

# Environmental Issues Instruction



Dr. Barbara Ehlers, Associate Professor of Education, Upper Iowa University, Eii Director

Cathryn Carney, University of Iowa Graduate Student, Former High School Science Teacher, Eii Associate Director

# 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?

# 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.*

## 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.

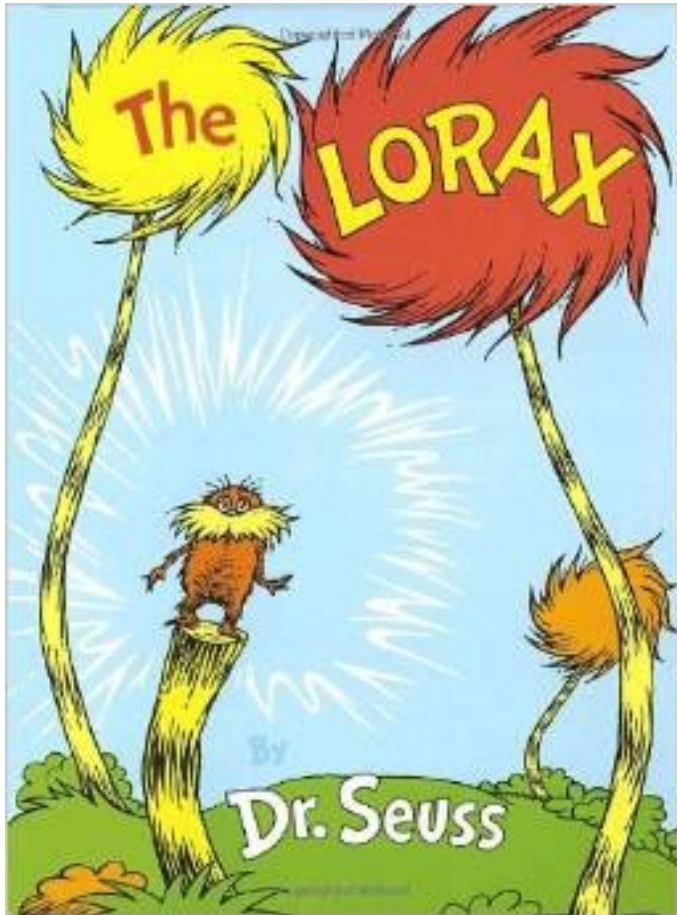
# 3. Cross-Cutting Concepts

## 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**

# 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?

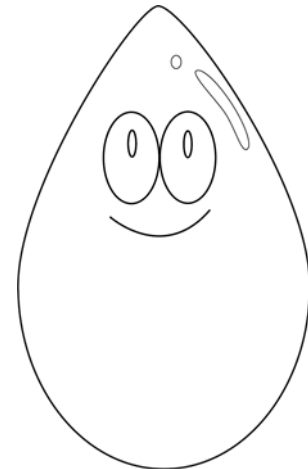
- Who is responsible for water pollution?
- What can we do about water pollution?
- Nitrates in Iowa rivers and streams
- The Red Tide in Florida
- The Dead Zone



# 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

# 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](mailto: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!!!!