

# LED Cards



## Learning Objectives

- Students will be able to design and decorate a greeting card.
- Students will be able to identify the components of a simple electrical circuit (battery, LED light, switch).
- Students will be able to assemble a functioning LED circuit on their greeting card.

## Materials

- Kids N Tech STEM Kit:
  - Fun Coloring Card)
  - LED Light
  - 3v Coin battery
  - 2 Pcs. of Double-Sided Foam Tape
  - On/Off Tab
- Fine point pen or pin (for making holes)
- Markers, crayons, stickers, or other decorative materials (not included)

## Engage (10 minutes)

1. **Light Up Your Day!** Show students a variety of greeting cards and ask them what makes a good greeting card. Discuss the importance of greetings and how cards can express a message.
2. **Light Up the Room!** Dim the lights slightly and turn on an LED flashlight or another small LED light source. Ask students to describe what they see. Explain that LEDs, or light emitting diodes, are tiny lights that glow when electricity flows through them. An LED has a long leg and a short leg. The long leg is called the anode, and the short leg is called the cathode. You need to connect the anode and cathode the right way for the LED to light up. Closely observe the length of each leg to help you know which leg is which.

## Explore (20 minutes)

1. **Circuit City!** Introduce the vocabulary words: circuit, battery, LED light, and switch. Explain that a circuit is like a path for electricity to flow. We need a battery to power the circuit, an LED light to create the light, and a switch to control the flow of electricity (**Note:** We will use a tab to represent the switch).
2. **Card Construction!** Distribute the Kids N Tech STEM Kit materials and coloring cards.



**3. Design Time!** Students have time to decorate their cards using markers, crayons, stickers, or other materials (optional). Encourage them to be creative!

**4. Have students decide where they will place their light on the card.** (This is where the 2 holes will be placed to insert the LED light.)

**Light Up Your Card!** The instructor/adult will carefully pierce 2 small holes in the place where the light will be inserted on each student's card.

#### **Connecting the Light:**

- Turn the card over so the front side is facing down.
- Stick a piece of tape close to one of the holes on the back of the card.
- Insert the LED Light through the hole, making sure the longer leg is facing towards the tape.
- Press the longer leg (positive lead) of the LED Light onto the tape firmly.
- Leave the shorter leg (negative lead) sticking up.
- Attach double-sided tape to the shorter leg (negative lead) of the LED Light.
- Stick the on/off tab to the other side of the double-sided tape. This tab will act as the on/off switch for the light, allowing you to turn it on and off easily.
- Your LED light is now connected and ready to use!

**Teacher Note:** Ensure students understand the positive and negative sides for proper LED illumination.

- 1. Testing Time!** Students press the shorter leg of the LED (acting as a switch) against the battery. The light should come on!



#### **Vocabulary Words:**

**Circuit:** A path for electricity to flow in a loop.

**Battery:** Stores electricity.

**LED Light:** A light that glows using electricity.

**Switch:** Turns electricity on and off in a circuit.