


Standards and Topic Connections:

<u>One Planet Topic</u>	Standards: <u>Next Generation Science</u>	<u>Environmental Principles and Concepts (EP&Cs)</u>
<p>Consumption and Waste</p>	<p>Performance Expectations (PE): Science and Engineering Practices (SEP) Disciplinary Core Ideas (DCI) and Crosscutting Concepts (CC)</p>	<p>Principle IV Principle V</p>
	<p><u>K-2-ETS1-1 Engineering Design</u>: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.</p> <p><u>ESS3.A Natural Resources</u> How do humans depend on Earth's resources?</p> <p><u>ESS3.C Human Impact on Earth Systems</u> How do humans change the planet?</p> <p><u>3-5-ETS1-2 Engineering Design</u>: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p><u>PS3.B Conservation of Energy and Energy Transfer</u> What is meant by conservation of energy? How is energy transferred between objects or systems?</p>	<p>Principle IV The exchange of matter between natural systems and human societies affects the long-term functioning of both.</p> <p>Principle V Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.</p>

Purpose / Learning Objectives:

Every student will be able to...

- analyze material make-up of “common everyday items
- classify everyday items by material make-up
- explain what a “natural resource” is
- create a chart showing the material make-up of common everyday items to its corresponding natural resource/s
- explain that natural resources do not exist in a vacuum, but rather are extracted from larger, complex ecosystems

- explain that the extraction, use, waste and recovery, or lack thereof, of natural resources affects the health and balance of ecosystems

Driving / Essential Question(s):

- How are humans and natural resources interrelated?
- How do humans depend on natural resources?
- What happens when natural resources are limited?
- How do we ensure that humans use natural resources wisely and sustainably?
- Can we look to nature to improve our dependence on natural resources?
- What are some of the best ways to manage “everyday items” when they become “waste”?

Lesson Terms / Academic Vocabulary:

- Waste
- Garbage
- Compost
- Recycle
- Rot
- Environment
- Raw materials
- Natural Resources
- Renewable resource
- Nonrenewable resource
- Needs/Wants
- Ecosystem
- Ecological Community

Materials / Technology:

- Humans Use Natural Resources printed
- Pencil/Pen
- Scissors
- Glue

Agenda / Activities:

Utilize the 5E Model - *Engage, Explore, Explain, Extend/Elaborate, Evaluate*

(15 - 25 min)	Engage: The purpose of this lesson is to gauge students' knowledge on the material make-up of everyday items (natural/not natural, plastic, wood, metal, etc.); this allows them to classify the items by the natural resource they are derived from.
Directions for Activity:	<p>PART 1 (Refer to student worksheet below)</p> <p>1.) Give students worksheet 1 and have them go on a home Scavenger Hunt to look for items made from different materials (something made of metal, plastic, glass, etc).</p> <p>2.) Have students answer the questions before moving on to Part 2.</p> <p>PART 2</p> <p>3.) Have students cut out all the images on pages 3 and 4. Next, have students correctly group and glue on a separate piece of paper.</p> <p>Optional: Images can also be aligned like a matching puzzle. Students would line them up as such: An item → The item's material make-up → The source from which the material is extracted.</p> <p>4.) Have students answer or discuss the question in Part 2.</p>
(10 min)	Explain: The questions in Part 2 will help the students explain their understanding of the connections between everyday items, the natural resource/s used to make them and the possible effects to the ecosystem due to extraction of the various natural resources.
After Completion of the Activity:	Follow up exercises include discussions on recycling as it relates to resource recovery.

Student Facing Lesson can be accessed through this [LINK](#)

The student facing lesson below is embedded in this document as a teacher reference only.



Humans Use Natural Resources

PART 1

Background: Humans need natural resources to make everything they need. Humans also use natural resources to make things they want. Examples of natural resources are metals, rocks, sand, wood, paper, glass, animals, and plants.

Lesson: You will go on a Scavenger Hunt in your house to find something for each box below. Draw and label what you find in each box.

Something made of Metal:	Something made of Wood:	Something made of Paper:
Something made of Plastic:	Something made of Glass:	Something made of Cardboard:
Something that grew from a plant:	Something that had to be born:	Something that came from an animal:

Awesome! Have an adult check your work, just to make sure the items you found came from the materials in the box.

Discuss with a family member or answer the following questions:




1. Was it easy to find things in your house made of metal? Things made of wood? Paper? Glass? Animals? Plants?
2. What do you think you have more of in your house; things made of metal, glass, wood or plastic?
3. What are clothes made of?
4. Are people natural resources?
5. Do pets need natural resources? What items do pets need and what natural resources do they come from?

PART 2


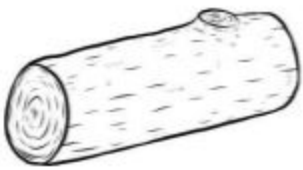










Background: Every natural resource come from different sources on our Earth. For example, the paper you are writing on came from trees (natural resource), and the trees that had to be cut down grew in a forest (source). A forest is not just a place where trees grow, it is an ecological community full of other trees, plants, animals, invertebrates, fungi, bacteria and other microorganisms.



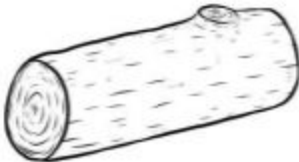
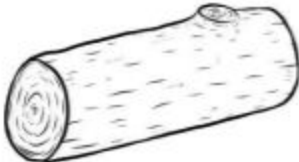








Lesson: For the next exercise you will cut all the boxes on pages 3 and 4. Rearrange and paste the boxes in a notebook or another piece of paper as you match each item to its natural resource and source.

For example:

Item --- BOOK	Natural Resource - WOOD	Source -- TREES, SOIL and WATER
		

Answer Key is on page 5

<p>Item</p>  <p>Paper Clip</p>	<p>Natural Resource</p>  <p>Wood</p>	<p>Natural Resource</p>  <p>Cow</p>
<p>Source</p>  <p>Mines in Mountains</p>	<p>Resource</p>  <p>Petroleum / Oil</p>	<p>Item</p>  <p>Plastic Bottle</p>
<p>Item</p>  <p>Pencil</p>	<p>Item</p>  <p>Glass</p>	<p>Source</p>  <p>Trees, Soil and Water</p>
<p>Source</p>  <p>Grass, Soil, and Water</p>	<p>Source</p>  <p>Deep underground or ocean floor</p>	<p>Item</p>  <p>Book</p>

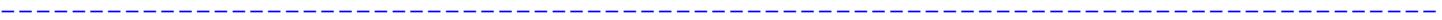
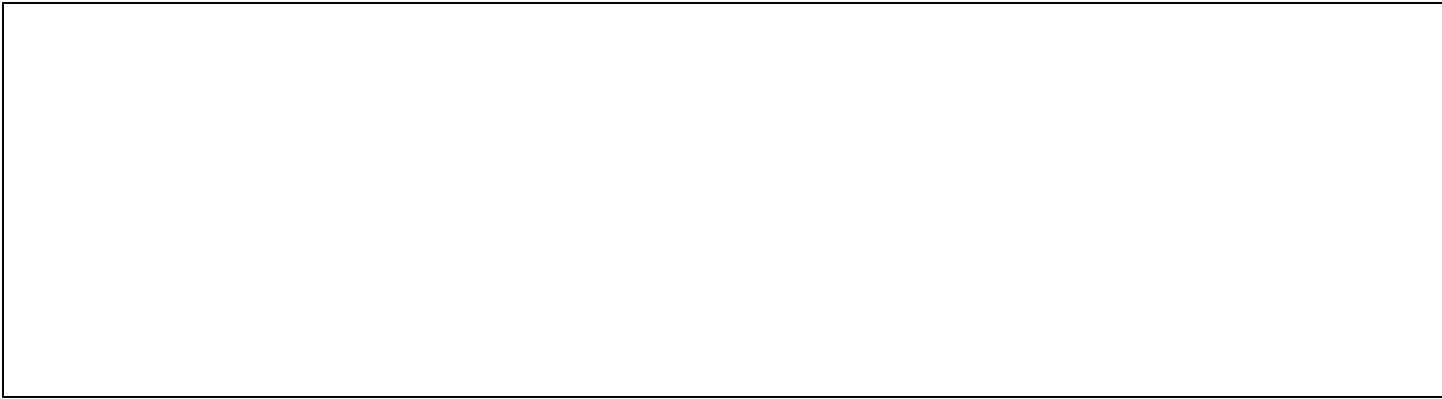
<p>Item</p>  <p>Milk</p>	<p>Source</p>  <p>Trees, Soil and Water</p>	<p>Natural Resource</p>  <p>Wood</p>
<p>Natural Resource</p>  <p>Wood</p>	<p>Natural Resource</p>  <p>Sand</p>	<p>Item</p>  <p>Chip Bag</p>
<p>Item</p>  <p>Pizza Box</p>	<p>Source</p>  <p>Deep Underground or Ocean Floor</p>	<p>Source</p>  <p>Trees, Soil and Water</p>
<p>Natural Resource</p>  <p>Minerals and Rocks</p>	<p>Source</p>  <p>River Beds</p>	<p>Resource</p>  <p>Petroleum / Oil</p>

Answer Key:

ITEM	Natural Resource	Source
Paper Clip	Minerals and Rocks	Mines in Mountains
Plastic Bottle	Petroleum/Oil	Deep Underground or Ocean Floor
Milk	Cow	Grass, Soil and Water
Pencil	Wood	Forests, Soil and Water
Glass Bottle	Sand	River Beds
Chip Bag	Petroleum Oil	Deep Underground or Ocean Floor
Pizza Box	Wood	Forests, Soil, Water

Discuss with a family member or answer the following questions:

1. Were you surprised by the natural resource that an item comes from? Which one and why?
2. Do we have to take care of our natural resources? Why or why not?
3. Watch the video, [Visit a Recycling Plant](#) to find out how paper is made from paper "waste." Why is it important to use our own "paper waste" as a resource instead of trees cut from forests?
4. Choose one of the items from your Scavenger Hunt and find what natural resource/s it is made of, and where those natural resources are found on or in the Earth. Use the space below.



Waste	Waste is defined as any item which is discarded after its primary use, or is deemed worthless, defective or of no use.
Garbage	Garbage is defined as waste that is sent to a landfill and items that never break down or will be used again.
Compost	Compost is defined as waste that is made of organic material that can be added to soil to help plants grow. Examples: Yard trimmings and food scraps.
Recycle	Recycle is defined as waste items that can be melted down and reformed into new items of the same material. Examples: Plastic items and metal items.
Rot	Rot is defined as the process in which organic waste items (compost) are breaking down into the basic nutrients soil needs to make plants grow.
Environment	The air, water, soil, minerals, organisms, and all other factors surrounding an organism.
Raw Materials	Raw materials are defined as the basic materials that are used to produce goods, finished products, energy, or intermediate products that are needed for finished products. Examples:
Natural Resources	Materials or substances such as minerals, forests, water, and fertile land that occur in nature and can be used for economic gain. Examples of natural resources: water, air, coal, oil, natural gas, phosphorus, iron, other minerals.
Renewable Resource	A renewable resource is a natural resource which will replenish to replace the depleted portion by consumption or usage. Examples: forests of trees grow back over time but cannot always keep up with the level of consumption by the human race.
Non-renewable Resource	A non-renewable resource is a natural resource that does not replenish to replace the depleted portion after consumption or usage. The