

Paper Circuits for Cards Grade 6 – Electricity and Electrical Devices

<h2>Post Activity – Let’s Get Electric</h2>	Cross Curricular	Arts
	Safety Notes	Circuits can get hot if not connected properly.
<p>Big Ideas Electrical energy can be transformed into other forms of energy. (Grade 6)</p> <p>Electrical energy plays a significant role in society (Grade 6)</p> <p>Energy can neither be created nor destroyed, but it can be transformed. (Grade 5)</p>	<p>Specific Expectations Use technological problem-solving skills to design, build and test a device that transforms electrical energy into another form of energy in order to perform a function.</p> <p>Identify ways in which electrical energy is transformed into other forms of energy.</p> <p>Explain the functions of the components of a simple electrical circuit.</p> <p>Describe series and parallel circuits.</p>	

Description
 Students learn about circuits and the difference between conductive materials and insulators in our school program, “Let’s Get Electric”. In this post activity, students will use materials to create a circuit that will cause LEDs to light up in a greeting card. Students will get an understanding of how some greeting cards with sounds and lights are created.

Materials	Accommodations/Modifications
<p>LEDs – various sizes Copper tape or Aluminum foil – cut into long strips Paper or cardstock Regular tape 3V coin battery Heavy-duty plastic clip</p>	<p>Try making a circuit with graphite powder. You can use LED stickers.</p>

Introduction

Have students design and build greeting cards that light up. You can start with a simple series circuit, moving on to a parallel circuit, a circuit with a simple switch, and a slide switch that would create a blinking light.

Action

1. Review the configuration of series circuits (components are daisy chained together) and parallel circuits (the components are like rungs on a ladder).
 2. Review polarity with regards to the LEDs. They will only work in one direction.
 3. Depending on how much you want to scaffold the activity, you can provide the students with full templates or see if they are able to figure out how to set up the circuits to do various functions.
 4. Students will lay down metal tape, following a path on a piece of paper.
 5. When the students are laying down their conductive tape, have them use a continuous piece of tape until you reach the point where you will insert your LED. Fold through the corners until you reach the end of a section.
 6. Simple series circuit: one loops with LED in series. Parallel circuit: two parallel lines of conductive tape, LEDs bridging the gap between the two lines. Switch: have an extra gap in your circuit that can be closed with a piece of conductive tape. Slide switch: several pieces of conductive tape that will close the circuit when pressed down as finger slides over.
 7. You can search paper circuit templates online to see more elaborate projects. Use the very simple template included with this activity to get started.
 8. Have the students use what they have learned to make a greeting card that lights up.
 9. Have the students draw the circuit they created for their card using the appropriate symbols.
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Consolidation/Extension

Experiment with different types of conductive tape: copper, aluminum, etc. Does foil work? Try making a paper circuit with graphite by drawing heavy graphite lines with a graphite pencil. How dark do the lines have to be? What type of pencil works best? 9B has much more graphite than 2HB.

Assessment

Students create greeting cards that light up. Students are able to explain the difference between series and parallel circuits.

Additional Resources

See Circuit Templates.
