

Discovering Discoveries: Writing a Report on a Medical Advance

Lesson Plan

Grade Level: 6-8

Curriculum Focus: Scientific Inquiry

Lesson Duration: 3 class periods

Student Objectives

- Understand the history of modern medicine.
- Describe important innovations in modern medicine and their origins.
- Examine how particular discoveries and innovations in medicine changed the future of medicine.

Materials

- Discovery School video on *unitedstreaming: Greatest Discoveries With Bill Nye: Medicine*
Search for this video by using the video title (or a portion of it) as the keyword.

Selected clips that support this lesson plan:

- Blood Transfusions
 - Anesthesia
 - X-ray
 - Germ Theory
 - Vaccination
 - Vitamins
 - Penicillin
 - Insulin
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- Science textbooks
 - Paper and pencils
 - Computer with Internet access (optional)

Procedures

1. Use *Greatest Discoveries With Bill Nye: Medicine* to explore some of the important discoveries and innovations in medical history. After watching the program, discuss the innovations featured, including blood transfusions, X rays, anesthesia, germ therapy, vitamin knowledge, and inoculations. How did they change medicine? Why are they important? Ask students to share other innovations they think revolutionized the field of medicine. Create a list of these and the examples from the program on the board or on chart paper at the front of the room.
2. Tell students to choose one example from the list and write a research report on this particular medical innovation or discovery. The reports should address the following:
 - What is the innovation? How does it work?
 - Who discovered or invented it?
 - When did it come about? What was going on in the medical field at the time?
 - What is the importance of this innovation?
 - How did it change the practice of medicine?
3. Go over the steps involved in writing a research report.
 - Step 1: Decide what you are writing about.
 - Step 2: Choose your sources (books, Web sites, periodical articles, etc.)
 - Step 3: Take notes from your sources.
 - Step 4: Review your notes and create an outline.
 - Step 5: Write a first draft of your paper.
 - Step 6: Exchange papers with a classmate for a peer review.
 - Step 7: Edit and revise; check spelling, punctuation and grammar.
 - Step 8: Turn it in.
4. Give students time in class to research their reports or assign as homework. They may use science texts, Web sites, encyclopedias, and periodical articles to conduct their research. The following Web sites provide some useful information:
 - About Inventors
<http://inventors.about.com/library/inventors/blmedical.htm>
 - Blackmask Online: A History of Science
<http://www.blackmask.com/books72c/4hscidex.htm>
 - Duke University: Medical Timeline
<http://scriptorium.lib.duke.edu/mma/timeline.html>
5. As students complete their first drafts, pair them up to conduct peer reviews. Monitor the peer reviews to make sure the first drafts are read and correctly edited before allowing students to begin their final drafts.

6. Ask volunteers to share some of the information they learned from their research. Discuss which innovations the students believe are most important and why. How did they revolutionize medicine?

Assessment

Use the following three-point rubric to evaluate students' work during this lesson.

- 3 points: Students were highly engaged in class discussions and peer review sessions; used research materials wisely; followed the eight steps in writing their research reports; and wrote informative, well-written reports that addressed all the established criteria and did not contain spelling, punctuation or grammatical errors.
- 2 points: Students were engaged in class discussions and peer review sessions; used research materials with little outside help; followed most of the eight steps in writing their research reports; and wrote informative reports that addressed most of the established criteria and did not contain many spelling, punctuation or grammatical errors.
- 1 point: Students participated minimally in class discussions and peer review sessions; were unable to use research materials without teacher assistance; followed four or fewer of the eight steps in writing their research reports; and wrote incomplete or incoherent reports that addressed little to none of the established criteria and contained numerous spelling, punctuation or grammatical errors.

Vocabulary

anatomy

Definition: The internal physical structure of an organism; the science of understanding the structure of the body

Context: Scientists studying human anatomy often consider the individual systems that are composed of groups of tissues and organs.

anesthesia

Definition: A loss of sensation or feeling; often used deliberately by doctors and dentists to block pain during surgery

Context: Before anesthesia was widely used, patients suffered great pain during surgery.

disease

Definition: An impairment of health or a condition of abnormal functioning

Context: In ancient Greece, the treatment of disease was based on philosophy rather than a genuine understanding of human anatomy.

germs

Definition: Microorganisms, especially those causing disease

Context: Germs cause wine to sour and people to experience infection and illness.

transfusion

Definition: The introduction of blood or blood plasma into a vein or artery

Context: A patient who loses a lot of blood will probably require a transfusion.

vaccination

Definition: Inoculating with a virus as a preventive measure against disease

Context: Vaccination for smallpox was revolutionary because it represented an attempt to intervene in the disease process.

Academic Standards

National Academy of Sciences

The National Academy of Sciences provides guidelines for teaching science in grades K–12 to promote scientific literacy. To view the standards, visit this Web site:

<http://books.nap.edu/html/nses/html/overview.html#content>.

This lesson plan addresses the following national standards:

- Science as Inquiry: Understanding about scientific inquiry
- Physical Science: Chemical reactions
- Science and Technology: Understanding about science and technology
- Science in Personal and Social Perspectives: Science and technology in local, national, and global challenges; Personal and community health
- History and Nature of Science: History of science; Historical perspectives; Science as a human endeavor

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit

<http://www.mcrel.org/compendium/browse.asp>.

This lesson plan addresses the following national standards:

- Science – Life Sciences: Understands relationships among organisms and their physical environment.
- Language Arts – Viewing: Uses viewing skills and strategies to understand and interpret visual media; Writing: Gathers and uses information for research purposes
- Visual Arts – Understands the visual arts in relation to history and cultures



Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>

