



Electricity – Grades K-2

Nebraska Science Standards

5.2.3.d Identify ways to generate heat (friction, burning, incandescent light bulb)

5.2.3.e Identify materials that act as thermal conductors or insulators

5.2.3.f Recognize that the transfer of electricity in an electrical circuit requires a closed loop

Objective: The objective of this activity is to teach students about static electricity and the types of electric circuits.

Materials (provided by CSM):

- Laminated worksheet and dry erase markers (30)
- Plastic comb or a balloon
- Balloon and construction paper
- Thread
- Small pieces of dry cereal (O-shapes or puffed rice)
- Salt
- Pepper
- Wool or cloth that can create a strong static charge
- Scissors

Discussion (Questions to ask the students)

- What types of things need electricity to work?
 - Lamp, camera
- What does electricity often need to work?
 - Socket, battery (exception lightning)
- How do we typically make electricity in our homes or at school?
 - Flipping a light switch, plugging into a socket or charger (with the supervision of an adult), putting batteries into a toy
- What are the types of electricity?
 - **Current** electricity goes from one place to another
 - **Static** electricity stays in one place

Pass out worksheets and discuss

- After explaining/reading the observation section, ask students to look at all the images of household items on the laminated sheets. Have them use a dry-erase marker to draw a line

between those that need to be plugged in versus those that would take a battery. Tell the students to ask if they are unsure of what an item is (Walkman=Nintendo switch or something more relatable). Once the class has been given time to draw their lines, go through each item with the entire class and ask them to raise their hands if they said battery or plugged in. Be kind and encouraging to all answers and help those that respond with the wrong answers to understand sockets vs. batteries.

- Tell students they can use the science exploration idea at home with adult supervision.

Activity Description:

Students will conduct an experiment to visually observe and learn about static electricity

EXPERIMENT 1 – Balloon Electricity Fun

You will need:

- A balloon
- Construction paper
- Piece of wool

Procedure:

1. The students begin the experiment with construction paper and a balloon (that the volunteers blow up and tie for them).
2. They need to tear up the construction paper into little pieces.
3. Students will then rub the balloon on their hair or a piece of wool.
4. Students will then hold the balloon above the tiny pieces of construction paper to observe what happens.

What happened: By rubbing the balloon in someone’s hair, or by rubbing it with a piece of wool, the balloon was “charged” with static electricity. Since the construction paper does not have a charge, it will be attracted to the negative charge on the balloon and will jump up and stick to the balloon. Once the paper comes into contact with the balloon, the paper then picks up the static electric charge.

EXPERIMENT 2 – Swinging Cereal

You will need:

- Plastic comb or a balloon
- Wool or material that can create a strong static charge
- Thread
- Small pieces of dry cereal (O-shapes or puffed rice)

Procedure:

1. Tie a piece of cereal to one end of a 12-inch piece of thread. Find a place to attach the other end of the thread so that the cereal does not land close to anything else. (You can tape the thread to the edge of a table but ask permission first.)
2. Wash the comb to remove any oils and dry it well.
3. Charge the comb by vigorously rubbing the comb on a piece of wool.
4. Slowly bring the comb near the cereal. It will swing to touch the comb. Hold it still until the cereal jumps away by itself.
5. Now try to touch the comb to the cereal again. It will move away as the comb approaches. *This project can also be done by substituting a balloon for the comb.

What happened: The static electricity (in the form of electrons) from the wool was able to move to the comb (balloon) which resulted in the comb having a negative static charge. The neutral cereal was attracted to it and when they touched, electrons slowly moved from the comb to the cereal. Now both objects had the same negative charge, and the cereal was repelled.

EXPERIMENT 3 – Salt and Pepper

You will need:

- A plastic comb
- Salt and pepper
- Wool or material that can create a strong static charge
- Paper plate
- Inflated balloon (optional)

Procedure:

1. Shake some salt onto a paper plate placed onto a flat surface. Shake some pepper over the salt and mix the salt and pepper together with your fingertips until there is an even mixture of salt and pepper.
2. Set your comb with a static charge by rubbing it against wool cloth or your inflated balloon (if you have one).
3. With your comb charged, slowly lower it above the salt and pepper mixture, teeth side down until it's about 1 inch away.
4. Like magic, the pepper particles separate from the salt particles and cling to the comb!

What happened: When the comb is rubbed against the cloth or balloon, it becomes negatively charged. The salt and pepper are both positively charged, which means they will form a natural attraction to the static from the comb. When the comb is slowly placed above the mixture, the pepper particles fly up and attract. Why do the pepper particles attract while the salt doesn't? Pepper particles are much lighter than the salt, so they're quicker to attract to the comb. If you were to bring the comb closer to the mixture, the heavier salt would eventually cling to it as well.