Title: Energy Conservation
Grades: 4
Subjects: Science, Language Arts
Time: 45 minutes

Objectives

- Identify and describe how an individual's action in regards to conserving energy is a form of waste management and can affect change and improve the environment.
- Organize, interpret and analyze data using a variety of graphic representations, and draw logical conclusions.

Standards

Technology Standard 3: Understand the relationship among science, technology, society and the individual.

- Benchmark # 1: Know that technologies often have costs as well as benefits (e.g., as new technologies are developed, man's need for energy increases, resources are used and more pollution/waste is created) and this can have an enormous effect on people and other living things.
- Benchmark **#** 4: Know that new inventions reflect people's needs and wants, and when these change, technology changes to reflect the new needs and wants (e.g., upgrades to new energy using devices require more and more energy usage).
- Benchmark # 5: Understand that technology may affect the environment both negatively and positively (e.g., renewable energy, such as wind and waterpower, create cleaner energy, but may effect wildlife populations in areas where they are used).

Science Standard 9: Understand the sources and properties of energy.

- Benchmark #1: Know that heat is often produced when one form of energy is converted to another form.

Language Arts Standard 8: Use listening and speaking strategies for different purposes.

- Benchmark # 3: Respond to questions and comments (e.g., gives reasons in support of opinions).
- Benchmark # 5: Use strategies to convey a clear main point when speaking (e.g., express ideas in a logical manner, use specific vocabulary to present information).

Materials

- Bulletin Board T chart similar to the printable one shown below
- Picture cards provided below
- "Buddy's Story" provided below

Overview: Demand for energy has increased considerably in the past hundred years. Energy is used to power our electrical devices, to heat our homes and businesses and to fuel most forms of transportation. In using energy we consume valuable natural resources and create waste products that have an affect on the environment. Since it is highly unlikely the need for energy will decrease in the future, it is vitally important that we learn to use energy wisely, reducing not only the amount we use, but also the amount of solid waste we create from the energy we consume.

Kid's Speak: We use more and more energy each and every day. We use it to make electricity, heat and fuel. It powers our laptops and TVs, gives us hot water and warm, comfy spaces, and helps transport us from place to place. It is very important that we learn not to waste the energy we use in our everyday lives.

Eco-Fact: Recycling just one glass container saves enough energy to light a 100-watt bulb for four hours.

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Procedures:
Before Conducting the Lesson:

- Create a bulletin board similar to the sample.

- Introduce the term energy conservation. Explain to students that energy conservation is any behavior that results in the use of less energy (e.g., turning the lights off when leaving a room). Hold a class discussion on the importance of energy conservation. Explain that there are many ways in which people waste energy each and every day. Explain that in this lesson students will learn to identify ways people waste energy, and actions they can take to change this wasteful behavior.

- Provide students with examples of energy conservation. Explain that while there are some simple ways to conserve energy they are not always obvious. Students may realize that conserving energy can be as simple as turning off the lights when leaving the room, but may be surprised that conserving water, for example, is also a way to conserve energy (e.g., cleaning/treating water for consumption and use, pumping water into homes and businesses, and heating it, are all actions that consume energy, so by conserving water we are also conserving energy).

Conducting the Lesson:

- Use the Picture Cards provided to develop the bulletin board. Select one of the cards and read the scenario out loud. Ask students to decide if the card describes an example of Energy Waste or Energy Conservation. Have students explain their rationale. Post the card on the board under the correct heading. Repeat the activity two or three more times, each time discussing with students the reasons behind the decision. Cards selected should provide at least one example for each choice.

- Ask for volunteers to come up to the bulletin board, select a card, read the scenario and decide on which side of the board it should be posted: Energy Waste or Energy Conservation. Students should be able to justify their response with logical reasoning.

- Repeat step two until all of the cards have been posted to the bulletin board.

After Conducting the Lesson:

- Read aloud "Buddy's Story" (found below) to the students or print out copies for students to read silently.
- Make a T chart on the board. Have students identify each time Buddy does something that wastes energy? Record the wasteful action on the left side of the chart. On the right side have students suggest something Buddy could have done in order to conserve energy. Post the chart near the bulletin board.

"Buddy's Story"

It was a beautiful, sunny day, but Buddy was inside the house watching television. When the phone rang, Buddy answered it. The TV was on so loud Buddy couldn't hear the person on the other end of the line, so he left the room. He went upstairs to his bedroom to talk to his friend. The curtains were still closed, and it was so dark in the room he turned on the lights. Buddy's friend asked if he wanted to go to the movies. Buddy wanted to go, but he told his friend that first he had to do some chores. Buddy checked online and saw that the movie was playing a little later that afternoon. They made plans to meet after lunch. Buddy got up from his desk, his computer still on, and started to clean his room. While cleaning he found his favorite tee shirt. Buddy wanted to wear the tee shirt to the movies, but it was dirty. Buddy went down stairs and put the tee shirt in the washer. While the shirt was in the washer, he ran back upstairs and turned on the shower. Then decided to brush his teeth before showering. After a long, hot shower, Buddy started to get dressed and realized his shirt was still wet. He tossed the shirt into the dryer, and

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then made himself some lunch. He put on the oven to heat up a piece of pizza. When the buzzer on the dryer went off he grabbed his tee shirt and the slice of pizza and rushed out the door. Boy, it was hot outside. Buddy went back in and cranked up the air conditioner before he left so the house would be comfortable when he got home from the movies.

Adaptations: Use “Buddy’s Story” as a homework assignment, having students identify all the examples of energy waste and suggestions for conservation. The following day in class discuss the assignment and have students work in pairs to make T charts. Post the T charts near the bulletin board.

Extensions: Have the students rewrite “Buddy’s Story”, making choices in which he conserves energy, rather than wastes it.

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