



Learning to Save Energy Activity Book

Teacher's Guide

Introduction

This discussion guide for *Learning to Save Energy Activity Book* contains questions for the entire cartoon booklet. You may do as much as you wish in one session and then continue with the rest in other sessions.

New Vocabulary

The following vocabulary words may be new to students. Introduce them before teaching the booklet.

Agriculture: The raising of crops and farm animals. *Agriculture is important to all of us as it feeds the world.*

Amp: Short for ampere, which is a unit for measuring the strength of electricity. *The strength of electric current is measured by **amps**.*

Communication: An exchange or sharing of feelings, thoughts, or information. *We **communicate** by speaking, reading, and writing.*

Conserve: To save from loss or waste. *You can help **conserve** energy at home in many ways.*

Energy: The ability to do work. Some forms of energy are light, heat, and electricity. *Refrigerators use a lot of **energy** to keep our food properly cooled.*

Industry: Manufacturing plants and other businesses. *There are many different kinds of **industry**.*

Cover

Discussion

- What are you going to learn by doing this activity book? (*Elicit: How to save energy and use energy wisely.*)

Page 2

Discussion

- Why do you think the characters in this book have those names? (*Elicit: Their names are associated with forms of energy.*)
- What is the definition of energy? (*The ability to do work.*)

Page 3

Discussion

- What is meant by “Sources of Energy”? *(There are many sources of energy. They include fossil fuels; nuclear energy; solar and wind energy; tidal energy and hydropower; fuel cells; and geothermal energy from hot springs, geysers, and volcanoes.)*
- Name some other sources of energy. *(Students’ answers will vary.)*
- What is the primary source of energy? *(Elicit: The sun, from which solar energy comes. Millions of years ago, living plants absorbed and stored energy from the sun. After the plants died, the plants’ material gradually changed into coal, oil, and natural gas, the fossil fuels. When we burn these fuels, we are really tapping and releasing the sun’s energy of eons past).*
- Ask the children about some of the different forms of energy. For example, what form of energy was used to lower the shades? *(mechanical)* What form of energy lit the room when the shades were raised? *(light energy from the sun)*
- Explain that technically not all of the words in the crossword are “sources” of energy. Some are “forms” of energy (like electrical and mechanical). Other forms of energy besides mechanical and electrical include chemical, thermal, and nuclear.

Page 4

Discussion

- Have students complete the activity and then ask them to match the answers to the appropriate category: industry, agriculture, or communication.
- Ask the children to give other examples of how energy is used in these three categories, beyond what is pictured. *(Students’ answers will vary.)*

Page 5

Discussion

- What forms of energy are the boys and girls on this page using in the home? *(Electricity to run the TV, computer, and DVD player and to provide light for reading; natural gas to heat the water to wash dishes with; and natural gas or electricity to fuel the stovetop, oven, and refrigerator.)*
- How do you use energy in your home? *(Students’ answers will vary.)*

Activity

Have the students do a study of how energy is used in each room in their home. Invite them to share with the class.

Page 6

Discussion

- What is the definition of “conserve”? *(To prevent the wasteful or harmful overuse of something.)*
- List the benefits of energy conservation. *(Elicit: We won’t have to use up our energy resources, we can save money, and we will keep our environment cleaner and more beautiful. It can also be stated that we would not have to be so dependent on other countries for energy sources such as oil.)*

Page 7

Discussion

- What do you think of when you hear the word “insulation”? (*Insulation is a form of protection.*)
- List the benefits of insulation. (*Insulation can protect a person from the cold, such as with protective layers of clothing made of down or wool, or it can protect one from extreme temperatures indoors by keeping cold or heat out of buildings.*)
- Where should insulation be used in homes? (*Around doors and windows, and sometimes around water heaters to keep the hot water hot, although newer water heaters are self-insulating.*)

Teacher Notes

Have students investigate the different types of insulation that are available and report back to the class.

Pages 8 and 9

For each situation let the children explain how the ones they did not choose are wasting energy. Have each member of the class make up their own situation. Allow the children to present their situations to their classmates.

Page 10

Discussion

- How does each of the statements presented help save energy?
- What are some other ways of saving energy in the kitchen? (*Defrost the freezer periodically, keep the refrigerator clean, make sure that the seal around the refrigerator door is air-tight, purchase energy-efficient appliances, and turn on/plug in appliances only when needed.*)

Teacher Notes

Explain that by holding the refrigerator door open, you are letting in warm air. That makes the motor work harder and use more electricity.

Page 11

Discussion

- Why is it inefficient to use only half loads in washing machines rather than full loads? (*It takes almost as much water to run a half load as a full load, so you use more water than is needed to do multiple half loads rather than waiting until one has a full load to wash.*)
- Why is it energy efficient to hang clothes on a line to dry? (*Using a clothes dryer uses up energy that would be saved if you hang your clothes to dry.*)
- What other ways can you save energy in the laundry? (*Clean the clothes dryer filter regularly, use cold water wash cycles whenever possible, and use washing machines during non-peak hours when energy demand is lower.*)

Page 12

Discussion

- In what word is the puzzle written? (*Elicit: SAVE.*)
- What pictures are shown in the word “SAVE”? (*A light bulb, a washing machine knob, a window, a door, a cold person bundled up, a person sitting in front of a fire.*)
- Explain how each of the activities that are clues in the puzzle would be an energy-saving method. (*Turning off lights uses less electricity; keeping the thermostat turned down uses*

less gas for heating; 68 degrees is the recommended temperature in the cold months to save energy on heating; sealing doors and windows prevents leakage of cold or warm air and means the heater or air conditioning doesn't have to work as hard to maintain a comfortable temperature in the house.)

Page 13

Discussion

What are some ways that people you know waste energy? *(Students' answers will vary.)*

Activity

Have the children make their own energy crossword puzzles with the information they learned from this booklet.

Page 14

Discussion

- Why is it important to use energy wisely? *(Conserving energy helps save our energy resources for future generations. It lowers fuel bills and saves money. Conserving energy also helps keep our environment beautiful, because we do not have to dig and drill for more energy resources.)*
- How can you get other members of your family to use energy wisely? *(Share this booklet with them, and remind them of the energy-saving tips you have learned in it.)*

Activity

Work with the students to develop some home energy conservation checklists. These checklists would include cooling, heating, lighting, and the use of appliances.

Page 15

Discussion

- What could happen in the future if we waste our energy resources? *(We could some day run out of resources like fossil fuels (coal, oil, and natural gas), and might be forced to change our lifestyles radically as a result.)*
- How do you plan to conserve our energy resources? *(Students' answers will vary. It may be helpful to write students' ideas on the board to help generate enthusiasm for various approaches to conservation.)*

Page 16

Discussion

What have you learned about energy conservation by doing this booklet?

Activity

Ask students to define each of the words used in the word search.

Teacher Notes

Here are some topic ideas for reports on energy:

- Careers in the Energy Field
- Alternate Sources of Energy
- Famous People in Energy (Newton, Franklin, Ampere, Ohm, Volta, Faraday, Edison, Einstein)
- The Roles of Government, Industry, and Individuals in the Conservation of our Energy Resources