

What's Energy

Preparation Time:	Easy-to-do	Moderate	Extensive
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Grade:	K – 1
Focus:	Understanding energy and how to conserve it
Subject:	Science
Materials:	Handouts included with this lesson
Teaching Time:	Several class periods, ongoing
Vocabulary:	Energy, heat, light, conservation

Ask: What can we do with our energy? Talk about playing, running, reading, talking, etc.

Show students how their energy as motion can be used to accomplish things. Place a stack of items (blocks, books, etc.) at one end of the class and have several students line up and take turns relay-race style moving the items across the room to a shelf.

Keep a list of all the ways students use their energy as motion during the day. (*Walking, eating, running, picking up toys, etc.*)

Learning Objective

Students will:

- define energy;
- see how they use energy at home and school everyday;
- try several tips to help conserve energy.

Learning Procedure

This lesson includes a collection of simple activities for young children to help them begin to understand the concept of energy.

1. Energy is motion.

- a. **Ask the class:** Have you ever heard someone say, "You have lots of energy!" What does this mean? Can people have energy?

Have students demonstrate "using their energy" by walking in place.

Ask: What keeps us going?

Discuss how our bodies use food and water to make energy, and how our bodies need rest.

- b. Bring in several wind up toys and let them move across the floor. **Ask:** Do toys have energy? Let students take turns putting the toys in motion. **Ask:** Where do the toys get their energy? Do they eat and rest like we do? (*No. The wind up toys have the energy created by winding them up and releasing them.*) Use a rubber band to show how when you stretch it out and release it, it moves across the room as its energy is released.

Ask: How did you get to school today? (*Cars, buses*) Where does your car/bus get the energy to make it move or go? (*Talk about how machines such as your car use gas as the source of energy.*) What other sources of energy make machines move? (*Batteries, electricity.*)

- c. Bring a pinwheel to class and show students how wind can be used to create energy. Wind makes the pinwheel move and turn. Talk about how wind moves the leaves in the trees. Use pencils, pins and paper and let students create their own windmill.

2. Energy is heat.

- a. Use a large thermometer to compare the temperature outside in the sun and shade.
Ask: Why is the temperature higher in the sun? (*The sun's energy is heat.*)

- b. Demonstrate how our bodies give off energy as heat. Bring in several blankets and/or jackets, hats and scarves. Have students put on these layers and feel the heat build up. **Ask:** Why do we wear coats in the winter? (*To keep our body heat in to help us keep warm when it is cold outside.*) Why do we wear less clothing in summer? (*To let the heat out when it is warm outside.*)

3. Energy is light

- a. Turn off the lights so that the classroom is dark and then light a candle. Explain how the candle's flame gives off energy as light and heat.
- b. Bring in a flashlight. Turn off the lights so that the classroom is dark and then turn on the flashlight. **Ask:** Where does the flashlight get its energy to make light? (*The batteries.*) Explain that batteries release energy. Have students list other battery operated items. **Ask:** Where do the lights in the classroom get energy to produce light? (*From electricity.*) **Ask:** Have you ever been at home or school when the electricity went out? (*Talk about how the lights won't work without the source of energy.*)

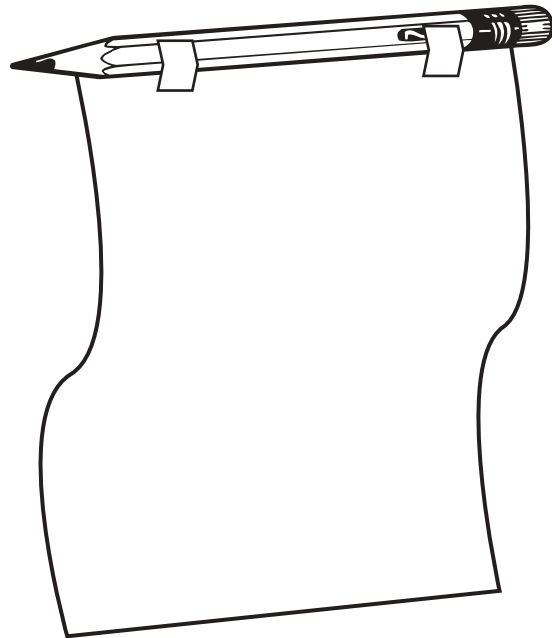
4. Conserving Energy

- a. **Ask:** What makes our school warm inside in the winter? Talk about the school's heating system. Show students the heat registers where the warm air comes out. Talk about the source of energy for the heat. **Ask:** Why do we need to keep the doors and windows shut in the winter? (*To keep the warm air in and the cold air out.*) What happens if we leave the windows open? (*The warm air goes out and the room gets cold, plus the heater has to*

work harder – using more and more energy – to warm the room.) Explain to students that sometimes, even when the windows are closed, cold air tries to slip in. When cold air comes in, we have a draft. This is not good!

Tell students that since we cannot see the cold air coming in, we need to make a special **Draft Detector**. Our Draft Detector will show us if our windows are closed tightly and if the cold air is staying outside where it belongs. To make Draft Detectors use pencils or plastic drinking straws and tape a facial tissue across it to create a little flag (see illustration).

When your Draft Detector is held near a draft, it moves. Test your Draft Detectors at school. Send the Draft Detector home with students along with the explanation for parents on how to use it with their children. The next day let students tell about their experiences and what they found.



Extension Activity

For reading students, use the Conserving Energy Checklist. Have students take the list home and share it with their families. Which conservation tips are the easiest to do?

Is Your House Drafty?

Your child has been learning about energy and about conserving it. Please take time to do this quick and easy experiment with your child!

Test your home for air leaks by holding the Draft Detector near the edges of windows and doors. Movement of the tissue shows movement of air!

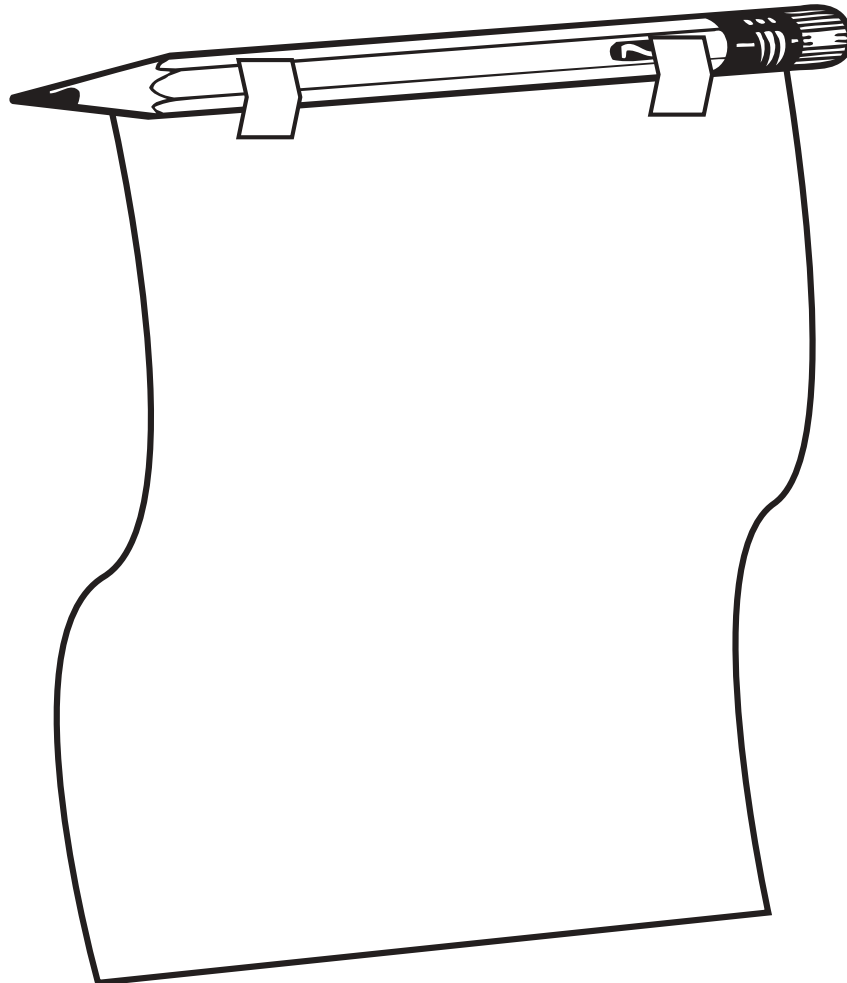
Note: Your forced air heating/cooling system must be off to use the Draft Detector or you'll get false results.

When the Draft Detector is held near a moving stream of air, it moves with the air. Vertical currents of air are desirable in a house.

If a house is well sealed, hot air will rise and be replaced by heated air near the floor. As hot air from the ceiling cools off, it will sink and be replaced by heated air from the heating system.

A house that leaks around doors and windows will permit the heated air to escape and cold air from the outside to enter and disrupt these ideal currents. About 10 percent of heat can be wasted this way.

To prevent air from seeping into the house, caulk windows and use weather stripping around door frames.



Conserving Energy Checklist

- Turn off the lights when leaving an empty room.
- Turn off the TV when no one is watching it.
- Save water by taking quick showers.
- Close the refrigerator door as quickly as possible. Decide what you want to get out of the refrigerator before you open the door.
- Use cold water to wash your clothes when possible.
- Never let the water run when you do dishes or brush your teeth.
- In the winter, close the curtains at night. During the day, open curtains to let in sunshine.
- In the summer, close curtains that let in the hot sun in morning and afternoon.
- In winter, keep the thermostat at the lowest comfortable setting, about 68 degrees.
- In summer, keep the thermostat at the highest comfortable setting, about 78 to 80 degrees.
- When the house is being heated or cooled, keep doors and windows closed. Go in and out quickly.



We are learning about energy and conserving energy.

There are many things that we can do at school and at home to save energy.

Please read this list with your child and talk about saving energy at home. Have your child check the energy saving ideas that your family can do.

