

Classroom Activity

Doing Magic Using Static Electricity

Standards:

Science (K-3): 1 Science as Inquiry 1, 2, 3; 2 Materials and Their Properties; Properties and Structure of Materials 1; Changes in Materials; Forms/Sources of Energy 5

Language Arts 1; 3

Skill

Observing, predicting, recording.

Purpose

The students will observe different objects with static electricity.

The students will record their observations of static electricity.

The students will learn all objects contain “static” electricity.

The students will be able to tell the difference between conductors and non-conductors.

Background

All objects contain “static” electricity. This is not the type of electricity that flows through the wires of your home. You are probably familiar with the spark you sometimes feel after shuffling across certain types of rugs and touching a doorknob. This spark is due to static electricity. Static electricity does not pass through some materials but is held in them. These materials are called non-conductors or insulators; i.e. rubber is an insulator.

All matter is composed of atoms. An atom is composed of a positively charged nucleus surrounded by negatively charged electrons. The body is neutral when there are enough negatively charged to just balance the number of positive charges in the nucleus. When you rub a comb or balloon with wool, it picks up electrons from the wool. Since the comb or balloon picks up excess electrons it becomes negatively charged. The comb or balloon attracts objects with the opposite electrical charge.

What you need:

Set up 3 different centers.

Center One

Comb	Copper wire
Wool cloth	Aluminum foil
Small pieces of the following:	Pencil lead
Piece of paper	Thread
Facial tissue	Wax
Steel wool	Iron filings

Center Two

Wool cloth	Rubber balloon
Thread	

Center Three

Wool clothe	Comb
Water tap	



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What you do:

Center One

Sprinkle the small bits onto a piece of paper.

“Charge” the comb by rubbing it with the wool cloth. (Static electricity is produced by friction or rubbing.)

Now hold the charged comb near the collection of small bits.

Observe and record what happens.

Center Two

Inflate balloon.

Tie the thread to the balloon.

Rub a balloon on cloth and hang it about head height.

Ask a person to approach the balloon slowly.

Observe and record what happens.

Center Three

Turn the water faucet, allowing a thin stream of water to flow.

Rub wool cloth and comb together many times.

Hold the back of the comb close to the stream.

Observe and record what happens.

Extension

Try this same activity using a glass rod, and a wax rod instead of the comb. Also for variation try a silk cloth instead of a wool cloth. Compare and contrast the differences in materials.

Assessment

Students should record their observations from each center on their log sheets.

Questions For Thought

Center One

How could you give a static charge to a large metal object?

Center Two

What would happen if you charged two balloons and then rolled them against each other? Is there any way you could charge them so they would stick together?

Center Three

Do you suppose lightning affects the direction of rain drops in a storm?

