Natural Inquirer Scientific Process Module

Unit 1, Lesson 2: What Does It Mean to Be a Scientist? What Is the Scientific Process?

Objectives:
- Students will be able to describe what it means to be a scientist.
- Students will be able to describe the scientific process.
- Students will be able to identify the different parts of the scientific process through the reading of a Natural Inquirer article.
- Students will describe the difference between basic science and applied science.

Time Needed:
2-3 class periods

Materials (for each student or group of students):
- Natural Inquirer monograph or article
- Introduction to the Scientific Process
- Scientific Process Graphic Organizer
- Writing utensil

What does it mean to be a scientist? Scientists are curious and creative people who use their talents in search of new information. Some scientists work in the arena of basic science. However, most scientists do applied science, which means that they try to solve problems or answer questions that will directly benefit society. Scientists are people who use the scientific process, which requires accuracy, patience, and open-mindedness. Therefore, scientists are people who are willing to make mistakes and learn from them. They are willing to expose their work to others for review and comment. They are willing to take constructive criticism and learn from others. Scientists must also be critical thinkers, both about their own work and the work of other scientists.

Scientists must be able to incorporate their creativity into the general process of scientific inquiry. Scientists also are good at developing and implementing plans, observing and recording data, and employing technology to analyze their data. Finally, scientists must communicate their results to other scientists and to the public.

In this lesson, students will be introduced to the qualities of scientists. You will also introduce them to the general scientific process.

Methods:

Prep
Familiarize yourself with the scientific process by reading the “Introduction to the Scientific Process” included in this year-long lesson plan. Create a presentation that you can share with students about the scientific process using the information from the “Introduction to the Scientific Process!”

Day One
Begin class by asking students, what do scientists do? Write down student comments on the board for all to see as the discussion progresses. Ask students to provide details to support their ideas whenever possible. If possible, focus the discussion on the broader idea of being a scientist, rather than a discussion of specific types of science. For example, students could say something like “Scientists try to solve problems.”

Once you feel the discussion has been exhausted, share with students the presentation you created on the topic of the scientific process. The presentation should touch on basic and applied sciences and the different steps of the scientific process. Provide students a copy of the Scientific Process Graphic Organizer, and walk through the steps of the scientific process with students. Ensure that students capture information about each step in the
**Day Two**

Have students review their Scientific Process Graphic Organizer. Then tell students that they will seeing a real-life example of the scientific process while reading a *Natural Inquirer* monograph or article. The text is from a real USDA Forest Service scientist, like one of the people shown on the cards during Unit One, Lesson One. Before reading the text, flip through the text with students and identify the parts of the text that correlate to the parts of the scientific process:

- Thinking about Science - explains application of a larger science concept such as the importance of teamwork in science
- Thinking about Environment - explains application of environmental theme or idea
- Introduction Section - provides background research and defines the problem
- Method Section - explains how scientists try to answer the problem
- Findings Section - tells what the scientists discovered
- Discussion Section - describes what the findings mean or leads to more questions

Then, direct students to read the entire article starting at the “Meet the Scientists” section.

**Day Three**

To conclude this lesson, review with students the scientific process and reinforce the idea that no matter what type of science is done most scientists use the scientific process to “do” science.

Then explain to students the plan for using *Natural Inquirer* texts over the entire year to learn about the scientific process. By the end of the year, students will do a research project using the scientific process, creating their own article in the same format as a *Natural Inquirer* article.

Students who would like an extra challenge can read an additional *Natural Inquirer* article and compare it to the one read by the whole class.