AP Environmental Science

Summer Assignment 2018

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This upcoming school year, you will be learning about different systems found in nature, and the human impact on the environment. Our course is to educate you about environmental issues that are important to our community, our country, and our world. If you have questions, please e-mail me.

What you need for class:

- ☐ **Notebook** (any style) – for your daily note-taking
- ☐ **APES Journal** – a *lined composition notebook*
- ☐ **All Summer Assignments are due the first day of school**
- ☐ **Sign in to our Schoology Class Room (www.schoology.com)**
  - Our AP Environmental class code is: **8TPRH-8XVQ6**

Part 1: Email or Print your Essay

Please type the answers to these questions.

1. Your name
2. Any special hobbies or interests you have
3. Why have you chosen to take APES and any concerns you have for the upcoming year
4. What environmental issues are you most interested in…and which ones do you want to learn more about? Please explain why.

Topic Ideas:

Human population growth	Non-native (invasive) species
Food production, food safety, GMO's	Air Pollution
CO_2 and global warming	Water Pollution (surface or groundwater)
Overfishing, overhunting	Deforestation
Ozone depletion	Biodiversity

Energy resources (coal, oil, nuclear, solar, wind, geothermal, hydro)
Recycling or another aspect of waste management (garbage)

Part 2: Where in the World Case Studies

Please complete the separate assignment / map (also found on schoology). Plot & write a brief description for each of 26 case studies. I have included an example of what it should look like.

Part 3: Major Themes and Concept Definitions

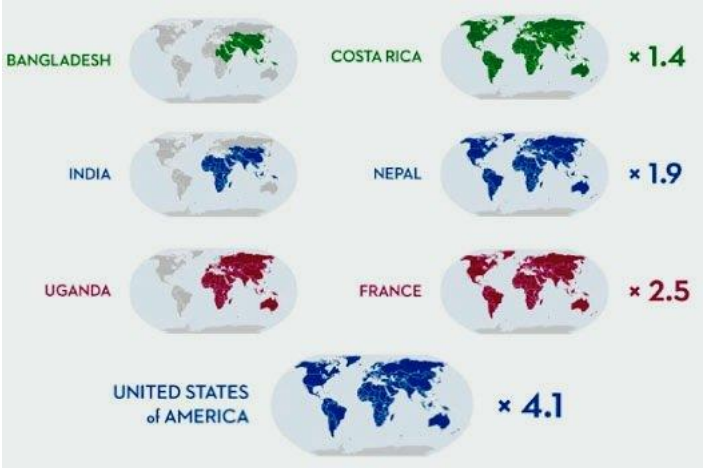
Sadly, there have been many environmental catastrophes across the globe. The important thing is that we learn as much as we can about why they occurred so that we can prevent similar events from happening in the future. Briefly research two of the following case studies: Great Pacific Garbage Patch, Canada's Tar Sands, Greenland Glaciers, Love Canal, NY, Aral Sea, Cape Town South Africa (water shortage), Ogallala Aquifer, Chesapeake Bay, MD. Please write a 1 page (double spaced) essay for two of the above case studies, answering: *What happened/What went wrong? What did we learn? How can it be prevented in the future? What were some of your thoughts as you learned about this?*

Part 4: UNIT 1- INTRODUCTION TO THE ENVIRONMENT

Ecological Footprint: To understand Ecological Footprint, watch: http://www.youtube.com/watch?v=EjyrAHzthTo

Then, visit http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/
and calculate your ecological footprint using the "detailed" version. Try to be as honest and careful as possible when answering the questions. When you are done, please also answer the following questions.

1. In your own words, define ecological footprint?
2. How many Earth's would be required to supply everyone's needs if the entire human population lived like you? How does the figure you got compare to those found on the world-wide diagram below? Describe.
3. Using the pie chart given for your break down, which two portions made up the largest percentage of your footprint (mobility, shelter, food, etc), and was this what you expected? Why or why not?
4. How many productive acres are needed to support you? Which two types of land do you use the most?
5. Click on the "explore scenarios" box on your results page (bottom right-hand corner) which two suggestions are the most "doable"? Would you actually be willing to do them? Why or why not?



Part 5: The Lorax (original 1972 version) (25 minute video)

This movie is embedded in our schoology website (summer assignment folder) or follow this link: https://www.youtube.com/watch?v=8V06ZOQuook

Post-Video Questions Type and explain your answers to these questions with complete and original thoughts.

1. Have you ever acted like the Once-ler?
2. Choose a real-life example of whom or what you think the Once-ler represents.
3. Have you ever done anything that you think the Lorax would have done?
4. Choose a real-life example of whom or what you think the Lorax represents.
5. How could the Once-ler have made Thneeds without destroying the Truffula Trees?
6. What message was the author of The Lorax trying to convey?
7. Besides using a cartoon, what other ways could this message be shared with others in the community?
8. The Lorax spoke for trees “for trees have no tongues”. What would you choose to speak for, what would you say?
9. Name an important natural resource in your area, state, or country. Explain its importance, and to who.
10. Why would the Humming Fish make reference to Lake Erie, a “real” place in an otherwise fictitious world? (NOTE: Do some research about the environmental issue in the 1970s associated with Lake Erie.)

Part 6: UNIT 1- INTRO: Pre-Discussion Report on "The Lessons of Easter Island"

Read the article: Jared Diamond. "Easter's end." *Discover* magazine, August 1995. 16(8): 62-69. Found on our schoology website in your summer assignment folder.

1) Write thoughtful responses to two (2) of the following questions. Responses should put ideas in your own words and should draw support both from the article and from your own knowledge and ideas.

a) The article describes the former abundance of trees and forests on Easter Island. Describe several factors that contributed to the extinction of trees on the island. What factors affected tree death rates? What factors affected tree "birth" rates (think about reproduction and germination of new seeds)? Imagine that you arrived on the island before the tree populations were extinct, but after the tree populations had started to decline. Suggest a management plan that could have helped the Easter Islanders save the tree populations from extinction. Be sure to consider both tree "birth" and tree death.

b) The article states that around 2,000 people were found living on Easter Island when European explorers first made contact with the island. However, the existence of the huge stone statues on the island suggests that the human population on Easter was once as high as 17,000. Describe how biotic and abiotic factors contributed to the crash of the human population on Easter Island. Imagine that you can turn back time and visit Easter Island a thousand years ago (after the Polynesian settlers had arrived, but before the peak of statue construction). Describe specific advice that you could give to the settlers that would help them avoid the population crash. Justify your advice.

c) Some authors liken the demise of the civilization on Easter Island with the overpopulation and resource destruction on the entire planet. Do you feel that this comparison is justified? Why or why not? What can we do to prevent a population crash of the entire human population? Describe how your suggestion relates to at least two of the following four ecological concepts: birth and death rates, carrying capacity, biotic and abiotic environment, biodiversity.

2) Write one thoughtful question that you have about the article. Begin with a sentence or two that describes the context for the question (e.g., what the writer said, what you know about biology). Then ask a question that relates to the content of the article. Good questions will try to deepen your understanding of concepts, or will try to relate the content of the article to other ideas. The most interesting questions will be used to fuel our in-class discussion!

Part 7: Current Issues/Events

One of my goals is to familiarize you with environmental issues that are important to our community, country and world. We will be reading and discussing a variety of current events throughout the school year. Over the course of the summer, find **two (2)** recent articles that interest you (during the past 1-2 years) related to environmental science and taken from a reliable source: scientific publications, magazines, newspapers. Try the NY Times, Washington Post, National Geographic, Discover Magazine, Treehugger.com. One article must focus on Massachusetts.

Directions: Each of the articles will have a write-up

- Title, Source and Date of article
- Questions – As you read, Come up with at least one question you have as a result of your reading. (this may be something you didn't understand, or something you are curious to know more about.
- Summary - Write a paragraph summary of the article (8-10 sentences in your own words), including pertinent facts, information and situations described in the article.
- Personal Reaction - Write a brief paragraph detailing your personal reaction to the article. As you read, try to relate or connect the information to your life personally. How does it affect you directly or indirectly? Did it open up areas for you to explore? Will you follow up on what you read?

Topic Ideas:

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Food production, food safety, GMO's
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Ozone depletion
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Recycling or another aspect of waste management (garbage)

Part 8: **APES Scavenger Hunt**

To successfully complete the scavenger hunt you must make a visual dictionary (with/without a partner) (PowerPoint, or a word document) that includes **25** of the 45 listed environmental terms/ items/ concepts listed below. You must have a photo of you with each thing as well as a definition of the term and an explanation of how your photograph relates to the term. Not all items need to be literal: be creative, and have fun!

1. An example of biomass
2. A keystone species
3. A sedimentary rock
4. A local superfund site
5. A symbiotic relationship
6. Inorganic fertilizer
7. Agricultural pollution
8. A point source of pollution
9. A non-point source of pollution
10. A organically grown food
11. A GM food (not produce)
12. An indoor air pollutant
13. A renewable resource
14. A non-renewable resource
15. A farmers market
16. A local park
17. A narrow spectrum pesticide
18. Coffee labeled: “fair trade”, “organic”, or “rainforest certified”
19. A monoculture
20. A r-strategist
21. A K-strategist
22. Select an item and discuss specific internal & external costs for that item
23. A source of photochemical smog
24. A source of industrial smog
25. A source of natural pest control
26. A PV cell
27. A carcinogen
28. A teratogen
29. An invasive species
30. Leaf litter
31. Evidence of habitat destruction
32. Biomagnification
33. An ecotone
34. A deciduous tree
35. A conifer
36. A natural pollinator
37. Urban sprawl
38. Recycling
39. Bycatch
40. An item with excessive packaging contrasted with the same item for sale with minimal packaging
41. A source of phthalates
42. A source of dioxin
43. A local landfill, water treatment facility, and electricity generation station
44. Evidence of erosion
45. A method used to prevent erosion