

Raising a thought-provoking question is a good way to assess the overall depth of student understanding. A couple of suggestions are listed below:

- What do you think our world will be like in 50 years if people continue to waste energy and decide not to recycle or fight pollution?
- Why is soil an important natural resource?
- What are some ways people can save energy in their homes?

Follow-up Activities

- Constructing a sealed terrarium in the classroom is an excellent activity for demonstrating natural resources and nature's ability to recycle. Students can create their terrarium in a plastic container covered with plastic wrap that contains soil, pebbles, branches, seeds and water. Have students list everything in the terrarium that they consider to be a resource. Have them observe this little world, taking notes regularly to record changes. How does each resource contribute to the terrarium? Encourage students to hypothesize how the environment would be affected if any of the natural resources were removed or polluted.
- Have students look through magazines and catalogs, and cut out pictures of things that use natural resources like fossil fuels, running water or sunlight. Students can create a bulletin board display that emphasizes the importance of natural resources in our lives.
- Share *The Lorax*, written by Dr. Seuss (Random House, 1971), with your students and discuss how each of the characters, including the Onceler, Humming Fish and the Brown Barbaloos, used the natural resources in the story. Students can then write more stories about the Lorax as he helps others learn how to use natural resources wisely.
- Have students bring in toys and tools that use solar cells as energy resources. Students can experiment with amounts and types of light (sun, incandescent, fluorescent, flashlight) necessary for these devices to work well.

Suggested Internet Resources

Periodically, Internet Resources are updated on our web site at www.LibraryVideo.com

- www.epa.gov/recyclecity
"Recycle City" from the Environmental Protection Agency helps students discover how recycling helps reduce waste and save money with games, puzzles, and an interactive book.

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- www1.eere.energy.gov/kids/roofus
The Department of Energy introduces children to Roofus, an energy-wise canine with a solar doghouse. This web site also contains instructions for making a solar oven and a sundial.
- www.pca.state.mn.us/kids/
The "Kid's Page" from the Minnesota Pollution Control Agency offers information about pesticides, water and air quality, and hazardous wastes. Experiments, pages to color, word finds and dot-dots are presented to help students learn about pollution.
- www.nrcs.usda.gov/feature/education/squirm/skworm.html
This site for kids developed by the Natural Resources Conservation Service explains the importance of soil and describes ways that it can be conserved.

Suggested Print Resources

- Cherry, Lynne. *A River Ran Wild: An Environmental History*. Voyager Books, San Diego, CA; 2002.
- Richardson, Adele. *Soil*. Coughlan Publishing, Mankato, MN; 2003.
- Sherman, Josepha. *Energy at Work: Solar Power*. Coughlan Publishing, Mankato, MN; 2004.

TEACHER'S GUIDE CONSULTANT

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TITLES

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All About Natural Resources

Grades K-4

This guide is a supplement, designed for educators to use when presenting this program in an instructional setting.

Before Viewing: Research in learning suggests that it is important for the teacher to discover what the students know — or think they know — about a topic, at the start of a new unit, so that their accurate conceptions can be validated and reinforced, and their misconceptions identified and corrected. Therefore, after reviewing the pre-viewing discussion questions provided for your class, create an "Everything We Know About..." list. Preview key vocabulary words and have students raise additional questions they hope will be answered by this program. Most importantly, students should be told that as "science detectives" they must listen closely, so that after viewing the program, they will be able to tell whether or not the facts/beliefs they put on their list were scientifically accurate.

After Viewing: After a brief discussion about the program, challenge your "science detectives" to prove or disprove the accuracy of the facts they put on their "Everything We Know About..." list. Discuss what else they learned and use the follow-up questions and activities to inspire further discussion. Encourage students to research the topic further with the Internet and reading resources provided.



Program Summary

Earth's natural resources include sunshine, water, minerals, air, plants, animals and soil. These resources are essential for life and are used everyday. Some natural resources are renewable, which means they can be replaced, but others are nonrenewable and cannot be replaced as quickly as they are being used.

The energy from sunlight is the Earth's most important renewable natural resource. Without the sun, life on Earth could not exist! The sun heats the Earth and gives energy to plants to produce food. The air is a natural resource that most living things need to breathe. Clean, fresh water is another vital renewable natural resource that is continually made available through the Earth's water cycle. Water from oceans, rivers and lakes evaporates, changing from a liquid into an invisible gas called water vapor. Water vapor rises, cools, forms clouds and condenses back into a liquid, falling as rain, snow, sleet or hail. The same water supply is recycled over and over again, which is why it is so important to avoid water pollution. Plants and animals are renewable natural resources, too. They keep growing and reproducing, making more of themselves for future generations. Where would we be without the last of the renewable natural resources — soil? Good soil can take thousands of years to form. If it is not cared for properly through wise farming practices and pollution prevention activities, it could easily become a nonrenewable resource.

Nonrenewable natural resources include such things as minerals and fossil fuels. Minerals, like iron, copper and gold, are the ingredients that make up rocks and soil. People mine for minerals in the ground, but there is a limited supply of minerals in the Earth. Once they are all found and removed, the Earth's supply will be gone forever! Fossil fuels like coal, petroleum and natural gas were formed over many millions of years from the decaying remains of ancient plants and animals. We use these natural resources to warm and light our homes, cook our food, and run our appliances and vehicles. Not only will we soon run out of some of these resources, but their use is also responsible for a great deal of pollution. Scientists are searching for alternative resources like wind and solar power to power our world. Unlike fossil fuels, these resources are both renewable and clean to use.

Recycling is a helpful way for us to make our natural resources last longer and reduce pollution. By reusing paper products, glass, plastics and metals to make new products, we are doing a better job of conserving Earth's precious nonrenewable natural resources.

Vocabulary

The following words are included for teacher reference or for use with students. They are listed in the order in which they appear in the video.

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resource — Something that is needed and used by people to get jobs done and to help them stay alive.

natural resources — Materials that are necessary for living things and are created in nature.

renewable resources — Materials that are always available for use such as sunlight, water, air, soil and plants and animals.

nonrenewable resources — Materials that are in limited supply because they are being used up faster than they are being formed. Nonrenewable resources such as fossil fuels like coal, oil and natural gas take a very long time to form.

photosynthesis — The process through which green plants make their own food.

pollution — Chemicals and wastes that poison the land, air and water. Pollution can be caused by many things: oil spills, animal waste, chemicals like fertilizers and insecticide sprays running from farmlands into streams, people spilling waste into sewers and factories pumping smoke into the air.

environmentalists — Scientists who study the environment and work to ensure that natural resources do not become polluted.

water cycle — The never-ending process that recycles Earth's water supply using energy from the sun. The water cycle has three stages: evaporation, condensation and precipitation.

water vapor — Water in the form of an invisible gas.

minerals — Solid, pure substances found in the Earth that combine to form rocks. Minerals are considered to be nonrenewable resources.

fossil fuels — Nonrenewable natural resources produced over millions of years from the remains of ancient plants and animals. Some examples of fossil fuels are coal, oil and natural gas.

solar panels — Devices created to collect the energy from the sun and use it to make electricity. Solar energy can be used as an alternative to fossil fuels.

wind turbines — Devices created by humans to use the energy from the wind to make electricity. Wind energy can be used as an alternative to fossil fuels.

recycling — Using materials like used glass bottles and aluminum cans to make new materials. Recycling saves energy because it allows us to use things over and over again.

Pre-viewing Discussion

Before students generate their list of "Everything We Know About..." this topic, stimulate and focus their thinking by raising these questions so that their list will better reflect the key ideas in this show:

- What is energy? Why do people need energy?
- Where do oil and gasoline come from?

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- What happens to puddles after it rains?

After the class has completed their "Everything We Know About..." list, and before watching the show, ask them what other questions they have that they hope will be answered during this program. Have students listen closely to learn if everything on their class list is accurate and to hear if any of their own questions are answered.

Focus Questions

You may wish to ask your class the following questions to assess their comprehension of key points presented in the program:

1. What is a resource?
2. What is the difference between a natural resource and a man-made resource?
3. What are some examples of renewable natural resources?
4. Why is energy from the sun considered to be the most important natural resource of all?
5. What is the water cycle? Why is it important?
6. Why are plants and animals natural resources?
7. What is the purpose of no-till farming?
8. What are some sources of air, water and soil pollution? What is being done to protect natural resources from pollution?
9. Why are some natural resources considered nonrenewable?
10. Provide some examples of minerals. Where are minerals found?
11. Are minerals nonrenewable or renewable natural resources?
12. What are fossil fuels? How are they formed?
13. What are some major problems with using fossil fuels?
14. What are some ways people can conserve natural resources?
15. What is recycling? Why is it important?

Follow-up Discussion

The most important part of this segment is to examine both the facts and beliefs generated by the class in their "Everything We Know About..." list. Research indicates that students will retain their previous misconceptions — in preference to the new information — until they actively recognize and correct their own errors. Because of this, it is important to lead students to the correct ideas while identifying and correcting any misconceptions from the class list. After reviewing the list, encourage students to share the answers they got to the questions raised, before viewing the program.

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