



Electric and Magnetic Interactions (Part 2-Electric Charges)



Essential Question: How can electric and magnetic forces interact?

Through observation and exploration, students will understand electric and magnetic forces, and will be able to define and analyze the properties of objects. Students will explore static charges, electric current, and how electromagnets work.

Next Generation Science Standards

- 3-PS2-1. Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.
- 3-PS2-2. Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.
- 3-PS2-3. Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.

Materials provided by the teacher for each student:



Paper, Aluminum Foil, tape, Balloon(optional), Straw, Disposable cup (any kind)



Materials provided by Greenbush:



Greenbush will arrange to have lights/battery dropped off and picked up or you will receive them in the mail with instructions on how to return.

Advanced preparation:

Tear a section of Aluminum Foil for each student approx. 6 inches to start with.

If you choose to use balloons, you might want to blow them up ahead of time if you think the students can't do it themselves. Some can, some can't. If you don't use balloons, their hair should be adequate, but if you have students with very short hair, they may need something else to rub their straw on.

Gather a small cup full of hole punched sized pieces of paper (or confetti). I will ask for you to dump them on the floor at the beginning of class. Then I will ask the students to find a way to pick it all up without touching it with their hands using what they have learned in the lesson.

Lesson Overview: Students will discover what the phenomenon of lightning has to do with static and electric charges through various hands on experiments. They will be introduced to electricity, will figure out how to complete a simple circuit, and will understand how electric and magnetic forces interact to make an electromagnet.

Program Connection Information

Please use an external microphone (conference style) rather than the integrated one in the computer for the audio for your class and locate it centrally in the room. It can be difficult for the Greenbush teacher to hear the students using the computer microphone and therefore it reduces the interactive nature of the lesson. It is fine to use the computer webcam for your video source.

All classes will take place using Zoom desktop video. If your building is already set up to use a desktop video application with a computer, simply open a browser and enter <https://greenbush.zoom.us/j/5337714346> in the URL space. You may need to download Zoom launcher software (free download) if you don't already have it. This needs to be done in advance of the lesson.

If using a Polycom video conferencing unit (or any legacy type video conferencing unit) to connect to a ZOOM conference, make sure the unit is in "encrypted mode" then dial the following IP on the internet: 162.255.37.11 or 162.255.36.11 and once connected, they will ask for a MEETING ID: enter 533 771 4346 (for Sheila at Science Center).

It's always a good idea to touch base with your district technology facilitator prior to your program to make sure all systems/equipment are in place and operational and that there aren't any firewalls in place that might prevent you from connecting to Zoom.

Once you connect, you will enter a Zoom waiting room. Your Greenbush teacher will admit you into the final meeting room.

If you have questions, please call Sheila Sandford at Greenbush, 620-724-6281, or email at sheila.sandford@greenbush.org (best method of contact).