SQUISHY CIRCUITS CONDUCTIVE CREATIONS

OVERALL TIME *60-minute lesson*

GROUPS *Three to four kids per kit*

Next Generation Science Standards

Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

(Energy 4PS3-4)

OBJECTIVE

Kids will identify materials as conductors or insulators for electricity to travel.

OVERVIEW

Children will have the opportunity to build upon previous circuit learning while creating circuits using electrical and motion energy with conductor (Playdoh) and insulator (modeling clay) materials.

MATERIALS

- **Squishy Circuits**
- **Circuit Sketch Sheet**
- **Pencils (optional-colored pencils)**
- **Insulator and Conductor examples**
- **Batteries (AA)**

KEY TERMS

Circuit: a complete and closed path around which electricity can flow.

Closed Circuit: an endless path for electricity to flow.

Conductor: an object or material that allows the flow of electrical current in one or more directions.

Insulator: an object or material that allows little or no electricity to go through.

Negative: the negative pole of a storage battery.

Open Circuit: an electrical circuit that is not complete.

Parallel Circuit: a circuit which has two or more paths for electricity to flow.

Polarity: attraction toward a particular object or in a specific direction.

Positive: the positive pole of a storage battery.

Series Circuit: an electrical circuit in which electricity passes through components following one path.

Short Circuit: the failure of electricity to flow properly.

PREPARATION

Gather some common everyday materials ahead of time:

Sample conductors: penny, aluminum foil, paperclip, water, (Playdoh will be the conductor in the experiment)

Sample insulators: rubber band or rubber ball, something plastic, glass, wood (baseball bat) (modeling clay will be the insulator in the experiment)

LAUNCH *15 to 20 minutes*

Activity 1-Circuit Model

Have kids form a circle by holding hands. This activity will model how electricity flows through a circuit. The leader starts by squeezing the hand of the person next to them. Kids will squeeze the hand of the person next to them and this pattern continues until it comes back to the leader. The leader can then ring a bell or raise their hand to represent a closed complete path. Next, have one kid step out of the circle to represent an open, not complete circuit. Ask kids, what just happened? What might the break in the chain represent?

Activity 2-Conductor or Insulator

The previous activity modeled how a complete circuit is made. Now, we are going to learn about different types of materials that allow electricity to flow in one or more directions called conductors. Other materials that allow little or no electricity to go through are called insulators.

Hold up the common everyday items (i.e. paperclip) one at a time. Ask the group: Does this paperclip act as a "conductor" or as an "insulator" for electricity? A follow up question could be, what makes you think that?

EXPLORATION *35 to 40 minutes*

Task the children to use Squishy Circuits and challenge them to do the following:

1.) Make a complete circuit with a light bulb.

2.) Make a circuit with a motor and switch.

3.) Choose a circuit to create.

Review the materials that come in the kit (battery holder, wires, motor, switch, Playdoh, modeling clay, LED lights). Hold up the LED light and show kids the longer terminal. This terminal will need to go in the dough with the positive (red) wire. Have kids sketch and label each of the circuits created using the Circuit Sketch sheet.

CLOSING *5 minutes*

Have youth partner up with someone from a different group to share new learning from their choice circuit.

ENRICHMENT AND NEXT STEPS

Have extra colored Playdoh out for children to design a creature or organism light up sculpture.

CIRCUIT SKETCHES

NAME _____

Design, sketch, and label the following circuits:

COMPLETE CIRCUIT

MOTOR AND SWITCH

CHOOSE YOUR OWN