



Natural Inquirer Scientific Process Module



Unit 1: Lesson 3: The BIG Idea- Thinking About Science and the Environment

Background: As you know, anything can be viewed from different scales. When we consider a health or environmental problem, for example, we can think of its impact locally, nationally, or globally. Science in general, and in this case environmental science, can be viewed at different scales as well. The larger scale perspective is important, because it provides a context for understanding the more specific topics. Presenting a large-scale perspective helps students to understand that specific learning can be transferred from one situation to another.

The *Natural Inquirer* takes two large-scale concepts and introduces something from each article based on these concepts. At the beginning of each article, students are asked to “Think About Science” and “Think About the Environment.” These two sections provide a large-scale context for the student as they learn about a specific environmental research study.

“Thinking About Science” takes a large-scale principle or practice of science from the article and introduces it for student reflection. This is usually an informal part of the scientific process, such as the idea of using controls, or the concept of teamwork in science. As an educator, you could combine these sections from each article in a journal or multiple journals as part of a lesson on the nature of science, without even reading the articles.

“Thinking About the Environment” takes a large-scale environmental principle from the article and introduces it for student reflection. Examples include the idea of biodiversity in ecosystems, the nature of ecosystems, or the concepts of native and nonnative plants and animals.

These large-scale concepts are important because they can help students to understand the implications of the research that they are reading. Additionally, this can help them to see how their present learning can be transferred to new topics.

Objectives:

- Students will be able to name at least one larger implication of studying science.
- Students will be able to discuss and evaluate verbally what larger concepts are being addressed by scientific studies.
- Students will be able to explain how the larger concept influences how a problem is defined and studied.

Time: 1-2 class periods

Materials:

- Any edition of the *Natural Inquirer*
- Student notebooks/ Scientific Process portfolios
- Pencils
- *Natural Inquirer* worksheet (attached)

Procedure:

1. Ask students to pick three or four articles from the *Natural Inquirer*.
2. Ask students to read the “Thinking about Science”, “Thinking about Environment”, and Introduction section for each article and ask students to complete the attached chart as they go.
3. After students have finished reading and completing the chart, have students play the following game to help reinforce the application of scientific studies to larger ideas and concepts.
4. Ask students to clear their desks and put them in groups of four.
5. Then read aloud to them the introduction section from an edition of the *Natural Inquirer* they have not read yet and give each group a minute to brainstorm larger concepts that may apply to the study. At the end of the minute, have each group share the list of ideas they came up with and see which group came up with the longest list. Discuss the answers and see how they apply.

Assessment:

Students can be assessed on the chart they fill out and through their participation in the class discussion. The charts should be placed in their scientific process portfolios so that the charts can be referenced later and are a part of a large assessment.

Modifications:

Instead of completing the reading and charts individually, the chart could be completed in pairs or in small groups. Additionally, the vocabulary words at the beginning of the article could be used for a vocabulary test or spelling words. Students that have difficulty reading or doing other tasks can be paired with a partner or the educator may assist.

Students who would like an extra challenge can read an additional *Natural Inquirer* journal or article and present the information to the class. They could also create a graphic organizer using the information. Graphic organizers are a way for students to visually represent information they have learned. Resources for learning more about graphic organizers are listed below.

Extra Resources:

Natural Inquirer Web Site- From this web site you can download articles individually or as an entire journal in Adobe PDF format.

<http://www.naturalinquirer.usda.gov>

Education Place Graphic Organizers

<http://www.eduplace.com/graphicorganizer/>

North Central Regional Educational Laboratory Brief Introduction to Several Types of Graphic Organizers

<http://www.ncrel.org/sdrs/areas/issues/students/learning/lr1grorg.htm>