

ROBERSON MUSEUM AND SCIENCE CENTER

Pre-Visit Visual History/Places Matter

The Built Environment

Grade Level: K-5 / 6-12

New York State Learning Standards: MST: 5, 6, 7 SS: 1, 3, 4, 5

Pennsylvania Learning Standards: RWSL: 1.6 EE: 4.4 E: 6.5 G: 7.1, 7.3 H: 8.1

Objectives:

Students will gain an understanding of what it means to be responsible stewards of their environment and will also learn the meaning of sustainable development, a concept that has currently held world- wide interest by leaders, planners and scientist. Sustainable Development, or SD, has four basic parts; human needs, technological needs, economic needs, and environmental needs.

Materials:

- ❖ Book Seuss. (1971). *The Lorax*. NY: Random House.
- ❖ Pen or Pencil
- ❖ The Lorax Worksheet

Procedure:

1. For younger students, please read aloud The Lorax and then talk through some of the questions below.
2. For older students, have students read the book The Lorax, either together in pairs or out load to each other, or possibly to themselves. (This will only work if you are able to get several copies of the book. You may purchase used copies rather cheaply on amazon.com). Another possibility is to read the book out load to the students. This will work especially well for younger students who are not yet able to read at the level of this book.
3. Have students answer questions on the worksheet as they read the book or as you are reading to them. Stop and answer questions along the way. You may also give them the worksheet after they have read the book and have them work on it when they are done reading.
4. When the worksheets are complete go over the information with your students. Some of these concepts will prompt students to higher order thinking.
5. For Younger children, you may choose to focus on just a few of the questions on the worksheet below.

Conclusion:

When this activity is complete, students should have a clear understanding of what it means to be a “responsible” steward in their environment and the world around them. So often we think only of our own needs rather than the needs of the many and of the needs as expressed in a sustainable development. Hopefully after completing this activity and reinforcing its ideals in Roberson Museum and Science Center’s, Places Matter program, students will have a better understanding of their role as a member of a community, or even the world.

Developed by: Barbara Betza

Date: December 2007

The Lorax and Sustainable Development

Developed by: Dr. John Ramsey, University of Houston

After you have read The Lorax, please complete the activity that follows:

The Lorax is a fictional story about a man who abused the environment, and how he learned about the wrongs he had done, and how he arrived at a conclusion that would no longer harm the environment. The story begins in the most run-down part of a dull, gray town. A small boy asks the Once-ler to share the secret of the Lorax and how he was “taken away”. Thus, the story is told as a “flashback” as the Once-ler talks about the Lorax and past events.

The characters of the story include:

- The Once-ler, a businessman
- The Lorax, a leader of the plants and animals in the world

Refer to both the text and pictures in The Lorax as you respond to the following questions. Your teacher might ask you to work in groups and share some or all of your responses with the class.

The Once-ler’s story: The Beginning

1. The Once-ler moved across the land in his wagon. He came upon a region with an important **natural resource**. (a natural resource is a plant, animal, or mineral that can be used by people.) What was this natural resource the Once-ler found?

The Natural Resource _____

Name an important natural resource in your region.

2. Humans often appreciate the beauty of the natural world. Experiences such as finding sea shells on a beach or seeing a rare bird often cause strong feelings. Did the Once-ler have feelings about the region and natural resources that he found?

Setting up shop and Doing Business

3. The Once-ler used the land's natural resource to start a business which made and sold a product. What was the product? How was it used by buyers?

The Once-ler's Product?

The Product's Uses?

Using Technology

4. Businessmen, like the Once-ler, sometimes try to make more money by increasing the number of products they can sell. Often new machines and other systems are invented to do this. Other people use machines to work faster, more easily, and more accurately. For example, students, engineers, and others use calculators. Robots are sometimes used to weld sections of cars. Sometimes machines are used to do work humans cannot do. X-ray machines, for example, allow doctors to "see" inside the human body. All these machines are examples of "technology". Often the word "technology" means complicated sets of machines, like those found working together in an automobile plant assembly line. Sometimes "technology" refers to a simple machine, like a pencil.

Name an example of technology YOU use at home.

Name an example of technology YOU use at your school.

Name an example of technology that YOUR parents might use at work.

5. Now back to the story. What technology did the Once-ler invent to increase the production of the thneeds?
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Environmental Effects

6. The use of technology requires the use of natural resources. The use of natural resources often has an effect on the environment. How did the production of the thneeds affect the **biotic** (living) natural resource, Truffula trees?
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7. Threatened and endangered species are those plant and animal **populations** facing extinction. Often, this is a result of human activity. Can you name several threatened or endangered species and describe why they face this condition?
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8. **Interdependence** is an important characteristic of the environment. Living things depend on certain **abiotic** (non-living) and **biotic** (living) factors. Can you think of a real example in which man's activities have altered the interdependence in natural systems?
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9. Often, technology production creates "byproducts". For example, a byproduct of sawing is sawdust. Sometimes the byproducts of technology are unwanted or dangerous (for example, poisonous chemicals) and are pollutants in the environment. Sometimes byproducts are useful. (For example, wood chips can be used to make particle board.) Name two byproducts that resulted from making thneeds?

Byproduct 1? _____

Byproduct 2? _____

10. Were the byproducts that resulted from the making of thneeds harmful or helpful to the environment? Check the line beside the answer of your choice.

Byproduct 1: Helpful _____ Harmful _____ I can't decide _____

Byproduct 2: Helpful _____ Harmful _____ I can't decide _____

11. The fish and swans were affected by the making of thneeds. Explain how the byproducts and making of thneeds affected these animals.

12. Can you think of a real-life example of how man-made pollution affected a real **ecosystem**, its **abiotic** (e.g. temperature, water equality, etc.), its **biotic** (e.g. species extinction), or its **habitat**? Please briefly describe the incident below.

Going Broke and What Follows

13. The Once-ler's business failed. What happened to cause the failure of this business?

14. The Once-ler started business in a small shop. As more and more thneeds were made and sold, more workers were needed. This is how a town grew up around the thneed factory. Human migration occurs when humans move, often seeking work and other human needs. The growth of towns and cities occurs when economic development is taking place; urban decay occurs when it declines and stops. What happened to the workers and the town after the Once-ler's factory closed?

Lessons to be Learned

15. The Once-ler learned that he made a serious mistake. What, in your opinion, was his mistake?

16. What makes you think that the Once-ler's ideas about the use of natural resources and the manufacture of products changed?

17. Explain what, in the Once-ler's opinion, must happen for the Lorax and his animals to return?

The Lorax and Sustainable Development

Developed by: Dr. John Ramsey, University of Houston

After you have read The Lorax, please complete the activity that follows:

The Lorax is a fictional story about a man who abused the environment, and how he learned about the wrongs he had done, and how he arrived at a conclusion that would no longer harm the environment. The story begins in the most run-down part of a dull, gray town. A small boy asks the Once-ler to share the secret of the Lorax and how he was “taken away”. Thus, the story is told as a “flashback” as the Once-ler talks about the Lorax and past events.

The characters of the story include:

- The Once-ler, a businessman
- The Lorax, a leader of the plants and animals in the world

Refer to both the text and pictures in The Lorax as you respond to the following questions. Your teacher might ask you to work in groups and share some or all of your responses with the class.

The Once-ler’s story: The Beginning

1. The Once-ler moved across the land in his wagon. He came upon a region with an important **natural resource**. (a natural resource is a plant, animal, or mineral that can be used by people.) What was this natural resource the Once-ler found?

The Natural Resource was *Truffula Trees*

Name an important natural resource in your region.

Answers May Vary

2. Humans often appreciate the beauty of the natural world. Experiences such as finding sea shells on a beach or seeing a rare bird often cause strong feelings. Did the Once-ler have feelings about the region and natural resources that he found?

Discussion, Answers and Opinions may Vary

Setting up shop and Doing Business

3. The Once-ler used the land's natural resource to start a business which made and sold a product. What was the product? How was it used by buyers?

The Once-ler's Product? *He made Thneeds*

The Product's Uses? *Many uses, a shirt, sock, glove, carpet, hat, pillow, sheets, covers*

Using Technology

4. Businessmen, like the Once-ler, sometimes try to make more money by increasing the number of products they can sell. Often new machines and other systems are invented to do this. Other people use machines to work faster, more easily, and more accurately. For example, students, engineers, and others use calculators. Robots are sometimes used to weld sections of cars. Sometimes machines are used to do work humans cannot do. X-ray machines, for example, allow doctors to "see" inside the human body. All these machines are examples of "technology". Often the word "technology" means complicated sets of machines, like those found working together in an automobile plant assembly line. Sometimes "technology" refers to a simple machine, like a pencil.

Name an example of technology YOU use at home.

Answers May Vary

Name an example of technology YOU use at your school.

Answers May Vary

Name an example of technology that YOUR parents might use at work.

Answers May Vary

Now back to the story. What technology did the Once-ler invent to increase the production of the thneeds?

He invented his super-axe hacker and a bigger more efficient factory

Environmental Effects

5. The use of technology requires the use of natural resources. The use of natural resources often has an effect on the environment. How did the production of the thneeds affect the **biotic** (living) natural resource, truffula trees?

It endangered them and possible caused them to reach near extinction

6. Threatened and endangered species are those plant and animal **populations** facing extinction. Often, this is a result of human activity. Can you name several threatened or endangered species and describe why they face this condition?

The Barbaloots that eat the fruit of the Truffula Trees, The Swomee Swans due to smog,

The Humming Fish because of water pollution.

7. **Interdependence** is an important characteristic of the environment. Living things depend on certain **abiotic** (non-living) and **biotic** (living) factors. Can you think of a real example in which man's activities have altered the interdependence in natural systems?

Truffula Trees need sun light to grow however if the factory produced smog, that would

Decrease the amount of sunlight that would reach the trees.

8. Often, technology production creates "byproducts". For example, a byproduct of sawing is sawdust. Sometimes the byproducts of technology are unwanted or dangerous (for example, poisonous chemicals) and are pollutants in the environment. Sometimes byproducts are useful. (For example, wood chips can be used to make particle board.) Name two byproducts that resulted from making thneeds?

Byproduct 1? *Smogulous Smoke*

Byproduct 2? *Gluppity Glupp and Schloppity Schlopp which glumps the pond water*

9. Were the byproducts that resulted from the making of thneeds harmful or helpful to the environment? Check the line beside the answer of your choice.

Byproduct 1: Helpful _____ Harmful I can't decide _____

Byproduct 2: Helpful _____ Harmful I can't decide _____

10. The fish and swans were affected by the making of thneeds. Explain how the byproducts and making of thneeds affected these animals.

The byproducts were harmful to these animals and caused them to move away or die.

11. Can you think of a real-life example of how man-made pollution affected a real **ecosystem**, its **abiotic** (e.g. temperature, water equality, etc.), its **biotic** (e.g. species extinction), or its **habitat**? Please briefly describe the incident below.

Answers May Vary. DDT situation with the Bald Eagles, for example.

Going Broke and What Follows

12. The Once-ler's business failed. What happened to cause the failure of this business?

He chopped down the last Truffula Tree

13. The Once-ler started business in a small shop. As more and more thneeds were made and sold, more workers were needed. This is how a town grew up around the thneed factory. Human migration occurs when humans move, often seeking work and other human needs. The growth of towns and cities occurs when economic development is taking place; urban decay occurs when it declines and stops. What happened to the workers and the town after the Once-ler's factory closed?

The workers left and the town collapsed.

Lesson to be Learned

14. The Once-ler learned that he made a serious mistake. What was his mistake, in your opinion?

He abused his environment. (Answers May Vary)

15. What makes you think that the Once-ler's ideas about the use of natural resources and the manufacture of products changed?

He realized his mistake when everyone left and he planted the last Truffula seed.

16. Explain what, in the Once-ler's opinion, must happen for the Lorax and his animals to return

The environment must be restored to its original state.

The Lorax and Sustainable Development an Overview

The narrative below should be read with your class before beginning the activity of

The Lorax

The focus of this activity is to introduce and understand the concept of sustainable development by using ideas found in The Lorax.

The Lorax is a fictional story about a man whose activities abused the environment and what he learned from the experience. The story contains many common components found in the environmental problems and issues facing humans around the world. Further, The Lorax also contains many of the components associated with sustainable development (SD), an idea that is probably new to many of you.

Sustainable development is an important (and complicated) idea for all human beings to understand. (SD) is the current worldwide attempt by planners, leaders, and scientist to conduct human activities in such a way that the environment is preserved. Although there is still much confusion and discussion, there appears to be four basic parts of SD – human needs, technology needs, economic needs, and environmental needs. Let’s consider each of these.

“Human needs” refers to the basics of human life. The primary needs include income, shelter, food, water, safety, and health. Certainly, others might argue that educational and spiritual components should be included. And certainly there are differences between regions, nations, and continents. Individuals living in developed, industrialized countries have, for the most part, greater opportunities to meet basic needs than individuals living in developing or underdeveloped countries.

“Economic needs” refers to monetary systems used by human beings in their activities. With some exceptions, few humans in today’s world can themselves meet all their basic needs. Rather they specialize in a particular good and/or are serviced by others. For example, bakers make bread; ranchers raise cattle; truckers transport bread, cattle and other goods. These goods and/or services that are needed by others are then bartered (i.e. traded) or exchanged for money. Money is a symbol of the value humans place on goods and/or services. Then, bakers, ranchers, and others buy other goods and/or services they need. Thus, over time the exchange of goods and services for money has developed into complicated economic systems, the discussion of which is far beyond the scope of The Lorax. The important idea is that in today’s world, individuals and nations operate within a complicated system based on the exchange of money for resources, goods, knowledge, and/or services. Further, most individuals (and nations) seek to improve their economic status, increasing their incomes in order that more goods and/or services can be bought.

“Technology needs” refers to the tools, methods, and/or systems used by humans. These include energy production, the use of natural resources, manufacturing, communication, transportation, and others. Humans use (technology) to help them meet their economic needs. For example, bakers need ingredients and ovens; truckers need fuel, trucks and highways. Technology assists by saving labor and/or time, increasing production, or increasing health and safety. Unfortunately, the use of technology can sometimes have negative environmental consequences. For example, the mechanical plow led to both increased agricultural production and to increased erosion. Many experts now believe that the new “environmentally-friendly” technologies must be developed. These technologies should be pollution-free and use renewable energy and natural resources.

“Environmental needs” refers to the protection, preservation, and conservation of biotic and abiotic resources in the natural world. Man’s modern history is that of technological development without adequate consideration of environmental effects. Many of the current environmental problems stem from side-effects of inappropriate technology use, e.g., pollution, habitat destruction, resource depletion. Many humans now believe that preservation of the environment must be an important consideration of all future human activity.

You can see that SD is a tricky idea. It suggests that humans “sustain” the environment by preserving, protecting, and conserving. Yet, economic development is still necessary in all countries regardless of their current economic status. Many experts believe that the conflict between conservation of the environment and the economic growth of a country is a constant struggle. However, the development of environmentally friendly technology can help promote economic growth that sustains the environment. and this may be the key to the quality of future human life on the planet. The central SD focus is to balance quality of life with quality of the environment.