

Photo Description



A big blue balloon sits above colorful paper circles on a dark table. Water drops hang from the bottom of the balloon. The paper pieces are many colors like red, yellow, green, and blue.

Scientific Phenomena

This image demonstrates static electricity and water condensation as anchoring phenomena. The balloon likely became charged through friction (rubbing), which can attract small water molecules from the air. The water droplets forming on the balloon's surface occur because the balloon's surface temperature is cooler than the surrounding air, causing water vapor to condense into visible droplets - similar to how dew forms on grass in the morning.

Core Science Concepts

1. Static Electricity: Rubbing objects together can create an invisible force that makes things stick together or push apart
2. Condensation: Water in the air can turn into tiny drops when it touches something cool
3. Properties of Materials: Different materials (rubber balloon, paper, water) have different characteristics and behaviors
4. Forces and Motion: Invisible forces can make objects move or stick without touching them

Pedagogical Tip:

Use "think-pair-share" activities when exploring static electricity. Have students rub balloons on their hair, then predict what will happen before testing with small paper pieces. This builds scientific reasoning skills.

UDL Suggestions:

Provide multiple ways for students to demonstrate understanding: drawing observations, acting out electron movement with their bodies, or using hand gestures to show attraction and repulsion forces.

Zoom In / Zoom Out

1. Zoom In: At the tiny level we cannot see, electrons (super small particles) jump from one object to another when we rub things together. This creates positive and negative charges that want to stick together like magnets.
2. Zoom Out: Static electricity happens everywhere in nature - lightning is giant static electricity in storm clouds, and this same force helps make rain form in the sky when water droplets stick together.

Discussion Questions

1. What do you think will happen if we bring the balloon close to your hair? (Bloom's: Predict | DOK: 2)
2. Why do you think some of the paper pieces stick to the balloon while others don't? (Bloom's: Analyze | DOK: 2)
3. How is the balloon like a magnet? How is it different? (Bloom's: Compare | DOK: 3)
4. What other objects in our classroom might work like this balloon? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: "The balloon is magic and makes things stick."
Scientific Clarification: The balloon gains an electric charge through friction, creating a natural force that attracts neutral objects.
2. Misconception: "Water drops appear from inside the balloon."
Scientific Clarification: Water drops form from water vapor in the air that condenses on the balloon's cooler surface.
3. Misconception: "Only some balloons can do this trick."
Scientific Clarification: Any balloon can build static charge when rubbed with the right materials like hair, wool, or fabric.

NGSS Connections

- Performance Expectation: K-PS2-1: Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object
- Disciplinary Core Idea: K-PS2.A - Forces and Motion
- Crosscutting Concept: Cause and Effect

Science Vocabulary

- * Static electricity: An invisible force that builds up when objects rub together
- * Attract: When objects pull toward each other without touching
- * Condensation: When water vapor in air turns into tiny water drops
- * Force: A push or pull that can make things move
- * Friction: What happens when two things rub against each other
- * Charge: The invisible electric power that builds up on objects

External Resources

Children's Books:

- Balloons, Balloons, Balloons by Dee Lillegard
- What Is Static Electricity? by Robin Johnson
- Forces and Motion by Peter Riley

YouTube Videos:

- "Static Electricity for Kids" - Simple experiments showing balloon attraction to hair and paper: <https://www.youtube.com/watch?v=yc2-363MIQs>
- "Bill Nye Static Electricity" - Fun demonstration of static electricity principles for young learners: <https://www.youtube.com/watch?v=LQWLYdJFLDk>