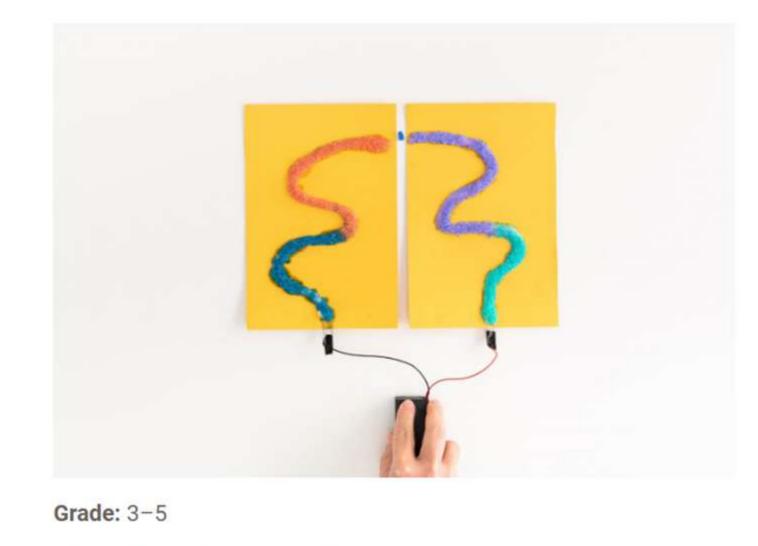


## **Rainbow Salt Circuit**



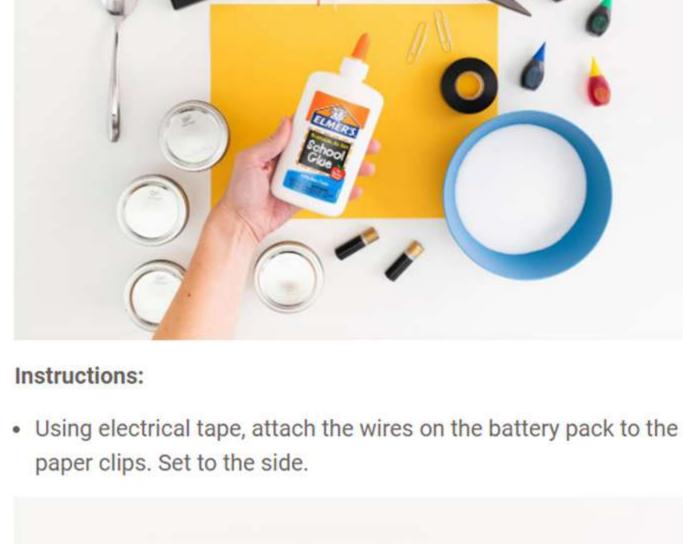
Activity Time: 15-30 minutes

STEAM Subject(s): Physics (Electricity & Circuits), Engineering, Art

Basic AA wired battery box

## Two AA batteries

- Electrical tape2 paper clips
- 3 or 4 jars
- Spoon
- Salt
- Construction paper or cardstock
   Elmer's White School Glue
- Elmer's White School GlueColored LED light
- 0
- (4)







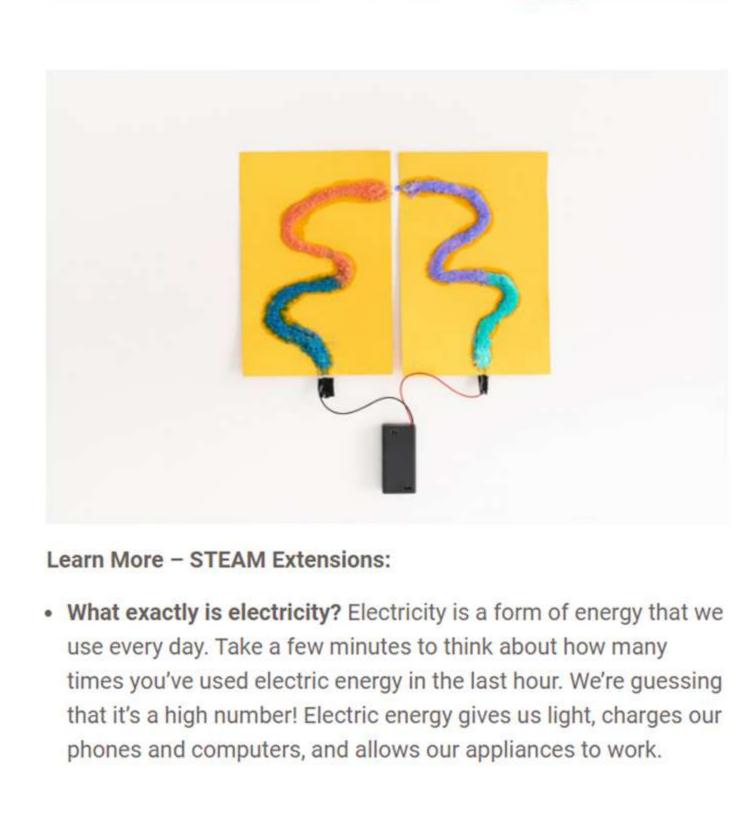




Before the glue dries, sprinkle your colored salt onto the glue.

Shake off the excess salt into a bowl.





What is a circuit? Electric energy needs a path to get from where

magic. This path is called a circuit. This circuit must be a

continuous, unbroken loop, or the electricity won't be able to

travel from the power source to the item you hope to light up.

Did you know that electricity flows easily through some items

and not so easily through others? A conductor is a material that

transmits electricity, which means electricity flows easily through

a conductor. Insulators stop the flow of electricity. Do you see

What about the glue? You'll notice that the glue is neither a

how the wires are wrapped in plastic? That plastic insulates the

conductor nor an insulator. Instead, the glue's job is to keep the

salt together. Had you just clumped a lot of salt on the page, you

might have been able to make a complete circuit, but one swish

it is being stored (usually a battery) to where it needs to work its

## it. In this experiment, the salt, the metals in the wires, and the paper clips are the conductors. Notice that the entire circuit is made of conductors. If you took away the paper clips, wires, or salt, your light bulb wouldn't light. An insulator is the opposite of

wires to contain the flow of electricity.

of the fingers and that circuit would have been broken. The glue makes a nice, clear, and complete path for the salt to stick to so that it can conduct electricity to the light bulb.

• Your science project as art. Did you wonder why we had you color the salts before using them? The answer doesn't have

anything to do with science-white salt would have worked just

beautiful, and when they glow over colored crystals (salt), the

reflections twinkle and sparkle. Once the glue on your circuit

as well as colored salt. The answer has to do with art! Lights are

dries, the paper clips and light should be permanently attached to

the paper. Hang your art up in your room or place it in a shadow box (where you have easy access to that battery box switch) and enjoy the colors and the light.
Have you ever wondered how a light bulb lights up? In the glue salt circuit, you made a path out of salt and glue for chemical energy to travel. Go you! When given a path made of electrical conductors (that's your wires, glue, and salt), the energy that is stored in the battery starts to move. As long as the path is free of

any obstacles (like a pesky piece of insulating plastic or some

air), the electricity will move right down that path and enter the

light bulb, and the light bulb will light up. What would happen if

you put an obstacle in the way of that traveling electricity? Try

removing one of the paper clips from the glue and salt. Then put

air (an insulator) in between the metal and the salt and the glue

(conductors). Did your light turn off? Yep! Now reattach the paper

Troubleshooting Tips:

• Help! My light bulb will not light up.

Make sure the paper clips from the battery pack and the wires from the LED light bulb are touching the glue lines to form the loop for the electrical current to flow.

• I checked my paper clips and wires, and my light bulb still will not light up.

Check the battery! If the battery is dead, then the circuit will not

work.

Level Up - Options for Older Kids:

Standards Alignment:

electric currents.

form of energy.

- Can you light up two light bulbs? A chain of lights? Experiment
  with making a glue salt circuit with more than one light. You will
  still only need one power source (battery box), but you will need
  to make a continuous loop of conductors with no gaps for the
  lights to work. Try using three or four pieces of paper, making
  longer glue and salt paths, or adding more paper clips and wire.
  The possibilities are endless!
- Next Generation Science Standards
   4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and
  - that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.
    HS-PS3-3: Design, build, and refine a device that works within given constraints to convert one form of energy into another

HS-PS2-5: Plan and conduct an investigation to provide evidence