

LESSON 2: People Use Natural Resources

LESSON'S CONCEPT
 People use natural resources to live and to make things.

PURPOSE
 Students will be able to trace objects to the category of natural resources from which they were made. They will identify some of the natural resources that people need in order to live.

OVERVIEW
 In this lesson students will:

- Make “Earth Pockets” using paper plates in which the students place a string of illustrations and words that show the transformation of a natural resource into a product.
- Work in groups to make mobiles that represent the kinds of natural resources humans need in order to live.
- Classify an item based on the natural resource from which it was made.
- Make a collage of items made from a specific natural resource.

CORRELATIONS TO CALIFORNIA'S CONTENT STANDARDS AND FRAMEWORKS AND TO BENCHMARKS FOR SCIENCE LITERACY

- Students make “Earth Pockets” to show the natural resources used to make certain products and the transformation that occurred from the natural resources from which the products were made to the products themselves.
 - “Earth is made of different kinds of materials that have distinct properties and provide resources for human activities.” (*Science Content Standards, Grades K–12; Grade 2; Earth Sciences, Standard 3*)
 - “Humans use air, fresh water, soil, minerals, fossil fuels, and other sources of energy that come from the Earth.” (*Science Framework, page 97*)
- Students work in groups to complete a

mobile that shows the natural resources humans need in order to live.

- “Most living things need water, food, and air.” (*Benchmarks for Science Literacy, page 111*)
- “Students demonstrate an understanding that being a good citizen involves acting in certain ways.” (*California History–Social Science Standards; Kindergarten; Standard K.1*)
- “In order to participate effectively in society, students need to: Develop personal skills. . . group interaction skills (and). . . social and political participation skills.” (*History–Social Science Framework, page 24*)
- “Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept . . . students will . . . communicate observations orally and in drawings.” (*Science Content Standards, Grades K–12; Kindergarten; Investigation and Experimentation, Standard 4e*)
- “Students create original artworks based on personal experiences or responses.” (*Visual and Performing Arts Framework; Goal 4, page 101*)

SCIENTIFIC THINKING PROCESSES
 observing, communicating, comparing, ordering, classifying.

TIME
 30 minutes to prepare for the lesson; 60 minutes to implement the lesson

VOCABULARY
 crude oil, manufacture

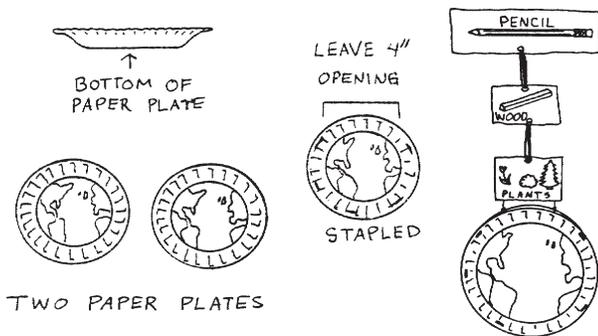
PREPARATION

Note: “Part I” could be completed with students in kindergarten and grade one; and “Part I” and “Part II,” with students in grades two and three.

- ___ 1. Read the “Background Information for the Teacher” at the end of this lesson.
- ___ 2. Make an “Earth Pocket.”
 - Draw a picture of the Earth on the bottom of each paper plate; or use the picture, “Outline for an Earth Pocket” (page 19), cut it out, and glue it to each paper plate.
 - Staple the two paper plates together, leaving a 4-inch opening to make a pocket. (See the accompanying illustration.)
 - Tape or staple a piece of string or yarn (approximately two feet long) to an illustration of a pencil on a card, as shown below (e.g., cardboard from a cereal box). This card should be large enough not to fall into the pocket.

Note: It is recommended that you make cards out of used products, such as cereal boxes, to model conserving natural resources.

- Further down the string, attach a card with an illustration of a piece of wood and the word “wood.” This and all other cards should be small enough to fall easily into the pocket.
- Attach the illustration and the word “plants.”
- Place the cards and attached string inside the pocket, leaving the pencil illustration sticking out of the pocket.



- ___ 3. Make a copy of the “Outline for an Earth Pocket” for each student or each group of students.

MATERIALS

For “Pre-Activity Questions”

- ___ Piece of butcher paper on which to record a list

For “Part I, Making ‘Earth Pockets’ ”

- ___ Two paper plates for each student
- ___ String or yarn (approximately two feet long) for each student
- ___ Cards (e.g., index cards or cards made from pieces of cardboard from cereal boxes)
- ___ Scissors
- ___ Crayons and other art supplies
- ___ Stapler and staples
- ___ Book, *How Things Are Made* by Felicity Brooks
- ___ A copy of the “Outline for an Earth Pocket” for each student or each group of students

Optional

- ___ Hole punch
- ___ Yarn for students to lace the paper plates together

For “Part II, Making a Mobile of the Natural Resources We Need in Order to Live”

- ___ Cardboard from boxes
- ___ String or yarn
- ___ Hole punch (A hand-held single-hole punch works best.)
- ___ Tape
- ___ Cards (e.g., index cards or cards made from pieces of cardboard from cereal boxes)
- ___ Scissors
- ___ Crayons and other art supplies
- ___ For students who do not have access to newspapers and magazines, provide such materials to help them complete the homework assignment.

PRE-ACTIVITY QUESTIONS

Ask students: “What things (products) do people make out of natural resources?”

- List the names of some products on a piece of butcher paper and post the list in the classroom.
- Tell students that they will be adding to this list during this lesson.

Natural Resources	Products
<i>trees</i>	<i>cardboard</i> <i>telephone pole</i>
<i>minerals</i>	<i>rock water fountains</i> <i>water pipes</i> <i>coat rack</i> <i>glass</i> <i>wire</i> <i>plaster walls</i>
<i>animals</i>	<i>shoes</i> <i>clothing</i> <i>honey</i>

Submitted by Kathy McCurry's third-grade class, Sutter's Mill Primary School, Gold Trail Union School District.

PROCEDURE

Note: "Part I" could be completed with students in kindergarten and grade one; and "Part I" and "Part II," with students in grades two and three.

Part I, Making "Earth Pockets"

Note: The directions for making an "Earth Pocket" may need to be simplified for younger students.

- A. Show students the "Earth Pocket" (that you made in "Preparation" #1), making certain that the card on which a pencil is drawn is sticking out of the pocket.
 - Ask students what the yellow part of the pencil is made from. As they say *wood* (and possibly lead), pull out the string to the piece of card with the "wood" sign and illustration.
 - Ask where wood comes from. When students say *trees*, ask what category of natural resources are trees. *They are plants.* Pull out the card on which plants are drawn.
- B. Brainstorming with students, make a list of things that they use every day. Write these on butcher paper below the list (started at the beginning of the lesson) of what people make from natural resources. Encourage students to look in the book, *How Things Are Made* by Felicity Brooks, for additional ideas and list them.

- C. Select one item from the list of things used every day.

- With the class, prepare an illustration of the item on a card. Then connect the card with string to an illustration of what the item is made from, down to the category of natural resources from which the item was made. This activity may have one or more steps.
- Place the cards and string inside the "Earth Pocket," with the item sticking out.
- Slowly pull out the string and the natural resource attached.

- D. Ask students to work individually and to select another item from the list of things used every day. They should then list the steps (or sources) from the natural resource to the item. They can use ideas from *How Things Are Made* by Felicity Brooks. Some examples are listed below:

- Book (paper—pulp—plant)
- Paper (pulp—plant)
- Crayon (wax—crude oil—fossil fuel)
- Paper clip (steel—rock—mineral)
- Milk (cow—animal)
- Sweater (wool—sheep—animal)
- Plastic bag (crude oil—fossil fuel)
- Glass (sand—mineral)

Lady bug puppet—cotton—plant
Collapsible dog—wood—tree—plant
Bracelet—plastic—fossil fuel
Rugrat toy—plastic—fossil fuel
Backpack—cloth—plant

Submitted by Debby Carter's kindergarten and first-grade class, Coyote Valley Elementary School, Middletown Unified School District.

Note: Several illustrations are included at the end of this lesson. Some of these could be copied for students to use if they do not wish to draw their own illustrations. They can color, cut out, and glue each illustration on a piece of stiff paper.

Note: For younger students, consider having groups of five students make one "Earth Pocket." Each student can make one part.

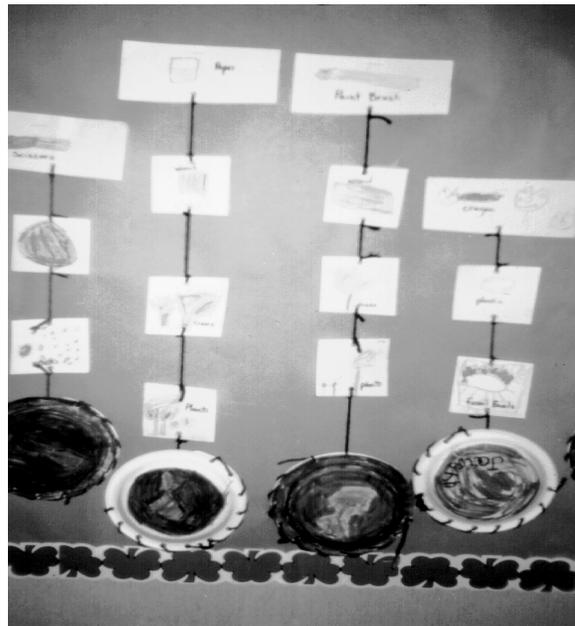
- E. Tell students that they will be making their own "Earth Pockets."
- Distribute two paper plates to each student.
 - Provide a copy of the "Outline for an Earth Pocket," cards, and art materials.
 - Have students color the picture of the Earth and then glue it to the bottom (which will become the outside of the pocket) of each paper plate. (See illustration in "Preparation.")
 - Help students place the two paper plates together (with the illustrated bottom of the plate on the outside) and staple the two paper plates together (approximately five staples), leaving an opening of about four inches on top.

Note: Another way to do this is put two plates together and punch holes through the edges of both paper plates, leaving four inches on the top with no holes. A hand-held single-hole punch is needed to do this. Have students use yarn to sew the edges. (Tape the end of the yarn to make it easier to thread through the holes.)



LACED YARN

- Have students prepare the illustrations and words of their objects on cards. They should illustrate each step back to the natural resource from which the object was made. Make certain that students use the larger card for the main object and smaller cards for all others. Students should then connect the parts (in order) to a piece of yarn or string.
 - Ask students to place the sources from which the item was made into the "Earth Pocket," making certain that the illustration of the object sticks out.
- F. Allow students to share their "Earth Pockets" with a partner or in a small group. Each student can pull out the parts slowly as other students guess what is connected to the object all the way to the natural resource from which it was made. Once students have made their presentations, they can



Submitted by Debby Carter, kindergarten and first-grade teacher, Coyote Valley Elementary School, Middletown Unified School District.

take their "Earth Pockets" home to share with their families.

Part II, Making a Mobile of the Natural Resources We Need in Order to Live

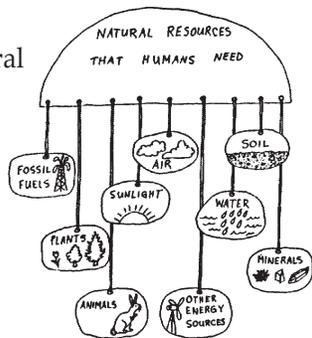
- A. Discuss with students which of the Earth's natural resources are needed by humans in order to live and how each of the natural resources will be used by humans. For example: water (to drink), air (to breathe), plants and animals (for food and clothing), minerals (from which to make things), soil (in which to grow food), energy sources (for electricity), and fossil fuels (for fuel and from which to make things).

Note: Lesson 4 addresses people's use of petroleum products.

- B. Help students to make a mobile that shows different natural resources that people need.
- Separate students into small groups.
 - Provide a piece of cardboard, yarn, cards, and art supplies.
 - Assist students in making a mobile showing different natural resources hanging from strings from a piece of cardboard.

Note: For younger students, make one mobile as a class. Have several groups draw, label, and color various natural resources. Have another group make the body of the mobile out of card-

board and punch holes in a row on the bottom from which pictures of natural resources can be hung. Then the group members should write "Natural Resources That Humans Need" on the body of the mobile. The last group can attach the strings to the body of the mobile.

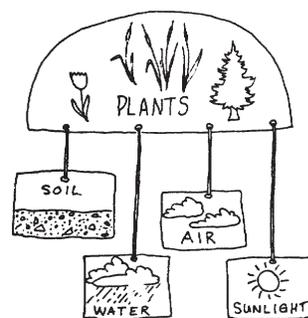


DISCUSSION/QUESTIONS

- A. Discuss with students:
- Why are natural resources important?
They provide us with things we need in order to live.
 - How do people use natural resources?
For making things; for producing energy; for providing the water, food, and shelter that they need in order to live.
 - Can there be shortages of natural resources for people to use? *Yes, if we use a lot of them.*
- B. Review the list, which was brainstormed at the beginning of this lesson, of the things people make from natural resources and the things students use every day. Ask students if they agree with the entire list. Do they want to add or delete any items? If so, ask them to explain why.
- C. List the following natural resources on the chalkboard or on a piece of butcher paper: plants, animals, minerals, fossil fuels. Ask students: "How can people make certain that the natural resources that they need, but that might be in short supply, will be available for many years to come?"
- Plants: *e.g., reuse and recycle items made from wood; plant more plants.*
 - Animals: *e.g., provide places for them to live.*
 - Minerals: *e.g., take care of things so they will last a long time; reuse and recycle items.*
 - Fossil fuels: *e.g., conserve them, don't waste them, and recycle items made from petroleum.*

APPLICATION

- A. Ask students to describe in their journals, two natural resources that they need and how they use them.
- B. Ask students to share their journal entries.
- C. As a class, select a toy and trace its creation to a natural resource category.
- D. Develop a guessing game with clues that will lead students to identify an object in the classroom. For example, tell students, "I am thinking of an item that is made from plants."
- E. Show students the "Earth Pocket" you made in "Preparation" step "2": Pencil—Wood—Plants.
- Ask what natural resources the plants need.
 - Have students help you make signs and illustrations for "Soil," "Water," "Air," and "Sunlight."
 - Cut the plants card from the "Earth Pocket." Add four pieces of string to the "Plants." Hang on the strings the signs and illustrations of the natural resources the plants need in order to live. (See illustration.) The string can be stapled or taped on.
 - Ask students to explain, based on what they just did and saw, additional ways people depend on natural resources.
We depend on natural resources that plants need, because we depend on plants.



- F. Ask students to circle (on the list developed in "Discussion/Questions" section "B") those ideas that they can do to conserve some natural resources. Keep this list to add to in Lesson 3 and Lesson 5.

Homework Assignment: Ask students to make a collage of items that are made from one specific natural resource. One way to do this is to have them use a piece of cardboard on which they

write the name of a natural resource. Then they can cut out pictures from newspapers and magazines of items made from that natural resource.

Note: For students that do not have access to a newspaper or magazine, provide one for each of them.

Project Idea: Have students show through displays, posters, and other art forms the ways natural resources can be used wisely.

EXTENSIONS

- A. Have students make a mobile on how wild-life depends on different natural resources. Encourage students to come up with their own ideas on how to do this.
- B. For older students, have groups of students use the book, *How Things Are Made* by Felicity Brooks, to help them illustrate how one product (such as paper, glass, shoes) is made. These illustrations could be displayed on a bulletin board or on poster board hung in the classroom.

RESOURCES

Videos

Where, Why, and How: House—A Child's Guide to the Origins of Everyday Stuff. Pyramid Film and Video, 1994 (9 minutes).

Explains what natural resources are used to build a house.

Wood: The Miracle Resource. Temperate Forest

Foundation, 1994 (15 minutes).

Discusses the various ways wood is used by people.

Videodisc

Windows on Science: Primary Science. Volume 2, Earth's Resources. Atlanta, Ga.: Optical Data School Media.

A multimedia science program that guides students to survey the Earth's resources and how they are used to produce useful products.

Books

Brooks, Felicity. *How Things Are Made. Finding Out About* series. Tulsa, Okla.: EDC Publishing, 1989.

Explains from what natural resources things are made. Contains illustrations and descriptions of how some items are made. These include leather shoes, clay pottery, clothing, paper, glass bottles, cans, plastic blocks, and soap.

Jones, George. *My First Book of How Things Are Made: Crayons, Jeans, Peanut Butter, Guitars, and More.* New York: Scholastic, Inc., 1995.

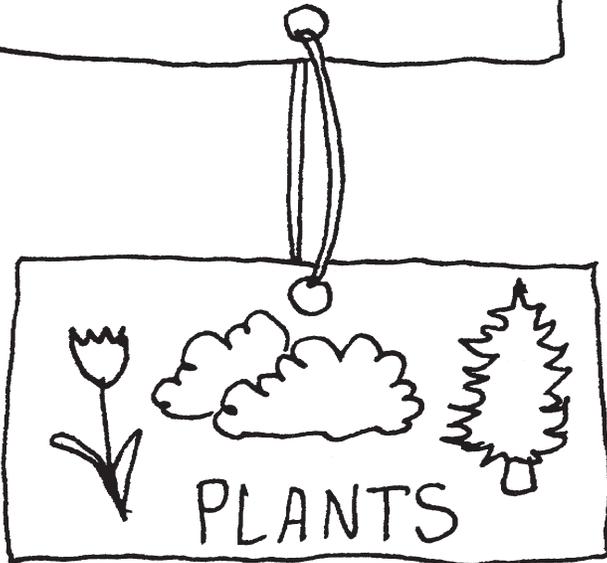
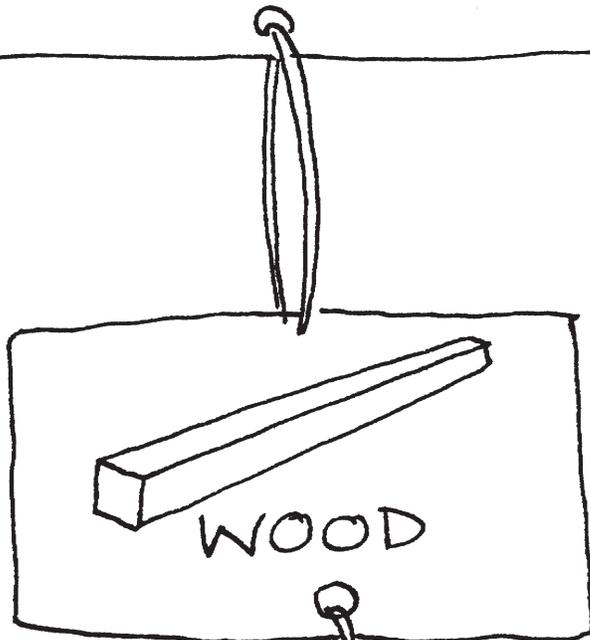
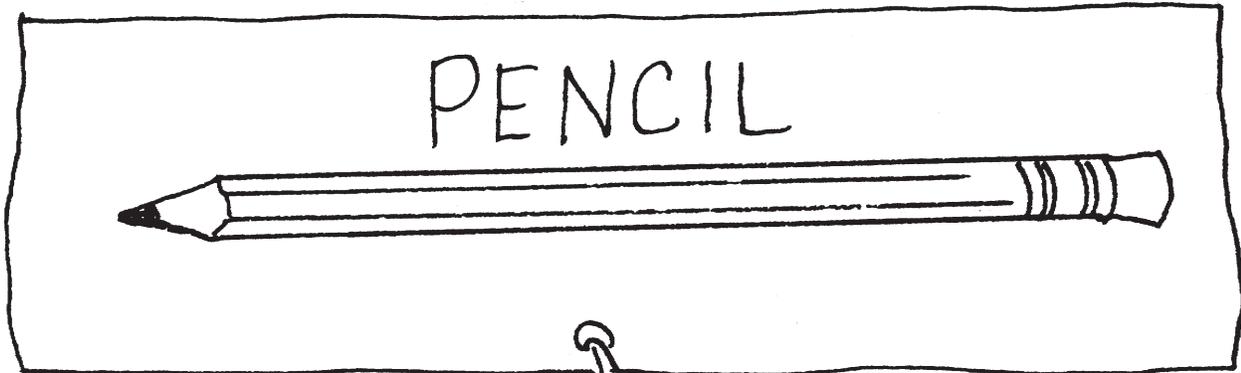
Explains how crayons are made, as well as peanut butter, grape jelly, footballs, orange juice, blue jeans, guitars, and books. This book can be used to show students ways people make products from plants.

Student's Page

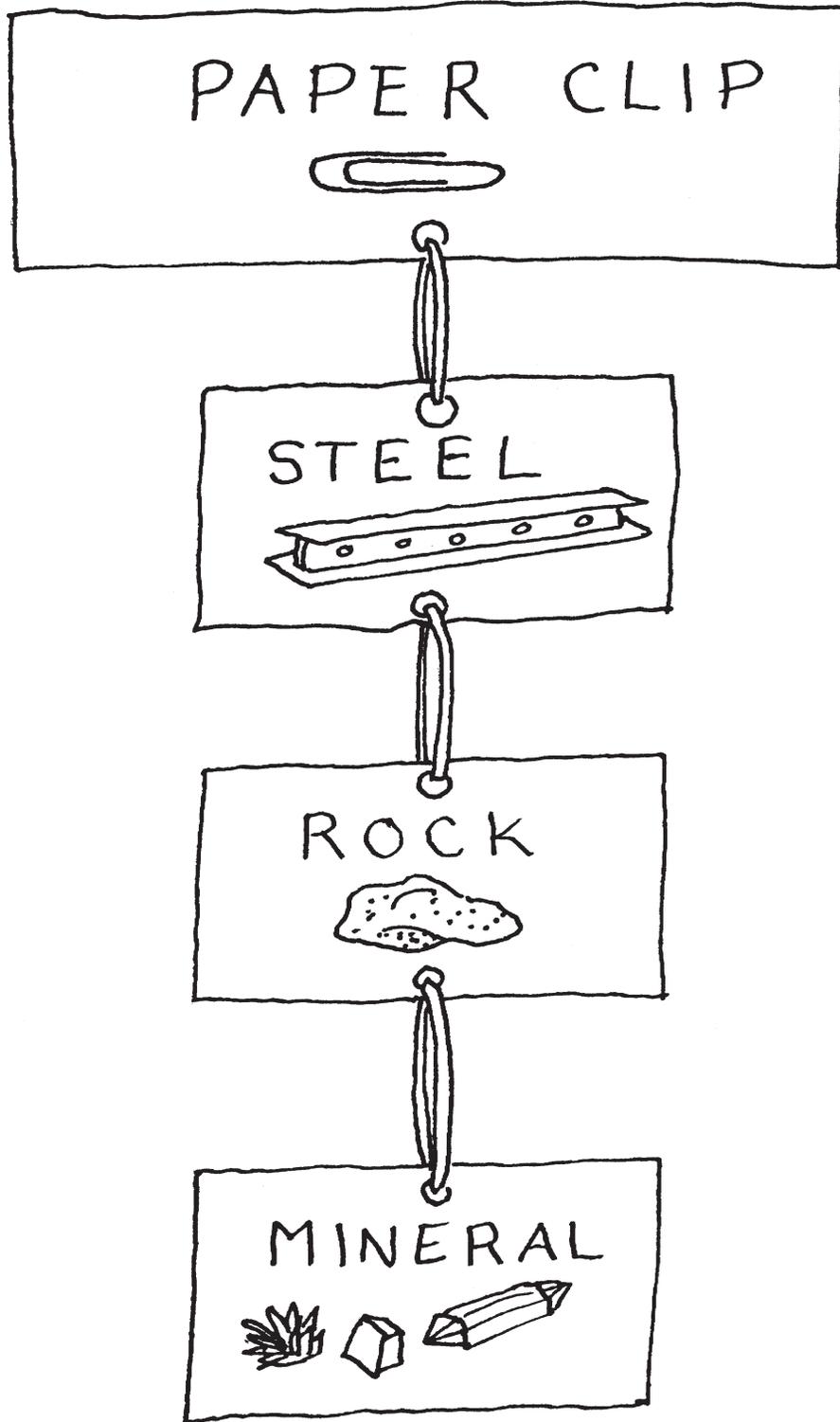
OUTLINE FOR AN EARTH POCKET



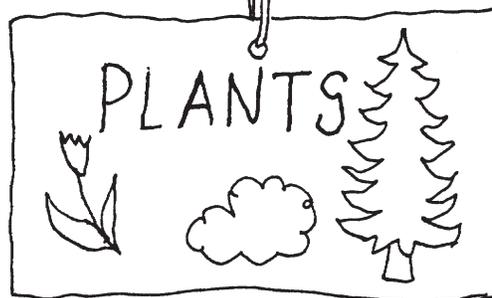
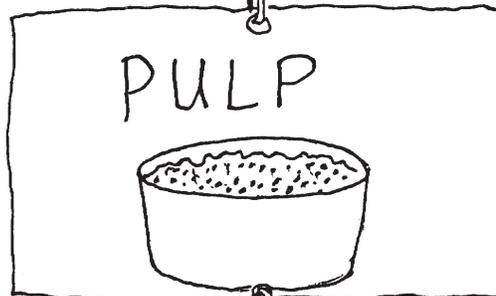
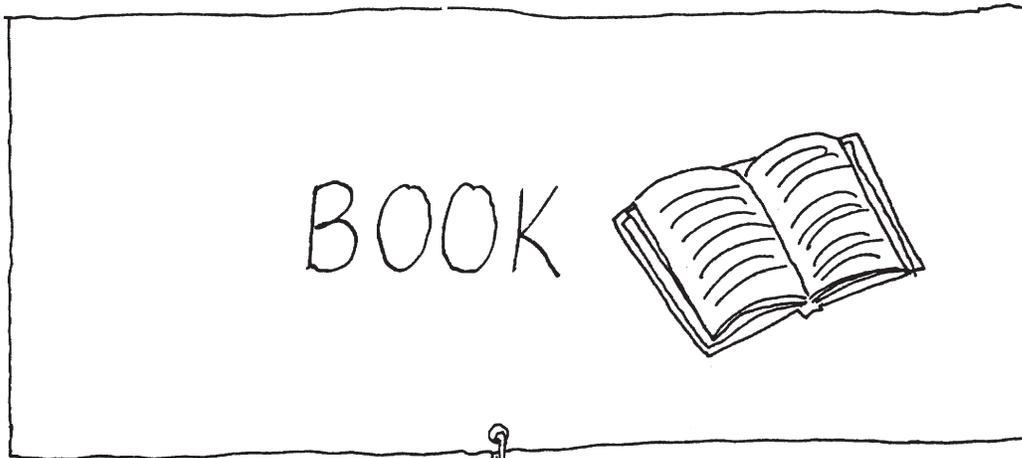
PENCIL



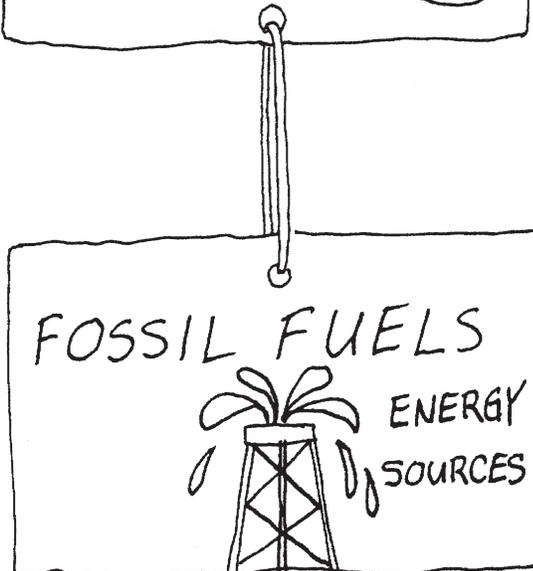
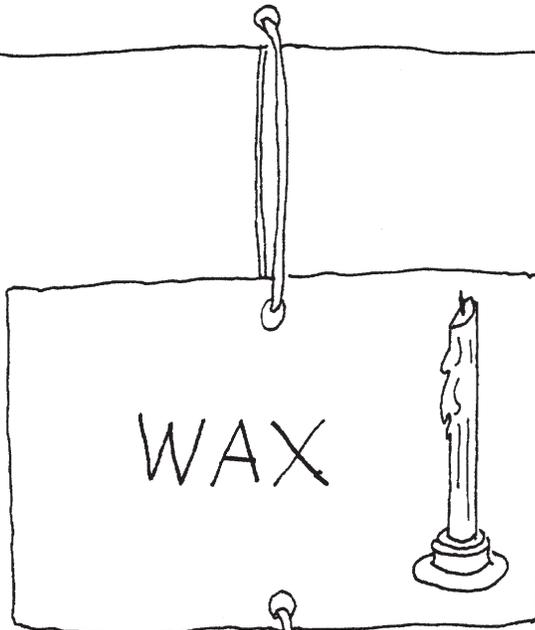
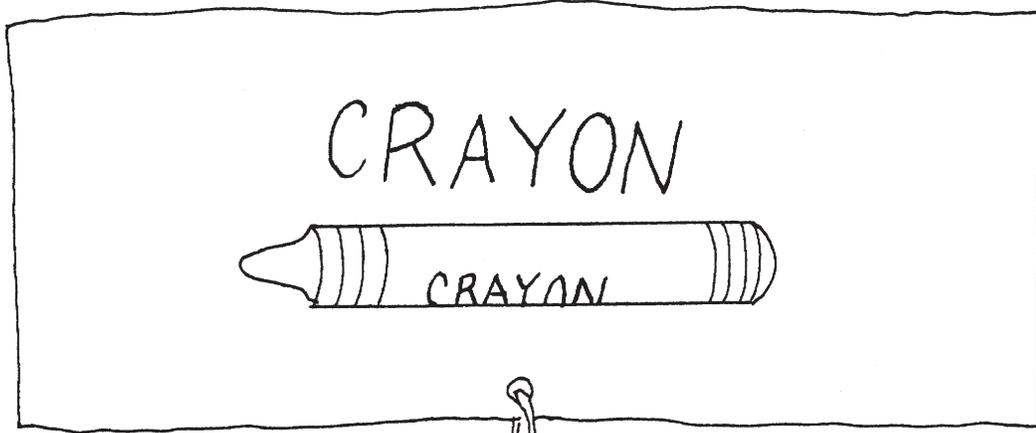
Student's Page
PAPER CLIP



Student's Page
BOOK



Student's Page
CRAYON



BACKGROUND INFORMATION FOR THE TEACHER

Humans depend on natural resources for their survival. The following describes ways people depend on natural resources.

PLANTS—Humans breathe the oxygen that plants make. Humans use plants for food, clothing, and in building materials. They also use wood to heat their homes. Humans use plants to beautify an area, to keep soil from eroding, and to serve as windbreaks. Many medicines are derived from plants.

ANIMALS—Humans use animals for food and clothing and to learn from and to appreciate (for aesthetic purposes). The droppings of some domesticated animals are used as fertilizer. Humans also use animal products in medicines.

SOIL—Humans use soil in which to grow plants for food and on which to build roads and buildings. They also use soil in products, such as adobe bricks.

MINERALS—Humans use minerals to manufacture thousands of different items. Silica is used to make glass; bauxite is used to make aluminum; many minerals are used to make items, such as cars, computer parts, and appliances.

AIR—Humans need clean air to breathe to stay alive.

WATER—Humans need clean water to drink to stay alive. Water is also used in the manufacturing process of most products. The water might become part of the product, be used to wash items, or used to cool down machinery.

ENERGY SOURCES

- **Sunlight**—Humans depend on sunlight, which provides energy for green plants to grow. Humans depend on green plants for food, clothing, fuel, and building materials. They also need sunlight to power the water cycle so they can have fresh water to drink and to use for other purposes. Humans use solar power to generate electricity and to heat water and homes and other buildings. Note that “sunlight” is not addressed in this unit, because the lessons focus on the connections among natural resources, manufactured items, and solid waste.

- **Fossil Fuels**—Fossil fuels include crude oil, coal, and natural gas. Humans use fossil fuels as a source of energy to generate electricity and to move machines. Petroleum is manufactured from crude oil. Humans use petroleum to make a variety of products, such as plastics.

- **Other Energy Sources**—Other energy sources include wind, hydropower, geothermal, and tidal energy. Humans usually use these energy sources to generate electricity; however, these are not addressed in this unit.

Note: In this lesson we will use only four categories of natural resources: plants, animals, minerals, fossil fuels (a subcategory of energy sources). These are the natural resources from which most products are manufactured. Note that air and water are almost always used in the manufacturing process.