

Energy Efficiency, Let's Save Energy!

Instructor Guide



| Subject Area | Unit | Grade | Time |
|--------------|---------------|--------------|------------|
| Science | Earth Science | K -1st grade | 45 minutes |

Overview

This lesson presents various ways to the student can save energy in their home as well as presenting the idea of energy conservation.

Learning Objectives

This lesson plan meets the typical state criteria for Earth Science in the Kindergarten and First grade level.

Extension Activities

1. Use the **Home Energy Saver Checklist** found on the Kids Korner website.
2. Have students develop a home energy audit checklist to conduct an energy audit at home.

What You'll Need

Teacher Lesson Plan Notes
Student Activity Sheets
Experiment Supplies
Internet Access to **Kids Korner**

Steps

1. Do **Let's Turn Things Off** experiment as introduction to the lesson.
2. Review **Energy Efficiency** teacher lecture notes with students.
3. Demonstrate the online **Light Switch and Appliance calculators** to illustrate cost savings found on **Kids Korner** website **Energy Efficiency** section.
4. Allow students to complete **Be an Energy Saver** Student Activity sheet.
5. Review checklist.

Evaluation

Check over Student Activity sheet with students using the checklist.

Teacher Lecture Notes

Energy Efficiency

Let's Save Energy!

Using energy wisely means being efficient. We use energy everyday at home, at school, at work, and even when you're playing. By saving energy you're helping to save the world's energy resources like natural gas, oil and water and you're also saving money on your utility bills. Best of all, by using energy wisely we can cut down on pollutants in the air and water, making a better environment for everyone.

Think about what would happen if there wasn't enough energy

- . . . there would be no light to turn on when it got dark
- . . . there would not be any hot water for the shower or heat for your house in the winter
- . . .no gas or oil to drive the car
- . . . so there are lots of reasons we should save energy.

Here are a few things you can do to start saving more energy:

- The lights and television use electrical energy, so when you leave the room, shut them off.
- During the day, when it is brighter outside, open the curtains and use the sunlight instead of turning on the lights.
- Don't leave windows or outside doors open when the heat or air conditioning is on. This makes the furnace and AC have to work harder to heat and cool the house.
- When you have a sunny day, help hang the clothes outside instead of using the dryer.
- Don't leave the water dripping in the faucet.
- Turn off the dishwasher right before the drying cycle and let the dishes air dry.
- Don't leave the refrigerator door open. Decide what you want BEFORE you open the door.
- Instead of cooking, once a week have a sandwich night. Not cooking saves gas and electricity.
- Plant trees and shrubs. Deciduous trees (trees that lose their leaves) are best to block the sun in the summer and, when the leaves fall, they let the sun shine through in the winter helping to warm your house.
- Replace conventional light bulbs with the compact fluorescent light bulbs.
- Use energy saving appliances.
- Turn thermostat to 68° to 70°F range in the winter, 78° to 80°F in the summer.

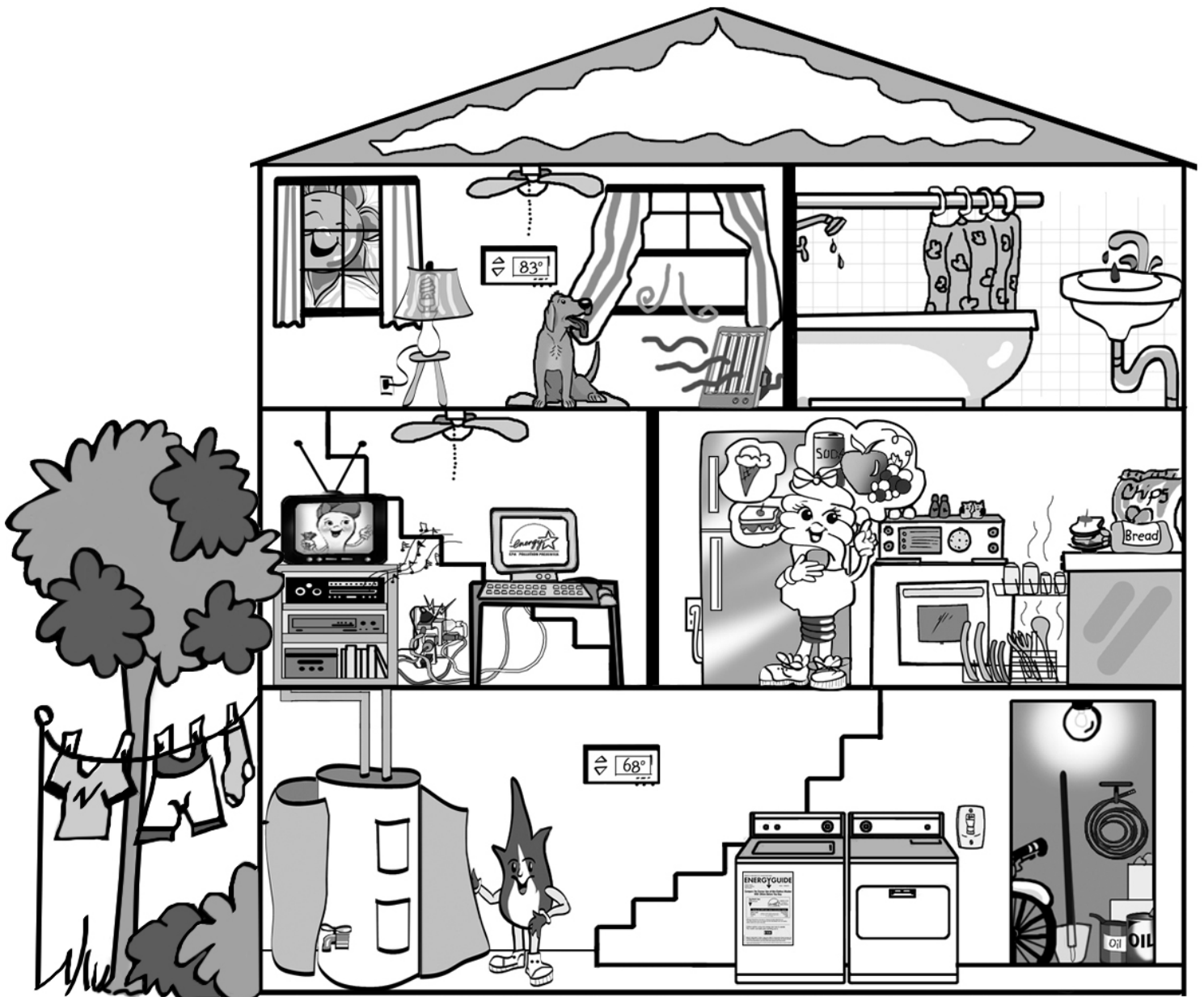
There are a lot more ways to save energy and it's important that everyone pitches in.

Activities Page

Energy Efficiency

Be An Energy Saver!

Look at the picture below. Circle the places where energy is being used wisely in this home.
Put an X on anything that is wasting energy.



Activities Page - Checklist

Energy Efficiency

Home Energy Audit - Energy Saver Checklist!

Have you found everything in the picture?

- Let the sun shine in! During the day when it is brighter outside, open the curtains and use the sunlight instead of turning on the lights.
- Turn off the dishwasher right before the drying cycle and let the dishes air dry.
- Don't leave the refrigerator door open. Decide what you want to eat before you open the door.
- Instead of cooking, have a sandwich night once a week. Not cooking on the stove or in the oven saves gas and electricity.
- Set your thermostats at 65° to 68° F in the winter months.
- Install hot water tank covers and lower water temperature to 130° F.
- Plant trees and shrubs. Trees that lose their leaves are best to block the sun in the summer and when the leaves fall, they let the sun shine through in the winter helping to warm you house.
- Replace conventional light bulbs with the compact fluorescent light bulbs.
- When you have a sunny day, hang clothes outside instead of using the dryer.
- Turn lights off as you leave the room.
- Check faucets and showers for leaks. Leaky ones waste water.
- Use energy saving appliances.
- Don't leave windows or outside doors open when heat or air conditioning is on.
- Turn lights off ceiling fans when you leave the room.
- Install extra attic insulation.



Activities Page - Experiment

Energy Efficiency

Let's Turn Things Off!

You will need:

A moving toy that operates on batteries

Two flashlights that are alike, one labeled "On" the other labeled "On and Off"

Several batteries

1. Turn on the battery operated toy for the students to see.
 - a. Ask questions to draw out the fact that the battery makes the toy move.
 - i. What makes this toy move?
 - ii. How do we know this?
 - iii. What would happen to this toy if we took the batteries out?
 - iv. What would happen if we did not turn the toy off?

Say: We just saw an example of energy which came from batteries. Do you ever leave your toys on that contain batteries? What happens? What would happen to a flashlight if we were to leave it on? Could we make the batteries last longer if we turned a flashlight on and off?

2. Turn on both flashlights. Turn the "On and Off" flashlight off after 5 minutes and leave "On" flashlight on. Continue the on and off process periodically throughout the day with the "On and Off" flashlight. Point out to class when the "On" flashlight no longer produces light.
3. Discuss what things use energy around the home. Think about our flashlight example. What would happen if we left those things on at home?
 - i. What happens if you leave the lights on?
 - ii. How does the light get its energy to run?
 - iii. Who pays for the energy?
 - iv. Can we save energy by turning the light off? How about if we switched to another type of bulb? (Use **Kids Korner Light Switch Calculator** to show the savings.)
4. What other things can we do to save energy? (Use **Kids Korner Appliance Calculator** to show cost savings of using energy efficient appliances.)

Energy Efficiency Homework

Energy Efficiency

Home Energy Audit



Just check each item as you go through your home. Make sure you have a parent help you.

- Check each sink and toilet in your home for leaks. Leaky ones waste water. Leaky hot water faucets waste both water and energy. If you find a leak, let an adult know. They are usually pretty easy and inexpensive to fix.
- Check the temperature settings on your home's thermostat. In the winter, they should be kept as low, in the 68° to 70°F range. In summer, they should be kept as high as is comfortable, in the 78° to 80°F range.
- Are there lights and televisions left on in rooms when nobody is around? Lights and appliances like radios and televisions use electricity. So turn them off when you leave a room or are not using them.
- Check the seal on your refrigerator door by closing the door on a slip of paper. Tug gently on the paper and see if it is held snugly in place by the door seal. If it slips right out, the door seal is not doing its job of keeping the cool air inside and the hot air out.
- If your home has a fireplace, when there is no fire burning, check to see if the flue is closed. An open flue lets your indoor air escape up the chimney.
- Does your home have a ventilation fan in the bathroom? If yes, is it turned on whenever someone takes a bath or shower? This takes away the moist air that can damage your home. And is it kept off at other times?
- Do an inventory of the light bulbs in your home. As you count them, note if they are of the type where a compact fluorescent could be used instead. Compact fluorescents don't use as much energy as regular light bulbs.
- If your home has ceiling fans to keep people cool, are they turned off when there is no one in the room? Ceiling fans don't cool the room, they just make people feel cool as the air blows over their skin, so they should be off when no one is around.