

# Lesson Plan for the *Investi-gator*

Vol. 1, # 1, Summer 2009

## Materials and Supplies:

The *Investi-gator* Vol. 1, #1, Summer 2009  
2 X 3 ½ inch sticky notes (11 for each student)  
pencils  
2 blank unlined pieces of 8 x 11 inch paper for each student

## National Science Education Standards addressed:

Content Standards A, C, and F

A: Abilities necessary to do scientific inquiry

A: Understandings about scientific inquiry

C: The characteristics of organisms

C: Organisms and their environments

F: Changes in environments

F: Types of resources

**Time needed:** Two days, 1.2 classroom periods  
(First classroom period: Fifteen minutes)

## Classroom Period 1:

**Fifteen minutes:** Introduce the scientific process, as expressed in scientific writing, to your students. Explain that scientists communicate with each other in writing by completing a scientific paper. A scientific paper is similar to what they do when they write a research paper. A scientific paper may have a number of sections, but they usually include:

**1. Introduction section.** The introduction gives the background of the research problem. It explains what the problem is and why it is a problem. It usually ends with a statement of the question the scientist wanted to answer or the specific problem to be solved.

**2. Methods section.** The methods section explains what kind of data or information the scientist collected, how it was collected, and how it was analyzed.

**3. Findings section.** The findings section presents the results of the data analysis and usually includes an interpretation of the analysis. An interpretation of the analysis is different than the analysis itself. The analysis is a process of data or information reduction, and may include mathematical and statistical processes. Mathematical and statistical analysis are not mandatory, as many forms of analysis may include non-numerical processes. The interpretation is the meaning given to the analysis. Different scientists could even interpret the same data or information in different ways.

**4. Discussion (or Implications) section.** In this section, the scientist usually discusses the findings and interpretation in light of the original problem presented in the Introduction section. In addition, this section often suggests new questions or problems to be answered or solved.

Explain to your students that there are many ways to solve scientific problems or answer scientific questions. The type of data or information collected and the way it is analyzed depends on the problem or question. Introduce the *Investi-gator* by telling them that they will be reading a scientific paper written at their grade level. Tell them that this paper is based on an actual scientific paper written by scientists working for the U.S. Forest Service, a United States government agency.

Hand each student an *Investi-gator*. For homework, ask students to read the article that you have chosen. Students should read the entire article, but they do not need to read the FACTivity or the Reflection Questions.

**Classroom Period 2:** This will take the entire classroom period.

**Twenty minutes:** Before getting started, give each student 11 sticky notes and two pieces of unlined white paper. Students will fold one sheet of paper in half and then into quarters. Then they will unfold the paper. In the first quadrant, have them write “Thinking About Science.” In the second, have them write, “Thinking About the Environment.” They should put their name on both pieces of paper.

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Divide your class into eight groups. Assign article sections to each group as follows:

**Group 1**—Introduction (and Reflection Question #1)

**Group 2**—Introduction (and Reflection Question #2)

**Group 3**—Method (and Reflection Question #1)

**Group 4**—Method (and Reflection Question #2)

**Group 5**—Findings (and Reflection Question #1)

**Group 6**—Findings (and Reflection Question #2)

**Group 7**—Discussion (and Reflection Question #1)

**Group 8**—Discussion (and Reflection Question #2)

(If there are three Reflection Questions, select two for this exercise. If there is one reflection section question, assign the question to two groups.)

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All students should silently read “Thinking About Science” and “Thinking About the Environment.” When they have finished each section, they should write the main idea of each section on one sticky note and place it on the paper in the correct quadrant. In the third quadrant, students should write the article section title to which they have been assigned (Introduction, Methods, etc.). Then, each student will silently scan that article section, including the Reflection Question to which they have been assigned. Students should write what they believe to

be the main idea or main sentence of each paragraph on one sticky note, and place each sticky note in one of the remaining quadrants. (Have extra blank sheets available if needed.) Students should number each sticky note in order (#1 for the first paragraph, #2 for the second, etc.). Remind students to examine the photos, illustrations, and tables in their section.

**Ten minutes:** Each group will focus specifically on the article section and reflection question to which they have been assigned. For example, students in groups 1 and 2 will focus only on the Introduction. Using the sticky note paragraph summaries, groups should discuss and develop an answer to their reflection question. One student will be appointed recorder and one student will be the presenter. The reflection answer should be summarized so that its presentation will take no longer than one minute to answer. The summarization should include a rationale for the answer, if necessary. For example, “We answered this way because.....”

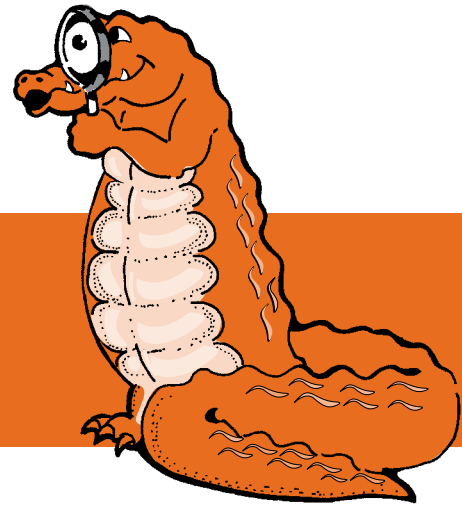
**Twelve minutes:** The presenter from each group will present the reflection section answer and rationale to the class. Have the student read the reflection question before giving the answer and rationale.

**Note that possible answers to the Reflection Section questions are on page 55.**

If you have time, hold a class discussion about the article. What did students learn? What did they like and dislike about the article? Challenge students to discuss how the research they just read might affect them personally. How might it affect their community?

**Assessment:** Have students turn in their sheets. You should have a “quadrant sheet” from each student, and a summary sheet from each group. You can assess student comprehension by examining their paragraph summary statements.

# Assessment Rubric



	<b>Poor 1</b>	<b>Fair 2</b>	<b>Good/ Satisfactory 3</b>	<b>Exemplary 4</b>	<b>Score</b>
<b>Quadrant sheet</b>	Did not attempt to make quadrant sheet	Made quadrant sheet-not completed	Completed quadrant sheet-missed one section	Complete quadrant sheet	
<b>Understanding of Material</b>	Did not demonstrate understanding of material	Limited understanding demonstrated	Demonstrated understanding of assignment and material	Added extra evidence to support answers	
<b>Grammar/Punctuation</b>	More than 8 errors	4-8 errors	1-3 errors	No errors	
<b>Group Summary Sheet</b>	Group did not turn in summary sheet	Showed limited support to group sheet	Met most of criteria for group summary sheet	Completed group summary sheet with full participation from all members of group	
<b>Total Score</b>					