#9215
HI-TECH DIGS

AMBROSE VIDEO PUBLISHING, INC.
1998
Grade Levels: 10-13+
30 minutes

DESCRIPTION

Archaeology is being revolutionized by satellites, sonar, and cyberspace as scientists race to locate and map ancient buried sites before developers destroy them. Visit archaeology online and view land and nautical sites.

ACADEMIC STANDARDS

Subject Area: Technology

- Standard: Understands the relationships among science, technology, society, and the individual
  - Benchmark: Knows that alternatives, risks, costs, and benefits must be considered when deciding on proposals to introduce new technologies or to curtail existing ones (e.g., Are there alternative ways to achieve the same ends? Who benefits and who suffers? What are the financial and social costs and who bears them? How serious are the risks and who is in jeopardy? What resources will be needed and where will they come from?)

Subject Area: Science: Earth and Space Sciences

- Standard: Understands the composition and structure of the universe and the earth's place in it
  - Benchmark: Knows ways in which technology has increased our understanding of the universe (e.g., visual, radio, and x-ray telescopes collect information about the universe from electromagnetic waves; space probes gather information from distant parts of the Solar System; mathematical models and computer simulations are used to study evidence from many sources in order to form a scientific account of events in the universe)

Subject Area: Science: Nature of Science

- Standard: Understands the nature of scientific inquiry
  - Benchmark: Knows that scientists conduct investigations for a variety of reasons (e.g., to discover new aspects of the natural world, to explain recently observed phenomena, to test the conclusions of prior investigations, to test the predictions of current theories)
- Standard: Understands the nature of scientific knowledge
  - Benchmark: Understands how scientific knowledge changes and accumulates over time (e.g., all scientific knowledge is subject to change as new evidence becomes available; some scientific ideas are incomplete and opportunity exits in these areas for new advances; theories are continually tested, revised, and occasionally discarded)

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INSTRUCTIONAL GOALS

1. To redefine today's meaning of *archaeology.*
2. To illustrate that archaeological work can be performed on land, in sea, and from space.
3. To compare technology used in past and current digs.
4. To list past and current uses of the Global Positioning System.

VOCABULARY

1. amphora
2. artifacts
3. AutoCAD
4. Byzantine Empire, Byzantium
5. cyberspace
6. decompression sickness (bends)
7. digital camera
8. electrodes
9. geophysical
10. gigabytes
11. GPS (Global Positioning System)
12. gradiometer
13. ground penetrating radar
14. Iron Age
15. prism
16. Roman Villa
17. SHARPS (Sonic High Accuracy Range & Positioning System)
18. transponder
19. virtual space (or other "virtual" terminology)

AFTER SHOWING

Discussion Items and Questions

1. The GPS locates places on the globe through "triangulation." Explain how triangulation from satellite signals works. How was it used in early navigation?
2. How was GPS used in the Gulf War in 1991?
3. How is it now used in communication and transportation?
4. The video called today's archaeology, "…a race against development." What does this mean? When should archaeological discovery take precedence over commercial, scientific or social development and vice versa?
5. Who should decide whether a scientific research facility, which requires a specific location, should be built over an Indian burial ground?
6. Explain how heat affects an object's magnetic polarization.
7. Why is it important—if it is—that we continue to do archaeological research? What can we learn that will benefit us today and in the future?
8. One of the great engineering feats of the ancient Romans was Hadrian's Wall in northern England. Its unearthing and preservation are also great accomplishments. What can you learn about the wall, its size and purposes? What of the man who devoted much of his life to preserving it?

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9. Explain what causes the "bends" and its effects.
10. Why does it seem that so many of the lost archaeological "treasures" are located in Europe? Why are they covered?
11. Explain digital versus analog technology. Is the computer the greatest invention of the 20th century?

RELATED RESOURCES

Captioned Media Program

- Rocks That Reveal the Past #2219

World Wide Web

The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **ARCHAEOLOGY MAGAZINE**

http://www.archaeology.org/magazine.php?page=curiss/index

Read full text of news briefs, articles, and abstracts of other departments and features online. Keep up to date on museum exhibitions, archaeology on TV; link to other sites on digs; and more.

- **FAA SATELLITE NAVIGATION**

http://gps.faa.gov

This Federal Aviation Administration site provides the basics on the Global Positioning Satellite. Find out how it works, what is the GPS policy, and click on "Site Map" to learn how the GPS also works in the marine, space, and other areas.

- **AMERICAN JOURNAL OF ARCHAEOLOGY**

http://www.ajaonline.org/

Read abstracts, full text of articles, and brief sentences of upcoming articles about the goings-on in the archaeological world.

- **ARCHEOLOGY & ETHNOGRAPHY**

http://www.cr.nps.gov/aad/particip.htm

Explore, learn, and participate online in archeological sites and museums, archaeological parks in the United States, archaeology time line starting in 1784, become a Volunteer in Parks in assisting the preservation of archeological resources in the national parks, and much more!