



Science.gov lesson plan

NSTA Atlanta 2004

Lesson Title: Deep Dive Mission

Enough surfing already – it's time to take a dive into the deep Web!

Subject: Science, all disciplines; technology.

Grade Level: High school; advanced middle school; accelerated and enrichment classes; professional development.

Objective: To demonstrate the use of science.gov as an Internet tool for finding targeted, authoritative science information; to demonstrate the difference between the surface Web and the deep Web; and to demonstrate the breadth and depth of scientific information found across government agency Web sites and databases found at science.gov.

Students will learn that searching on science.gov:

- ❖ Pulls to their desktops quality and reliable science information
- ❖ Weeds out commercial and pay-for-placement sites
- ❖ Yields targeted results
- ❖ Allows fast and easy exploration of government science

Materials and equipment: Internet connection; overhead projector; Deep Dive Mission (insert, can be downloaded from <http://www.osti.gov/sciencelab>).

Lesson Description: Using the Internet search engine at www.science.gov, students will learn to dive beneath the surface of the Web to retrieve mostly unexplored reservoirs of government agency science information.

Teacher Preparation:

- ❖ View 5:49 online video, *Searching the Deep Web*, found at www.osti.gov. This video highlights the differences between the surface Web and the deep Web.
- ❖ Trial search of key science unit vocabulary at www.science.gov as outlined in Deep Dive Mission. Note the focused, quality science results found at science.gov.

Student Preparation: Explore students' Google habits

- ❖ As a class discuss how often students "Google"; in what ways they use Google for homework; and what types of information they get in return. Is the information always authoritative and dependable? What do they like and dislike about their results?
- ❖ On the overhead projector perform a Google search on a key vocabulary word found in the next science unit, such as "anthrax." Note the information is returned rapidly but yields inconsistent information, ex: "anthrax" on Google might yield a heavy metal band Web site as well as a CDC fact sheet. Note Google generally quickly retrieves basic information.
- ❖ Ask students "did you know" questions pulled from the *Searching the Deep Web* video. These might include, Did you know:
 - o That you've only been surfing the surface of the Web?
 - o That there are millions of quality, authoritative science documents below the surface of the Web that are difficult to locate using traditional search engines?
 - o That you can dive in and explore the deep Web?

Lesson Procedure: View together *Searching the Deep Web* video, followed by live teacher demonstration of science.gov exploration, followed by student Deep Dive Mission (see insert).

- ❖ Class views *Searching the Deep Web* video.
- ❖ Live teacher demonstration of science.gov, including exploration of search engine, advanced search engine and government agency Web sites and subject areas. Point out: (1) science.gov search is in real time, so it takes a little longer to pull up results, (2) Google (basic info) can be used hand-in-hand with science.gov (more in-depth, targeted and authoritative information) for improved research and (3) science.gov delivers to desktops research often not accessible through traditional search engines.
- ❖ Hand out Deep Dive Mission
- ❖ Review findings/discussion

Keywords: Google; science.gov; anthrax or other science unit vocabulary in Deep Dive Mission handout.

Student Evaluation: In groups, students discuss their deep Web discoveries, and compare those findings to surface Web results. Students should be able to cite benefits and challenges with both types of search, i.e., rapid, basic returns on Google; in-depth, reliable and targeted information from science.gov.

National Science Education Standards:

This Lesson Plan Addresses the Following National Standards:

- o Science as Inquiry: Skills necessary to become independent inquirers about the natural world.
- o Science and Technology: Understanding about science and technology.

Sources: The U.S. Department of Energy Office of Scientific and Technical Information (OSTI); OSTI's *Searching the Deep Web* video; the interagency science.gov search portal, supported by the U.S. Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, and Interior; the Environmental Protection Agency; the National Aeronautics and Space Administration; the National Science Foundation; the Government Printing Office; and the National Archives and Records Administration.

NOTE: *This lesson plan can be downloaded from www.osti.gov/sciencelab.*

OSTI's mission is to collect, preserve, and disseminate scientific and technical information (STI) of DOE to expand the knowledge base of science and technology and facilitate scientific discovery and application.



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NSTA National Convention Atlanta 2004