

The Bruce Museum of Arts and Science Education Department Presents: Educator Guide

Archaeology



The Bruce Museum of Arts and Science Education Department develops Educator Guides to provide detailed information on field trip planning, alignment with Connecticut State Goals and Learning Standards and New York Education Standards, as well as suggested hands-on classroom activities to do before, during, and after your visit to the Museum.



Teacher Notes:

This educator's guide is separated into seven parts:

- Exhibition guide
- Curriculum Connections
- Teacher and Student Resources
- Games and Puzzles
- Activities
- Vocabulary
- How to schedule your Museum visits
- Education Staff List

School programs are inquiry based and promote critical thinking, written, and oral expression. They feature hands-on-learning activities using objects from Museum collections and exhibitions. Many are interdisciplinary and address various learning styles.

For school program information contact Diane Clifford, Manager of School and Tour Services at 203-869-6786 Ext. 324 or by email dclifford@brucemuseum.org. If you are interested in this program as a BruceMobile Outreach program, contact Sheean Haley, Manager of Outreach Education at 203-869-6786 Ext. 323 or by email shaley@brucemuseum.org for further information.

For reservations contact Anne Burns at 203-869-6786 Ext. 338 or by email anneburns@brucemuseum.org



Exhibition Guide:

What is archaeology? Archaeology (also spelled archeology) is the science that studies human cultures through the recovery, documentation, analysis and interpretation of material remains and environmental data, including architecture, artifacts, features, biofacts (e.g., plant seeds, animal bones), and landscapes.

The goals of archaeology include the documentation and explanation of the origins and development of human cultures, understanding culture history, chronicling cultural evolution, and studying human behavior and ecology, for both prehistoric and historic societies. Archaeologists do this by surveying areas in order to find new sites, excavating sites in order to recover cultural remains, and classifying, analyzing and preserving artifacts.

Why is archaeology important? In many cases, archaeology provides the only means to learn of the existence and behaviors of people of the past. Thousands of cultures and societies and billions of people have come and gone with little or no written record or with erred or incomplete existing records. Knowledge of these cultures and societies (e.g., the development of agriculture, cult practices of folk religion, the rise of the first cities) must come from archaeology.

The archaeological process:

A modern archaeological project often begins with a specific scientific question. The archaeologists may want to learn about how a group of people lived in a particular area. Another way archaeological projects may be initiated is through the destruction of an area from construction or other destructive activity that uncovers artifacts. Once archaeologists have a question or a site to begin studying, they often research the area or the site before they begin fieldwork.

Archaeologists explore sites and recover information through fieldwork. Fieldwork includes survey and excavation. There are several types of surveys. Surface survey is the simplest technique. It involves combing an area, usually on foot, to search for features or artifacts visible on the surface. Surface survey cannot detect sites or features that are completely buried under earth, or overgrown with vegetation. Surface survey may require some excavation tools such as augers, corers, and shovel test pits. Another type of survey is aerial survey. This method uses cameras attached to airplanes, balloons, or even kites. This technique is useful for mapping large or complex sites. Aerial photographs can be used to document the status of the archaeological dig. Aerial survey can also detect many things not visible from the surface.



Once a site has been surveyed, archaeologists can proceed to excavation. Since all excavation is destruction, archaeologists must be careful to take excellent notes and record as much information as possible while they are digging so the site can be "reconstructed" in the lab. The type of information recorded about the site includes the context of the materials recovered, where each item was found in relation to other materials, and what kinds of situations were represented-such as a storage pit, a fireplace, or a house floor. Such information includes maps, descriptions of each feature and unit, the soil color and texture, and photographs that systematically document the process of excavation.



Archaeologists work in an excavated site that is mapped off with grids. Archaeologist carefully record their work and findings in a notebook.

Fieldwork is just one step in recovering information about the past. Archaeologists must take the materials recovered in the field to the laboratory to analyze and interpret their findings. The goal of the laboratory work is to try and answer the questions identified during the first phase of the project. Artifacts and materials that were found in the field must first be cleaned before they can be analyzed. Analysis involves examining each type of artifact to learn as much as possible about the past. Archaeologists will study shards of pottery and ceramics, stone tools, and animal and plant remains to try to recreate the past and understand how a particular society or culture lived hundreds of years ago.

History of the Manakaway site (a prehistoric settlement of Greenwich Point):

Excavated in 1955 by Robert Suggs, the Manakaway site has provided considerable information about the prehistoric people who inhabited Greenwich Point. The site consisted of a large shell midden, or trash pile, some post molds, animal bones, pottery, pits, hearths and stone tools. In all, over 1,000 artifacts were recovered. Artifacts from this site and a reconstruction of the shell midden are on view at the Bruce Museum.

Greenwich Point forms the Connecticut mainland into the Long Island Sound toward the south. It is a glacial deposit of sand resting on bedrock. During the prehistoric period, the point was actually two islands connected to the mainland by a thin bar which was submerged at high tide.



For many years the Point was a private estate and most of the land was not cleared or cultivated, except near the roads and dwellings. This was ideal for archaeological preservation. There are probably other prehistoric sites, as well as Colonial period sites located at the Point.

Greenwich Point is the site of the landing of the first settlers in this region. Robert Feaks and Daniel Patrick led a party from the New Haven Colony to the Point where they purchased the land and the mainland adjacent to it on July 18, 1640 from the local Native Americans. The Native Americans were members of a local tribe of the Siwanoy, who in turn belonged to the Wappinger Confederation. The Wappinger group was made of various tribes from the Westchester region, Manhattan, and southwestern Connecticut.

Historical documents do not record a Native American camp at Greenwich Point during the Contact Period (1640-1650), but it is certain that they used the area because the deed of sale prohibits any Native American trespass. The only Native American village recorded in the area at the time of the purchase was located about a mile inland.

The site called Manakaway is a strip of shell midden about 40 feet wide. It lies close to the beach at the southeast corner of the point. A layer of whole shells appeared in all the test pits. Some pits showed heavy concentrations of shells where the Native Americans had buried huge piles of shells. Remains of animals and manufactured artifacts were found within the shell midden levels.

Eleven post molds were also discovered in a layer of soil below the midden level. Post molds are uniformly circular stains left in the soil by wooden posts that had been driven into the ground. The consistency of the soil in a post mold is markedly different from the surrounding soil. Suggs suggested that the structure represented by these post molds was probably a drying or smoking rack. It is closely associated with a burning pit which showed signs of intense and prolonged heating. Drying and smoking fish was a common practice among the Greenwich area Woodland Indians as a way of preparing foods for long-term storage.

The excavation at Manakaway yielded 988 pottery shards. At least eight different vessels are represented. It appears that decorating pottery was of little importance at Manakaway, but some showed signs of cord markings, stick stamping and shell incising. The fire pits, with fired clumps of clay associated, suggest that limited pottery manufacture occurred at the site.

The diet of the inhabitants of Manakaway was determined by the excavations. It included shellfish, oysters, clams, scallops, mussels, whelks, cockles, and snails. The snails were probably boiled, as their shells were intact. The larger shellfish were routinely fractured to remove the animal.



Plant foods included an edible variety of sumac and numerous seeds, the identities of which Mr. Suggs was not able to determine.

Recovered animal skeletal material showed the Indians at Manakaway hunted or trapped deer, raccoon, puma, wildcat, bear cub, beaver, squirrel, chipmunk, skunk, fox, dog, and blackfish. The three most common were deer, raccoon and dog, in that order. Bird bones were also recovered. They had been broken-up to extract the marrow and then either boiled or burned, making them impossible to identify.

Finally, it appears from the evidence that Manakaway was a Middle Woodland Period, short term, summer occupation chosen mainly for the task of gathering shellfish. People enjoyed their stay at the point for about a century, from the years 1100-1200 AD, after which the site was abandoned.

This information was gathered from, "The Manakaway Site, Greenwich, Connecticut" by Robert Carl Suggs. Bulletin 29: The Archaeological Society of Connecticut, (1958).

Dating Techniques:

Dendrochronology is the study and comparison of tree ring growths, which can provide very accurate dates about the wood itself or artifacts found in close proximity to it. Clark Wissler of the American Museum of Natural History first recognized the potential for using tree rings as a dating method. He worked with A. E. Douglass, now considered the father of dendrochronology, at the University of Arizona on Pueblo Bonito, a pre-historic Native American settlement in New Mexico.

Dendroarchaeology is the use of tree rings to date when timber has been transported, processed, felled or used in construction. Rings are made of xylem. Pith is found at the center of the tree stem followed by the xylem, which makes up the majority of the trees circumference. The cambium layer keeps the xylem separated from the rough bark. Each spring or summer a new layer of xylem is formed, producing the rings we can count. A tree ring is a layer of wood cells produced by a tree in one year, consisting of thin walled cells formed in the early growing season (called earlywood), and thicker walled cells that are produced later in the growing season (called latewood). The beginning of earlywood and the end of latewood forms an annual ring. In dendrochronology, these rings are then counted and compared. A departure of growth for any one year, as compared to average growth is known as a tree-ring chronology.

Tree rings are never identical but the patterns are similar, assuming you are looking in the same geographic area. When the climate is particularly moist it will produce wider rings and in the dry years, narrow rings. Due to severe weather, trees may not produce a ring every year. To ensure they are counting accurately



scientists have developed a cross check system that uses nearby resources to verify the data. By looking at a species with a known sequence of growth they can look for matching patterns in the unknown and perhaps see the past more clearly.

In order for this to be a reliable method for dating, four factors must be present:

1. The species studied must only produce one ring per growing season or year.
2. Only one dominant environmental factor can be the cause of hindered or increased growth.
3. The dominant environmental factor should vary each year so we can see the changes clearly in every ring.
4. And lastly, the environmental factor must affect a large geographic area so testing can be compared easily (Stokes and Smiley 6).

Factors affecting tree ring growth include slope gradient, soil properties, temperature, wind, sun, and snow accumulation.

Radio-carbon dating (Carbon-14) is a method of obtaining age estimates on organic materials. It has been used to date samples as old as 50,000 years. The method was developed immediately following World War II by Willard F. Libby and coworkers, and has provided age determinations in archaeology, geology, geophysics and other branches of science. Radiocarbon determinations can be obtained on wood; charcoal; marine and fresh-water shell; bone and antler; peat and organic-bearing sediments, carbonate deposits such as tufa, caliche, and marl; and dissolved carbon dioxide and carbonates in ocean, lake and ground-water sources.

Each sample type has specific problems associated with its use for dating purposes, including contamination and special environmental effects. While the impact of radiocarbon dating has been most profound in archaeological research and particularly in prehistoric studies, extremely significant contributions have also been made in hydrology and oceanography. In addition, in the 1950s the testing of thermonuclear weapons injected large amounts of artificial radiocarbon ("Radiocarbon Bomb") into the atmosphere, permitting it to be used as a geochemical tracer.

Radioactive carbon, produced when nitrogen 14 is bombarded by cosmic rays in the atmosphere, drifts down to earth and is absorbed from the air by plants. Animals eat the plants and take C14 into their bodies. Humans in turn take carbon 14 into their bodies by eating both plants and animals. When a living organism dies, it stops absorbing C14 and the C14 that is already in the object begins to disintegrate. Scientists can use this fact to measure how much C14 has disintegrated and how much is left in the object. Carbon 14 decays at a slow but steady rate and reverts to nitrogen 14. The rate at which Carbon decays (Half-life) is known: C14 has a half-life of 5730 years. Basically this means that half of



the original amount of C14 in organic matter will have disintegrated 5730 years after the organisms death; half of the remaining C14 will have disintegrated after another 5730 years and so forth. After about 50,000 years, the amount of C14 remaining will be so small that the fossil can't be dated reliably.

To discover how long an organism has been dead (to determine how much C14 is left in the organism and therefore how old it is), we count the number of beta radiations given off per minute per gram of material. Modern C14 emits about 15 beta radiations per minute per gram of material, but C14 that is 5730 years old will only emit half that amount, (the half-life of C14) per minute. So if a sample taken from an organism emits 7.5 radiations per minute in a gram of material, then the organism must be 5730 years old. The accuracy of radiocarbon dating was tested on objects with dates that were already known through historical records such as parts of the dead sea scrolls and some wood from an Egyptian tomb. Based on the results of the Carbon 14 test the analysis showed that C14 agreed very closely with the historical information.

Thermoluminescence dating is in its developmental stages. Except for doing simple authenticity tests of art objects, thermoluminescence dating is not generally accurate enough for archaeological standards. There are many factors which have to be taken into account and each of these factors has its own random error. This, combined with poorly understood measurement errors, make thermoluminescence dating only about 15% accurate for a single sample and 7 to 10% accurate for a suite of samples in a single context.

Thermoluminescence dating is used for rocks, minerals and pottery. It dates items between the years 300-10,000 B.P. It is based on the fact that almost all natural minerals are thermoluminescent. Energy absorbed from ionizing radiation frees electrons to move through the crystal lattice and some are trapped at imperfections. Later heating releases the trapped electrons, producing light.

Measurement of the intensity of the luminescence can be used to determine how much time has passed since the last time the object was heated. The light is proportional to the amount of radiation absorbed since the material was last heated. Natural radioactivity causes latent thermoluminescence to build up so the older an object is the more light is produced. Therefore, thermoluminescence dating is actually determining the last time a crystal was heated and electrons were released. The minerals that are used for thermoluminescence dating are quartz, feldspar, diamond and calcite.

The last time a crystal was reheated and its electrons were released is known as a clock resetting event. This usually occurs when the items are heated to 350 degrees Celsius. Therefore, in archaeology, thermoluminescence dating works best for ceramics, cooking hearths, incidentally fire-cracked rocks and deliberately fire treated rocks such as flint or chert.



To test the date, three steps are taken:

1. Measure sample's intensity of luminescence
2. Relate luminescence intensity to radiation dose
3. Irradiate sample with a calibrated radioactive source
4. Determine the dose per year that the sample has been exposed to

The formula used in this equation is:

$$\text{Age} = \frac{\text{accumulated dose}}{\text{dose rate}}$$

Dose Rate=dose accumulated each year

From <http://www.mnsu.edu/emuseum/archaeology/dating/>. See this website for further information, additional dating methods, and references.



Curriculum Connections:

Connecticut **Science**

Grades 3,4 and 5

- Scientific Inquiry: Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena.
- Scientific Literacy: Scientific literacy includes speaking, listening, presenting, interpreting, reading and writing about science
- Scientific Numeracy: Mathematics provides useful tools for the description, analysis and presentation of scientific data and ideas.

The expected outcomes for scientific inquiry include:

- Make observations and ask questions about objects, organisms and the environment.
- Design and conduct simple investigations.
- Employ simple equipment and measuring tools to gather data and extend the senses.
- Use data to construct reasonable explanations.
- Analyze, critique and communicate investigations using words, graphs and drawings.
- Use measurement tools and standard units (e.g., centimeters, meters, grams, kilograms) to describe objects and materials.
- Use mathematics to analyze, interpret and present data.

Grade 3

3.2: Organisms can survive and reproduce only in environments that meet their basic needs.

- Explain the interdependence of plants and other organisms (including people) (Connecticut Expected Performance B-10).

Grade 4

4.2: All organisms depend on the living and non-living features of the environment for survival.

Grade 5

5.4: Humans have the capacity to build and use tools to advance the quality of their lives.

Social Studies

Grade 3

Archaeology: People and places (e.g., Greenwich) undergo change over time (cultural, economic, political, geographical).

Grade 4



Northeastern Region: Regions are formed by a multiplicity of factors both natural and human.

New York

Elementary

Science Inquiry

PI 1.1a Scientific explanations are built by combining evidence that can be observed with what people already know about the world.

PI 1.1b Learning about the historical development of scientific concepts or about individuals who have contributed to scientific knowledge provides a better understanding of scientific inquiry and the relationship between science and society.

PI 1.1c Science provides knowledge, but values are also essential to making effective and ethical decisions about the application of scientific knowledge.

PI 1.2a Inquiry involves asking questions and locating, interpreting, and processing information from a variety of sources.

PI 1.2b Inquiry involves making judgments about the reliability of the source and relevance of information.

PI 1.3a Scientific explanations are accepted when they are consistent with experimental

and observational evidence and when they lead to accurate predictions.

PI 1.3b All scientific explanations are tentative and subject to change or improvement.

PI 3.1a Interpretation of data leads to development of additional hypotheses, the formulation of generalizations, or explanations of natural phenomena.

Living Environment

PI 7.1a The Earth has finite resources; increasing human consumption of resources places stress on the natural processes that renew some resources and deplete those resources that cannot be renewed.

PI 7.1b Natural ecosystems provide an array of basic processes that affect humans. Those processes include but are not limited to: maintenance of the quality of the atmosphere, generation of soils, control of the water cycle, removal of wastes, energy flow, and recycling of nutrients. Humans are changing many of these basic processes and the changes may be detrimental.

PI 7.1c Human beings are part of the Earth's ecosystems. Human activities can, deliberately or inadvertently, alter the equilibrium in ecosystems. Humans modify ecosystems as a result of population growth, consumption, and technology.

Social Studies

Elementary

Standard 1 – History of the United States and New York

- Know the roots of American culture, its development from many different traditions, and the ways many people from a variety of groups and backgrounds played a role in creating it.

- Distinguish between near and distant past and interpret simple timelines.



- Gather and organize information about the important accomplishments of individuals and groups, including Native American Indians, living in their neighborhoods and communities.
- Classify information by type of activity: social, political, economic, scientific, cultural or religious
- View historic events through the eyes of those who were there, as shown in their art, writings, music and artifacts
- Describe the reasons for periodizing history in different ways
- Consider the sources of historic documents, narratives, or artifacts and evaluate their reliability
- Complete well-documented and historically accurate case studies about individuals and groups who represent different ethnic groups
- Compare and contrast the experiences of different ethnic groups, including Native American Indians and explain their contributions to American society and culture.

Intermediate

Standard 1 – History of the United States and New York

- consider the sources of historic documents, narratives, or artifacts and evaluate their reliability
- understand how different experiences, beliefs, values, traditions, and motives cause individuals and groups to interpret historic events and issues from different perspectives

Elementary

Standard 2 – World History

- distinguish between past, present, and future time periods
- develop timelines that display important events and eras from world history
- measure and understand the meaning of calendar time in terms of years, decades, centuries, and millennia, using BC and AD as reference points

Intermediate

Standard 2 – World History

- know the social and economic characteristics, such as customs, traditions, child-rearing practices, ways of making a living, education and socialization practices, gender roles, foods, and religious and spiritual beliefs that distinguish different cultures and civilizations
- know some important historic events and developments of past civilizations
- interpret and analyze documents and artifacts related to significant developments and events in world history.

Elementary

Standard 3 – Geography

- study about how people live, work, and utilize natural resources
- draw maps and diagrams that serve as representations of places, physical features, and objects



- locate places within the local community, State, and nation; locate the Earth's continents in relation to each other and to principal parallels and meridians. (Adapted from National Geography Standards, 1994)
- identify and compare the physical, human, and cultural characteristics of different regions and people (Adapted from National Geography Standards, 1994)
- investigate how people depend on and modify the physical environment

Intermediate

Standard 3 – Geography

- map information about people, places, and environments
- understand the characteristics, functions, and applications of maps, globes, aerial and other photographs, satellite-produced images, and models (Taken from National Geography Standards, 1994)
- investigate why people and places are located where they are located and what patterns can be perceived in these locations
- describe the relationships between people and environments and the connections between people and places.



Student and Teacher Internet Resources:

- <http://www.digonsite.com/>
- <http://www.nps.gov/history/archeology/public/kids/index.htm#>
- <http://www.binghamton.edu/cap/kidsindex.html>
- <http://news.nationalgeographic.com/news/archaeology.html>
- <http://www.bwpowell.com/archeology/synthesis/synthesis.html>
- <http://www.cac.uconn.edu/>
- http://www.saa.org/Public/links/websites_kids.html
- <http://www.socialstudiesforkids.com/subjects/archaeology.htm>
- <http://www.mnsu.edu/emuseum/archaeology/dating/>

Suggested Reading:

McIntosh, Jane. Eyewitness: Archeology: DK Children, 2000.

Cole, Joanna. The Magic School Bus Shows And Tells: A Book About Archaeology: Scholastic Paperbacks, 1997.

Duke, Kate. Archaeologists Dig for Clues (Let's-Read-and-Find-Out Science 2): Harper Trophy, 1996.

Orna-Ornstein, John. Archaeology: Discovering the Past: Oxford University Press, 2002.

White, John R. Hands-On Archaeology: Real-Life Activities for Kids: Prufrock Press, 2005.

Games and Puzzles:

- <http://www.kidsdigreed.com/>
- <http://www.athropolis.com/arcsite.htm>



Activities:

Your Artifacts and You

(from <http://frank.mtsu.edu/~then/Archeology/page8.html>)

This short in-class exercise will show students how archeologists learn from artifacts, what they can tell us about an individual and a culture. It is a simple exercise and involves the students with their own material things so the message of the lesson should be easily understood.

Materials:

Favorite toy, book, article of clothing, or picture

What to do:

- 1) Have each student bring in something from his/her room at home that says something about him/her. It can be a favorite toy, a book, a piece of clothing, or a picture. It might be good to have each student present the object briefly.
- 2) Have the students lay their items on a table. At the end all the objects will be laid out to view.
- 3) The analysis can be done one of two ways; either each student explains his/her "artifact" or they are exchanged making sure no one gets their own. Then each student explains what the "artifact" would tell an archeologist about the person who owned it, how old they might have been, and what the object was used for.
- 4) Be sure to discuss what the object is made of and if it would survive in the ground for hundreds of years, or if it is a material that is can only be found in the twentieth century and later. For instance, plastic won't be found on a colonial site, but iron will. Iron can be found on both twentieth century and colonial period sites.
- 5) Now, ask these questions of the students "artifacts." What can be determined about the culture that generated this collection of objects? Are all types of people represented? Are only children represented? Where did the objects come from, were they all manufactured by that culture, were some made elsewhere, could those have been purchased or traded for?
- 6) Sum up the exercise by discussing the kinds of conclusions that were made about the owners of the objects that are on display, and the cultural implications of this assortment of "artifacts." The implications might be that the culture was all 5th graders based on this collection, or that the culture had industrial techniques in plastic, metal, glass, etc.
- 7) Have the students write down their conclusions about the culture represented by this group of artifacts.
- 8) Then ask the students what would be left if their rooms burned or were suddenly buried and found 1000 years from now. What would be missing and what would an archeologist be able to tell about them and their family



from only the artifacts that survive? These are the parameters that archeologists have to work with, only the artifacts from a culture that survive in the ground. Although it is only part of the materials a culture had, archeologists can determine many things about how a society functioned from the remains they do find.

- 9) Now go back and discuss the "artifacts" from the first part of the exercise. How many would survive in the ground for several hundred years? Take only those that will last and make conclusions based on only those artifacts. The students should write down their conclusions again and see the differences between this step and the previous one.

Create A Civilization

(from <http://frank.mtsu.edu/~then/Archeology/page7.html>)

Note- Have various categories such as food, shelter, living conditions, clothing, where they live, (i.e. on the moon, in space, underwater), death rituals, religion, language/writing, transportation, etc.

What to do:

- 1) Divide the room up into two equal teams. Each team will create their own civilization. Tell the students to be creative; their cultures can exist anywhere in the universe and at any time in the past or future. The group should collectively decide what their culture is in time and place etc. They should make team decisions on all the categories of the culture mentioned above.
- 2) Within each team, have teams of 2 or 3 students work on each of the categories (such as religion) and have them create an artifact that represents the religion. The artifact can be made out of anything they can get from home. The process of making the artifacts can take several days.
- 3) After all the artifacts have been made, the two groups exchange their cultures and they try to draw conclusions about each other's culture based on their artifacts.
- 4) Have sheets of paper for each of the cultural categories with a space for the students to write down the artifact they think fits in that category, and why they think it fits there. This can be done either as a group exercise, or individually.
- 5) After everyone has finished analyzing the artifacts have each group present their conclusions to the other group.
- 6) Sum up the exercise by examining their incorrect assumptions where the artifacts did not fit the categories they assumed. If there were artifacts that might have fit into more than one category, why do they think so? What are the reasons the artifact could fit into more than one category? Be sure to also emphasize the correct assumptions and sum up the exercise by explaining that archeologists make conclusions about cultures based on similar kinds of evidence.



Vocabulary:

A.D.: Abbreviation for the Latin phrase "Anno Domini," which means "in the year of our Lord." Used to refer to dates starting with the year 1 (i.e., this is the year A.D. 2003).

Archaeology: The science of studying material evidence to find out about human cultures of the past.

Artifact: Any object that was made, used, and/or transported by humans that provides information about human behavior in the past. Examples include things like pottery, stone tools, bones with cut marks, coins, etc.

B.C.: Abbreviation for "Before Christ.", used to refer to dates before the year 1.

Chronology: The arrangement of events in the order in which they took place.

Classification: Arrangement of artifacts, species, etc., into categories.

Conservation: The scientific process of cleaning--and often repairing and/or restoring--an artifact in order to preserve it for further study and/or display.

Cultivation: Preparation and use of land for the production of food.

Culture: The complete way of life of a people: the shared attitudes, values, goals, and practices that characterize a group; their customs, art, literature, religion, philosophy, etc.; the pattern of learned and shared behavior among the members of a group.

Dendochronology: A method of dating that counts the annual tree rings and matches up the ring patterns to make a dating sequence, usually on wooden objects. The oldest form of scientific dating.

Digs: Archaeological sites with on-going excavations.

Environment: The physical and biological surroundings (plant, animal, climate, and inorganic resources) that influence social groups and their cultural development.

Evidence: Data proving a point or contributing to a solution.

Excavation: The process of methodically uncovering and searching for remains of the past. Some excavation methods are grid layout, open excavation, and quadrant method.



Field Notes: Archaeologists keep a notebook with them when they are digging so they can note when they change levels and what kinds of things they find. The goal of every archaeological excavation is to document the work so well that anyone could accurately reproduce the site using only the field notes and site maps.

Flint: A hard, brittle stone, usually a type of chalk or limestone that can be flaked in any direction and easily shaped. Flint occurs naturally in many locations and often formed the material for human tools, until humans learned to work metals.

Flintknapping: The process of chipping and shaping flint to give it sharp edges useful for scraping and cutting.

Grid: The division of an archaeological site into small squares that denote different areas of excavation, making it easier to measure and document the site.

Midden: A trash heap of remains. At ancient settlements, a midden was the place where people discarded broken pots and tools, ashes, food remains, and other items that were thrown out or left behind. Middens are great places for archeologists to find out how people lived and what they cooked and made at a site.

Observation: Looking at and critically noting the details of a site, an artifact, or cultural behavior.

Shard: A broken fragment of pottery.

Survey: To examine the land to locate and record artifacts and sites.



How to schedule your museum visits

- Adult and school groups of 8 or more require advance reservations and are subject to a special group fee.
- Museum-Based School programs are available Tuesday through Friday at 10:00 am, 11:15 am, and 1:00 pm
- After-School Museum-Based programs are available Tuesday through Friday, last one hour, and start no later than 4:00 pm.
- The Bruce Museum is accessible to individuals with disabilities.
- Call Bruce Museum Reservations Manager, Anne Burns, at 203-869-6786 ext.338. You may leave a voicemail message at this number at any time. Please leave a choice of times to return your call.
- **Fees**
A confirmation/invoice will be mailed four weeks prior to the program. Pre-payment is preferred, however, Museum programs may be paid on day of visit. Payment is by check only, payable to Bruce Museum, Inc.
Museum-Based Programs: \$45 per program.
- **Scholarships**
Thanks to the generosity of our corporate members and sponsors, scholarships are available under special circumstances. Please contact the Museum for more information.
- **Cancellations**
There is a \$15 charge if cancellation is less than two weeks in advance of the scheduled program.
- **No Eating Facilities are available at the Museum**
In case of bad weather, classes will be permitted to eat in the Education Workshop if they reserve the room in advance.
- **Class Size**
In order to maintain quality education, classes are limited to 25 students. Pre-school class size is limited to 20 students.
- **Supervision: REQUIRED for all programs**
Museum visit: 1 adult for every 5 children, to accompany the children at all times.
Self-guided tours: If you would like your class to tour the rest of the Museum before or after the scheduled program, you must tell us when you make your reservation to avoid conflict with other groups.
Nametags: Help to personalize program and enhance student behavior.
- **Conduct**
In order to enhance everyone's enjoyment of the Museum, please go over these rules with your students in advance:
 - Please do not run in the Museum.
 - Please talk in quiet voices.
 - Please do not touch paintings or objects

Special requests or curriculum needs

All of the programs are flexible and can be adapted to audiences with special needs or to your curriculum objectives. Please discuss with the Museum Education staff in advance.



Education Department Staff List

Robin Garr

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