



Natural Inquirer Scientific Process Module



Unit 2: Lesson 4: Discussing the Findings and Implications

Background: As mentioned earlier, the scientific process is a cyclical process. When scientists discuss their findings and the implications of their findings, they are completing the cycle. In a typical research paper, findings are presented without much commentary. Following the “Findings” section, most scientific papers include a section titled “Discussion.” In this section, scientists discuss what their findings mean. Often, the findings are summarized holistically. In this section, comparisons of the study’s findings with earlier findings that were identified in the literature may be made. In this part of the scientific process, the current findings are placed into the larger scientific context, including what is currently known and often noting how the new findings confirm or challenge existing knowledge.

While not all research papers include an “Implications” section, many do. This part of the scientific process places the research into a larger social context. The implications of the research may make recommendations, based on the findings, about improvements that can be made by an environmental manager, a doctor, or an educator, for example. Often, scientists will not include an “Implications” section, relying instead on the reader to draw their own implications based on the findings and discussion related to the research. Some scientists feel that identifying implications goes beyond their responsibility as a scientist. Other scientists feel that the identification of implications is an important part of understanding the meaning and potential use of the research findings.

In many research papers, scientists may identify new questions that have been raised as a result of their research. This may be done in the “Discussion” or “Implications” section of a research paper.

In the *Natural Inquirer*, the “Findings” and “Implications” sections are oriented more toward helping the student to understand the findings and to place the findings into a larger context.

Objectives:

- Students will be able to read, analyze, and explain information from a science article.
- Students will be able to describe the findings and associated implications from scientific research.
- Students will be able to explain the importance of research and be able to draw conclusions that are connected to a larger environment or science concept.

Time: 3 class periods

Materials:

- *Natural Inquirer* journals
- *Natural Inquirer* reading guide
- Notebooks
- Pencils

Procedure:

1. Assign students to groups of 3 or 4 students and assign the group an article from the journal.
2. Ask each group to read their assigned article paying particular attention to the Findings and Implications section in each article and ask the students to fill out the reading guide as they go.
3. After students have finished reading their articles, have each group present the findings and implications in the article.
4. Ask each group as they present their information if they think the implications match the findings and whether they feel the findings and implications are important. Note: This is a good opportunity to discuss the idea that people will value different types of science research differently, but that it is important to study many different things so that we have a greater understanding of the world in which we live.

Assessment:

The reading guide can be used as a formal assessment. When completed, the reading guide should be placed in the scientific process portfolio. Class discussion and participation can be used as an informal assessment.

Modifications:

Students that have trouble reading can be paired with a reading buddy. Students who would like an extra challenge can read two articles, make comparisons between the two articles, and present their findings to the class.

Extra Resources:

Natural Inquirer web site

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

Critical Thinking and Problem Solving Resources

<http://falcon.jmu.edu/~ramseyil/critical.htm>