

A Few of My Favorite Things (Grades 4-8)

Overview

Students will trace the resources that go into making one item (their “favorite thing”). They will learn how the manufacturing of just one product can have an impact on the environment.

Objectives

Students will explain how the different materials that go into making a product all come from natural resources, identify natural resources as being renewable or non-renewable, identify the steps that go into making a product and describe some of the impacts from obtaining and processing natural resources for making products.

Time

Preparation: 10 minutes

Activity: 60 minutes

Materials

What are Natural Resources? Fact Sheet

Background

Natural resources are the raw materials we use for housing, clothing, transporting, heating, cooking and so on. They include the air we breathe, the water we drink, the land we farm, and the space we use for living and recreation. In short, they are all the things we use in our physical environment to meet our wants and needs. We can put them into three categories: renewable, nonrenewable, and perpetual.

In a human time frame, perpetual resources such as solar energy, wind and tides last forever. Nonrenewable resources, however, exist in fixed amounts and once they're used up, they're gone forever. For example, fossil fuels are formed through natural processes that take millions of years. If we use all the available fossil fuels, no additional amounts of them will ever be available to us – at least not for millions of years. Other nonrenewable resources such as copper and other metals were created billions of years ago during the explosions of giant stars. These nonrenewable resources are not created through natural processes here on Earth. The only way we could get more of them is to mine them on other planets.

Renewable resources are materials that can be replenished through natural and/or human processes. For example, even though trees die naturally or are harvested, new trees are natural reseeded or can be replanted by humans. And even though people consume livestock, new animals are constantly being raised. It is important to realize that renewable resources need to be carefully managed. People can use renewable resource in a way that it cannot recover itself. For example, in the early 1900's, the passenger pigeon was hunted so heavily and irresponsibly that its numbers dwindled and it became extinct. Grasslands can become overgrazed to the point where the soil loses its ability to support plant life and the area becomes like a desert. Groundwater supplies may be pumped out of the ground faster than precipitation can trickle down to replenish them.



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The maximum rate at which people can use a renewable resource without reducing the ability of the resource to renew itself is called sustainable yield. For example, a sustainable yield of timber would mean harvesting only the amount of trees that the forest could grow. The term also applies to water and wildlife. The sustainable yield of any resource varies from region to region, and it can be altered through various management practices.

When people recycle or re-use natural resources, they decrease the demand on the resource and save energy. (Of course, the recycling process itself also consumes energy.) For example, when people recycle aluminum cans, less bauxite needs to be mined to create “new” aluminum. Recycling aluminum saves a lot of energy as well. With paper products, the equation is more complicated since paper fibers cannot be recycled indefinitely and new fiber from trees must be added to the papermaking cycle. However, recycling keeps paper out of the landfills and incinerators. Many resources, including renewable and nonrenewable ones, can be recycled and reused.

Teacher Preparation

Make copies of the “*What are Natural Resources?*” fact Sheet.

Activity

1. Have each students bring in a favorite object (such as a skateboard, book, or toy). Give students five minutes to write down as many of the materials that went into making it as they can. They should be able to generate a list of materials just by looking at the object (plastic, wood, aluminum, steel, leather, rubber, glass, etc.).
2. Ask several students to describe their possessions and the materials that went into making them. As they list the materials, write them on the board (without duplicating responses).
3. Explain to the students that all the products we use and the materials in them are derived from natural resources, resources that occur naturally on Earth. Go down the list of materials on the chalkboard and help the students identify the natural resource from which each material is derived. Afterward, ask the students to identify the major groups of natural resources from which all of the materials are made (plant, animal, metal or mineral, petroleum).
4. Explain to the students that some natural resources can be renewed while others cannot. Ask them which of the resources they’ve identified and which are not. (Plants and animals are renewable.) Which materials in their favorite thing come from renewable resources? Could the materials that are not from renewable resources be substituted with materials that are?
5. Explain that some materials can be recycled and some cannot. Have the students look at the list of materials on the board and decide which ones they think can be recycled and which ones cannot. Does this mean that products made from these materials can always be recycled? (No, it is difficult to recycle products that contain different resource materials



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mixed together.) Can any of the items the students brought in be recycled? Can any of them be reused? How long will they last? Will they eventually get thrown in the trash?

6. Ask the students if they know what type of fuel or energy was used to make their favorite item and to transport the item to them. What energy is used to maintain it? Is this a renewable source of energy? How might the mass production and use of each item affect the environment? How might the negative effects be minimized?

7. Have the students look at their favorite thing again, think about all the materials and energy that went into making it, and decide whether these were derived from renewable or nonrenewable natural resources. For example, a skateboard might have a plastic board derived from petroleum, metal wheel supports from minerals in the earth and rubber wheels from tree sap. So, in this example, the only material that might come from a renewable resource is rubber. In addition, nonrenewable fossil fuels (oil, gas, coal) were used to process raw materials to manufacture, and transport the skateboard.

8. Students should use poster paper and markers to create a visual representation of their favorite thing, showing the materials, resources, and energy that go into making it.

9. Now that the students have learned that most manufactured items are very difficult to recycle, have them find out what happens to those items when people throw them away. They probably end up in a landfill or incinerator. Many times people throw away things that are still useful because they are no longer interested in them or don't want to have them repaired. This problem can be solved by giving items away, fixing them, or finding ways to reuse them.



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