

Environmental Issues Instruction



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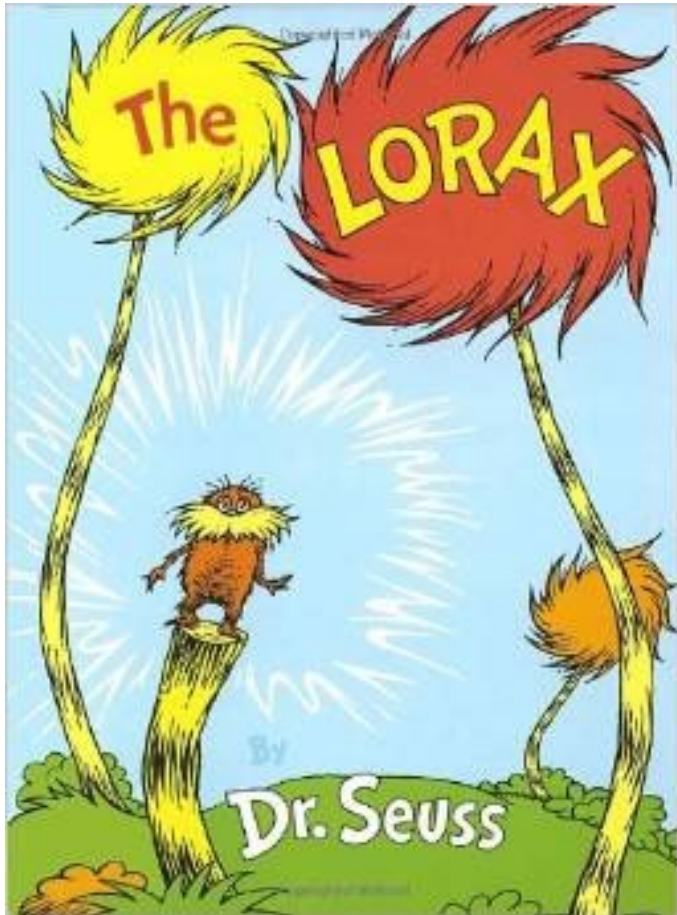
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Environmental Issues Instructional (eii) Model

Water Connects Us All

- Level I: What is an environmental issue?
- Level II: What content is necessary to understand this environmental issue?
- Level III: What are the environmental issues related to this theme?
- Level IV: What responsible environmental action will be taken?

Level I: What is an environmental issue?



What is the difference between a problem and an issue?

Level II: Ecological Foundations

- Why are soil and water important?
- How are water and soil connected?
- What problems and issues are associated with water and soil?
- What effect does climate change have on the quality of water and soil?

Level III: What are the issues?

- Who is responsible for water pollution?
- What can we do about water pollution?
- Nitrates in Iowa rivers and streams
- The Red Tide in Florida
- The Dead Zone

Level IV: Responsible Environmental Action

- Teachers and their students create a plan of action based on the learning about Water Connects Us All.
- Personal Actions
- Class Actions
- School Projects
- Community Projects

How do we use NGSS 3-D Learning in Environmental Issues Instruction?

1. Disciplinary Core Ideas:

5-ESS2-1 Earth's Systems

Students who demonstrate understanding can:

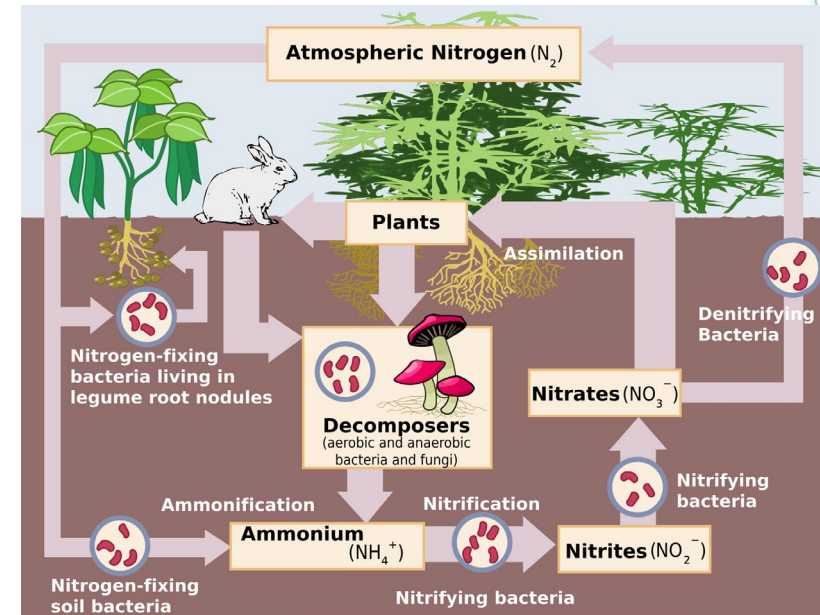
- 5-ESS2-1.** Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. [Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the atmosphere on landforms and ecosystems through weather and climate; and the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.] *Assessment Boundary: Assessment is limited to the interactions of two systems at a time.*

Earth's Systems

- The Incredible Journey-
Water Cycle Game



- The Nitrogen Cycle Game



How do these two interact?

2. Engineering Practices

Developing Models

What are models?

According to the **Next Generation Science Standards**, scientific **models** can include diagrams, physical replicas, mathematical representations, analogies, and computer simulations if they are used to predict or explain phenomena.

Engineering Practices: Developing Models

Participants developed water filtration devices to discover how water can be filtered.



3. Cross-Cutting Concepts

Systems and system models

- Systems and system models.

Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering

Cross-Cutting Concepts: Systems and system models

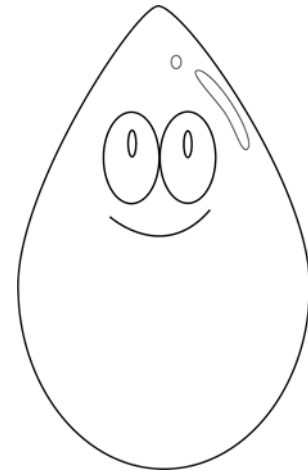


- Water Filtration Game



- Participants tested water in various locations
- Data was gathered and shared

Issues



In Your Group

- Based on your data, what is the problem with the water in Iowa?
- Who might be the people (players) involved in this problem?

Level 1 and Level 3

- What caused the water to have changes in the nutrients it carried?

Level 2

- How could you impact Iowa's water quality?

Level 4

2019-2020 Professional Development Environmental Issues Instruction (eii) Presents: **Water Connects Us All**

Two separate workshop dates and locations are available:

Iowa Lakeside Lab, Milford, Iowa

- June 25-27, 2019 and April 3-4, 2020
- Upper Iowa Quad Cities Center-Bettendorf
- November 15-17, 2019 and March 27-28, 2020

Contact Dr. Barbara Ehlers for more information

- ehlersb@uiu.edu or <http://www.uiu.edu/eii>
- Funded by EPA, REAP-CEP, Iowa Farm Bureau, Izaak Walton League and Upper Iowa University
- ▶ Additional workshops- UIU Campus- Fayette- to be announced

Questions?

Thank You!!!!