

Seas, Trees, and Economies

Lesson 2: Here Today, Back Here Tomorrow

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Standards and Benchmarks (see page 2.11)

Lesson Description

Students engage in a trading activity that allows them to chart the flow of a natural resource out of the environment, through the economy, and then back into the environment.

Grade Level

6-8

Economic Concepts

Consumer
Consumption
Goods
Intermediate goods
Natural resources
Production
Services
Trade-off
Waste

Objectives

Students will be able to

- define goods, services, consumer, production, natural resources, intermediate goods, waste, and trade-off;
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- explain the “life cycle” of natural resources used in an economy; and
 - explain how the environment provides raw materials and services that are used to satisfy people’s wants.
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Compelling Question

How can waste that occurs through the transformation of natural resources into goods and services be reduced?

Time Required

30-45 minutes

Materials

- Visual 2-1
 - One or two copies of Handout 2-1, cut apart and shuffled so that one set of four cards is available for each student (NOTE: A set contains one natural resource, one intermediate good, one good, and one waste card. The handout provides enough sets for a class of 25 students. For classes with fewer than 25 students, remove sets. For classes with more than 25 students, add duplicate sets.)
 - One copy of Handout 2-2 for each student
 - Internet access for online dictionaries
 - Drawing paper, pencils, and crayons
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Procedure

1. Point out a wooden desk or other wooden object in the classroom and ask the following questions:
 - What was used to make this desk? (*Wood or lumber*)
 - From where did the person who produced the desk buy the lumber? (*Lumberyard or sawmill*)
 - Where was the wood or lumber before it arrived at the lumberyard or sawmill? (*It was a tree in a forest.*)
 - What might happen to this desk in 15 to 20 years? (*It might become old and unusable.*)
 - Once the desk is placed in the trash, where will it go? (*Landfill or incinerator*)
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2. Display *Visual 2-1: Vocabulary* and explain the following:
 - **Goods** are objects that satisfy our wants.
 - **Services** are actions that satisfy our wants.
 - When people buy and use goods and services, they are **consumers**.
 - **Production** occurs when resources and intermediate goods are used to make goods and provide services.
 - **Natural resources** are things that occur naturally in and on the earth that are used to produce goods and services. For example, trees occur naturally on the earth. Natural resources often are transformed into intermediate goods that are used to produce many other goods.
 - An **intermediate good** is a man-made good that is used to produce another good or service, becoming part of that good or service. For example, trees (natural resources) are cut into lumber (intermediate good). The lumber is used to produce desks and becomes part of the desks.

3. Discuss the following:
 - Name some goods that you consume. (*Clothing, food, pencils, paper, games*)
 - Name some services that you consume. (*Education, bus transportation, bike repair*)
 - Give some examples of natural resources. (*Oil, water, plants, trees, rocks, soil, minerals*)
 - Name some goods that are produced with natural resources. (*Oil—gasoline and plastic; water—bottled water, other beverages, food, shampoo, and lotion; soil—plants, fruits, and vegetables; Minerals—aluminum cans, jewelry, and glass*)

4. Explain that when goods are produced and consumed, waste occurs. **Waste** is the unavoidable material that remains after something has been consumed or produced. Some waste may be recycled to produce more goods, while the rest of the waste is put back into the environment in the ground (landfill), in waterways (through sewers), or in the air (incineration). Thus, each natural resource has its own “life cycle” as it starts in the environment, is used in the economy, and then eventually is returned to the environment. Discuss the following:
 - Give some examples of waste that is recycled to produce more goods. (*Aluminum cans, some plastic products, paper*)
 - Give some examples of waste that is put back into the environment—whether in landfills, through sewers, or incinerated into the air. (*Packaging from various products may be put into landfills or incinerated; water used to produce chemicals and cool machinery flows back into rivers and streams; treated sewage flows into rivers; and carbon dioxide and other gases are emitted from cars.*)

5. Tell students they are going to discover the life cycle of several natural resources by playing a simple trading game. Each student will receive four cards. The object of the game is to collect a set of cards that trace the life cycle of one natural resource through each of its stages: natural resource, intermediate good, good, and waste. Each student should make one-for-one trades with other students until collecting a complete and accurate set of four cards for a specific resource.
6. Once a student thinks he or she has a complete set of cards, the student should bring it to you to verify that it is complete and accurate. If correct, the student receives a copy of *Handout 2-2: The Lifecycle of a Natural Resource* to complete by drawing pictures that represent each of the four stages for the resource. If incorrect, the student must continue trading until a complete set has been collected. (NOTE: Each set is identified as a row on Handout 2-1. For example, a correct answer for “tree” would be tree, wood/lumber, furniture, and scrap wood. An incorrect answer for “oil,” according to the table, would be oil, plastic, jar, and used jar.)
7. Instruct students to begin trading. When all students have completed trading and have completed Handout 2-2, allow several of them to share their natural resource life cycles. Display student pictures on a bulletin board titled “The Life Cycle of Natural Resources.”
8. Point out that bringing natural resources into the economy unavoidably creates waste because materials can never really disappear altogether. So the environment not only supplies us with materials to produce the goods and services we want, it also is the place where we put our waste.
9. Explain that putting waste into the environment prevents the environment from providing other goods and services that people want. Give the following examples:
 - When we place waste into the air, the environment can’t provide the clean air that we want to breathe.
 - When we place waste into the air, we damage the ozone layer. This means the environment can’t provide the UV protection that we want.
 - When we put waste into the water, the environment can’t provide the clean water that we want.
 - When we cut down trees and eliminate grasslands, the environment can’t provide the flood protection and wildlife habitat that we want.
10. Explain that our environment is limited. This means there’s a limited amount of clean water, clean air, land space, and so on. This means that if we want to produce more goods and services in the economy, we give up goods and services the environment provides. If we want more goods and services the environment provides, we give up goods and services pro-

duced in the economy. Giving up some of one thing to have more of something else is called a **trade-off**.

11. Point out that decisionmaking often involves trade-offs. For example, if you have an important test you must study for, you may give up some free time after school to spend additional time studying. If you want to be a better baseball player, dancer, or saxophone player, you may give up some time sleeping in on Saturday morning to spend more time practicing.

Closure

12. Review the major points of the lesson by discussing the following:
 - What are consumers? (*People who buy and use goods and services*)
 - What are goods? (*Objects that provide satisfaction*)
 - What are services? (*Actions that provide satisfaction*)
 - What are natural resources? (*Things that occur naturally in and on the earth that are used to produce goods and services*)
 - What are the four stages of a natural resource's life? (*Natural resource, intermediate good, good, waste*)
 - What is an intermediate good? (*A man-made good that is used to produce another good or service, becoming part of that good or service*)
 - Give an example of an intermediate good. (*Wood pulp, lumber, steel, leather, glass*)
 - What is production? (*The process of using resources and intermediate goods to make goods and provide services*)
 - What is waste? (*The unavoidable material that remains after something has been consumed or produced*)
 - Why is waste a problem? (*It ends up back in the environment and makes it difficult for the environment to provide other goods and services we want.*)
 - What is a trade-off? (*Giving up some of one thing to have more of another thing*)
 - What trade-off do we make between the economy and the environment? (*If we want to produce more goods in the economy, we give up environmental goods such as clean air and clean water. If we want more clean air and clean water, we must give up some goods produced in the economy.*)

Assessment

13. Talking with students, create a list of goods in the classroom (pencils, paper, desks, water, tables, chairs, markers, crayons, and so on). Ask students to choose an item from the list and

explain which natural resources were used to produce the item and from where these natural resources might have come. Then ask students to explain what happens to these goods after they are used up. (*Paper comes from trees—perhaps from forests in another state. When the paper is used, it is tossed in the trash or recycle bin. Then it is hauled away by a garbage truck to be recycled, put in a landfill, or possibly incinerated. If it is incinerated, it isn't eliminated. Its molecules are dispersed over a very wide area. Water comes from rain or snow melt from nearby mountains. It comes to homes, businesses, and schools through pipes. Once it is used, it is flushed or poured down the drain and enters the sewer system. From there it goes to a sewage treatment facility where it is treated and discharged back into a nearby river or evaporated back into the atmosphere.*)

Extension

14. Discuss the following “Four Rs” of waste management:

- **Reduce** means to produce and consume fewer goods. Producing fewer goods means we use fewer natural resources and produce less waste.
- Give examples of ways in which you, your family, or your class might reduce. (*Write on a chalkboard or whiteboard that can be reused instead of on paper. Read a textbook online. Both of these reduce the use of paper. Take showers instead of baths because typically a shower uses less water than a bath. Use cloth bags for shopping, reducing the use of paper or plastic for bags.*)
- **Reuse** means to use goods more than once or to use goods in new ways.
- Give examples of ways in which you, your family, or your class might reuse. (*Use both sides of the paper on which you write and draw. Hand down clothing to younger brothers and sisters. Keep boxes and wrapping paper in which you received gifts and use them when you give gifts. Use reusable cloth bags for shopping.*)
- **Refine** means to develop production methods that use fewer intermediate goods and less energy and, therefore, use fewer natural resources and produce less waste.
- Give examples of ways in which you, your family, or your class might refine. (*Cooking in a microwave instead of an oven reduces the use of electricity, which means using less coal, oil, or uranium. Using computers to store information saves paper. Better-insulated windows and doors reduce the school's and/or your family's need for heating and cooling.*)
- **Recycle** means to collect used materials and use them to produce goods. This means fewer natural resources are used and less waste is produced.
- Give examples of ways in which you, your family, or your class might recycle. (*Place paper, glass, aluminum, and plastic in recycle bins. Use empty boxes and cardboard tubes to produce storage containers for the classroom.*)

Visual 2-1: Vocabulary

Goods: Objects that satisfy our wants.

Services: Actions that satisfy our wants.

Consumers: People who buy and use goods and services.

Production: Occurs when resources and intermediate goods are used to make goods and provide services.

Natural resources: Things that occur naturally in and on the earth that are used to produce goods and services.

Intermediate good: A man-made good that is used to produce another good or service, becoming part of that good or service.

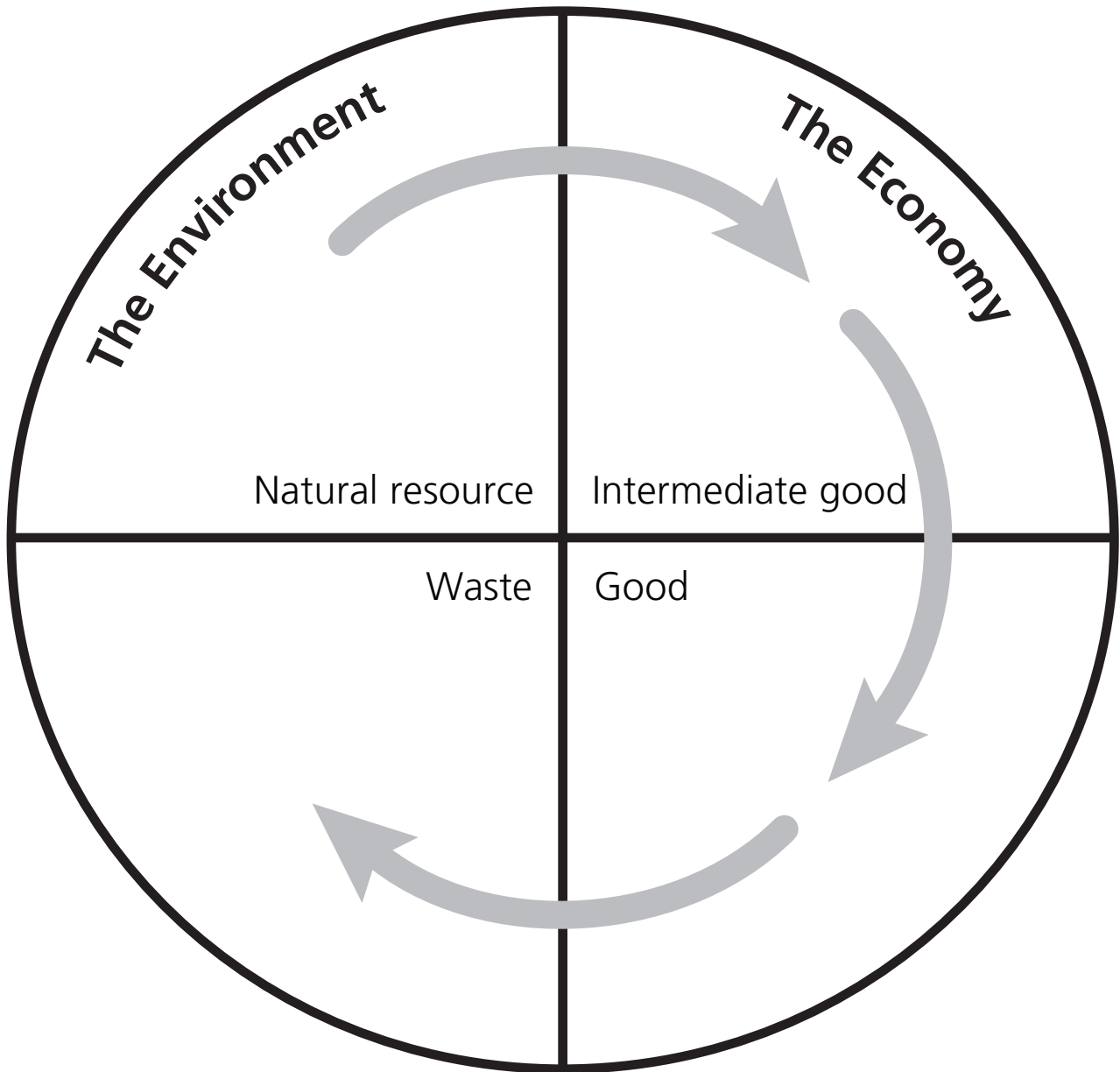
Handout 2-1: Flow Cards (page 1 of 2)

TREE Natural resource	WOOD/LUMBER Intermediate good	FURNITURE Good	SCRAP WOOD Waste
COW Natural resource	LEATHER Intermediate good	COAT Good	OLD COAT Waste
OIL Natural resource	GASOLINE Intermediate good	CAR FUEL Good	EXHAUST GASES Waste
IRON ORE Natural resource	STEEL Intermediate good	CAR Good	JUNK CAR Waste
SUGAR CANE Natural resource	SUGAR Intermediate good	CANDY BAR Good	SEWAGE Waste
SNOW/RAIN Natural resource	WATER Intermediate good	SOFT DRINK Good	SEWAGE Waste
SAND Natural resource	GLASS Intermediate good	JAR Good	USED JAR Waste
GALENA Natural resource	LEAD Intermediate good	BATTERY Good	OLD BATTERY Waste
SHEEP Natural resource	WOOL Intermediate good	CARPET Good	OLD CARPET Waste
RUBBER TREE Natural resource	RUBBER Intermediate good	TIRE Good	OLD TIRES Waste
OIL Natural resource	PLASTIC Intermediate good	MILK JUG Good	USED JUG Waste
BAUXITE ORE Natural resource	ALUMINUM Intermediate good	SOFT DRINK CAN Good	USED CAN Waste
COW Natural resource	MILK Intermediate good	CHEESE Good	SEWAGE Waste

Handout 2-1: Flow Cards (page 2 of 2)

COAL DEPOSIT Natural resource	COAL Intermediate good	ELECTRICITY Good	ASH AND GASES Waste
COTTON Natural resource	CLOTH Intermediate good	SHIRT Good	RAGS Waste
LIMESTONE Natural resource	CONCRETE Intermediate good	SIDEWALK Good	BROKEN SLABS Waste
SILKWORM Natural resource	SILK Intermediate good	TIE Good	OLD TIE Waste
WHEAT Natural resource	FLOUR Intermediate good	BREAD Good	SEWAGE Waste
COPPER ORE Natural resource	COPPER Intermediate good	WATER PIPES Good	SCRAP METAL Waste
TREE Natural resource	WOOD PULP Intermediate good	PAPER Good	TRASH Waste
PLANT Natural resource	CHEMICALS Intermediate good	MEDICINE Good	SEWAGE Waste
SOIL NUTRIENTS Natural resource	CROPS Intermediate good	VEGETABLE Good	SEWAGE Waste
GOLD DEPOSITS Natural resource	GOLD Intermediate good	JEWELRY Good	OLD JEWELRY Waste
CHICKEN Natural resource	EGGS Intermediate good	CAKE Good	SEWAGE Waste
OIL Natural resource	CHEMICALS Intermediate good	PAINT Good	OLD PAINT Waste

Handout 2-2: The Life Cycle of a Natural Resource



Standards and Benchmarks

Voluntary National Content Standards in Economics

Standard 1: Scarcity

- **Benchmarks: Grade 4**

1. People make choices because they can't have everything they want.
2. Economic wants are desires that can be satisfied by consuming a good (an object), a service (an action), or a leisure activity.
3. People's choices about what goods and services to buy and consume determine how resources will be used.
6. Productive resources are the natural resources, human resources, and capital goods available to make goods and services.
7. Natural resources such as land are "gifts of nature"; they are present without human intervention.
8. Human resources are the people who do the mental and physical work to produce goods and services.
9. Capital goods are goods that are produced and used to make other goods and services.
11. Most people produce and consume. As producers they help make goods and services; as consumers they use good and services to satisfy their wants.

- **Benchmarks: Grade 8**

1. Scarcity is the condition of not being able to have all of the goods and services that one wants. It exists because human wants for goods and services exceed the quantity of goods and services that can be produced using available resources. Scarcity is experienced by individuals, governments, and societies.
2. Making good choices should involve trading off the expected value of one opportunity against the expected value of its best alternative.
3. The choices people make have both present and future consequences.

Standard 3: Allocation

- **Benchmark: Grade 8**

5. As consumers, people use resources in different ways to satisfy different wants. Productive resources can be used in different ways to produce different goods and services.

