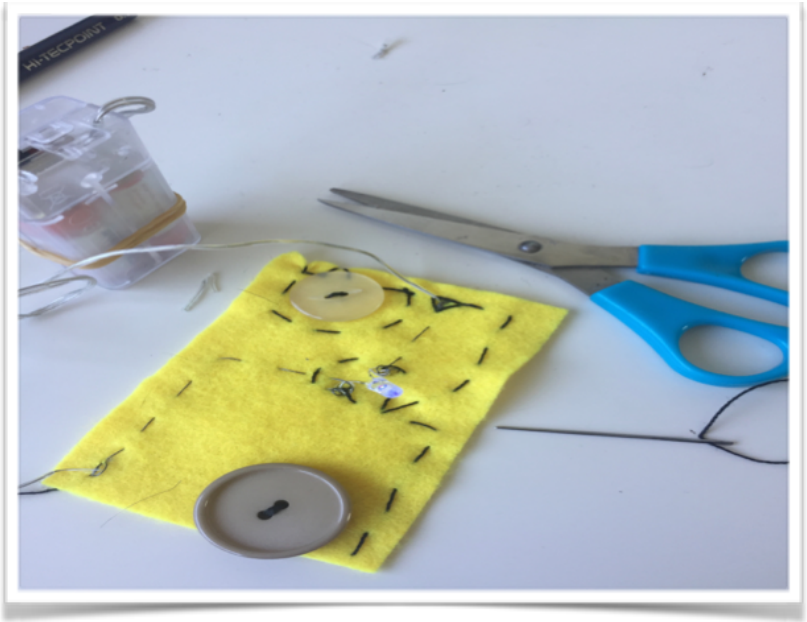
MakEY



Soft Circuits - Sewing Circuits

Aims

The aim of the activity is for children to create a soft circuit by combining old and new technologies. They will develop sewing skills and learn about simple circuits.

Intended Learning Objectives

All children will be able to:

- thread a needle and perform basic stitches;
- create a basic circuit with an led, battery pack and conductive thread (either collaboratively or alone).

Some children will be able to:

- describe how a basic circuit works;
- remix this project to imagine new ways of creating soft circuits.

Activity

Introduction

In this activity you will experiment with creating soft circuits and sewing, connecting craft with technology. Prepare the tinkering station with parcel paper or other, large enough to cover table space. (Tip: A large workshop table invites collaboration and conversation - if possible allow for both standing and seating at the station.)

Plan for inquiry and tinkering by having all materials laid out in an open workshop format. Create a short guide to the activity including circuit diagram on the table top paper with clearly labelled area for resources. This will provide a visual guide for learners as they are creating their textile.

Use the table as a working tool to document the process and encourage participants to write down questions, draw diagrams and make notes.

Allow children to tinker with materials and circuits before formal activity begins. This will allow them to experiment with how electricity works and make connections with previous experiences.

Soft Circuit 'idea grabber'

1. Introduce children to the activity with an example soft circuit and how it works.
2. Relate the example to the visual guide.
3. Draw out and cut your thought grabber - this can be a simple square or rectangle or some other shape such as a cloud.
4. Mark your LED using a dark coloured sharpie on longer leg for positive lead.
5. Twist your LED into a sewable bead.
6. Draw out your circuit lightly in chalk (use visual table guide).
7. Tape your LED in place.
8. Demonstrate with a small group how to thread the needle and create small stitches (use double thread with a knot to connect thread to fabric).
9. Take a 40 cm length of conductive thread - beginning at the edge of your fabric sew a series of stitches and finally connect to the positive arm of the LED.
10. Take another 40 cm length of conductive thread - beginning at another edge of your fabric sew a series of stitches and finally connect to the negative arm of the LED (finish with a double stitch - you may need to add glue to the thread to prevent it undoing).
11. Connect the battery using crocodile clips and check if your circuit works!
12. With non conductive thread add a button, sew a question mark or you could even sew the word 'ideas!'
13. Light it up when you have a new idea!

Materials

Conductive thread
2 AA batteries in battery pack
led
Embroidery thread
Selection of felt fabric
Parcel paper or large roll of paper
Marker and pens

Tools

Embroidery needles
Scissors

Preparation

Table covering and visual guide

Glossary

Inquiry: active learning prompted by materials, provocations and questions.
Tinkering: experimentation through trial and error often by combining seemingly random materials and ideas together. Tinkers use, What if I…? when making.
Led: electric light bulb using a light emitting diode.
Conductive thread: sewing thread made with conductive material such as steel wire

Thanks to Elizabeth Perry and The Tinkering Studio for inspiration
https://tinkering.exploratorium.edu/sewn-circuits
https://twitter.com/elizabethperry

Notes prepared by Mark Shilltoe - https://about.me/markshillitoe