SUGGESTED REFERENCES

- *Archaeology for Kids*
  http://www.cr.nps.gov/archeology/public/kids/index.htm
- *Digital Archaeology*
  http://www.online-archaeology.com/
- *Technology in Archaeology*
  http://www.mnsu.edu/emuseum/archaeology/archtechnology/index.shtml
- *A site with news and interactive features of digital archaeology*
  http://www.digital-archaeology.com/
- Thomas Laurence Evans & Patrick T. Daly
  Digital Archaeology: Bridging Method and Theory
  Routledge, January 2006

NATIONAL SCIENCE EDUCATION STANDARDS

Grades 5 - 8

Science and Technology
Understandings about Science and Technology

Science in Personal & Social Perspectives
Science and Technology in Society

Grades 9 – 12

Science in Personal and Social Perspectives
Science and Technology in Local, National, and Global Challenges

**Source: National Science Education Standards, 1996, National Academy Press*

CREDITS

EDUCATOR ADVISORY PANEL

Fred Barch, M.S.
Rose-Marie Botting, M.S.
Debra A. Murnan, B.A.
John A. Murnan III, M.S.

PRODUCTION CREDITS

WRITER/PRODUCER:	Jon Glassman
ASSOCIATE PRODUCER:	Judi Sitkin
EDITOR:	Jon Glassman
NARRATOR:	J.J. Wilson

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1000 Clint Moore Road, Suite 211, Boca Raton, FL 33487
tel: 1.800.232.2133 email: info@ssrvideo.com
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DIGITAL ARCHAEOLOGY

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SYNOPSIS

Archaeology is an ancient science which has relied on very old excavation techniques. Scientists are turning increasingly to modern technology in their journeys into the past and the results are quite fascinating.

This program takes a look at some newer technologies that archaeologists are using. The magnetoscanner, for instance, is a device which used to measure the finest variations in the magnetic field of the ground, enabling more precise identification of the ancient foundations without even digging.

CURRICULUM UNITS

- ECOLOGY
- GEOLOGY
- LIFE SCIENCE
- PHYSICAL SCIENCE

RUNNING TIME

15:32

BACKGROUND

Over one hundred years ago, the legendary city of Troy was rediscovered, turning the historic region into a huge building site. In the past, as many as two hundred people dug there at any one time, and modern archaeologists believe that these practices destroyed certain historical finds forever.

The exhibition: "Troy: Dream and Reality", revealed one new archaeological approach. It is an interdisciplinary project called "virtual archaeology." Many different researchers compiled results for the project. Using data streams to create 3-D images, they provide a fascinating new vision of the ancient city.

"Virtual Troy" can be offered up to museums everywhere with a mobile presentation unit. There is great interest among the public for such an interactive approach to archaeology. Children and young adults in particular find it easy to relate to the electronic and multi-media based learning, which is currently streaking out ahead of the more traditional approach of dusty objects sitting on shelves.

Scientists also employ resistance mapping, which uses the ground's electric conductivity. It recognizes changes in ground resistance, and can be an indication of stone foundations or streets. Things that do not contain any metal cannot be so closely identified using the magnetic field method.

Resistance mapping is far more time consuming than the magnetoscanner. But to sum it up, one could say that the magnetic method provides the overview and the electric method provides the detail. A computer is then used to combine all the results of the different methods. Even data accrued in the magnetic tests provides a good deal of information about what is under the ground, and when the electric results are added to the existing measurements, scientists have a detailed impression of the archaeological finds. The whole process enables the creation of a specific three-dimensional reconstruction of an ancient site, without as much as one spade breaking the ground. And scientists are beginning to work on newer super-magnetometers, which increase the sensitivity one hundred fold.

CRITICAL THINKING EXERCISES

1. Ask students to imagine the site of their classroom to be excavated 1000 years from now. Ask students to make a list of things in the classroom that might preserve versus the things that might not preserve. (For example, not preserved: wood, plants, feathers, cloth. Materials Preserved: stone, metal, bone, fired clay, burnt wood.)

2. Investigate different cultures or people such as the earliest Spanish settlements in Florida or the 20th-century coal-mining camps in California. See what kinds of artifacts survived and how they helped us to understand how life was during these times.

ADVANCED ORGANIZERS

Prior to showing this program, students should have some understanding of the following benchmarks for Science Literacy, Oxford University Press which are excerpted and, in some cases, abbreviated below. Refer to the Benchmarks for more information.

Benchmark 1: The Nature of Science
Section C – The Scientific Enterprise

Know by Grade 8

- Computers have become invaluable in science because they speed up and extend people's ability to collect, store, compile, and analyze data, prepare research reports, and share data as well as ideas with investigators all over the world.

Benchmark 3: The Nature of Technology
Section A – Technology and Science

Know by Grade 12

- Technological problems often create a demand for new scientific knowledge, and new technologies make it possible for scientists to extend their research in new ways or to undertake entirely new lines of research. The very availability of new technology itself often sparks scientific advances.

- Technology usually affects society more directly than science because it solves practical problems and serves human needs (and may create new problems and needs). In contrast, science affects society mainly by stimulating and satisfying people's curiosity and occasionally by enlarging or challenging their views of the world.

**Benchmarks can be found at www.project2061.org/tools/benchol/bolintro.htm*

VOCABULARY

Alloys
Computer tomography
Dating
Digital pantograph
Electric conductivity
Excavation plans
Hallstatt period
Laser tachymeter
Magnetoscanner
Resistance mapping
Satellite data
Super-magnetometer

CAREER POSSIBILITIES

- ARCHAEOLOGIST
- ENGINEER
- HISTORIAN
- MUSEUM CURATOR