

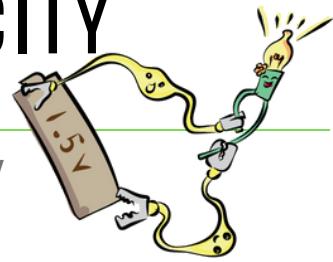
# EXPERIMENT WITH ELECTRICITY

Grades K-3/4-8

## BUILD DEVICES THAT USE ELECTRICITY

K-3 Students will program their robots

4-8 Students experiment with converting energy from one form to another.



### YA'AT'EEH!

5 min

**Ya'at'eeh is Navajo for hello! (Pronounced yah-aht-eeh)**

Greet your students. Be friendly. Use their name, ask a question, give a high five, or thumbs-up! Take roll. Mark down which students took a snack and tally how many snacks were given out.

### SNACK / FREEPLAY

30 min

**Enjoy Free Play:**

Students will have their snack and enjoy time to free play.

### STORY TIME

15 min

**Read the story:**

Read the story of the day. Older students may choose to read their own books.

### STEM TIME

50 min

#### Materials:

- Chromebooks
- Robots
- Legos

**K-3 Program Your Robot****Instructions:**

STEM Coaches will go to the portal and help students with the next Edison programming lesson they are on. Students may choose to build a Lego creation on top of their robots.

Link to portal: <https://www.stemexpandedlearning.com/robotics>

**STEM TIME**

50 min

**Materials:**

- LED lights
- Christmas lights
- Solar panels
- Alligator clips
- Batteries
- Magnets
- Motors
- Fans
- Bamboo trays (1 per student)

**4-8 Experiment with electricity**

Students will experiment building various devices that use electricity with classroom materials.

**Instructions:**

1. Watch the teacher prep video before conducting the lab:  
[https://youtu.be/cSMEO1\\_Sxd0](https://youtu.be/cSMEO1_Sxd0)
2. Give each student a tray of supplies with at least 3 alligator clips and one of everything else. Students can work alone or together. Instruct your class to build different devices that convert energy (electricity) from one form to another. If necessary, you can give your students tips:
  - A circuit needs to have a closed loop or no electricity can flow.
  - Alligator clips: When you push on both sides of the clamp it opens to connect metal to metal. Metal is a conductor, but plastic insulates. Your circuits won't work if you connect to plastic.
  - Red LED Lights: These lights have a positive and a negative end. Look at how one metal lead is longer than the other. If they don't work in your circuit then you may need to experiment with turning them around.
  - Solar panels: Remember to make sure you have the pattern of red to black wires and that you attach the alligator clips to the metal and not the plastic casing.

**Make sure students follow these safety rules:**

Don't put anything in an electrical outlet. The electricity from outlets is too strong and can hurt you.

If you feel your batteries getting hot, you've created a short circuit. This ruins batteries! Please disconnect them!

Only use one battery with an LED light. The LED lights are designed to light up with 1.5 volts. One battery is 1.5 volts. If you hook up two batteries (3 volts) to an LED light it will ruin the light.

3. Ten minutes before the lab ends have students get up and walk around to see what their peers have built.



## SPORTS/GAMES

25 min

\*Older students may practice their sport if they don't want to play the game.

### Materials:

- Large rubber ball
- Bases

### Kickball

Objective- Teams will try to score home runs by kicking a rubber ball and running through all the bases.

Instructions- In a large field, set up the bases in a baseball diamond form. There will be a first, second, and third base, as well as a home base. There should be about 20-30 ft. between each base. Organize the players into two teams. One team will be out in the field with one player at each base, and the others spread out in different positions. The other team will line up to kick. To play, the pitcher will roll the ball to the kicker who will be standing at the home plate. If the kicker gets three strikes or four fouls, they are out. If they are able to kick the ball into the field they can then run to first base. The team in the field will run and get the ball and can get the kicker out in three ways. One, by catching the ball in the air when it is kicked. Two, by throwing the ball to first base-player and then having them touch the plate before the kicker gets to the plate. Three, by tagging the kicker with the ball, below the head. The kicking team scores a point with every home-run they get. They can get a home-run when a kicker makes it through all of the bases and back to the home plate. When the kicking team has three out, this is half an inning. At this point the teams will switch places. The game can go on for as many innings as the STEM Coach chooses. The team with the most points at the end of the game wins.

## HOMEWORK/ FREEPLAY

20 min

## CLEAN UP/ DISMISSAL

5 min

### Instructions:

Allow your students some homework time. If they need help let them know you can help them. If they do not have any homework they can have some reading time, or they can have free time to go outside and play.

### Clean up/pack up/dismissal

Clean up, pack up and practice lining up.

