



MAKE A LIGHT SHINE AND PROGRAMMING

Grades K-3/Grades 4-8

EXPERIMENT WITH ELECTRICITY

K-3 Students will build a circuit to make a light shine

4-8 Students will program their robots

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

K-3 Make a light shine

Say- "Electronic devices are all around us, but have you ever built an electronic circuit? Every electronic circuit needs a power source, such as a battery or solar panel. Every circuit also needs something that will use the power, such as a light or a motor. How can you connect the components of a circuit to make it work?"

Materials:

- Alligator clips
- A small light
- A power source (battery or solar panel)
- Magnets

Instructions:

1. Watch the teacher prep video before conducting the lab:

<https://youtu.be/BOXDDXeaFrM>

2. Show students the in-class video:

<https://youtu.be/09EZNVeXGvI>

3. Students get to experiment with the materials. Challenge the students to figure out how to make the light shine on their own.

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.

Ask: What evidence shows the electricity (energy) is moving?

Example: The lightbulb turns on.



STEM TIME CONTINUED

50 min

STEM TIME

50 min

Materials:

- Chromebooks
- Robots
- Legos

SPORTS / GAMES

25 min

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

Materials:

- Two basketballs

HOMEWORK / FREEPLAY

20 min

CLEAN UP / DISMISSAL

5min



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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.

4-8 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>

Dribble and Shoot

Objective- Each team will play to get the most points and win

Instructions- Organize the players into two teams. One team will be the dribbling team, and the other will be the shooting team. Have the dribbling team line up at a corner of the basketball court. Then have the shooting team line up at the free-throw line. For younger players on the shooting team they may get closer to the hoop to shoot during their turn. To play the game one player from the shooting team will start with the ball. They will shout "Go!" and begin trying to shoot a basket. This is a signal to the dribbling team. One player from the dribbling team will then begin to dribble their ball to the half-court line and back. If the dribbler can make it back to their corner before the shooter can make a basket, then they will get a point. The shooter will continue to shoot until they make a basket. If the shooter makes a basket before the dribbler returns back to their corner the shooting team gets a point, and the dribbler is out and the next dribbler will take their turn. The game ends when one of the teams has had all their players take a turn. At the end of the game add up the points and see which team has won!

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.