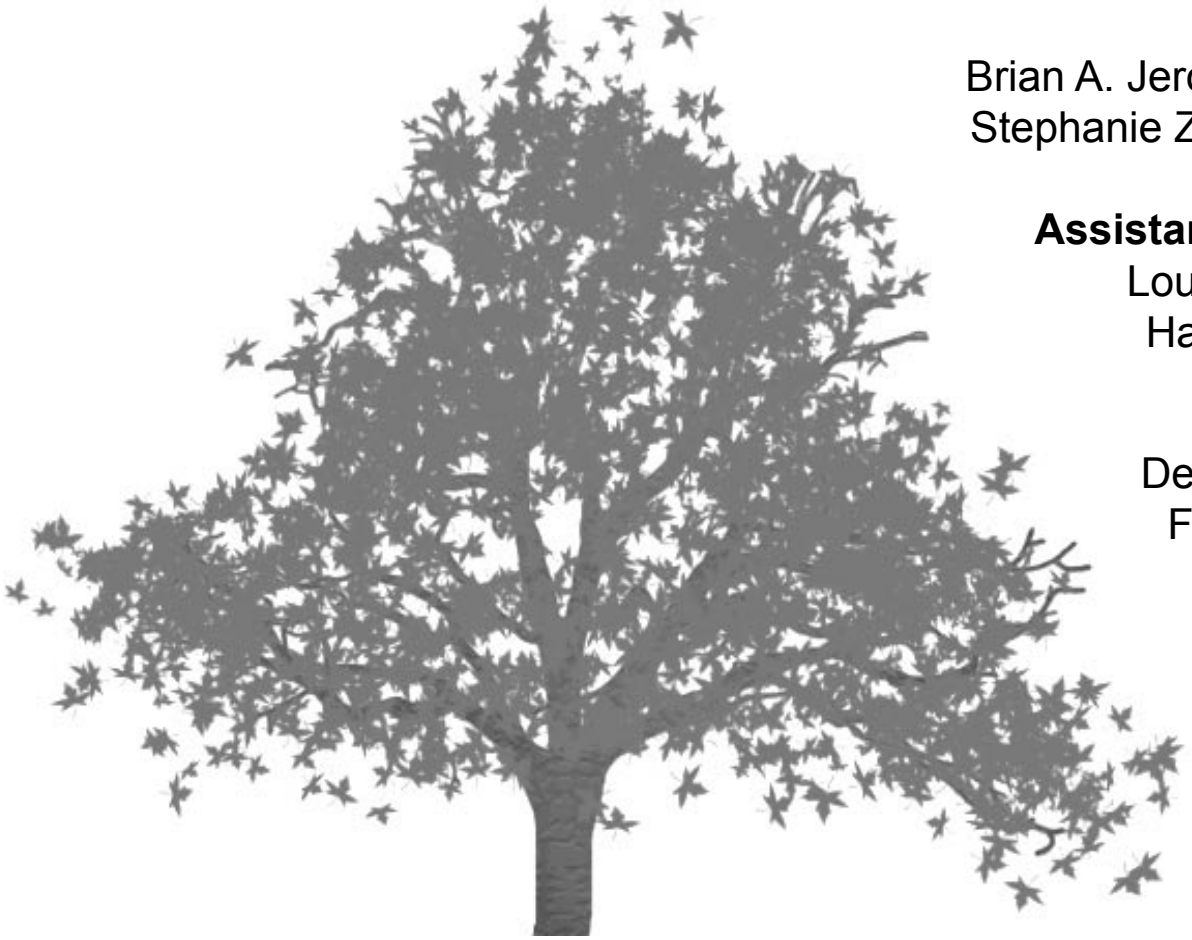
Earth's Natural Resources

Teacher's Guide
Middle School



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A Message from our Company. . .

Dear Educator:

Thank you for your interest in the educational videos produced by the Visual Learning Company. We are a Vermont-based, family owned and operated business specializing in the production of quality educational science videos and materials.

We have a long family tradition of education. Our grandmothers graduated from normal school in the 1920's to become teachers. Brian's mother was an elementary teacher and guidance counselor, and his father was a high school teacher and superintendent. This family tradition inspired Brian to become a science teacher, and to earn a Ph.D. in education, and led Stephanie to work on science educational programs at NASA.

In developing this video, accompanying teacher's guide, and student activities, our goal is to provide educators with the highest quality materials, thus enabling students to be successful. In this era of more demanding standards and assessment requirements, supplementary materials need to be curricular and standards based - this is what we do!

Our videos and accompanying materials focus on the key concepts and vocabulary required by national and state standards and goals. It is our mission to help students meet these goals and standards, while experiencing the joy and thrill of science.

Sincerely,

Brian and Stephanie Jerome

National Standards Correlations

National Science Education Standards

(Content standards: 9-12, National Academy of Sciences)

Science in Personal and Social Perspectives - Content Standard F

As a result of activities in grades 9-12, students should develop an understanding of:

Natural Resources

- Human populations use resources in the environment in order to maintain and improve their existence. Natural resources have been and will continue to be used to maintain human populations.

- The earth does not have infinite resources; increasing human consumption places severe stress on the natural processes that renew some resources, and it depletes those resources that cannot be renewed.

Benchmarks for Science Literacy

(Project 2061 – AAAS)

The Physical Setting - The Earth (4B)

By the end of 8th grade, students should know that:

- The benefits of the earth's resources—such as fresh water, air, soil, and trees—can be reduced by using them wastefully or by deliberately or inadvertently destroying them. The atmosphere and the oceans have a limited capacity to absorb wastes and recycle materials naturally. Cleaning up polluted air, water, or soil or restoring depleted soil, forests, or fishing grounds can be very difficult and costly.

- Some minerals are very rare and exist in great quantities, but—for practical purposes—the ability to recover them is just as important as their abundance. As minerals are depleted, obtaining them becomes more difficult. Recycling and the development of substitutes can reduce the rate of depletion but may also be costly.

Student Learning Objectives

Upon viewing the video and completing the enclosed student activities, students will be able to do the following:

- Explain that a natural resource is anything people take from the environment and use.
- List several examples of natural resources including air, water, living things, and geologic materials.
- Understand that many everyday objects are made from natural resources.
- Differentiate between renewable natural resources, which are resources that can be replaced by nature, and nonrenewable natural resources, which are resources that cannot be replaced once used.
- Give several examples of renewable natural resources, including wind, solar energy, and living things.
- Explain possible consequences of using renewable resources at a faster rate than they can be replaced.
- List several examples of nonrenewable natural resources such as minerals and fossil fuels.
- Describe how recycling and reusing can be effective ways to preserve and conserve nonrenewable natural resources.
- Understand the correlation which sometimes exists between rising prices and the increasing scarcity of specific natural resources.
- Identify some potential drawbacks to natural resource alternatives including high prices and environmental damage.
- Describe the concept of natural resource sustainability.

Assessment

Preliminary Assessment:

The Preliminary Assessment, provided in the Student Masters section, is an assessment tool designed to gain an understanding of students' pre-existing knowledge. It can also be used as a benchmark upon which to assess student progress based on the objectives stated on the previous pages.

Video Review:

The Video Review, provided in the Student Masters section, can be used as an assessment tool or as a student activity. There are two main parts. The first part contains questions that can be answered during the video. The second series of ten questions consists of a video quiz to be answered at the conclusion of the video.

Post Assessment:

The Post Assessment, provided in the Student Masters section, can be utilized as an assessment tool following completion of the video and student activities. The results of the Post Assessment can be compared against the results of the Preliminary Assessment to evaluate student progress.

Introducing the Video

Before showing the program to the students tell them to take thirty seconds to list the objects they see in the room. Have them write the objects on a piece of paper. Then, have them write next to each object the material(s) from which the object was made. For example, a pencil is made of wood and graphite. The eraser is made of a synthetic, and the metal around the eraser is made of aluminum or an iron-based metal. A wooden desk is made from wood which is processed from trees. It will take students several minutes to complete this task.

After students have completed their lists, ask them what broad term is used to describe materials used to make things we use. Write the term "Natural Resources" on the board. Tell students that natural resources are materials taken from the Earth and used by people. Explain to students that we benefit from hundreds of different natural resources everyday. Tell students to pay close attention to the video to learn more about natural resources.

Video Viewing Suggestions

The student Master "Video Review" is provided for distribution to students. You may choose to have your students complete this Master while viewing the program or to do so upon its conclusion.

The program is approximately twenty minutes in length and includes a ten question video quiz. Answers are not provided to the Video Quiz on the video, but are included in this teacher's guide. You may choose to grade student quizzes as an assessment tool or to review the answers in class.

The video is content-rich with numerous vocabulary words. For this reason you may want to periodically stop the video to review and discuss new terminology and concepts.

Video Script: Earth's Natural Resources

1. Every time you breathe a breath of air,
2. ...take a bite of an apple,
3. ...write with a pencil,
4. ...take a drink of water,
5. ...or pick a flower from a garden, you are using something from the earth.
6. A natural resource is anything people take from the environment and use.
7. Air, water, living things, and materials inside the earth that we use are all examples of natural resources.
8. During the next few minutes we are going to take a look at the wide range of natural resources.
9. We will investigate how resources are valuable to us and how we use them every day.
10. And we will also see why it is so important to protect Earth's natural resources.
11. **Graphic Transition – What are Natural Resources?**
12. Almost everything we eat, see, and touch is a natural resource.
13. As we mentioned, things we use from the natural environment are natural resources.
14. It is easy to think of things such as trees, grass, and the water in this river as natural resources because they come directly from nature.
15. Things we eat such as fruits and vegetables are also natural resources.
16. The water we drink is a natural resource.
17. And energy sources such as oil, wood, and coal are natural resources.
18. **You Decide!** Are the following things natural resources: a chair, a sweater, and an aluminum can?
19. You wouldn't see a chair, sweater, or aluminum can naturally occurring in nature,
20. ...but all these things are made from natural sources.
21. The chair is made from the wood of trees.
22. The sweater is made from the wool of sheep.
23. And the aluminum can is made from aluminum mined from the Earth's surface.
24. So as you can see, almost everything, from the clothes we wear,
25. ...to the food we eat,
26. ...to the energy used to heat and cool our homes, is derived from natural resources.
27. Needless to say, without natural resources we could not survive.
28. **Graphic Transition – Renewable Resources**
29. Scientists divide natural resources into two major groups: renewable resources and nonrenewable resources.

Script (cont.)

30. A nonrenewable resource cannot be replaced by nature.
31. Minerals such as copper, iron, and rocks such as marble, are nonrenewable resources.
32. Once they are taken from the Earth they cannot be quickly replaced through Earth's natural processes.
33. We will talk more about nonrenewable resources in a few minutes, but first let's discuss renewable resources.
34. "Renewable resources" can be replaced by nature.
35. Renewable resources are essentially inexhaustible, or can be replaced relatively rapidly.
36. **You Decide!** Is wind a renewable or nonrenewable resource?
37. Wind is a renewable resource. It cannot be exhausted or used up.
38. Wind turbines take advantage of this renewable resource to produce electricity.
39. Energy from the sun, referred to as solar energy, is another example of a renewable resource.
40. Solar panels convert the sun's energy to electricity.
41. Just because a resource is renewable does not mean that it can't be used up. In some cases renewable resources are used up so quickly they become scarce. Such is the case with the American Buffalo which has been hunted to near extinction.
42. Take wood for example.
43. As you know, wood used in pencils, furniture, and in building materials is processed from trees.
44. Given enough time, trees harvested to make wood products can be replaced with new trees that will grow over time.
45. But if trees are cut down at a rate that is faster then they can regrow, problems occur.
46. The resource becomes scarce and cannot meet the demands of society.
47. This has occurred in many parts of the world, and has forced people to seek timber in more remote and fragile areas such as rainforests.
48. Fish are another example of a renewable resource.
49. But when fish populations are over-fished they become depleted, they cannot regenerate quickly enough, and the fish become scarce.
50. One of the big challenges we face today is being careful not to overuse many of Earth's renewable resources.
51. **Graphic Transition – Nonrenewable Resources**
52. If you live in a cold climate that has severe winter weather,
53. ...or even if you live in a moderate climate that has cool winters, you know the importance of heating your home.

Script (cont.)

54. There are several sources of heat energy. Natural gas, propane, oil, and wood are some of the most common.
55. **You Compare!** Which of these is a renewable natural resource?
56. Wood is a renewable resource, which can be harvested from trees. New trees can be replanted and grow with time.
57. Natural gas, propane, and oil on the other hand are nonrenewable resources.
58. Nonrenewable resources cannot be replaced by nature.
59. Once nonrenewable resources are gone they are gone forever, or they take so long to regenerate they are considered to be nonrenewable.
60. Energy sources such as gasoline, oil, natural gas, and coal are collectively referred to as fossil fuels.
61. Fossil fuels form in the earth from the ancient remains of decayed plants, animals, or other once living things.
62. Once processed, fossil fuels are burned as energy sources.
63. While in theory fossil fuels can be recreated by nature, this process takes hundreds of thousands or even millions of years.
64. Therefore, once a fossil fuel is burned it is gone as a useful source of energy.
65. Other examples of nonrenewable natural resources include minerals.
66. The iron used to produce the steel in this car,
67. ...the copper in these pipes,
68. ...and the aluminum in this can, are all minerals which we use regularly in our day to day lives.
69. It is somewhat discouraging to think that we are rapidly using up our nonrenewable resources. But there are some ways these resources can be used again.
70. **Graphic Transition – Recycling and Reusing Nonrenewable Resources**
71. Perhaps you live in a place where you can receive money for returning empty cans and bottles.
72. Or maybe when you take your trash out you place items such as newspapers, cans and bottles in separate containers from the rest of your garbage.
73. What happens to these items?
74. These items are recycled.
75. Recycling is the process of collecting and reprocessing materials into new products that can be used again.
76. Newspaper, glass, plastic, some metals, and many other things made from natural resources can be recycled.
77. Believe it or not in some cases even sewer water can now be recycled through special cleaning systems and then used for purposes such as irrigation of crops.
78. **You Decide!** What is the benefit of recycling?

Script (cont.)

79. Recycling enables natural resources to be used over and over again so that new resources do not have to be taken from the earth.
80. Recycling does have some downfalls in that it consumes energy and can be expensive.
81. There are some cases where things made from natural resources can simply be reused.
82. Reuse involves using a resource over and over again in its same form.
83. Wood from this old building, for example, can be reused in creating a new building.
84. Engine parts from old junk cars are often used to replace parts in newer cars.
85. Recycling and reusing enables valuable materials from the earth to last for many years to come.
86. **Graphic Transition – Cost and Natural Resources**
87. The wooden boards used to build this barn a hundred years ago cost merely a few cents a foot.
88. One hundred to two hundred years ago certain types of lumber were relatively inexpensive compared to the costs of lumber today.
89. One of the reasons certain types of lumber cost so much more now is because it is becoming increasingly scarce as a natural resource, even though it is a renewable resource.
90. Certain types of wood such as redwoods from the Pacific Coast, are extremely costly because they are so scarce.
91. The number of redwood trees being harvested today are minimal compared to a hundred years earlier.
92. A similar phenomena is occurring with oil today. Oil production is leveling off and soon will begin to decline.
93. Unless easily accessible resources of oil are located, the cost of this resource will undoubtedly escalate.
94. If the cost of a natural resource becomes extremely high it will not be widely used.
95. **Graphic Transition – Natural Resource Alternatives**
96. Sometimes if a natural resource becomes scarce or too expensive, alternative resources are found.
97. For example, 30 to 40 years ago cars and trucks were made mostly of steel.
98. But over time these vehicles have been made of lighter, less expensive materials such as aluminum and plastic.
99. The lighter materials also help improve fuel efficiency, and thus conserves gasoline.

Script (cont.)

100. You may have heard the word synthetics before. The word synthetic means things which are man-made or manufactured.
101. You are probably wearing a piece of synthetic clothing or perhaps you are sitting at a synthetic desk or chair.
102. Synthetics, while still made from some natural resource, in many cases serve as an economically or environmentally sound alternative to natural resources.
103. Plastics are a broad group of synthetics used in everything from bottles to computer cases to boats.
104. There are hundreds of different kinds of plastics, many of which serve as alternatives to natural resources.
105. The siding of this home may look like wood but it is actually an alternative to wood called vinyl siding which provides the advantage of not needing to be painted.
106. While many alternatives to natural resources do have their advantages, they also have their own set of drawbacks.
107. Fleece, for example, made from recycled plastics, is quite warm but it can be expensive.
108. Or perhaps in some cases alternative resources may pose a threat to the environment as is the case with many plastics if not disposed of properly.
109. Graphic Transition – Sustainability and Natural Resources
110. The cows grazing in this meadow are eating the grass at a slower rate than the grass can regrow.
111. But what would happen if more cows were allowed to graze on the meadow,
112. ...until there were so many cows that they ate the grass faster than the grass could regrow?
113. Eventually the grass would be overgrazed and the cows would starve.
114. Resource sustainability involves utilizing natural resources so that they are not overused or damaged for the long term.
115. There are many variables involved in reaching sustainability including dealing with overpopulation, overconsumption of resources, distribution of resources, and pollution control to name just a few.
116. Graphic Transition – Summing Up
117. During the past few minutes we have explored many of the different facets of natural resources.
118. We described natural resources as things we take from the environment and use.
119. Natural resources are commonly grouped as either renewable or nonrenewable.
120. Fish and trees are examples of renewable natural resources that can be regenerated.

Script (cont.)

121. Whereas nonrenewable resources such as minerals and oil cannot rapidly be replaced by nature.
122. In many cases, natural resources can be recycled or reused.
123. We discussed how the cost of natural resources limits how natural resources are used.
124. Various natural resource alternatives were described, and the impact they have on natural resources were discussed.
125. Finally, the notion of sustainability of natural resources was explained.
126. The sustainable use of natural resources is vital for the survival of the planet.
127. Graphic Transition – Video Assessment

Fill in the correct word to complete the sentence. Good luck and let's get started.

1. A natural _____ is something we use from the environment.
2. A _____ resource cannot be replenished readily by nature.
3. _____ such as copper and iron are nonrenewable resources.
4. Solar energy and wind are _____ resources.
5. When overused, renewable resources can become _____.
6. Coal and oil are examples of _____ fuels.
7. _____ is the process of reprocessing materials into new products.
8. _____ involves using a resource over and over again in its same form.
9. If the _____ of a natural resource becomes too high it will be used less.
10. Resource _____ involves maintaining natural resources and not exhausting them.

Answers can be found on page 17

Student Assessments and Activities

Assessment Masters:

- Preliminary Assessment
- Video Review
- Post Assessment

Student Activity Masters:

- Renewable vs. Nonrenewable Resources
- Natural Resources Awareness
- Alternatives to Natural Resources
- Vocabulary of *Earth's Natural Resources*

Answers to Student Assessments

Preliminary Assessment (pgs. 20-21)

1. resource
2. nonrenewable
3. renewable
4. scarce
5. fossil
6. gone
7. recycling
8. reuse
9. increase
10. sustainability
11. true
12. false
13. true
14. true
15. false
16. false
17. true
18. true
19. false
10. true

Video Review (p. 22)

1. These items would not naturally occur in nature but all of these items are made out of natural resources. A chair is made out of wood, a sweater out of wool, and an aluminum can is made out of aluminum.
2. Wind is a renewable resource. It cannot be exhausted or used up.
3. Wood is a renewable resource which is harvested from tees. New trees can be planted and grow with time. Natural gas, propane and oil are nonrenewable resources meaning they cannot be replaced by nature.
4. Recycling enables natural resources to be used over and over again so that new resources do not have to be taken from the earth.

Video Quiz (p. 22)

1. resource
2. nonrenewable
3. minerals
4. renewable
5. scarce
6. fossil
7. recycling
8. reuse
9. cost
10. sustainability

Post Assessment (pgs. 23-24)

1. scarce
2. resource
3. recycling
4. sustainability
5. gone
6. reuse
7. fossil
8. renewable
9. nonrenewable
10. increase
11. false
12. true
13. false
14. true
15. true
16. true
17. true
18. false
19. true
20. false

Answers to Student Activities

Renewable vs. Nonrenewable Resources (p. 25 - 26)

1a. renewable natural resource: resources that can be replaced by nature relatively quickly. Examples: fruits, vegetables, trees, fish, wind, solar energy.

1b. nonrenewable natural resource: resources that cannot readily be replaced by nature. Once these resources are used they are gone. Examples: coal, oil, minerals.

Natural Resource	Renewable or Nonrenewable Resource	Source or place it is obtained
Wood	Renewable Resource	Obtained from trees which grow in forests.
Coal	Nonrenewable resource	Mined from Earth's crust.
Carrots	Renewable resource	Grown in soil.
Copper	Nonrenewable resource	A mineral mined from Earth's crust.
Water	Renewable resource	Obtained from ponds, lakes, rivers and pumped from underground. Can become exhausted locally.
Iron	nonrenewable	A mineral mined from Earth's crust.
Wind	Renewable resource	Generated by interactions in Earth's atmosphere.
Oxygen we breathe	Renewable resource	Atmosphere - oxygen is given off by plants and plant-like organisms.
Granite	Nonrenewable resource	Mined from Earth's crust.
Fish	Renewable resource	Obtained from freshwater or saltwater environments.
Sun's Energy	Renewable resource	Continually emitted by the sun.

Natural Resources Awareness (p. 27 - 28)

1. Answers will vary, but students should list at least several dozen resources.
2. This will probably exceed 50 in number. You may need to help students figure our what types of natural resources are in specific objects.
3. Review the difference between renewable and nonrenewable resources. Students can categorize the different natural resources as renewable or nonrenewable.
4. Explain the idea of reuse and why it is important.

Alternatives to Natural Resources (p. 29)

1. A resource alternative is a material used to perform the same general purpose or function of the original resource it is replacing.

2. Resource alternatives are necessary because natural resources sometimes become scarce or difficult to obtain.

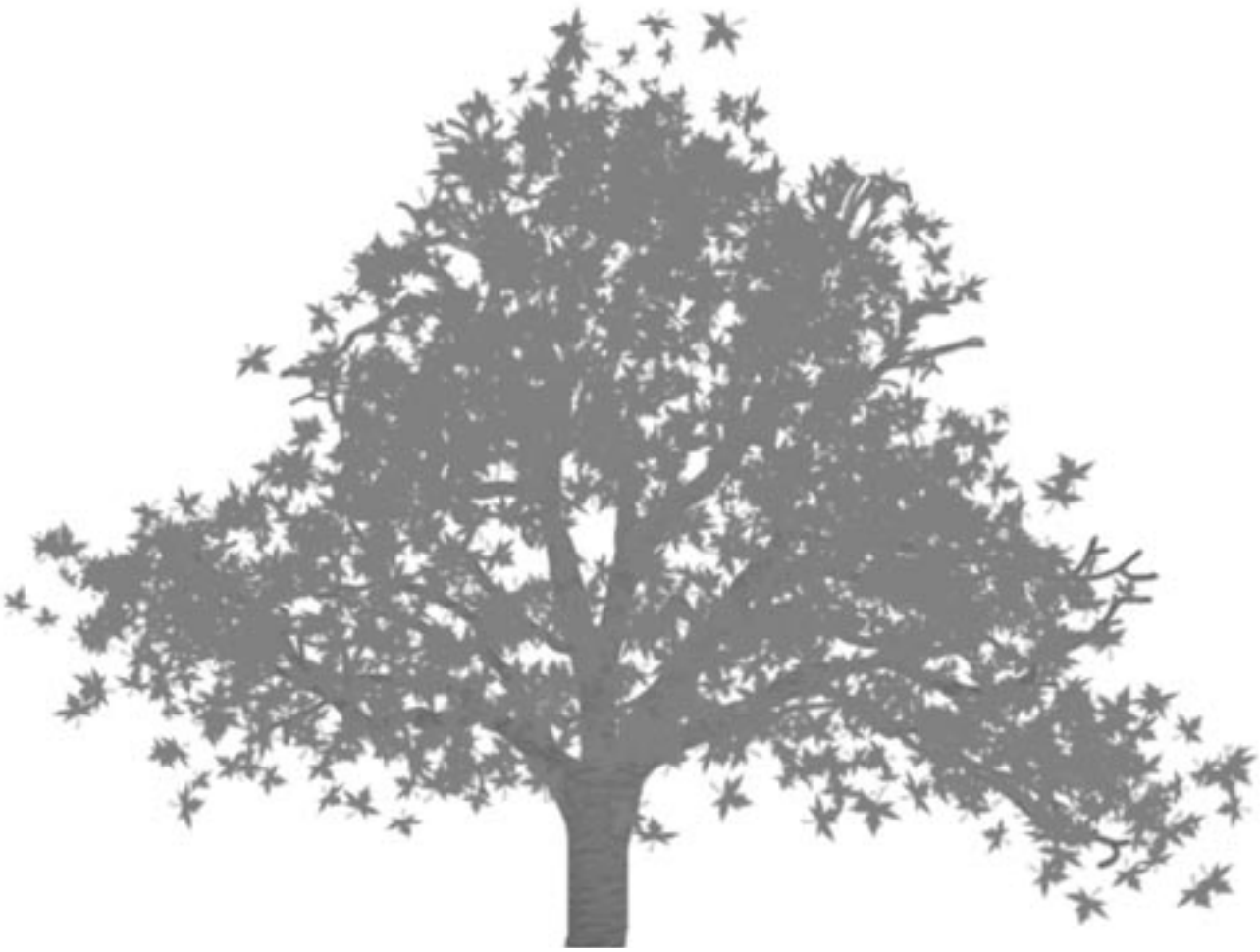
3. One example of a synthetic resource alternative found in the home would be plastic. The coffee maker, toaster, plastic cups and plates, stove, and refrigerator most likely have plastic parts. Another example of a synthetic resource alternative would by cloth or material. Carpeting, furniture, and some of the clothes in the closet most likely contain a synthetic material.

4. Plastic is a resource alternative. Some of the advantages of using plastic include the fact it is durable, easy to manufacture, and cost effective. Some of the disadvantages of using plastics are that they may not be as effective as the original resource and they may have negative effects on the natural environment and health.

Vocabulary of Earth's Natural Resources (p. 30)

1. i - natural resource
2. e - nonrenewable resource
3. a - renewable resource
4. j - solar energy
5. b - fossil fuels
6. d - mineral resources
7. g - recycling
8. f - reuse
9. c - resource alternative
10. h - resource sustainability

Assessment and Student Activity Masters



Name _____

Preliminary Assessment

Directions: Fill in the blank with the correct word. A list of possible answers is provided at the bottom of the page.

1. A natural _____ is anything taken from the environment and used.

2. A _____ resource cannot be readily replaced by nature.

3. Wind and solar energy are examples of _____ natural resources.

4. If a renewable resource is used faster than it regenerates, it can become _____.

5. Energy sources such as coal, natural gas, and oil are referred to as _____ fuels.

6. Once a fossil fuel is used, it is _____ as a useful source of energy.

7. _____ involves reprocessing materials into new products that can be used again.

8. _____ involves using a resource over and over again in its same form.

9. When a resource becomes scarce, the cost of the resource may _____.

10. Resource _____ involves maintaining natural resources for the long term and not exhausting them.

increase	recycling
gone	nonrenewable
renewable	sustainability
resource	fossil
scarce	reuse

Preliminary Assessment

Directions: Decide whether the statement is true (T) or false (F).

11. Almost everything we eat, see, and touch is a natural resource. T F

12. Without natural resources we could survive. T F

13. Minerals such as copper, iron, and aluminum are nonrenewable resources. T F

14. Renewable resources can be replaced by nature over time. T F

15. It is impossible for renewable resources to run out. T F

16. We have plenty of natural resources to last for thousands of years. T F

17. Once nonrenewable resources are used, they are gone forever or for a very long time. T F

18. Fossil fuels are formed from the ancient remains of dead plants and animals. T F

19. Natural resources cannot be reused. T F

20. Resource sustainability focuses on using resources so they are not overused or damaged for many years to come. T F

Name _____

Video Review

Directions: During the course of the program, answer the questions as they are presented in the video. At the end of the video, answer the Video Quiz questions.

You Decide!

1. Are the following things natural resources: a chair, a sweater, and an aluminum can?

You Decide!

2. Is wind a renewable or nonrenewable resource?

You Compare!

3. Which of these is a renewable natural resource?

You Decide!

4. What is the benefit of recycling?

Video Quiz: Fill in the correct word to complete the sentence.

1. A natural _____ is something we use from the environment.
2. A _____ resource cannot be replenished readily by nature.
3. _____ such as copper and iron are nonrenewable resources.
4. Solar energy and wind are _____ resources.
5. When overused, renewable resources can become _____.
6. Coal and oil are examples of _____ fuels.
7. _____ is the process of reprocessing materials into new products.
8. _____ involves using a resource over and over again in its same form.
9. If the _____ of a natural resource becomes too high it will be used less.
10. Resource _____ involves maintaining natural resources and not exhausting them.

 Name _____

Post Assessment

Directions: Fill in the blank with the correct word. A list of possible answers is provided at the bottom of the page.

1. If a renewable resource is used faster than it regenerates, it can become _____.

2. A natural _____ is anything taken from the environment and used.

3. _____ involves reprocessing materials into new products that can be used again.

4. Resource _____ involves maintaining natural resources for the long term and not exhausting them.

5. Once a fossil fuel is used, it is _____ as a useful source of energy.

6. _____ involves using a resource over and over again in its same form.

7. Energy sources such as coal, natural gas, and oil are referred to as _____ fuels.

8. Wind and solar energy are examples of _____ natural resources.

9. A _____ resource cannot be readily replaced by nature.

10. When a resource becomes scarce, the cost of the resource may _____.

sustainability	resource
reuse	renewable
gone	fossil
scarce	recycling
nonrenewable	increase

Name _____

Post Assessment

Directions: Decide whether the statement is true (T) or false (F).

11. Natural resources cannot be reused. T F

12. Once nonrenewable resources are used, they are gone forever or for a very long time. T F

13. It is impossible for renewable resources to run out. T F

14. Minerals such as copper, iron, and aluminum are nonrenewable resources. T F

15. Almost everything we eat, see, and touch is a natural resource. T F

16. Resource sustainability focuses on using resources so they are not overused or damaged for many years to come. T F

17. Fossil fuels are formed from the ancient remains of dead plants and animals. T F

18. We have plenty of natural resources to last for thousands of years. T F

19. Renewable resources can be replaced by nature over time. T F

20. Without natural resources we could survive. T F

Renewable vs. Nonrenewable Resources

Background: We use natural resources everyday. Every time you eat food, take a drink of water, write with a pencil, or breathe air, you are using natural resources. In fact, we couldn't live without natural resources. There are thousands of natural resources people utilize, and there are many ways to group natural resources. One of the simplest ways to categorize resources places them in two groups: renewable natural resources and nonrenewable natural resources.

Vegetables, fish, and the sun's energy are all examples of renewable natural resources. Renewable resources can be replaced relatively rapidly by nature. Nonrenewable natural resources on the other hand cannot be replaced quickly by nature. Once they are used they are gone. Substances such as coal, oil, and minerals are examples of nonrenewable natural resources.

Directions:

1. Define the terms renewable and nonrenewable natural resources and provide two examples of each

renewable natural resource:

examples:

nonrenewable natural resource:

examples:

2. Categorize the natural resources on the following page as either renewable or nonrenewable natural resources. Also, describe where the natural resource is obtained.

Name _____

Renewable vs. Nonrenewable Resources

Natural Resource	Renewable or Nonrenewable Resource	Source or place it is obtained
Wood		
Coal		
Carrots		
Copper		
Water		
Iron		
Wind		
Oxygen we breathe		
Granite		
Fish		
Sun's energy		

Natural Resources Awareness

Background: Take a minute to think about all the different kinds of natural resources you used as soon as you woke up this morning. Did you comb your hair, change your clothes, take a shower, or eat breakfast? It is not inconceivable that you used dozens of natural resources, or things made from natural resources before you even left your home this morning. Think of all the resources you used the rest of the day!

You may not necessarily think of things such as a toothbrush, cereal, and wooden chairs as natural resources. These items are not natural resources in their "now" or "unprocessed" form, but they are made from natural resources. A toothbrush, for example, is made of plastic which is a material derived from oil and other materials. Cereal is processed primarily from corn or wheat, sugar, and other plant products. And wooden chairs are formed from wood processed from trees. In many cases, a single item we use is made from many different natural resources. So, as you can see all the things we eat and use are derived from natural resources.

Directions:

1. In this activity you will keep track of the resources you use during a three hour block of time in your day. Obtain a copy of the "Natural Resource Awareness Data Table".

2. Choose a three hour block of time which includes time at home and time at school. This block of time would therefore be at the beginning or at the end of the school day.

3. Every ten minutes write on the data page the object, food, or item you utilized, touched, or experienced in some way.

4. At the end of the three hour block of time, fill in the right-hand column to record the natural resource from which the item you utilized was derived.

5. Next, add up the total number of natural resources you used during the three hours.

6. Answer the questions at the bottom of the data page.

Name _____

Natural Resources Awareness Data Table

Hour One

Time Segment	Items Used	Natural Resource(s) Used in Item
0 to 10 minutes		
10 to 20 minutes		
20 to 30 minutes		
30 to 40 minutes		
50 to 60 minutes		

Hour Two

Time Segment	Items Used	Natural Resource(s) Used in Item
0 to 10 minutes		
10 to 20 minutes		
20 to 30 minutes		
30 to 40 minutes		
50 to 60 minutes		

Hour Three

Time Segment	Items Used	Natural Resource(s) Used in Item
0 to 10 minutes		
10 to 20 minutes		
20 to 30 minutes		
30 to 40 minutes		
50 to 60 minutes		

Questions:

1. How many different items did you use in the three hour block of time?
2. How many natural resources were used in the items you utilized?
3. Describe some of the renewable natural resources and nonrenewable natural resources you used.
4. Describe some natural resources you used which could be reused again.

Alternatives to Natural Resources

Directions: Read the following and answer the questions at the bottom of the page.

Many people love eating dessert. Let's say you love eating chocolate cake every night after dinner. But, due to a problem with the supply of chocolate, it becomes impossible for you to get or make chocolate cake. What would you do? If you really enjoy eating dessert, your best option is to find a dessert alternative. For example, maybe you could eat apple pie, vanilla ice cream, or fresh fruit. While these dessert alternatives may not be your favorite desserts, they are reasonable alternatives.

A similar situation occurs with natural resources when they become scarce or difficult to obtain. A resource alternative is a material used to perform the same general purpose or function of the original resource it is replacing. There are many resource alternatives in your home. For example, a hundred years ago most kitchen countertops were made of wood or different types of stone. But, today's countertops are often made of synthetic materials such as formica or Corian. A synthetic is a man-made or manufactured material. You are probably wearing an article of synthetic clothing. In many cases synthetics are an economically or environmentally sound alternative to other natural resources.

There are both advantages and disadvantages to natural resource alternatives. Let's consider plastics. Fifty years ago the use of plastic was not widespread. Today, almost every object produced contains or is packaged in plastic. Plastics are used in everything from cars, to computers, to kitchen appliances. Plastics are durable, easy to manufacture, and cost effective. Many plastics can also be recycled. As is the case with many resource alternatives, plastics also have their own set of disadvantages. In some cases, they may not be as effective as the original resource they are replacing. Or they may have negative effects on the natural environment or human health.

Questions:

1. What is a resource alternative?

2. Why are resource alternatives necessary?

3. Describe a couple examples of synthetic resource alternatives found in your home.

4. Using an example of a resource alternative, state its advantages and disadvantages.

Name _____

Vocabulary of Earth's Natural Resources

Directions: Unscramble the vocabulary words in the first column. Match the words to the definitions in the second column.

____ 1. aatunlr serrceou
_____ _____

____ 2. woenaelnbrne ucseorer
_____ _____

____ 3. erlebnaew ercersuo
_____ _____

____ 4. aorls eeyrng _____ _____

____ 5. lsoisf seflu _____ _____

____ 6. mlianre srseueroc _____
_____

____ 7. ynelricgc _____

____ 8. ueesr _____

____ 9. oeuerscr tniarveetal _____
_____

____ 10. ueecrors sibisaiyntatul
_____ _____

a. a resource that can be replaced relatively quickly by nature.

b. energy sources formed from the ancient remains of once living plants and animals.

c. a useful and reusable replacement to a natural resource

d. examples include copper, aluminum, and iron.

e. a resource that cannot readily or quickly be replaced by nature.

f. using a resource in its same form over and over again.

g. the process of collecting and reprocessing materials into new products that can be used again.

h. the process of utilizing natural resources so they are not overused or damaged for the long term.

i. anything taken from the environment and used.

j. energy from the sun.