in a cohesive way.
7. **Sharing and reflection:** This entire process was documented in their maker portfolios. We also took time to share and reflect as a group.





From Sarah's maker portfolio, a bit of advice for a future maker of the Atari Synth Console:

".... building a synth from scratch is like building something with legos but completely forgetting one small step which makes your entire masterpiece look like a blob. Even though you have instructions right in front of you, be sure to look at it very thoroughly before you begin this project. If you do, then the synth project will be one of the coolest project in the fall semester!"

Good class reading:

[Zero to Maker](#): Inspirational--generates excellent blog posts!

History on the War of Currents

Electronics tutorials:

Collin's Lab

Sparkfun and Adafruit

Erin Riley

<http://erinriley.weebly.com/>