

Photo Description



Scientific Phenomena

This image demonstrates static electricity as an anchoring phenomenon. When the balloon is rubbed against hair, fabric, or another surface, it gains an electric charge through friction. This charge creates an invisible electric field around the balloon that can attract lightweight objects like small pieces of paper or confetti. The white pieces clinging to the balloon show how oppositely charged objects are drawn together, while some confetti on the table may have been repelled if it carried the same charge as the balloon.

Core Science Concepts

1. Static Electricity Generation: Friction between two materials can transfer electrons, creating an electric charge on objects.
2. Attraction and Repulsion: Objects with opposite charges attract each other, while objects with the same charge push away from each other.
3. Electric Fields: Charged objects create invisible areas of influence around them that can affect other nearby objects.
4. Material Properties: Some materials hold electric charges better than others, and lightweight materials are more easily affected by static forces.

Pedagogical Tip:

Use the "I Notice, I Wonder, It Reminds Me Of" thinking routine when first showing students this image. This helps activate prior knowledge and generates authentic questions for investigation.

UDL Suggestions:

Provide multiple ways for students to demonstrate their understanding: drawing their observations, using body movements to show attraction/repulsion, or creating simple comic strips showing the balloon's "invisible power" affecting different objects.

Zoom In / Zoom Out

Zoom In: At the atomic level, electrons are moving from one material to another during friction. When you rub the balloon, electrons jump from your hair to the balloon's surface, leaving your hair with fewer electrons (positive charge) and the balloon with extra electrons (negative charge).

Zoom Out: Static electricity is part of the larger electromagnetic force that governs much of our world - from lightning in thunderstorms to how our electronic devices work. The same principles that make confetti stick to this balloon also explain why socks cling together in the dryer and why you sometimes get shocked when touching a doorknob.

Discussion Questions

1. What do you think would happen if we brought another charged balloon near this one? (Bloom's: Predict | DOK: 2)
2. Why do you think some pieces of confetti are sticking to the balloon while others stay on the table? (Bloom's: Analyze | DOK: 3)
3. How could we test whether the balloon's "power" works on different materials like feathers, coins, or paper clips? (Bloom's: Create | DOK: 3)
4. What other times have you noticed objects sticking to things when they shouldn't? (Bloom's: Remember | DOK: 1)

Potential Student Misconceptions

1. "The balloon is magnetic" - Students often confuse static electricity with magnetism. Clarification: Static electricity works on many materials, while magnets only attract certain metals like iron.
2. "The balloon has glue or is sticky" - Students may think there's a physical adhesive. Clarification: The attraction is caused by invisible electric forces, not sticky substances.
3. "Only balloons can do this" - Students might think this is unique to balloons. Clarification: Many materials can build up static charge through rubbing, including plastic combs, wool socks, and even your own body.

Cross-Curricular Ideas

1. Math - Counting & Sorting (2.NBT.A.1): Have students count the confetti pieces stuck to the balloon versus those on the table. Create a simple bar graph showing "Confetti on Balloon" vs. "Confetti on Table." Students can practice counting by 5s or 10s depending on the total number of pieces.
2. ELA - Descriptive Writing & Vocabulary (2.W.3): Ask students to write or dictate sentences describing what they observe using sensory words: "The balloon is smooth and round," or "The confetti is colorful and light." Create a word wall with adjectives like "sticky," "invisible," "electric," and "charged" to build vocabulary while discussing static electricity.
3. Art - Color Mixing & Design (VA:Cr1.1.2a): Have students create their own "confetti art" by painting or drawing a large balloon shape and arranging colored paper pieces around it. This connects the visual elements of the photo to art while reinforcing the concept of attraction and arrangement patterns.
4. Social Studies - Community Helpers (K-2.4.3): Discuss how electricians and engineers use knowledge of electricity to build and fix things in our community. Take a simple "electricity scavenger hunt" around the classroom to identify things that use electricity (lights, computers, fans), connecting static electricity to practical applications in their world.

STEM Career Connection

1. Electrical Engineer: An electrical engineer designs and builds things that use electricity, like lights, phones, and video games. They understand how electricity works and use that knowledge to create helpful tools and devices that make people's lives better. Average Salary: \$104,000 USD/year

2. Physicist: A physicist is a scientist who studies how things move and how energy works, including electricity and magnetism. They ask big questions like "Why do things stick together?" and do experiments to find the answers. Some physicists even work on inventions that help doctors treat sick people. Average Salary: \$129,000 USD/year

3. Electrician: An electrician installs and fixes the wires and electrical systems in houses, schools, and buildings. They use their understanding of electricity to keep the lights on, make sure outlets are safe, and repair things when they break. Average Salary: \$56,000 USD/year

NGSS Connections

Performance Expectation: 2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Disciplinary Core Ideas:

- 2-PS1.A Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature
- K-PS2.A Pushes and pulls can have different strengths and directions

Crosscutting Concepts:

- Cause and Effect Simple tests can be designed to gather evidence to support or refute student ideas about causes
- Patterns Patterns in the natural world can be observed and used as evidence

Science Vocabulary

- * Static electricity: An electric charge that builds up on objects and can make them stick together or push apart
- * Friction: The rubbing of two things together that can create heat or electric charge
- * Attract: When objects pull toward each other like magnets or charged materials
- * Repel: When objects push away from each other
- * Charge: The amount of electricity that builds up on an object
- * Electrons: Tiny particles that carry electric charge and can move between objects

External Resources

Children's Books:

- Static Electricity by David Dreier
- The Magic School Bus and the Electric Field Trip by Joanna Cole
- Oscar and the Bird: A Book About Electricity by Geoff Waring