

# Potato Battery Activity



## Objectives

In this activity, you will work individually to:

- Make a potato battery

## Activity Overview

You may know that many devices rely on electrical energy, or electricity, in order to function. Some devices plug into wall outlets to connect with sources of electricity. Other devices use different types of batteries to store energy that can later be converted to electricity. Did you know that a potato can be used as a battery? Certain metals, such as copper and zinc, can react with acids in a potato to produce electrical energy. This electricity is strong enough to power a clock!

## Materials Needed

### Per Participant

- 2 large potatoes, thoroughly washed
- 3 copper wires (approximately 8 inches long)
- 2 galvanized nails
- 2 copper nails
- 6 alligator clips
- 1 LED clock that uses 1 button battery

### Per Group

- Multimeter (optional)

## Activity Instructions - Make a Potato Battery

This activity is meant to be completed in one 30-minute session.

1. Remove the clock's battery, paying attention to which are the positive (+) and negative (-) terminals.
2. Attach one alligator clip to the end of each copper wire.
3. Insert one galvanized nail approximately 1 inch into each potato.
4. Insert one copper nail approximately 1 inch into each potato.

5. Clip a copper wire onto the galvanized nail in one potato, and connect the other end of the wire to the copper nail in the other potato.
6. Clip another copper wire onto the other copper nail, and connect the other end of the wire to the positive terminal of the clock's battery compartment.
7. Clip the third copper wire onto the other galvanized nail, and connect the other end of the wire to the negative terminal of the clock's battery compartment.
8. Set the clock and watch it run!

## Questions for Discussion

- What adjustments, if any, did you have to make to create a functional potato battery?
- What other small devices could you power with a potato battery?

## TEACHER NOTES

### Before the Activity

- Generate interest by asking participant what they can do with a potato.

### During the Activity

- Assist participants with assembling their potato batteries as needed. Some participants may benefit from working with a partner for this activity.
- Use a multimeter (optional) to measure the voltage of the potato batteries. (Voltage measures the electrical pressure in the battery, which causes electrical current to flow.) Measure voltage by touching the probes of the multimeter to the nails in the potato.

### After the Activity

- As an extension, encourage participants to repeat the experiment with a lemon or an orange.
- Allow participants to experiment with adding more potatoes and more nails to see how these changes affect the voltage.