Natural Inquirer Scientific Process Module

Unit 1, Lesson 1: What Is a Scientist?

Objectives:

- Students will be able to identify at least two different perceptions of scientists.
- Students will be able to verbally describe different types of scientists in the USDA Forest Service and the work that these scientists do.
- Students will be able to verbally describe the differences and similarities between their before and after drawings of scientists.

Time Needed:

1-2 class periods

Materials (for each student or group of students):

- *Natural Inquirer* Scientist and Engineer Cards (http://www.naturalinquirer.org/Scientist-Card-Series-v-168.html)
- Blank paper (unlined)
- Writing utensil
- Color pencils, markers, or crayons
- Tape
- Computer (optional)
- Internet (optional)

Scientists are people who are curious about their world. Rather than learning haphazardly, scientists use a general method, called the scientific process, to collect, analyze, and report new information. Scientists want to share what they have learned with other people. Scientists are found in every discipline, such as biology, physics, chemistry, and environmental science, as well as psychology, education, history, and even religion. There is no topic of interest for which scientists cannot be found.

Often students think of scientists as individuals found in laboratory environments wearing a lab coat and working with chemicals. However, as you will find in *Natural Inquirer*, scientists can be anyone. They represent a diversity of people, including both women and men, people of different ethnic backgrounds, and people of all ages, talents, and interests.

Natural Inquirer attempts to show that a scientist is anyone who identifies and systematically solves a problem or answers a question. Thus, every one of your students are scientists when you follow the general scientific process in your problem-solving. Challenge your students to think about the times that they have been a scientist. That would include any time that they have tried to answer a question or solve a problem. Did they follow a scientific process in their problem-solving?

In this lesson, students will think critically about what makes a scientist by introducing students to a variety of USDA Forest Service scientists.

Methods

Day One

Begin the lesson by having students close their eyes for one minute. During that time, ask students to visualize a scientist. When students open their eyes, direct students to use the blank paper and coloring pencils, markers, or crayons to draw the scientist they visualized in their minds.

Once students are finished, tape all the student drawings to the board. Spend a few minutes discussing and comparing the drawings to one another. Focus the discussion on similarities and differences between the depictions of scientists. List the similarities and differences on the board for all students to see. As you discuss with the students, ask them to think about and explain where the concept comes from. For instance, why are numerous students depicting a scientist in a lab coat? Where are they seeing these scientist depictions? Do they think it's always the case that scientists wear lab coats?

Continue discussing until you feel that all similarities and differences have been discussed. If you have access to a computer and Internet, consider typing

the word “scientist” into a search engine and display the resulting images. Lead a discussion about these images. What do the students notice? How are these images similar or different from those images created by students? Do you think that these scientist images are representative of all scientists? Why or why not?

Note: This activity can also be done using engineers and the engineering cards featured in the *Natural Inquirer* Scientists and Engineer Cards.

Day Two

Sometimes, depictions of scientists are not as diverse as they are in real life. Explain to the students that scientists are diverse. They are diverse in their backgrounds, how they look, and what they study. Provide students copies of *Natural Inquirer* Scientist and Engineer Cards. Explain to student that some scientists study the environment and natural resources, like those USDA Forest Service scientists on the cards.

Ask students to read their card(s) silently. Partner the students together, and have students introduce the scientists on their cards to one another.

Come together as a class and hold a class discussion about the cards. What similarities or differences do students see between the cards and the student drawings made in the previous lesson? Is there a science career on the cards that interests the students? Why or why not?

Following the discussion, provide students blank paper and coloring pencils, markers, or crayons to draw a new scientist. Once students are finished, have students compare and contrast their two illustrations. Are there similarities and differences? If so, what are they? Why did your illustration change? What new things did you try to incorporate? Why?

Note: It will be important to discuss differences or similarities in gender, ethnic or racial background, age, and setting.

The before and after drawings can be displayed next to each other throughout the room, so that students can make observations and compare the drawings.