

Earth Systems I/Unit 1 Study Guide

es1u1sg (The Earth System – “. . . all things are connected.”)

The Habitable Planet: <http://www.learner.org/courses/envsci/index.html>

Gaia Theory: <http://library.thinkquest.org/C003763/flash/gaia1.htm>

Learning Objectives

1. Describe the character of scientific knowledge and inquiry and how it is achieved.
 - a. What test does something have to meet to be considered scientific?
 - b. How is scientific knowledge acquired?
2. Demonstrate understanding of the ideas of system, model, change, and scale in exploring scientific and technological matters.
 - a. What is a system?
 - b. What purpose do models serve?
 - c. Provide examples of how the earth system has changed over time.
 - d. Why does scale matter?
3. Summarize the current scientific theories about the earth, solar system and universe and how those theories evolved.
 - a. Summarize the solar nebulae theory and the evidence that supports it.
 - b. Summarize the big bang theory and the evidence that supports it.
4. Describe natural resources and explain their importance to human life.
 - a. What are natural resources?
 - b. How has human population changed our relationship with natural resources?
 - c. How does resource consumption put pressure on societies and the environment?
 - d. How can we learn from past civilizations?
5. Characterize the interdisciplinary nature of environmental science.
 - a. What are some of the disciplines drawn upon in environmental science?
 - b. How does “environmental science” and “environmentalism” differ?
6. Understand the scientific method and how science operates.
 - a. What is empirical evidence?
 - b. Describe the parts of the scientific method
 - c. How does “quantitative” and “qualitative” data differ?
 - d. What are paradigm shifts in science? When do they occur?
7. Diagnose and illustrate some of the pressures on the global environment.
 - a. Define Ecological Footprint and explain what it measures.

Some Terms to Know

science natural resources theory quantitative qualitative ecological footprint interdisciplinary natural sciences social sciences law environmentalism ecology peer review paradigm biodiversity empirical

To-Do List

- [Understanding Science, The Habitable Planet](#), Chapter 1 (pages 3-22)
- Notebook **10pts**
 - ✓ Notes/Input (right side)
 - ✓ Reflection/Output (left side)
 - ✓ Systems and The Lorax
 - ✓ Easter Island Reflection
- Skill **Lab**: Percent Oxygen **10pts**
- **Quiz** (online in Moodle; take as many times as you need) **20pts**
- Unit **Exam** (a test of your knowledge, understanding, and application) **20pts**

Additional Resources:

“Lorax” by Dr. Seuss

“Tragedy of the Commons” by Garrett Hardin

How science works

