PAPER CIRCUITS

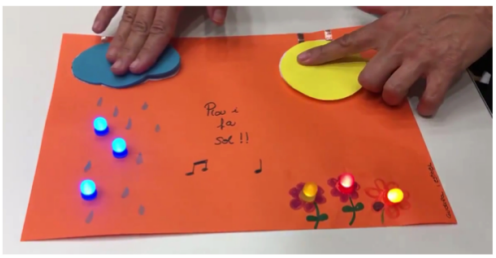
chibitronics

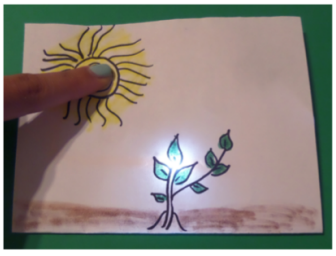
Michigan City Public Library

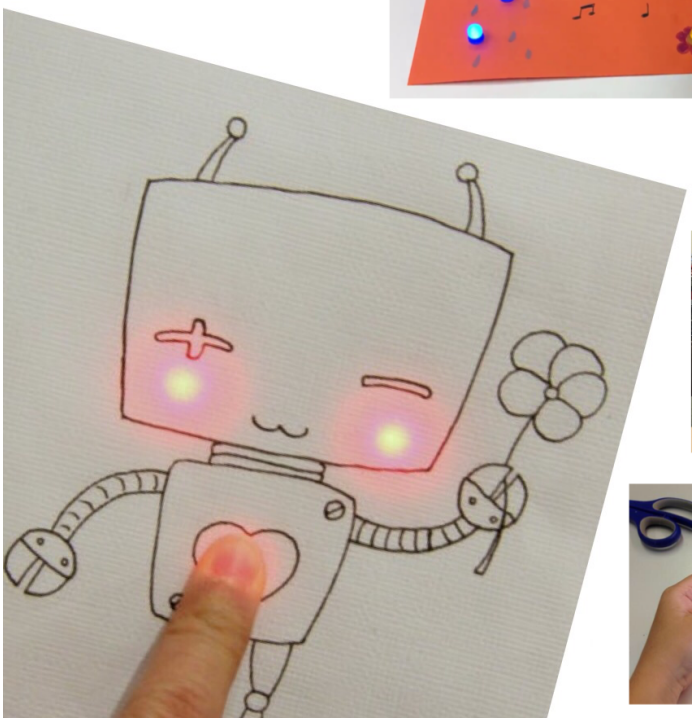
M.C. Maker Fest

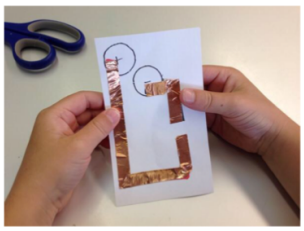
at Michigan City High School

May 5, 2018







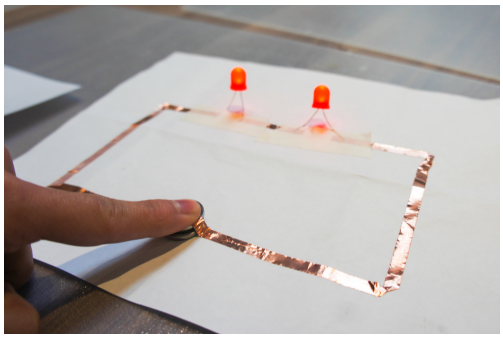


Workshop Presenter: David Fink, Youth Services Librarian
Michigan City Public Library **#MCPLSTEAMAheadKids**
100 E. 4th Street, Michigan City, IN 46360
http://www.mclib.org/

Photo credits: Jie Qi Flickr, @sleggss, @TinkeringStudio, @the_gella, @ryanejenkins, chibitronics, @joshburker, and carriedilley62.

PAPER CIRCUITS

Photo credit: theexploratory.com



*"**Paper circuits** is an activity that allows participants to both be creative and learn the elements of basic circuitry."*
—Dave Buker, Technology & Innovations Operations at COSI
(*Paper Circuits*, https://vimeo.com/127619581)

"I'm really in love with paper craft but I also love engineering; specifically, building circuits and programming — and I'm excited to put them together through paper circuits."
—Jie Qi, Cofounder & Creative Director of Chibitronics
(*#GirlsinTech Chat*, https://www.youtube.com/watch?v=-4_oOj-H-f0)

"I hope they [children] use it [paper circuits, Chibitronics] the same way they use big, fat crayons to bring things that are in their imaginations out into the world so they can share it, play with it."
—Jie Qi, Cofounder & Creative Director of Chibitronics
(*Interview Jie Qi MIT*, https://www.youtube.com/watch?v=0Jua9JX5lAg)

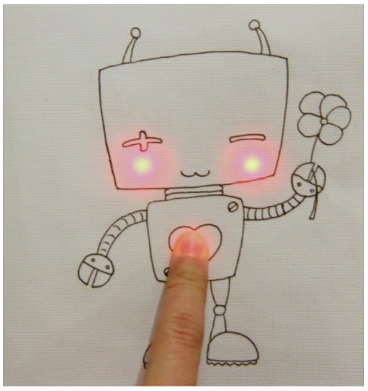


Photo credit: Jie Qi Flickr

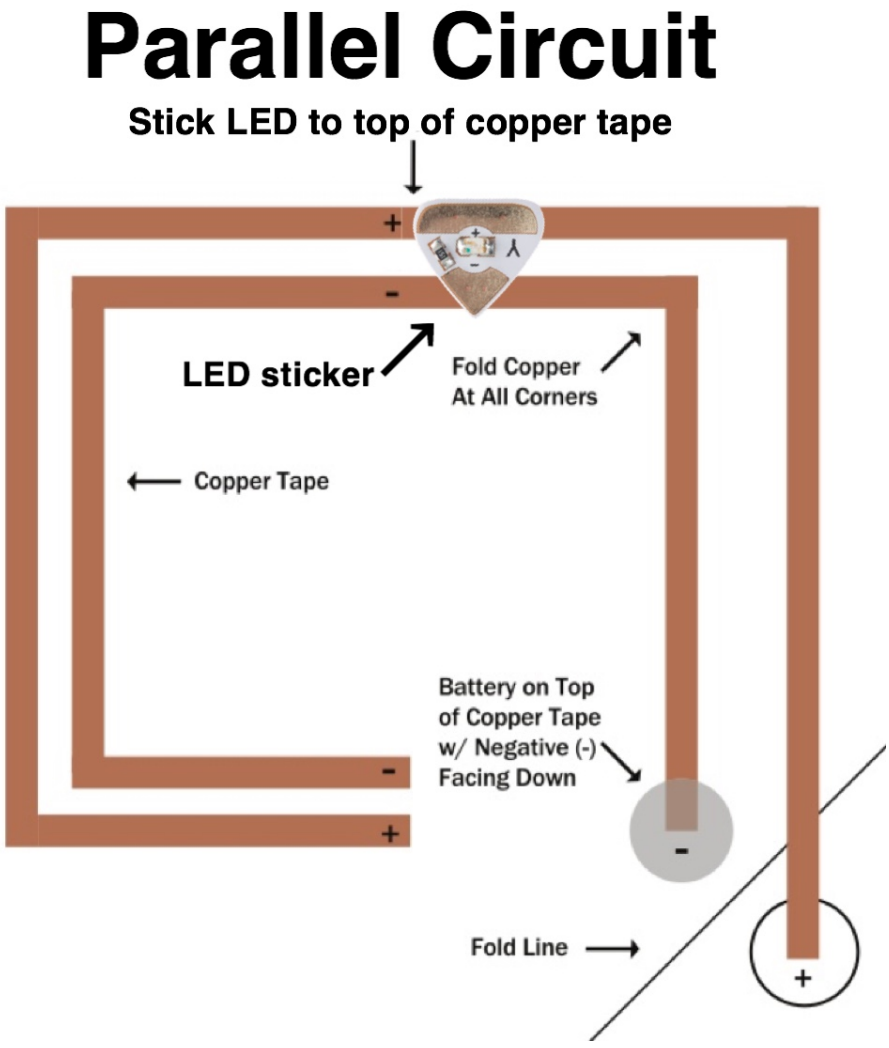


Photo credit: slideshare.net/bradley15

Circuit

"A closed path through which an electric current flows or may flow. Circuits in which a power source is connected to two or more components (such as light bulbs, or logic gates in a computer circuit), one after the other, are called series circuits. If the circuit is broken, none of the components receives a current.
Circuits in which a power source is directly connected to two or more components are called **parallel circuits**. If a break occurs in the circuit, only the component along whose path the break occurs stops receiving a current."
(http://www.dictionary.com/browse/circuit)

Paper circuits are typically made with paper, copper tape, LED lights, and a 3v coin cell battery.

Purchasing Supplies (Paper Circuits)

Chibitronics

Chibitronics has an online shop at https://chibitronics.myshopify.com/collections. Paper circuit starter kits, classroom kits, LED stickers, and copper tape are available for purchase. Starter kits and classroom kits include an interactive circuit sketch book, copper tape and LED stickers. Coin cell batteries are only sold with the starter kit.

"Chibitronics is an evolution of Jie Qi's passion for combining technology and art through making electronics using paper craft. The circuit stickers were developed as part of her PhD research at the MIT Media Lab. Together with Andrew "bunnie" Huang and Patricia Ng, Jie's research has evolved into the Chibitronics toolkits. We hope to share this new way of learning circuits and creating artwork, so that everyone can become technology creators!" (chibitronics.com)

Discover projects suitable for Grade 3 and up at chibitronics.com/how-are-things-connected-switches.

Chibitronics Starter Kit

Coding with Chibitronics

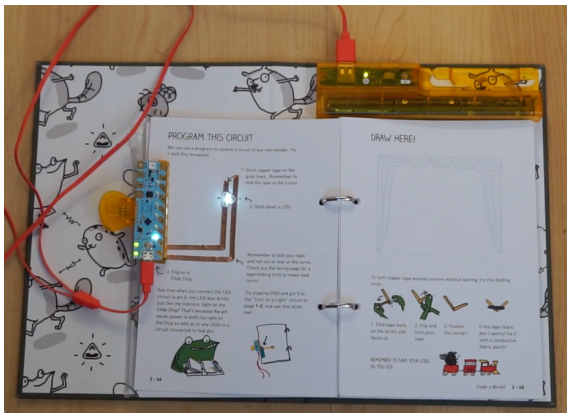
The **Chibi Chip Starter Kit** comes with *Love to Code, Volume 1,* a book that engages users with a variety of coding and circuit activities. The Chibi Chip allows users to connect their paper-circuit creations to a computer or mobile device for the purpose of programming.

"The Chibi Chip is the heart of the LTC system. You can use the Chibi Chip to bring life to your Chibi Lights LED stickers by making them blink and fade. Add interactivity to your greeting cards and projects by connecting switches and sensors to your Chibi Chip."

"You get to pick how to make the programs: either by dragging-and-dropping blocks together using Microsoft's MakeCode Editor, or by writing Arduino-style computer code using Chibitronics' LTC Editor."

"Interested in coding, but don't know where to start? Or perhaps looking to add that personal, interactive touch to a craft project?
The Love to Code (LTC) system from Chibitronics is designed to enable beginners of all backgrounds and ages to try out programming without the frustration of installing software."

Chibitronics Love to Code activity book & kit



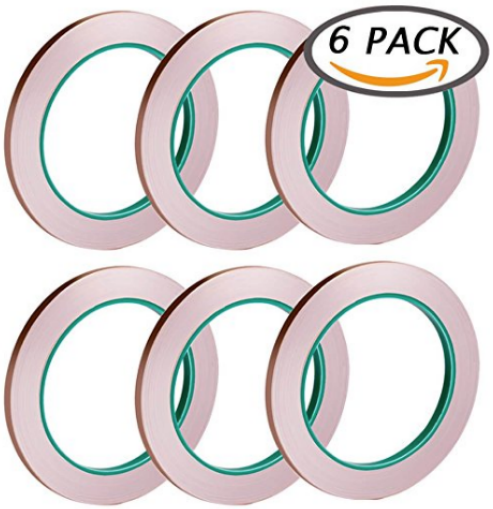
Purchasing Supplies (Paper Circuits)

Alternatives to Chibitronics

Amazon.com is a great place to find supplies for paper circuits at a reduced cost.

Coin cell batteries can be expensive and they are typically more affordable in bulk at Amazon.com. On Amazon, a package of 20 Sony CR2032 Lithium Coin Cell 3V batteries typically sells for about $9.

A six-pack of copper tape rolls that are .25" wide (a little wider than the Chibitronics tape) are available through Amazon. Selizo 6 Pack Copper Foil Tape with Conductive Adhesive sells for about $13 on Amazon.com.



2Pin LED lights are an economical alternative to the Chibitronics LED sticker lights. The 2Pin LEDs come in a variety of sizes from 3mm - 10mm. Elfeland Light Emitting Diodes, 750pcs 3mm 2Pin LED Lamp Assorted Diffused LED Kit White Yellow Red Blue Green sells for around $15.50.

Other Places to Purchase Paper Circuit Supplies:

SparkFun Electronics
https://www.sparkfun.com/

Adafruit Industries
https://www.adafruit.com/

Visit ***The Great Big Guide to Paper Circuits*** for tutorials, info, and inspiration at https://learn.sparkfun.com/tutorials/the-great-big-guide-to-paper-circuits.

Electronic Popables by Jie Qi
(https://www.youtube.com/watch?v=AI-6wMlaVTc)