UNIT V - NATURAL RESOURCES AND CONSERVATION

Lesson 1: Conservation of Natural Resources

Competency/Objective: Describe the importance of natural resources.

Study Questions

1. **What are natural resources?**
2. **What are the differences between inexhaustible and exhaustible resources?**
3. **Why is it important to conserve natural resources?**
4. **What is the difference between preservation and conservation?**
5. **What agencies monitor our natural resources?**
6. **What is pollution?**

References

1. *Exploring Agriculture in America* (Student Reference). University of Missouri-Columbia: Instructional Materials Laboratory, 2000, Unit V.
2. Transparency Master

   TM 1.1 Inexhaustible and Exhaustible Resources

3. Activity Sheets

   AS 1.1 Exhaustible vs. Inexhaustible Resources
   AS 1.2 Resources for the Future
   AS 1.3 Oil Pollution of Water

UNIT V - NATURAL RESOURCES AND CONSERVATION

Lesson 1: Conservation of Natural Resources

TEACHING PROCEDURES

A. ***Introduction***

Natural resources are important to the welfare of all living things. Many of the products needed for survival rely on one or more natural resources. Conservation of precious natural resources is important for several reasons. This lesson will examine the importance of natural resource conservation.

B. ***Motivation***

1. Natural resources include coal, oil, air, water, soil, trees, and wildlife. Acid rain, contaminated or polluted drinking water, clear cutting of forests, and wildlife poaching are conservation problems that need to be addressed. Identify and discuss natural resources that are important to society at this time.

2. Bring to class mounted specimens of fish or wildlife to initiate a discussion of hunting or fishing for recreation and population control.

C. ***Assignment***

D. ***Supervised Study***

To prepare for an activity in Lesson 5, obtain the board game "Oh My Deer" from Carolina Biological Supply Co., 2700 York Road, Burlington, NC 27215. You will need one game for every four to six participants.

Discussion

Q1. <u>What are natural resources</u>?

A1. Natural resources can be defined as living things, including soil, water, air, etc., that people come in contact with that can be used to perform a useful function.

Ask students to describe a natural resource. Write their answers on the board. Note that resources may include minerals, oil, trees, wildlife, fish, water, soil, air, and other materials found in nature.

Q2. <u>What are the differences between inexhaustible and exhaustible resources</u>?

A2.

a) An inexhaustible resource can last forever regardless of human use.
- **1. They renew themselves continuously.**
- **2. They may, however, be limited.**
- **3. They can be damaged by human misuse.**
- **4. Inexhaustible resources can be replaced by human efforts.**

b) An exhaustible resource cannot be replaced or regenerated.
- **1) They exist in finite quantities, and once gone they are gone forever.**
- **2) They can, however, be conserved wisely.**

Describe the difference between an exhaustible and an inexhaustible resource. Show TM 5.1 to generate a discussion on the importance of both exhaustible and inexhaustible resources. Have students complete AS 1.1. Ask students why they think it is important to know the difference between exhaustible and inexhaustible resources.

Q3. <u>Why is it important to conserve natural resources</u>?

A3. Natural resources interact with each other and depend upon one another. When one natural resource is affected adversely, others may suffer.

Discuss why it is important to conserve natural resources. Include a discussion about how resources interact and depend on each other for survival. Conduct AS 1.2 and discuss the impact conservation has on future generations.

Q4. <u>What is the difference between preservation and conservation</u>?

A4.

- **a) Preservation maintains natural resources that already exist by prohibiting their use and returning them to a natural state.**
- **b) Conservation is the careful use and management of resources to avoid wasting them for future generations.**

Explain the differences between preservation and conservation. Discuss the fact that most people involved in agriculture take great pains to **conserve** their natural resources, and because agriculture depends on the wise **use** of natural resources, **preservation** is not necessarily a feasible option. Divide the board into two categories (one for preservation and one for conservation) and have students list resources, items, or areas that are preserved or conserved.

Q5 <u>What agencies monitor our natural resources</u>?

A5.

- **a) Bureau of Land Management**
- **b) U.S. Fish and Wildlife**
- **c) National Park Service**
- **d) Environmental Protection Agency**
- **e) Forest Service**
- **f) Natural Resources Conservation Service**
- **g) National Scenic Riverways**
- **h) Missouri Department of Conservation**
- **i) Missouri Department of Natural Resources**

Each agency has its own responsibilities.

Q6. <u>What is pollution</u>?

A6.

- **a) Pollution is the presence of substances in water, soil, or air that affects its usefulness or makes it offensive.**
- **b) Pollution involves two forms.**
  - **1) Point source can be traced to a specific point of discharge and is readily identifiable. One example of point source pollution is water pollution caused by industrial waste that is dumped directly into a nearby stream.**

2) Nonpoint source occurs from sources that cannot be directly traced to a specific point of discharge. One example of this is air pollution and smog in large cities caused by emissions from thousands of vehicles.

Have students complete AS 1.3 to become familiar with how pollution affects the water environment.

F. ***Other Activities***

1. Students could research a recycling program in their community. Start research at pick-up points and follow the product's path to the recycling center or to the production of recycled products. Recycle the paper used in class for 1 week to calculate how much could be saved over a year's time.

2. Take the class on a field trip to a wastewater treatment plant or recycling facility.

3. Have students select one natural resource and provide information on the following.

   a) Where is the resource geographically located?
   b) What is the method used for retrieval for this resource (mining, drilling, etc.)?
   c) What products are made from this resource?
   d) What are the processing procedures of this resource?
   e) How is it transported from area of retrieval to other parts of the region or world?
   f) What are economic benefits to the country that possesses this resource?

4. View the video *Guarding Our Living Environment*, Ag Video 128, available from the Missouri Resource Center for Career & Technical Education (MRCCTE), University of Missouri-Columbia.

5. View the video *Soil Conservation Technician*, STW Video 27, available from MRCCTE, University of Missouri-Columbia. This video discusses career opportunities as well as the work a technician will perform.

6. Invite a forest service or conservation agent to speak to the class about the importance of conserving natural resources.

7. Give students trash bags containing both recyclable and nonrecyclable items. Customize the contents of each trash bag to the location of the classroom. Ask students to sort the contents of each bag into recyclable and nonrecyclable.

G. ***Conclusion***

Practices to conserve natural resources should be implemented to preserve the natural condition of the land, air, water, and wildlife resources. Preservation of these resources will ensure their availability for future generations.

H. ***Answers to Activity Sheets***

AS 1.1 Exhaustible vs. Inexhaustible Resources

1. I
2. E
3. E
4. I

5. I
6. I
7. E
8. I
9. E
10. E
11. The instructor should determine if answers are appropriate.

AS 1.2 Resources for the Future

Answers will vary.

AS 1.3 Oil Pollution of Water

Answers will vary.

I. ***Evaluation***

A unit test is provided at the end of this unit. If a lesson quiz is needed, use questions pertaining to this lesson from the unit test.

Inexhaustible vs. Exhaustible Resources

Inexhaustible Resources

Can be renewed or regenerated

Include:

- Water
- Air
- Wildlife
- Forests

Exhaustible Resources

Cannot be replaced when used

Include:

- Crude oil
- Coal
- Minerals
  - Gold
  - Copper
  - Iron
- Soil

Lesson 1: Conservation of Natural Resources Name _____

Exhaustible vs. Inexhaustible Resources

Objective: Students will differentiate between exhaustible and inexhaustible resources.

Directions: To the left of each natural resource listed below, identify the inexhaustible resources by writing an “I” in the blank and identify the exhaustible resources by writing an "E" in the blank.

1. ____ Oak trees
2. ____ Crude oil
3. ____ Natural gas
4. ____ Water
5. ____ Air
6. ____ Wildlife
7. ____ Coal
8. ____ Pine trees
9. ____ Iron ore
10. ____ Soil
11. What steps can you take to conserve resources in your community?

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Resources for the Future

Objective: Students will understand the importance of conserving resources for future generations.

Materials and Equipment:

Large container filled with peanuts
Lunch bag for each student

Procedure:

1. Divide the class into three equal groups. Name your own group.

2. The instructor will think of a number between 1 and 15. Each group tries to guess the number. The groups will proceed with the activity according to how close each group comes to guessing the correct number.

3. Everyone is given a lunch bag.

4. On the instructor's desk is a large bowl filled with peanuts. This bowl is labeled "The World's Supply of Peanuts."

5. The first group comes up to the bowl and everyone takes as many peanuts as desired.

6. When the first group is through, the second group takes whatever it wants. Finally, the third group takes as many peanuts as it can.

7. Within your group, designate someone to record responses to the following questions:

    a. What does "exhaustible" mean? What are examples of exhaustible resources in your hometown?

    b. How did the first group react when allowed to take the peanuts? How did you feel when you watched them take these resources?

    c. What was the reaction of the last group when it had access to the peanuts?

    d. If a fourth group could have some peanuts, how many would be available?

    e. What will now happen to the world's supply of peanuts? What, if anything, could change this situation? What would you do to protect exhaustible resources?

8. Share your responses with the other groups.

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Oil Pollution of Water Environment

Objective: Students will observe the effects of oil pollution on the water environment.

Materials and Equipment:

Water
Four 1-quart jars
1 quart motor oil
Table scraps
Dish soap
1 cup coffee grounds (used)
Algae
Microscope
Eight local/common water plants of varying types
Measuring cup
Labels
Eye dropper
Four slides and cover slips

Procedure:

1. Place 3 cups of water into each of the four 1-quart jars.

2. Label the jars as follows:
   a) Jar 1 - fresh water - motor oil
   b) Jar 2 - fresh water - dish soap
   c) Jar 3 - coffee grounds
   d) Jar 4 - table scraps

3. Add the algae and two water plants to the fresh water in each jar.

4. Use the dropper to add 8-10 drops each of oil to jar 1 and dish soap to jar 2.

5. Use the scoop to add a scoop of coffee grounds to jar 3 and table scraps to jar 4.

6. Every day, check the jars. Continue checking for 1 week. Record your daily findings in the chart found in step 9.

7. After 1 week, make a microscope slide from samples of each jar and observe the algae or plants. Record your findings in the chart shown in step 10.

8. Record your observations as you drop the oil in the water.

9. Record your daily observations in the chart below.

Day	Jar #			
	1	2	3	4
1				
2				
3				
4				
5				
6				
7				

10. Record your microscope observations in the chart below.

Jar #	Observation
1	
2	
3	
4	

Key Questions:

1. What change(s) occurred when the oil was placed in the water?

2. What happened to the algae or water plants when the oil was added?

3. What was the effect of dish soap on the algae and water plants?

4. How was the water plant affected by the oil?

5. What effect did the dish soap have on the water plant?

6. Did the coffee grounds or table scraps affect the algae? In what way?

7. Did the coffee grounds or table scraps affect the water plant? In what way?

8. How can household wastes pollute the water?