

Managing Natural Resources

Teacher Facilitation Notes

In General . . .

- Project the slide deck in edit mode—do not show it as a slideshow.
- Hide the speaker notes before projecting. (View/Show Speaker Notes)
- Hide the filmstrip to the left. (View/Hide Filmstrip.)
- Hide the toolbar. (Click on the up arrow at the right end of the tool bar.)
- Call on students to read the various content shown on slides.

Materials Needed Per Group:

Part B: Natural Resource Management

Graduated cylinder (100 mL)	Foam cup (6-8 oz.)
Timer/stopwatch	Paper towels
Beaker, 250 mL	Water

Part C: Proper Disposal of Waste

Feathers, 1 per student*	Cooking oil
Small condiment cups	Water
Paper towels	Cotton balls
Sponge	Dove® dish soap
Craft stick	Beaker (100 mL)

Part D: Designing Solutions

Chart paper or poster board	Markers, crayons, or colored pencils
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Other Materials

Student Recording Sheets	Pencils
Student Summative Evaluation	Science notebooks

*Feathers can be purchased at Walmart® and many craft stores.

Advanced Preparations

- Use scissors to poke a small hole in a foam cup for Part B exploration. The hole should be small but large enough for water to slowly drip through.
- Fill condiments cups about $\frac{3}{4}$ full of Dove® dish detergent for Part D.

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Introduction

- Show the opening slide.
- Have students brainstorm what they see in the grasslands picture. Ask students how the grassland might change in the future.
- Go to the next slide of the landfill. Discuss the questions on the slide.
- Have students identify specific things they see in the photo: birds, people, machinery, paper, etc. Ask them if they can think of one term that can be used to name things they see like paper, grass, birds, wood, trees, dirt, soil, etc. (The term should be *natural resources*.)
- Have students infer what the rest of the lesson might be about!

Part A: Natural Resources

- Show Odd One Out #1. Call on volunteers to read and answer the questions. The important concept here is that three are natural things found on the Earth and one is man-made.
- Do the same for Odd One Out #2. On this slide, 3 are man-made and one is natural.
- Ask students where we get the materials to make the man-made objects. They should realize that the materials needed to make these objects come from nature.
- Read the definition of natural resources. Discuss what natural resources can be seen in the map and how they are used. Discuss the two types of resources: energy and material.
- Complete the two Odd One Out slides as before. Here, they are looking to determine which are renewable and nonrenewable resources.
- Discuss the chart showing renewable and nonrenewable resources. Be sure to discuss how some resources, such as air and water, can be both energy and material resources.
- Have students complete the recording sheet independently.

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Part B: The Importance of Natural Resources and Their Management

- Discuss the title slide for this section.
- Read and discuss the paragraph about the importance of natural resources.
- When reading through the table of natural resources, clarify unknown terms and ideas as needed.
- Be sure students understand the importance of conservation. Use the lab activity to reinforce this concept.
- Have groups complete the lab activity independently. When discussing their results, ask why some groups might have collected more water than others. Point out the the holes might be slightly different sizes leading to differences in collection. Relate this to the speed of water dripping from a faucet—some faucets might have a quicker drip while others drip more slowly.
- Discuss the three main reasons communities need plans to manage their natural resources.

Part C: Proper Disposal of Waste

- Read the introductory slide. Discuss how using and misusing natural resources might harm the environment and organisms living there.
- Read through and discuss the slides about pollution, its causes, and its effects. Have students propose solutions to the pollution problem where appropriate.
- Have groups follow the procedures to investigate cleaning up oil spills in bodies of water. Discuss each step as they work. Be sure they are recording their observations on their data sheets. Discuss why they used the feather in this investigation (to show the effects of oil on seabirds).

Part: Designing Solutions

- Read and discuss the information on the title slide for this section of the lesson.
- Discuss the conservation of material resources. Have students brainstorm ways to conserve these resources. Type in their responses on the slide as students record them on their data sheet. Responses may include:
 - Use only the products you really need
 - Use reusable, not disposable, products when possible
 - Use sponges or rags—not paper towels
 - Turn off the water when not in direct use
 - Donate used goods—don't throw them away
 - Use only one paper towel when drying your hands at school

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Part: Designing Solutions, continued

- Brainstorm ways to conserve energy resources. Responses may include:
 - Use energy-efficient light bulbs
 - Walk short distance, bike, or carpool
 - Use cooler water when showering or bathing
 - Don't stand with refrigerator door open
 - Keep windows and doors closed when heater or air conditioner is on
 - Wash clothes in cold water when possible
- Brainstorm ways to use the 3 R's. Students will probably be able to generate many of their own ideas for this action.
- Brainstorm ways to dispose of waste properly. Responses may include:
 - Don't put used batteries in the trash
 - Don't litter
 - Compost leftover food and organic materials
 - Never throw trash on the ground or in water
 - Pick up any litter you see on the ground and throw it in the trash
- Brainstorm ways to conserve water. Responses may include:
 - Pour leftover water from your glass into potted plants
 - Water yards and plants less
 - Fix leaky faucets
 - Don't let water run when not in use
 - Wash only full loads in dishwasher or clothes washer
- Divide the class into 5 groups. Assign each group one of the five areas of conservation: material resources, energy resources, 3 R's; proper disposal of wastes, and water. Have each group create an anchor chart for their assigned area.
- Display the anchor charts in the classroom or a nearby hallway.

Evaluate

- Take students on a gallery walk. Have them follow the directions on the slide. After the walk, discuss what they saw. Have them tell what questions they still have.
- Let students complete the quiz independently.

Managing Natural Resources

Name: KEY

Evaluation

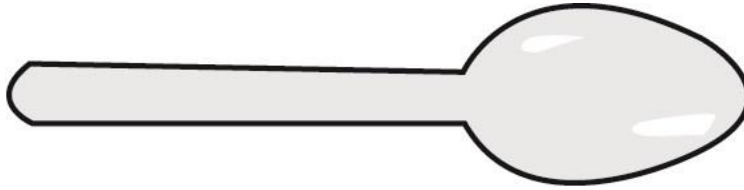
1. Many scientists are researching ways to conserve Earth's natural resources. Why is this work important for maintaining balance in ecosystems?
 - A** Without this research some natural resources could become scarce or disappear completely.
 - B** Conserving natural resources is a difficult and expensive thing to do.
 - C** Plants and animals in many ecosystems don't use natural resources every day.
 - D** Scientists are always trying to make things better for people living on the Earth.
2. A student is making a poster about the importance of conserving Earth's nonrenewable resources, such as fossil fuels and soil. Why is it important to conserve Earth's nonrenewable resources?
 - F** Earth's nonrenewable resources may be used up in the near future.
 - G** Recycling paper means less trees must be cut down each year.
 - H** Using a plastic lunch bag instead of a paper one saves people money.
 - J** Nonrenewable resources form from organisms that lived millions of years ago.
3. A family came up with a plan to help save their environment by carefully managing the natural resources they used. They decided to run their dishwasher only when it is completely full. Which of the following best explains why this step was added to their plan?
 - A** It is cheaper to run a full dishwasher than one that is half empty.
 - B** There will be less sewage, or waste water, if they only run the dishwasher when it is full.
 - C** They are able to reuse their dishes more often if they wait until the dishwasher is full.
 - D** Running the dishwasher only when it is full is a way to conserve water.

Managing Natural Resources

Name: KEY

Evaluation

4. The illustration shows a disposable spoon made of plastic.



Most plastic objects are made out of oil, a nonrenewable resource. However, scientists are studying ways to use renewable resources to make different kinds of plastic. Which of the following is a renewable resource that might be used to make objects like the plastic fork?

- F** Petroleum
 - G** Minerals
 - H** Metals
 - J** Plants
5. Natural resources are the “ingredients” for almost everything humans use to stay alive and be comfortable. Many natural resources are nonrenewable or only available in a limited supply. What is the most reasonable action for humans to take so that people don’t run out of these natural resources?
- A** People should use these resources quickly before they are all gone.
 - B** Nonrenewable resources should not be used at all so that they will last longer.
 - C** People should find effective ways to manage and conserve these resources.
 - D** Nonrenewable resources should be used before renewable ones.

Managing Natural Resources

Name: KEY

Evaluation

6. Which of these problems could happen if we don't manage and dispose of our natural resources properly? Mark all answers that apply.
- F** Damage to ecosystems
 - G** Loss of animal habitats
 - H** More sunshine every day
 - J** An increase in land pollution
 - K** A greater number of fish in the ocean
 - L** More landfills with more trash
 - M** Less air pollution
7. Conservation is the wise use and protection of natural resources. Which of the following is not an example of the conservation of resources?
- A** Buying clothing at a resale shop
 - B** Using disposable spoons every day at lunch
 - C** Turning off the water when brushing your teeth
 - D** Eating leftovers rather than throwing them in the trash

Most natural resources management plans include using the 3 R's: recycle, reduce, reuse. Write the correct term in each blank next to its definition.

8. reuse To use something over and over again
9. recycle To process waste items so that the materials they are made of may be used again
10. reduce To use less of a particular item or resource

Managing Natural Resources

Name: KEY

Evaluation

11. A fifth grade science class developed a plan to manage both renewable and nonrenewable natural resources in their classroom. They wrote their plan on a piece of poster board.

Natural Resources Management Plan

- Recycle used paper and plastic when possible
- Use only 1 paper towel when drying hands
- Don't litter; pick up litter on playground
- Bring lunch in reusable bag
- Don't let water run when not in use

Which of the following activities might they add to their conservation plan?

- A** Collect outgrown clothes to take to a resale shop
- B** Pour used motor oil into local storm drains
- C** Drink water only from disposable plastic bottles
- D** Throw away torn clothing and socks with holes in them
12. Why is the proper disposal of waste materials and items important to the conservation and management of natural resources? Mark all the answers that apply.
- F** Most towns and cities bury their trash in landfills which can leak chemicals into the environment.
- G** Not disposing of waste properly may lead to land, air, and water pollution.
- H** The overuse of natural resources may cause them to become scarce.
- J** Some products can be recycled and reused rather than being thrown away.

Managing Natural Resources

Name: _____

Engage: Natural Resources

Directions: Circle the name of the object or material in each list that you think does not belong. Explain why you circled that object or material.

Which is the Odd One Out? trees soil coal water	Why is It the Odd One Out? _____ is the odd one out because _____ _____
Which is the Odd One Out? grass rocks air sunshine	Why is It the Odd One Out? _____ is the odd one out because _____ _____
Which is the Odd One Out? corn oil (petroleum) natural gas coal	Why is It the Odd One Out? _____ is the odd one out because _____ _____
Which is the Odd One Out? plastic tree cow fish	Why is It the Odd One Out? _____ is the odd one out because _____ _____
Which is the Odd One Out? silver gold oxygen soil	Why is It the Odd One Out? _____ is the odd one out because _____ _____

Managing Natural Resources

Name: _____

Part B: Drip, Drop, Plip, Plop

Question: How much water is wasted from a leaking faucet?

Directions: Complete the table below as you follow the procedures for this lab. Then answer the questions under the data table.

Minutes	Water Wasted (in mL)

1. How much water was wasted in 5 minutes? _____
2. What real-life event does your model represent? _____

3. Why is it important to fix a leaky faucet? _____

4. What other ways can you think of to conserve water in your household or at school? _____

Managing Natural Resources

Name: _____

Part C: Clean It Up!

Question: Why is oil spilled in the ocean harmful to the environment?

Directions: Answer the questions and complete the data table as you investigate the effects of an oil spill in water.

1. What did you notice about the oil and water mixture? _____

2. Describe the feather. Tell how it looks and feels. _____

3. Describe your feather after it has been in the oil and water mixture. _____

4. Describe the method (material) you used and how it worked to clean up the oil spill.

What We Used	How it Worked
Piece of Paper Towel	
Cotton Balls	
Sponge	

5. Explain why oil spills are harmful to the environment and the animals living there. _____

Managing Natural Resources

Name: _____

Part D: Designing Solutions

What are some ways to conserve material resources?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

What are some ways to conserve energy resources?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

What are some ways we can recycle, reduce, or reuse materials?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Managing Natural Resources

Name: _____

Part D: Designing Solutions, continued

What are some ways we can dispose of wastes properly?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

What are some ways to conserve water?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Anchor Chart

My group will be creating an anchor chart for _____

My job(s) in creating the anchor chart will be to _____

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Name: _____

Evaluation

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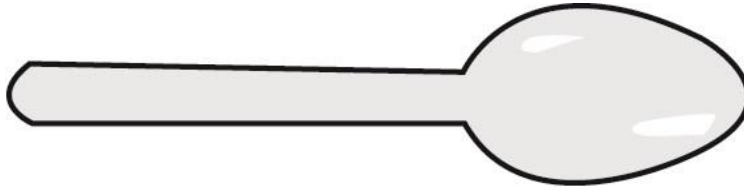
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