

## **Squishy Circuits**

Science Day 2014

### **Source:**

[https://www.ted.com/talks/annmarie\\_thomas\\_squishy\\_circuits](https://www.ted.com/talks/annmarie_thomas_squishy_circuits)

<http://courseweb.stthomas.edu/apthomas/SquishyCircuits/conductiveDough.htm>

### **Materials:**

Salt dough

Sugar dough

9V Batteries

Alligator Clips

LED lights

Rotating motors

### **How it works:**

The battery provides the electricity. This is where the circuit starts and stops. The salt dough conducts the electricity, which means that electricity can easily travel or flow through it. The sugar dough is an insulator, meaning it does not allow electricity to flow through it.

#### Circuits:

Electricity travels in a loop called a circuit. The loop or circuit starts with the battery and travels to and from the salt dough through the black and red wires. When there are two separated pieces of salt dough, a LED can be added by pushing the wires into each piece of the dough.

#### Adding LED light:

Push both of the LED's wires into two separate pieces of salt dough. Once the circuit is all connected, the LED light should turn on.

#### Adding rotating motor:

First add a little piece of dough to the rotating part of the motor to act as a blade. Next, push the motor into the salt dough. The wing should then spin. To add to this, have the students switch the black and red wires to change the direction of the spinning.

#### Short Circuit:

Electricity flows through the easiest path it can take, like water. The salt dough is the easiest path for it to travel. When the salt dough pieces are not touching, the electricity is forced to pass through the LED to complete the circuit. This turns on the light. If you push the salt dough pieces together, the light will turn off creating a short circuit. The electricity no longer has to pass through the LED to complete the circuit.

Using the insulator:

If you put a piece of sugar dough in between the short circuit salt pieces, the light will turn back on. This is because the sugar dough does not allow electricity to flow through it. Therefore, when all of the pieces are touching, the light will still turn on.

“Sushi Circuit”(for the older students):

A “sushi circuit” can be used as an example of the sugar dough acting like an insulator. To make this: small ball of salt dough, ring of sugar dough surrounding it, and a ring of salt dough surrounding that.

Students can play around with this circuit by connecting multiple LED lights and rotating motors to this. They will be able to see lights dim and motors rotating slower when more is added.