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| Lesson Overview | <p>Students will come to this lesson with prior knowledge of renewable and nonrenewable sources of energy. They will be aware of the importance of conserving energy in order to save the nonrenewable sources we have left, and to help maintain a healthy environment. Students will be able to apply their conservation awareness by surveying adults about the types of energy they use and how they try to conserve. After conducting the survey, students will make inferences about whether age, gender, or occupation made a difference in the participants' responses. The final result will be a report written from the point of view of a reporter.</p> |
| Objectives | <ul style="list-style-type: none"> • To generate a list of energy sources and ways to conserve energy at home, school, and in the community • To survey adults on the types of energy sources they use, and how they attempt to conserve energy • To make inferences and organize survey material into a newspaper article |
| National Standards Addressed | <p><i>K-4 Science Content Standard C – Organisms and Their Environments</i> Humans depend on their natural and constructed environments. Humans change environments in ways that can be either beneficial or detrimental for themselves and other organisms.</p> <p><i>K-4 Science Content Standard D – Properties of Earth Materials</i> Earth materials are solid rocks and soils, water, and the gases of the atmosphere. The varied materials have different physical and chemical properties, which make them useful in different ways, for example, as building materials, as sources of fuel, or for growing the plants we use as food. Earth materials provide many of the resources that humans use. Fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time.</p> <p><i>K-4 Science Content Standard F – Characteristics and Changes in Populations</i> Resources are things that we get from the living and nonliving environment to meet the needs and wants of a population. The supply of many resources is limited. If used, resources can be extended through recycling and decreased use.</p> <p><i>K-4 Science Content Standard F – Changes in Environments</i> Changes in environments can be natural or influenced by humans. Some changes are good, some are bad, and some are neither good nor bad. Pollution is a change in the environment that can influence the health, survival, or activities of organisms, including humans.</p> |

National Standards, continued

Some environmental changes occur slowly, and others occur rapidly. Students should understand the different consequences of changing environments in small increments over long periods as compared with changing environments in large increments over short periods.

K-4 Language

#4 – Students adjust their use of spoken, written, and visual language (e.g., conventions, style, vocabulary) to communicate effectively with a variety of audiences and for different purposes.

#5 – Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.

#7 – Students conduct research on issues and interests by generating ideas and questions, and by posing problems. They gather, evaluate, and synthesize data from a variety of sources (e.g., print and non-print texts, artifacts, people) to communicate their discoveries in ways that suit their purpose and audience.

Desired Outcome

After completing this lesson, students will:

- Have a working knowledge of the difference between renewable and nonrenewable sources of energy
- Recognize a variety of good energy conservation measures
- Be able to gather information about energy use and energy conservation by surveying selected adults
- Be able to synthesize data from the survey and create a report

Time Required

Teacher preparation: 20 minutes

Class time: Two to three 30-45 minute classes, plus outside time for conducting the survey

Materials Needed

- Teacher and/or student resources such as the following Web sites:
www.energyquest.ca.gov/story/chapter08.html
www.powerhousetv.com/renewable
www.alliantenergykids.com/environment
www.eere.energy.gov/kids/

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| Materials Needed, continued | <p>www.eia.doe.gov/kids/energyfacts/index.html www.culverco.com/ngsw/efficiently/saver.html</p> <ul style="list-style-type: none">• Questionnaire for students to use during the survey• Local newspaper copies• pencil and paper |
| Reproducible | <p>This lesson includes a reproducible questionnaire for students to use as they interview their survey samples.</p> |
| Important Terms | <p>Conservation, environment, detrimental, renewable energy, nonrenewable energy, resource, reduction, survey, interview</p> |

Lesson Steps/Activity

1. With a pencil behind your ear, a note pad in hand, and a baseball hat with a sticker in front that says “Press,” go to a student at random and say: “I’m a reporter conducting a survey on energy use and conservation in our community. Would you be willing to be interviewed?” Signal to the student to nod in agreement. Continue, pausing to jot down notes as student responds. “What kind of energy source or sources do you use in your home? Why do you prefer one over the other? Would you mind telling me how you try to conserve energy in your home? Thank you for your time.”
2. Step out of the interview demo and tell students that by now they have learned a lot about energy resources and have given thought to ways that they can conserve it. Further, say that one way to extend their commitment to become conservation conscious is by investigating the uses of energy and the amount of conservation that adults around them are practicing. Suggest that one way to investigate is to survey people in and around home. Plus, they may learn ideas from those they survey, and they also may be able to help others who aren’t making such a good effort to conserve.
3. Have students brainstorm lists of ways they can conserve energy with both natural gas and electricity. If possible, use the same format that was used as part of the Energy Conservation Presentation by the representative from Alliant Energy (such as using pictures of appliances, coming up with memorable conservation phrases, etc.). If using pictures is not an option, you may just want to list the objects on an overhead and have the students call out ideas about conservation related to them.
4. Tell students they will interview five adults, using the questionnaire you provide, which will also contain many of the conservation measures they brainstormed. Hand out the reproducible and go over it to be sure the students understand how to use it.
5. Give students several days to complete the interviews. Ask them to bring their questionnaire sheets back to class.
6. Role-play a newspaper editor, perhaps by wearing a different hat — one with “Editor” written on it. In the role of editor, assign students the task of writing an article to report on their surveys. Before students write their articles, though, go over a sample newspaper article, discussing style and approach. Point out how an article’s title reveals information, how the

Lesson Steps, continued

opening paragraph captures the reader's attention, how the article quotes people, etc.

7. Before students present their articles, discuss the survey results in general/overall terms, including what students think of the experience of surveying others. Then, have students read their articles aloud.
8. As a class, assemble a conservation newsletter that incorporates the student articles.

Extensions and Modifications

- After compiling the survey data and writing the articles, students can figure out which area or areas of conservation need the most attention, and plan a "campaign" in the school or community to target one or two conservation goals.
- If you can devote more time to writing the articles, have students edit and proof one another's articles before they submit their "final" draft to you, the Editor.
- After completing the articles, students could practice reading them to each other in class, and then make a "documentary" presentation to another class.
- Students could conduct the interviews and write the articles in pairs or small groups, taking into consideration varying degrees of expertise in reading, writing, and speaking.

Survey says ...

INTERVIEW PROCEDURE

Introduce yourself and say you are conducting a survey on energy and conservation. Ask whether the person would mind answering a few questions about their energy usage. If he or she agrees, begin the interview. If not, thank the person and leave.



QUESTIONS

1. What kind of energy do you use in your house, natural gas or electricity? Both? Any others, such as solar?
2. Which one do you prefer? Why?
3. I am going to read some conservation ideas. Please answer "yes" or "no" to each question.

Stove: I always use the lowest heat setting when I am cooking.

Furnace/Air conditioner: I would put on a sweater or cuddle under a blanket instead of turning the thermostat up on my furnace.

Refrigerator: I like to keep my refrigerator at the coldest setting.

Washer: I always use cold water instead of warm or hot to wash my clothes.

Dryer: I hang my clothes out to dry instead of using the dryer most of the time.

Light bulb: I use new compact fluorescent bulbs.

Microwave: I use the microwave instead of the oven whenever possible.

Tree: I use both sides of a piece of paper whenever possible.

Dishwasher: I always make sure the dishwasher is full before running it.

Computer, TV, video games: I always turn off the TV, VCR, computer, and video games after using them.

Hair dryer: I only use a hair dryer on the lowest setting.

Curling iron: I always unplug a curling iron as soon as I am finished.

4. I have some optional questions before I leave. You do not have to answer them if you don't want to.

How old are you?

What is your occupation?

5. Thank you very much for taking the survey.