

ARCHAEOLOGY: A WINDOW TO THE PAST

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Objectives:

At the completion of this lesson students will be able to:

1. Define archaeology.
2. Describe the education and training needed to become an archaeologist.
3. Use the Internet to find out more about archaeology in Maryland
4. Explain some of the ways that the environment influenced the development of Native American culture in Maryland
5. Explain how archaeologists use artifacts to help understand past cultures.

Maryland Learning Outcomes:

Science:

- **Nature of Science:** Students will demonstrate the ability to interpret and explain information generated by exploration of scientific phenomena.
- **Processes of Science:** Students will demonstrate the ability to employ the language, instruments, methods, and materials of science for collecting, organizing, interpreting, and communicating information.
- **Applications of Science:** Students will demonstrate the ability to apply science in solving problems and making personal decisions about issues affecting the individual, society, and the environment.

Social Studies:

- **Peoples of the Nation and the World:** Students will demonstrate an understanding of the history, diversity, and commonality of the peoples of the nation and the world, the reality of human interdependence, the need for global cooperation, and a multicultural perspective.

Worksheets Used in this Lesson:

- Worksheet #1: The Internet and Archaeology
- Worksheet #2: Archaeology and the Environment
- Worksheet #3: Looking at Artifacts
- Worksheet #4: Site Report Data
- Worksheet #4: Site Report Form

Other Material Needed:

- A Map of Maryland
- A basket containing: a shell, rock, chicken bone, walnut, penny, pencil, and soda can.
- Engravings of Native Americans by Theodore De Bry:
(<http://www.csulb.edu/gc/libarts/am-indian/woodcuts/wood.coll.set.2.html>)
to be used by students to show to the class to illustrate their verbal Site Reports to the class.

Key Web Sites Referenced in this Lesson

- The Society for Historical Archaeology: <http://www.sha.org>
- The National Association of State Archaeologists: <http://nasa.uconn.edu>
- The Maryland Historical Trust: <http://www2.ari.net/mdshpo/wwwhome.html>

Teacher Background

What is Archaeology?

Archaeology is the scientific study of past human activity. People often think archaeologists dig up dinosaurs. But **archaeology deals only with the HUMAN past.**

Archaeologists locate and excavate the remains of past human activity - called archaeological **sites**. This evidence of human activity found on sites falls into two main categories.

- **Artifacts** are objects that were made or used by people – things like tools, weapons, clothing, or food.
- **Features** are “non-portable” artifacts - things like stains in the soil that indicate to archaeologists where buildings or fences once existed. Once the original material has decomposed, a stain in the soil may remain.

Artifacts are often found in features. Common features found on archaeological sites in Maryland are: trash pits that are indicated by soil stains, and may contain things like plant and animal remains, and broken pottery; post holes - circular stains in the soil that indicate where fence posts, or other structures once existed; and graves or burial sites.

Archaeologists analyze artifacts and features to better understand the **culture**, or way of life, of the people who left them behind. Archaeologists are often compared to detectives who carefully collect evidence and analyze it to determine what has happened at a particular time and place.

10,000 Years of Maryland Prehistory

Archaeologists call the period of time before written historical records exist, **prehistory** (before written history) or the **prehistoric** period. The native peoples in what is now Maryland did not have a written language. But archaeologists have clear evidence that native peoples inhabited the Chesapeake Bay region for at least 10,000 years before the first permanent European settlement was established at St. Mary's City in 1634. The evidence from this long occupation of what is now Maryland by native peoples is studied by **prehistoric archaeologists**. Almost everything that is known about Maryland's first inhabitants is the result of archaeologists' systematic study of this period.

The period of 1634 to the present, for which consistent written records exist, is called the **historic** period and is studied by **historical archaeologists**. Historical archaeologists use written records, in addition to finding sites, artifacts, and features, to study past cultures. These written records include things like diaries, court documents, wills, land ownership information, and inventories of possessions.

Though most people think of archaeologists as studying exotic cultures such as ancient Egypt, or early human fossils from east Africa, **archaeology is actually a process that can be used to study human behavior from any period of time.**

The Process of Archaeology - or How Do Archaeologists Know Where to Dig?

Archaeologists, like all scientists, begin with a research question they want to answer and follow the scientific method. This research question will determine where they go to look for answers.

Of course, archaeologists and non-archaeologists alike sometimes find sites completely by accident. It is important for non-archaeologists to report sites they find to the State Office on Archaeology so this important information can be recorded.

When archaeologists want to study an area to see if it contains any sites, they will usually use a technique called a survey. To **survey** an area is to explore it systematically for evidence or sites. Large areas are divided into grids, and the surface of the area is searched systematically. Sometimes a series of small, shallow pits, called **shovel test pits** are dug to sample an area for the presence of sites. When an archaeologist finds artifacts, the artifacts are collected and labeled so they can be studied later. Their location is recorded precisely on a map. The location of artifacts and features on a site - the context- is critical to interpreting them later on.

Excavation

When archaeologists find a site, it is recorded with the State Office of Archaeology or Historic Preservation. In Maryland, this is part of the Maryland Historical Trust, located near Annapolis. Very few sites are ever excavated. It is too costly and time-consuming to excavate sites unless they are very important and are threatened by destruction because of construction activity. When a site is excavated, only a portion of it is actually excavated.

A series of test units, often 1 meter by 1 meter square are measured out on a grid across the site. Archaeologists remove soil very slowly and very carefully with a small trowel. All of the soil is “sifted” through a screen, usually of $\frac{1}{8}$ ” mesh, to recover any very small artifacts that might have been missed. The removal of soil needs to be this careful so objects do not get broken or moved out of their original location. In addition, archaeologists are looking for subtle changes in the color and texture of the soil that may indicate a feature. All of the artifacts found are carefully bagged with their exact location noted. Features are carefully drawn and photographed before, during, and after excavation.

These small test units are often enlarged as work progresses and artifacts or features are encountered. Archaeologist will dig down until they are no longer finding cultural materials. When they are through excavating a unit, they draw the profile of each wall, photograph it, and then fill it all back in with the soil that has been removed and sifted.

In order to excavate a site, archaeologists must, in a sense, destroy it. In other words, it can never be reconstructed again after it has been excavated. That is another reason why excavations are not done unless the research value is great enough to justify destroying the site.

Interpreting A Site

Although it is exciting to find a site, and excavate it, much of the actual fieldwork is tedious. Archaeologist may survey an area for many days or weeks and find little or nothing. They work out of doors in all weather, which can also be hard. Many people are surprised to find this out because the Hollywood version of archaeology is quite different than the reality of most digs.

A rule of thumb used by archaeologists is that for every hour spent in the field, archaeologists spend at least 3 hours in the lab. The **laboratory analysis** of the materials from a site is where real meaning of what has been found is determined. After washing, labeling, and cataloging the artifacts from a site, archaeologists may run a variety of statistical tests to look at how the materials are distributed on a site. They may send materials out to a lab that specializes in dating archaeological materials. Charcoal, for example, can be used for **radiocarbon, or C 14, dating**. Because all living things contain carbon 14,

which converts into another form of carbon at a constant rate once an organism dies, analysis can measure the amount of C12 in a sample to determine how long ago a living organism died - therefore, approximately how old it is.

Other types of analysis include soil analysis, where the presence of specific chemicals in the soil can provide evidence of a specific type of behavior. Potassium, for example, is produced in fireplaces from wood ash. Potassium in the soil may indicate where people were sweeping their fireplace ashes. Calcium is left in the soil when bones or shells decay. Therefore, the presence of calcium may be an indicator of where food trash deposits were located. Archaeologists work with a variety of scientists in other fields to study the complex evidence they collect. The field becomes more sophisticated all the time. Infrared photography may be used to help locate sites. Complex computer programs are developed to analyze sites and materials.

In the end, however, it is how an archaeologist interprets what he or she has found that is up to the individual alone. Just as no two people would describe an event they both witnessed in exactly the same way, no two archaeologists would interpret a site in exactly the same way. Archaeologists write **site reports** to report their findings to the archaeological community. They present these at conferences and meetings. They may write scholarly or popular books to explain their research and ideas.

How Do You Become an Archaeologist?

Archaeologists are trained in a college or university where they typically receive a degree in **anthropology**, the **study of humankind**. To become a professional archaeologist also requires an advanced degree (MA or Ph.D.) in anthropology with a specialization in archaeology. An archaeologist learns the techniques of archaeology, as well as laboratory analysis of materials, in a **field school**. Archaeologists typically write up their research findings in journals or books, which they present at professional conferences. Archaeologists are employed by some museums, colleges and universities, as well as federal, state, and some county governments. They are also employed in the private sector by engineering companies and contract archaeology companies. Federal laws passed in the 1970s require archaeological surveys to be conducted by professional archaeologists whenever federal land is under construction or development, or where federal tax dollars are funding construction or development.

Treasure Hunters are not Archaeologists!

People who collect artifacts from archaeological sites for their own collections are not archaeologists. By removing objects from a site without recording their exact location robs them of their meaning. Archaeological resources are much like natural resources - they are a finite resource that is rapidly vanishing and can never be replaced. Because of this, archaeologists excavate only a very few sites

of all the sites that are known to exist. And the objects from the sites are carefully washed, drawn or photographed, and analyzed. Then they are stored, often by a museum, so other researchers may also study them.

Just as we now teach our students to understand the importance of valuing our precious natural resources, so, too, should we respect and preserve our nation's cultural resources: these include archaeological sites under the ground and under the water, as well as historic houses, and other historic structures.

Introducing the Lesson

Write the word **ARTIFACT** on the board and ask the students if they know what it means. Many students will think that things like fossils or shark's teeth or dinosaur bones are artifacts. They are not! Get as many definitions as you can without correcting the students. Then pass around a basket in which you have put a few different objects. Include some natural objects such as shells, rocks, animal bones (such as a chicken bone) and nuts. Include some objects that have been made by people, such as a penny, a pencil, and a Coke can. Ask students to "vote" on each object: artifact or not an artifact. **An artifact is any object that was made or used by people.** The coin, pens, and can, are thus artifacts, even though they are not necessarily old. Artifacts do not have to be old. The shells, bones, and nuts may not be artifacts, just natural objects. However, on a site, they might be found as evidence of the kinds of food people were eating. It is the **context** in which objects are found that determines their meaning. This is a central principle of archaeology.

Tell the students that the archaeology lesson that follows is a story about a family who visits Jefferson Patterson Park and Museum to volunteer on an archaeological site and to learn more about archaeology. This is something they can do, too. There are four activities within the story that they will complete to learn more about archaeology. They will look at artifacts to determine what they were used for. At the end of the lesson, they will share their findings with the class.

Lesson Development

Though students can work individually, it is better to divide the class into small groups that can work at the computer together. They will complete four activities guided by Worksheets. Students can complete the culminating activity, writing the Site Report, away from the computer. Once they have written their Reports as teams, the students should share their Reports with the rest of the class, using the John White drawings to illustrate it.

To conclude the lesson, review the story of Lana Brown, Mrs. Patterson, and the Founding of Jefferson Patterson Park and Museum with the class. Ask them to think of ways in which the actions of a single person, like Lana Brown, have had an impact on the preservation of historic resources. Ask them to brainstorm ways in which **they** can help preserve historic resources.

Thoughtful Application

Activity #4, writing the Site Report, is the culminating activity to tie together the previous three activities. In this final Report, the students summarize the environmental information, artifacts, and features they have seen, and **interpret** what it means about the Native Americans who lived at the sites. It is important that you stress that there are no right or wrong answers. Their Report should 1) refer back to all of the information about the site that they have been given: environment, artifacts, and features. And 2) use this information as **evidence** to support their final paragraph that asks them to use this evidence to interpret “what was happening here?” Point out that archaeologists do the same thing. They interpret to the best of their ability based on the information they find. Later excavations or research may add new information and change the previous conclusions - this happens all the time and is part of a dynamic process.

Children's Literature/Book References on This Topic

The First People of Maryland, Hettie Boyce Ballweber, Maryland Historical Trust, Lanham, MD, 1987

Archaeology!, Hettie L. Ballweber, Maryland Historical Press, Lanham, MD, 1996

Archaeology for Young Explorers, P. Samford and D. Riblett, The Colonial Williamsburg Foundation

Usborne Young Scientist: Archaeology, Usborne Publishing Co. Ltd., London, 1991

Archaeology Theme Pack

FACES - The Magazine About People

Published by Cobblestone Publishing, Peterborough, NH (in conjunction with the American Museum of Natural History, New York)

Archaeology: Finding the Past, March 1991 issue (Volume VII, No. VII)

Past single issues are available from the publisher for \$3.00. You can purchase a single issue on archaeology, or the theme pack, which includes 5 back issues for \$24.95. The teacher's guide is an additional \$4.95.

Maryland Indians: Yesterday and Today, Frank Porter, Maryland Historical Society

Resources for Teachers

An Instructional Guide that is free from the Society of American Archaeology:

Teaching Archaeology: A Sampler for Grades 3 to 12, Society of American Archaeology, Bureau of Reclamation, Public Education Committee, POB 25007, Denver, CO 80225-0007. Attention: D-5650

Teaching With Primary Sources Series: Volume 13, Archaeology of Early Colonial Life
Cobblestone Publishing, Grades 5+

Other Resources on This Topic

Smithsonian Institution Office of Education

Art to Zoo: Teaching With the Power of Objects, November/December 1995 issue
“Decoding the Past: The Work of Archaeologists.”

Free lesson plans from the Smithsonian Office of Education, or available online at
<http://educate.si.edu/resources/lessons>

The Office of Outreach and Public Information in the
Anthropology Department of the Smithsonian Institution

has a variety of free resource materials on archaeology for teachers and students. The office also publishes a free quarterly newsletter for teachers called AnthroNotes that includes articles about archaeology and other areas of anthropology, teaching activities, and information about volunteer opportunities in archaeology.

Contact Ann Kaupp at 202/357-1592, or visit the web site at
<http://www.nmnh.si.edu/anthro/outreach/outrch1.html>

The web site includes an annotated bibliography on American Indians designed to help teachers select appropriate classroom materials. Although the focus is on American Indians, it includes some books on archaeology as well.

Archaeological Society of Maryland

has chapters throughout the state. Contact your local chapter to find out more about archaeology in your area, including possible classroom speakers, and volunteer opportunities.

Web site: <http://www.smcm.edu/asm>

Worksheet #1: The Internet and Archeology

ANSWER KEY

1. **What is Archeology?** Archaeology is the scientific study of the remains of past human activity.
2. **What is an Archaeological Site?** A site is any area that contains evidence of past human activity.
3. **What kinds of things do archaeologists study to better understand the past?** Artifacts - things people made and used. Features - non-portable artifacts like buildings, foundations, trash piles that tell us how people lived.
4. **Do you need to go to college to become a professional archaeologist?** Yes.
5. **What are some of the subjects you would study in college if you want to become an archaeologist?** Anthropology, history, biology, chemistry.
6. **What is a “field school”?** A field school is where archaeologists learn the techniques (ways) used to excavate sites, analyze artifacts, and explain what they have found.
7. **What are the four kinds of job archaeologists do?** Four places archaeologists find jobs are: 1) in universities, 2) in the government, 3) with private research firms, and 4) with museums.
8. **Do archaeologists make a lot of money?** No, archaeologists do not make a lot of money.
9. **What is the name, address and phone number for the State Archaeologist of Maryland?** The state archaeologist is Richard Hughes, Office of Archaeology, 100 Community Place, Crownsville, MD 21203-2023. Telephone 410/514-7600.
10. **How can you and your family can do to get involved in archaeology in Maryland.** Your family can participate in the annual Field Session conducted by the Archeological Society of Maryland.

BONUS QUESTIONS

11. **How many artifacts does the state of Maryland have its collection?** Over seven million
12. **What kinds of things are kept?** Artifacts such as tools, pottery, bones, seeds
13. **Where are all of these things stored?** At the Maryland Archaeological Conservation Laboratory.

Worksheet #2: Archaeology And The Environment

ANSWER KEY

1. Use your map of Maryland to locate Jefferson Patterson Park and Museum. Name the three bodies of water near the park.
 1. Patuxent River
 2. St. Leonard's Creek
 3. Chesapeake Bay

2. Look carefully on the computer screen at the aerial photograph and the other images from Point Farm, where the Jefferson Patterson Park and Museum is now located. What kinds of natural resources are there? Do you think these same resources would have been available to the Patuxent Indians 500 years ago? Why was each one important? HINT: each natural resource can have many different uses. List as many as you can think of!

NATURAL RESOURCE	POSSIBLE USES BY PATUXENT INDIANS
Water	Drinking , cooking, transportation River and Bay have fish, shellfish for eating
Trees	Wood for houses, boats, making fires Trees (forest) are home to birds and other animals needed for food
Rocks, stones	Making tools and weapons
Oyster Shells	Oysters are a source of food. Shells can be used for making tools, and beads

3. Do you think this environment was a good place to settle? Why or why not?

It seems like this was a very good place to settle because it is close to lots of water, which is necessary for drinking, and is a source of many kinds of food. It is also a way to travel to transport people, or to trade with other groups. There are also forests, which have wood for making fires, raw materials for houses, and other things such as tools. The forests also provide a home to many kinds of animals, such as deer, and squirrels, which can be eaten, or their hide or fur used for clothing, etc.

Worksheet #3: Looking at Artifacts

ANSWER KEY

Study the pictures of the artifacts on the computer screen. In the left hand column, name what you think the artifact is. In the right hand column, describe how you think it might have been used.

Name of Artifact	Possible Uses
1. Ceramic pottery	Containers, cooking pots
2. Animal bones	Food
3. Ceramic (clay) pipe	Smoking tobacco
4. Stone axe heads and celts	Stone tools for chopping wood, farming
5. Arrowheads	Hunting tool
6. Antler	Food, tool
7. Oyster shell	Food

Worksheet #4: Site Report

ANSWER KEY

Name Of Sites:

Patterson Site and Stearns Site

Location Of Sites:

Jefferson Patterson Park, southern Calvert County, Maryland

Type Of Environment:

Woodland --with lots of trees and shrubs; Calvert County is bordered by the Chesapeake Bay on the east, and the Patuxent River on the west. Jefferson Patterson Park is located on the Patuxent River at the mouth of St. Leonard's Creek. Also could mention the climate in Maryland; types of plant and animal life that are common in this part of Maryland.

Summary Of Artifacts and Features Found:

Ceramic pottery; clay pipe; tools and weapons made of stone (arrowheads, stone axes); lots of oyster shell! Bones from many kinds of animals common to this environment, including deer and other small game animals, birds, crabs and other fish and shellfish. Seeds and shells from many kind of wild plants. Corn--which was being cultivated. Storage pits, including one that contained a human burial. Huge oyster midden (trash pile).

How Old Are The Sites?

The human burial from the Patterson Site dates the site at approximately 1,800 years ago. Charcoal from the hearth (fire pit) at the Stearns Site dates that site to 1450 AD.

Which Site Is Older?

The Patterson Site (approx. 200 AD)

Who Lived Here:

Probably the Patuxent Indians lived here at this period of time.

Based On The Evidence You Found, What Do You Think Was Happening Here?

There is no evidence of houses or other kinds of structures you would expect to find if people were living here for a long period of time. But there is a lot of evidence related to food gathering. The many kinds of plant seeds found suggest people were gathering wild plants, as well as possibly growing, or storing corn. There were many kinds of fish and shell fish found, suggesting people came to the River to fish and harvest oysters, mussels, etc. The pottery and charcoal suggest they may have been cooking, and eating some of the food here. Storage pits found suggest they were also storing food here to preserve it—perhaps taking some back to their village and storing some on the site for later use. There is also evidence from hunting (arrowheads, deer bone.) Perhaps groups of Patuxent Indians came here during certain seasons to gather

plants, hunt, and fish. The huge oyster shell midden (trash pile) suggests people returned here over and over again to harvest oysters. The human burial on the Stearns site dates that site as much earlier in time than the Patterson Site. So clearly people were coming to this spot on the Patuxent River, for the many available food resources, for over a thousand years!