Drawdio Experiments

Mahtomedi Fablab
Sciencearium.com
http://web.media.mit.edu/~silver/drawdio/play.php

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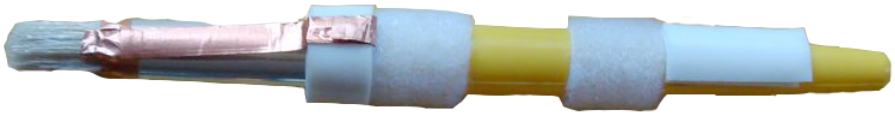
Human Chain! The Drawdio works by measuring how much electricity flows from one end to the other. When you connect the two ends of the Drawdio with your hands you've made a "circuit". A circuit sounds like the word circle. When you make a circle by connecting the two ends of the Drawdio, electricity can flow through it.

The more electricity that flows the higher pitched the sound it makes.

Electricity flows like water, but not everything conducts electricity. Just like a dam to water, not everything lets electricity flow through it. If a material lets electricity flow through it, we say it conducts electricity. If a material doesn't let electricity flow through it, we say it resists electricity.

1. Paint Brush Attachment



   a. Watercolors
   b. Make music with water and the brush on almost any surface

2. Pencil Attachment
   a. Draw designs with the pencil and then play music from it by holding the pencil to one end of your drawing and moving your finger to any other part
   b. Make sure pencil lines are dark and solid, any breaks in the drawing will break the circuit
   c. Tips:
      i. Draw on a hard smooth surface
      ii. Draw dark connected lines with landing pads for your finger
      iii. Dry hands? Push harder

3. Wand Attachment
   a. Use the wand to explore to explore how well objects conduct electricity

4. Sponge
    a. Soak a sponge with water and draw lines of water with your fingers

5. Musical Fruit
    a. Try different foods with the Drawdio to see what sounds you can make
    b. Use the wand attachment or clip the Drawdio directly to it

6. Squishy Circuits
    a. Make a keyboard or musical animal from homemade playdough
    b. To make your own dough follow the recipe for “Insulating Dough” found at the website for “Squishy Circuits”
    c. Make your own Dough
        i. Ingredients
            - 1 1/2 cup flour
            - 1/2 cup sugar
            - 3 Tbsp. vegetable oil
            - 1/2 cup deionized (or distilled) water
            - (Regular tap water can be used, but the resistance of the dough will be lower)
    d. Instructions:
        i. Mix solid ingredients and oil in a pot or large bowl, setting aside ½ cup flour to be used later.
        ii. Mix with this mixture a small amount of deionized water (about 1 Tbsp.) and stir.
        iii. Repeat this step until a majority of the water is absorbed.
        iv. Once your mixture is at this consistency, knead the mixture into one “lump”.
        v. Knead more water into the dough until it has a sticky, dough-like texture.
        vi. Now, knead in flour to the dough, until a desired texture is reached.
        vii. Store in an airtight container or plastic bag. While in the bag, water from the dough will create condensation. This is normal. Just knead the dough after removing it from the bag, and it will be as good as new. If stored properly, the dough should keep for several weeks.

7. KeyBranch
    a. Find a stick that’s about 2 feet long with bark on the outside
    b. Clip your drawdio to an end with no bark
    c. Scrape off the bark with your fingernail at regular distances along the branch. The spots where you scrapped the bark off become the keys!
    d. The bark acts as a natural insulator

8. The Plants are Talking
    a. Stick an end of the Wand attachment into the ground near a plant and see how it reacts as you hold the other end of the wand
    b. Take off your shoes and see what sounds you can make with your feet
    c. Join hands with others and see how far away you can be from the drawdio and still make sounds

9. Drink up the Fun
    a. Stick the long end of the wand in a cup of liquid
        i. CAREFUL! Don't let the drawdio circuit/battery get wet!
    b. Suck up the liquid with a straw and see what happens when it hits your lips
    c. Try drinking different things. How does the viscosity (thickness) change the way it sounds?