AP Environmental Science Summer Work
2023 - 2024
Dr. Olson

As part of your start to next year, you are being required to get a jump on things in case we have crazy interruptions or an unusual start to the new school year. For this class we will be covering a lot of aspects of Earth Science, Biology, Chemistry, Physics, Economics, Government, Math, and more. Environmental Science is an interdisciplinary science! It is important that you come to class in September with a base from which to begin the year. Below you will find your work for the summer.

You will be expected to email this completed work to me at:

peter.olson@cape.k12.de.us in order to earn credit no later than 8/22/2020.
You can earn bonus points if you email this to me no later than 7/31/2020.

Include your name in the file containing your work, for example

"JSmith ap env sci summer work submission"

Also, the format must be in pdf format. If you handwrite your answers, then be sure to write clearly and make sure the images are not sideways, etc..

Three tasks you must complete:

1) **Important Environmental Laws/ Legislation 100pts – research the listed laws and construct a chart showing all the criteria listed.** Great website to use— https://www.epa.gov/laws-regulations You are not limited to this website, feel free to find other sources of information.
2) **The Lorax 100pts – watch the short video of the Dr. Seuss story online or read the book. Answer the listed questions and be ready to discuss the concepts on the first day. This is a classic story so enjoy watching the "old-school" animation.**
3) **APES Opening Free Response Question 20pts – Answer all parts of the question** ***(following The Lorax video questions*****) on a separate piece of paper and be ready to discuss on the first day.**

1) Important Environmental Laws & Legislation

For each of the laws and/or treaties, construct a table containing the following:

a. Name, Draft year, International or National
b. Description/ Environmental Issues Affected
c. Agency or Group responsible (i.e. United Nations, EPA, etc.)

sample

Name	Draft year	International/ national	Description/ EV. Issues controlled	Agency/group responsible
1. Antarctic Treaty	1959	International	Governs the actions of people in Antarctica, Resource use, conservation of seals	47 nations

1. **Antarctic Treaty**
2. **Cairo Conference on Population and Development**
3. **Clean Air Acts**
4. **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**
5. **Convention of Climate Change and the Kyoto Protocol**
6. **Convention of Ozone Depletion and the Montreal Protocol**
7. **Convention on International Trade in Endangered Species (CITES)**
8. **Declaration of the Conference on the Human Environment (Stockholm Declaration)**
9. **Endangered Species Act**
10. **Energy Policy Act**
11. **Federal Food, Drug, and Cosmetic Act (FFDCA)**
12. **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**
13. **Federal Mine Safety and Health Act**
14. **Food Quality Protection Act of 1996 (FQPA)**
15. **Freedom of Information Act**
16. **Lacey Act**
17. **Law of the Sea Convention (LOSC)**
18. **Migratory Bird Hunting Stamp Act**
19. **National Environmental Policy Act (NEPA)**
20. **Pollution Prevention Act (PPA)**
21. **Rio Earth Summit**
22. **Safe Drinking Water Act**
23. **Superfund Amendments and Reauthorization Act (SARA)**
24. **Surface Mining Control and Reclamation Act**
25. **Taylor Grazing Act**
26. **The Emergency Planning & Community Right to Know Act (EPCRA)**
27. **The Occupational Safety and Health Act (OSHA)**
28. **The Oil Pollution Act of 1990 (OPA)**
29. **The Resource Conservation and Recovery Act (RCRA)**
30. **Toxic Substances Control Act**
31. **U.S. Clean Water Act**
32. **Wild and Scenic Rivers Ac**
33. **Wilderness Act**

2) *The LORAX* and Sustainable Development

Developed by: Dr. John Ramsey, University of Houston

Background: The focus of this activity is to introduce and understand the concept of sustainable development by using ideas found in *The LORAX,* written by Dr. Seuss. *The LORAX* is a fictional story about a man whose activities abused the environment and about 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 scientists 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. There are many 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 the exception of primitive tribes, few humans in today's world can themselves meet all their basic needs. Rather, they specialize in a particular good and/or 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, the 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 technologies 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 soil erosion. Many experts now believe that 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 of the environment must be an important part of all future human activity.
You can see that sustainable development 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 this apparent conflict between outcomes is the key to the quality of future human life on the planet and that economic development using environmentally-friendly technology can help promote economic development that sustains the environment. The central SD focus is to balance quality of life with quality of the environment.

Directions: Watch Dr. Suess "*The Lorax" (1972 version) part 1 &2* online or the full original version from 1972, Youtube then answer all of the following questions:

Interpreting Events and Meaning in *The LORAX:* This is a fictional story about a man who abused the environment and about what he learned. 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 natural world.

The Once-ler's Story: The Beginning

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

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. What were the Once-ler's feelings about the region and natural resource 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.
    a. What was the product?
    b. How was it used by buyers?

4. The Lorax appeared at this point and asked the Once-ler some angry questions.

    a. What the Lorax asked?

    b. What the Once-ler answered?

5. The Once-ler, like other humans in business, organized a system to manufacture and distribute his product. Listed below are several parts of a manufacturing process. Describe how each of the following was used in the story. Remember, you may refer back to the video/book.

    a. Raw materials? _____
    b. Product design? _____
    c. Labor (workers)? _____
    d. Assembly line? _____
    e. Energy? _____
    f. Shipping, transportation? _____
    g. Communication? _____
    h. Profits/losses _____

Using Technology

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. All of 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.

6. What technology did the Once-ler invent to increase the production of thneeds?_____

_____

_____

7. What are several other examples of technology presented in the story?

_____

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Environmental Effects

8. 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 thneeds affect a key biotic (i.e.,living) natural resource, truffula trees?

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9. Threatened and endangered species are those plants and animal populations facing extinction. Often, it is a result of human activity. Name 3 threatened or endangered species and describe why they face this condition.

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10. Certain animals depended on truffula trees.
    a. Name the animals.
    b. Explain why these animals needed truffula trees.

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

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12. Often, technological production creates "byproducts." For example, a byproduct of sawing wood 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? _____

13. 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 _____

    Byproduct 2: Helpful _____ Harmful _____

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

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3) AP Environmental Science Opening Free Response Question

Answer the following free response question on a separate sheet of paper and be ready to discuss the first day of school.

The study of environmental science covers a wide range of information from all disciplines.

a) What is your own personal definition of environmental science?
b) Explain the connection between government regulations and environmental science.
c) What do you believe should be the role of the government in environmental science? Elaborate on 2 specific examples to support your statement.