

LESSON:

A Table or Figure Is Worth a Thousand Words

Summary: Students read the article “Environmental Cardiology: Getting to the Heart of the Matter,” and then evaluate how the article uses a table and figures to communicate scientific information.

EHP Article(s): “Environmental Cardiology: Getting to the Heart of the Matter,” *EHP Student Edition*, February 2005: A880–A887.
<http://ehp.niehs.nih.gov/members/2004/112-15/focus.html>

Objectives: By the end of this lesson, student should be able to:

1. Differentiate between a table and a figure.
2. Describe the purposes of using tables and figures in scientific communication.
3. List the qualities of a good table and figure when used in scientific writing.
4. Evaluate critically the use of figures and tables in a scientific article.

Estimated Class Time: 1 hour

Grade Level: 11–12

Subjects Addressed: All Sciences

►Prepping the Lesson (15–20 minutes)

INSTRUCTIONS:

1. Obtain a class set of *EHP Student Edition*, February 2005 or download article at <http://www.ehponline.org/science-ed> and make copies.
2. Review the article “Environmental Cardiology: Getting to the Heart of the Matter.”
3. Make copies of the student instructions.
4. Decide how you plan to divide the class into groups and assign figures and the table for evaluation. There are two separate vertical bar graphs, a set of two horizontal bar graphs, a table, and four pictures. Assign one of the graphs or table to each group.

MATERIALS (per student):

- 1 copy of *EHP Student Edition*, February 2005
- 1 copy of the student instructions

VOCABULARY:

Cardiovascular disease (CVD)

BACKGROUND INFORMATION:

Communicating scientific information in writing and orally is very challenging because of the complexity and technical nature of the subject. Scientists may be experts in a particular subject, but still must be able to communicate their ideas and findings to others. Often scientists use tables or figures to help simplify and clarify their ideas. Tables are orderly displays of data, often numeric, that aid comparisons between data. Figures are any illustrations that are not tables and include charts, graphs, photographs, and drawings. Tables and figures should be simple and clear, and aid understanding of the ideas being presented.

RESOURCES:

Publication Manual of the American Psychological Association, 5th Edition. 2001. Washington, D.C.: American Psychological Association.



▶Implementing the Lesson

INSTRUCTIONS:

1. Lead a discussion with students about why communicating scientific information is difficult. (e.g., complexity, vocabulary, lack of audience knowledge, technical nature)
2. Continue the discussion by asking students for examples of ways scientists can present information that helps the communication process (e.g., tables, pictures, graphs, charts, PowerPoint, movies, simulations, demonstrations).
3. Tell students that they will now evaluate the use of a table and figures in an article about how environmental factors affect cardiovascular disease. Explain that tables are orderly displays of data in columns and rows that aid the comparison of data. Figures are everything else such as graphs, charts, and pictures.
4. Pass out the student instructions for “A Table or Figure is Worth a Thousand Words.” Assign different figures or the table to each group.
5. Once each group has completed the activity, have each group present their findings to the class.
6. After all groups have presented information about their table or figure, discuss and summarize their findings.

NOTES & HELPFUL HINTS:

- You might want to have your students develop their own criteria for what is a good table or figure.

▶Aligning with Standards

SKILLS USED OR DEVELOPED:

Communication (note taking, oral, written—including summarization); comprehension (listening and reading); critical thinking and response; tables (reading); and figures (reading)

SPECIFIC CONTENT ADDRESSED:

Use of tables and figures in communicating scientific and technical information, cardiovascular disease, air pollution

NATIONAL SCIENCE EDUCATION CONTENT STANDARDS MET:

Unifying Concepts and Processes

- systems, order, and organization

Science as Inquiry

- abilities necessary to do scientific inquiry
- understanding about scientific inquiry

Science in Personal and Social Perspectives

- personal and community health
- environmental quality
- natural and human-induced hazards
- science and technology in local, national, and global challenges

▶Assessing the Lesson

Written responses on “A Table or Figure is Worth a Thousand Words” activity. Criteria: accuracy and quality of explanations.

Verbal responses during classroom discussion. Criteria: relevance and accuracy of responses.

Group skills. Criteria: Listening to others, participating in discussion, communicating clearly, cooperating with others, sharing of tasks, and taking initiative in discussion.

Oral presentation skills. Criteria: organization of information presented, clarity of information presented, and quality of delivery.

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Read the article "Environmental Cardiology: Getting to the Heart of the Matter," *EHP Student Edition*, February 2005: A880–A887 or (<http://ehp.niehs.nih.gov/members/2004/112-15/focus.html>). Answer the following questions :

1. What are the main ideas of the article?
2. What is the title of the table or figure that was assigned to your group?
3. Is there explanation in the article explaining how the table or figure relates to the article? If so, what does it say about the table or figure?
4. Does the table or figure have a clear, understandable title?
5. Is all of the information in the table or figure labeled?
6. Is the table or figure easy to read? Why or why not?
7. Is the table or figure easy to understand? Why or why not?
8. What do you think is the purpose of the table or figure in the article?
9. Does the table or figure convey information that helps you understand the subject of the article? Describe how.
10. Is the table or figure necessary for your understanding of the content in the article? Why or why not?
11. If you were writing the article, what would you change about the table or figure to make it better?
12. Select a spokesperson for the group and prepare to present your findings to the rest of the class.

