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Goals and Materials

Goals

Kit users will:

- Learn what archaeology is and how it relates to other disciplines.
- Become familiar with the tools and procedures used in archaeology.
- Learn about cultural artifacts and customs of prehistoric people.
- Develop a better understanding of archaeological concepts such as not disturbing sites.

Materials

This kit contains:

1 Teacher Resource Binder
1 tool box
1 pair of gloves
1 bottle of sunscreen
3 paper bags
1 directional compass
5 geometric compasses
5 paint brushes
1 toothbrush
2 tape measures
1 pencil sharpener
1 line level
1 plumb bob
2 wooden skewers
1 hand screen
1 five-quart bucket
1 dust pan with brush
1 pencil
1 Sharpie marker
1 trowel
1 field notebook
20 stakes with string
50 pink pin flags
1 Clovis point
1 Licking Bison point
1 Pelican Lake point
1 Avonlea point
1 Angostura point
1 bison scapula hoe
1 deer-jaw sickle
1 bone awl
1 bone fishhook
1 bone arrow wrench
1 stone knife
1 hammerstone
1 mano and metate
7 arrowhead casts
6 bags of sherds
1 bag of rim sherds

Teacher Resource

What is archaeology?

People have been interested in ancient artifacts since Roman times. Yet, there is a difference between collecting objects for personal gain and collecting them to learn about past peoples and civilizations. Archaeology itself was born in the 17th and 18th centuries when British antiquarians like John Aubrey and William Stukeley began to observe ancient sites, speculate about their structure and function, collect artifacts, and perform primitive excavations to prove their theories. **Archaeology has become the systematic study of past human life by the recovery and examination of remaining material evidence, such as graves, buildings, tools, and pottery.**

What is not archaeology?

Archaeology is often confused with similar disciplines such as anthropology, paleontology, science, and history. These fields are all closely related to archaeology, but subtle differences set them apart. The study of archaeology is derived from anthropology, a social science that uses both physical and non-physical characteristics to learn about humanity. The difference is that archaeologists study material culture exclusively, while anthropologists take other things into account like language, sociology, and belief systems.

Archaeology and paleontology are also closely related, yet, different areas of study. Paleontology is the study of life that existed in prehistoric or geologic times as shown by the fossils of plants, animals, and other organisms. Although both disciplines study life in pre-historic times, paleontology focuses on *all* forms of life and is probably best known for dealing with dinosaurs. Archaeology focuses exclusively on the study of human life throughout time and deals with historic as well as prehistoric evidence.

Similarly, archaeology and geology are also often confused. Geology is the scientific study of the origin, history, and structure of the earth. Although archaeologists do not study things like plate tectonics or layers of the earth, the two fields are often mistaken for each other because each is studied in similar ways, such as digging beneath the earth's surface.

Archaeology is a combination of both history and science. History differs from archaeology in that when a historical document or record is found, it often directly makes a statement or informs the individual of its magnitude. In archaeology, the person uses scientific methods and deductive reasoning to determine the significance of an artifact and make sense of what is found.

Prehistory vs. History

Different types of archaeologists study different areas. The biggest divide in areas of expertise is between prehistory and history. In early archeological days, wealthy and well-educated Europeans showed an interest in past civilizations. As Robert J. Braidwood, Ph.D. writes, "Many Europeans took to the spade simply because of their curiosity about their own national origins: the French sought for traces of the Gauls, the English for ancient Britons, the Germans for the old Teutonic tribes, and so on."[1] These early archaeologists were able to use a large body of written history and maps from earlier times to guide them. This was also the case when many Europeans went in search of Greek and Roman relics.

Pre-historic archaeology developed in the 19th century as evidence was found suggesting the existence of human life prior to written records. By studying ancient tools found in stratified layers of soil, C.J. Thomsen, a Danish professor, identified three "past ages" now known as the Stone Age, the

[1] Braidwood, Robert J. *Archaeologists and what they do.* (New York: Franklin Watts, Inc., 1960), p17.

Bronze Age, and the Iron Age. The biggest inspiration for the study of pre-history was the establishment of Charles Darwin's *The Origin of Species* in 1859 which introduced the ideas of evolution and natural selection for the first time. These developments were especially important for archaeology in the Western Hemisphere, including the United States, where there were no written records to guide researchers who wanted to study ancient people and their cultures.

How is archaeology done?

The first step in an excavation or a survey is the selection of the site. First, the archaeologist should learn as much as they can about a site, such as who lived there, how old it is, and what timeframe it covered. They accomplish this initial analysis through the use of such things as maps, photographs, regional studies, oral histories, and historic documents of surrounding sites that may give them an idea of what they are going to find. Once this is done, the archaeologist must assess the possible results of the excavation. He/she takes into consideration whether or not the work done at a site will yield innovative or duplicated results. Because the information that comes from a site can only be viewed once, careful deliberation must take place to determine whether or not the proper funds, technology, and human resources are available to properly perform the excavation.

There are two types of investigation, excavation and survey. Survey is a pre-discovery method that is used to find a site. Excavation is done after discovery to obtain any further information the site will yield. The major difference in the information obtained by each method is summarized as follows by Colin Renfrew and Paul Bahn, "…excavation tells us a lot about a little of a site, and can only be done once, whereas survey tells us a little about a lot of sites, and can be repeated."[2] While most preliminary investigation is in the form of a survey, it may be necessary to conduct small excavations, or sub-surface testing, to augment surface data or to test any hypothesis that arises from a survey. Surveys are not conducted post-discovery.

A systematic excavation generally begins with the establishment of a grid system. A grid helps to ensure that no part of the project area is over- or under-represented. Grids also make it easier to plot the location of artifacts that are found. After a grid is constructed, archaeologists search for surface traces such as chips of flint, bone and pottery fragments, and pieces of brick or building stone. When this is done, the vegetation is cleared from the area and excavation can begin.

The actual excavation takes place within the grid and is commonly carried out by digging down one stratum (ground level) at a time. This is the natural and preferred way to perform an excavation. When this is not feasible due to ground inconsistencies, an excavation can also be performed through the use of contoured arbitrary levels. In this situation, the archaeologist picks an arbitrary depth (10 or 20cm) to which the entire pit is excavated parallel to the ground slope. Archaeologists generally use a trowel as their main excavation tool to carefully remove layers of earth in search of midden, or accumulation of debris and domestic waste products. They do this while trying to maintain perfectly vertical walls and horizontal floors that meet at 90 degree angles. Other instruments include trenching tools for digging, and things like bamboo sticks, tooth brushes, paint brushes, line levels, dust pans, and whisk brooms for more delicate work.

Once the digging begins, the archaeologist must take careful detailed notes on any observations at the excavation. An excavation is like a book that can only be read once so it is vital that any artifacts found or anomalies discovered be recorded, or information could be lost forever. Pieces are carefully removed by digging around them to preserve the integrity of the site. Although the work is meticulous, it must be done in such a manner to be effective. When

[2] Renfrew, Colin and Paul Bahn. *Archaeology Theories Methods and Practice*, 2nd edition. (New York: Thames and Hudson Inc., 1996), p75.

excavations are done properly, analysis of findings will result in reports, databases, and other documents that can be studied to reveal a great deal of information. This information could lead to an increased knowledge about past civilizations and how they dealt with changing climatic and geographical conditions.

Why is archaeological context important?

One of the most important keys to interpreting a site is the context in which excavations are carried out. While many people think that objects are studied only after they are removed, a more accurate description comes from Patricia L. Parker when she writes that: "Fieldwork usually involves careful excavation, under professional supervision, to record not only objects in the ground but – most importantly – the way those objects lie in the ground relative to one another, which can reveal the human activities responsible for their being there."[3] Archaeologists that have studied the Plains Village culture known as the Middle Missouri have been able to make certain assumptions about their way of life from the context of artifacts found during excavations. For example, archaeologists know that the houses of the Middle Missouri people had hearth features at the center because they have found certain cooking utensils and effects of fire that would indicate the existence of such a fireplace. This deduction would be much more difficult to make if objects were moved from their original context.

An archaeological site is a fragile thing that must be maintained in its original state whenever possible. This fragility makes the knowledge of archaeological context even more important as amateur archaeologists search for items to add to their collections without understanding the importance of leaving them in-situ, or in their original position. Even though looters threaten archaeological context, it can be disrupted by anyone or anything. This is why the point must be stressed that when an object is discovered, that appears to be of archaeological value, it must be left where it is found until a professional can view it.

Pre-Historic Archaeology of South Dakota

Archaeology is an instrumental tool that has been used in South Dakota to learn about the past human occupations, climates, and geographies of this state. Popular theory is that the first people to inhabit the North American continent were nomads that followed game animals across a land bridge (Beringia) that connected present day Alaska to Siberia over 15,000 years ago. This land bridge is believed to have been exposed during the Ice Age as water normally covering the land was frozen in glaciers. Archaeologists have learned that these people had tools such as knives and scrapers. They also had weapons and knew how to use fire. Once across the land bridge, the glaciers began to recede and people began migrating across what is now the United States.

The Llano Tradition

The first human presence on the Great Plains is thought to be the Llano tradition, which began about 12,000 years ago. The Llano peoples hunted big game such as mammoth, bison, horse, and camel. Their sites are identifiable due to the Clovis spear point, a large point typified by fluting and basal grinding, which is the first known American projectile point. Some of these points have been found in South Dakota. Barbara Lass describes the Clovis hunting technique as, "…tracking, wounding, harassing and then finally killing individual large game animals which had been

[3] Parker, Patricia L. *Local Preservation: Is There Archaeology in Your Community?.* (Washington, D.C.: National Park Service, 1987), p2.

driven into lakes or swamps where escape was impossible."[4] The Clovis people used the atlatl, or spearthrower, to hunt these big game animals.

The Folsom Tradition

The hunting techniques on the Great Plains began to change as the mammoth started to die off and were replaced by the giant bison as the principle big game hunted. To adapt to this change, the Folsom point was adopted. The Folsom point was smaller, lighter, and more refined than the Clovis. It featured distinct fluting, prominent basal ears, and a deeply concave base. The Folsom tradition also became witness to a change in hunting techniques as the people began to hunt the giant bison in herds as opposed to hunting them individually, which had been the style of the Llano.

The Plano Tradition

The early Plains people had to adapt again around 8,000 B.C., an adaptation that marked the beginning of the Plano tradition. Again the projectile points and the hunting methods were changed to account for differences in the game. By this time, the larger game animals, such as the mammoth and giant bison, had disappeared, only to be replaced by the smaller bison of today. To hunt these bison, the Plano people used a variety of long, narrow, leaf-shaped points such as the Angostura and the Scottsbluff. The Plano tradition had a larger population than its predecessors and used its numbers to drive herds of bison over cliffs or drop-offs to kill them. This group seems to have been more prevalent in South Dakota than either the Clovis or the Folsom. Sites such as the Ray Long Site, the Boulder Canyon Site, and the Travis II site have yielded such Plano artifacts as Angostura points, Agate Basin points, knives, charcoal, drills, and grinding stones.

The Plains Archaic Tradition

As time progressed, the people of this area began to leave more signs of their presence. Therefore, archaeologists have learned more about the successive cultures than they know about the Paleoindians. The first of these better known cultures is the Archaic tradition of approximately 6000 B.C. Barbara Lass illustrates the great changes of this time period.

> *Weather became hotter and drier, and the big game herds began to dwindle. Many species became extinct due to disease, a lack of adequate food in the changed environment, and possibly even because of over hunting by man in the preceding periods. Species that survived, like the modern bison, moved from the plains, especially in the west, to more desirable habitats.*[5]

As a result of the environmental changes, Archaic people began to embrace a foraging subsistence dependant on gathering food to compensate for the lack of big game. Consequently, the people wandered less and began to adapt to their environments as they could no longer survive solely on a nomadic lifestyle.

Several Archaic sites have been found in South Dakota. The Gant Site has yielded such artifacts as McKean points, Duncan and Hanna points, grinding stones, burned rock, bone tools, stone tools, and cache pits. Cache pits are usually bell-shaped holes dug into the floor of dwellings to store food. All of these artifacts are indicative of the changing lifestyle of the Plains people. They show that Archaic foragers were beginning to become more sedentary in comparison to their predecessors. Other Archaic sites in South Dakota include Gavin's Point, Medicine Crow, George Hey, Licking, and Travis II.

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[4] Lass, Barbara. *The First South Dakotans.* (Vermillion, S.D.: University of South Dakota Archaeology Laboratory, 1981) p1.
[5] Lass, Barbara. *Archaic Foragers.* (Vermillion, S.D.: University of South Dakota Archaeology Laboratory, 1981) p1.

The Woodland Tradition

About 2000 years ago, the climate began to stabilize and resemble that of the contemporary Plains. This change helped the populace adapt to the environment. Archaic people of the eastern woodlands practiced hunting and gathering similar to that of the Plains Archaic people, but they had a much larger food base to draw from. This allowed them to become even more sedentary than their western Plains neighbors. Because these eastern people were able to maintain a more permanent settlement, they were assured regular contact with rapidly developing Central American complexes to the south. Central American traits, such as the use of pottery and burial mounds, were first adopted by this eastern Woodland culture. The Plains Archaic people would later pick up these changes from the eastern people in a second hand version. This adaptation is the dawn of the Woodland Tradition on the Great Plains.

There are four complexes of Woodland culture known in South Dakota. A complex is a segment of the tradition that can be further classified based on distinctly different lifestyle characteristics and geographical location. The Loseke Creek complex, with examples like Scalp and Ellis Creek in Gregory County, were people that lived primarily along rivers and gained their subsistence much like the Archaic people. They hunted big game when possible, but also gathered wild vegetable products. The Sonota Complex has been located along the Missouri River near the North Dakota-South Dakota border at sites such as Stelzer, Swift Bird, and Boundary Mound. This complex was oriented toward buffalo hunting and gathering. Some of the goods found in Sonota burial mounds also suggest trade with other regions. Besant, Avonlea, and Pelican Lake complexes are expected to be located in western South Dakota. These complexes are marked by their different tool types. Consequently, projectile points commonly found in South Dakota indicate the presence of these people in this area. The bison was extremely important to the Dakota Mound complex as material remains have been discovered in large quantities in the northeastern part of the state in mounds such as Sisseton Mound. These examples of the Woodland people show that they were very similar to the Archaic people in subsistence and settlement patterns. The major noted differences between the two are the Woodland use of pottery and burial mounds. These two advances are what separate the Woodland from the Archaic.

The Plains Village Tradition

As time passed, cultural exchange became more prevalent as an influence over the Plains people. The most significant affect on South Dakota came from the Mississippian settlement known as Cahokia. One characteristic of this Mississippian culture was an increase in population centers. In addition to climate fluctuations on the Plains, the presence of these population centers stimulated the need for horticulture in order to feed their growing numbers. This lifestyle marked a drastic change from the predominantly nomadic means of subsistence in earlier civilizations. The Plains Village Tradition was born as a result. South Dakota is known for its settlement by Plains Villagers known as the Middle Missouri. The Middle Missouri tradition refers to Plains Village cultures located north of Chamberlain, SD on the Missouri River. This tradition developed villages, agriculture, and changes in material culture.

The Great Oasis people are thought by some to mark the transition from Terminal Woodland to Initial Middle Missouri. The Great Oasis people lived in large lodges similar to the remnants found at the Heath site in Lincoln County, South Dakota that had a central fireplace and several cache pits. The Great Oasis people in South Dakota may not have been as reliant on farming as other Middle Missouri peoples. Archaeologists have found a great deal of animal remains in contrast to little evidence of horticultural tools. It is also the belief of many archaeologists that the Great Oasis people may have lived in large semi-permanent lodges for

most of the year, but went out in smaller groups during the summer to either hunt or establish garden plots.

Another Middle Missouri complex emerged in Iowa around A.D. 1000. This complex is known as the Mill Creek culture. The people in eastern South Dakota that were contemporary to the Mill Creek had previously been labeled as the Over Focus. However, because this term is no longer used in archaeology, the Mill Creek and Over Focus will be referred to as simply Initial Middle Missouri. Some archaeologists believe that these people may have their origins from Mississippian influence as well. It is thought that they moved onto the Plains due to pressure from eastern groups, and because the area was ideal for their agricultural needs. The material remains of these people are found throughout South Dakota in sites from the James River to the Black Hills. They lived in large rectangular lodges as the Great Oasis did, but the Initial Middle Missouri lodgings were seemingly designed to be easily defensible. The walls were greatly fortified and the houses were located on strategic points such as steep bluffs or cliffs. These findings would indicate regular conflict between groups. The material remains of the Mill Creek people also include pottery and bone tools.

The Central Plains Tradition

Another group influenced by the Mississippian culture was the Central Plains Tradition, which dates from about A.D.1150 to 1250 It is thought that ideas and material culture of the Mississippian peoples were spread easily to the Plains area through well developed trade networks. Like the Great Oasis people, the settlements of the Central Plains immigrants may have been seasonal with similar earth lodgings. These lodges had a central fireplace and cache pits, but varied slightly in shape and support structure. The subsistence of the Central Plains people also varied little, and is described by Larry J. Zimmerman as:

> *…[hunting] bison, with deer, antelope, and other large animals providing variety. Smaller animals, including rabbit, ground squirrel, prairie dog, pocket gopher, kangaroo rat, and beaver supplemented the diet. Fish and shellfish (such as clams) came from the local streams. Corn, beans, squash, and sunflowers grew near the lodges or villages, on land cultivated with digging sticks and scapula hoes.*[6]

The Central Plains people were comparable to the Initial Middle Missouri in other aspects as well. The pottery of each culture was similar and each used many of the same types of bone and stone tools. Some exceptions that are unique to the Central Plains people are the diamond shaped knife and ceramic pipe. Evidence of the Central Plains culture is found in South Dakota at sites in Tripp County. Archaeologists believe that these people moved to this area due to the onset of the Pacific Climatic episode, which made the climate warmer and drier causing drought across the Plains. Many of the differences between the Central Plains immigrants and the Initial Middle Missouri people, including settlement patterns and subsistence practices, resulted from this climatic change.

The Coalescent Tradition

A new tradition was formed around 1250 A.D. when Middle Missouri people of the Northern Plains came into direct contact with the Central Plains people who were being forced north from Nebraska and Kansas due to the Pacific climatic episode. The blending of these two cultures is what archaeologists refer to as the Coalescent tradition. Material remains suggest that the housing of the Coalescent tradition was round, rather than square, with domed roofs. The settlement patterns of the Extended variant were very similar to those of the Central Plains people as the houses

[6] Zimmerman, Larry J. *Peoples of Pre-historic South Dakota*. (Lincoln : University of Nebraska Press, 1985), p96.

were scattered in a loose formation. It is believed that the Initial Coalescent settlements were fortified, but became less protected as the Extended variant began. However, the conflict between groups is evident in South Dakota at the site of the Crow Creek Massacre where at least five hundred people were killed. The cause of this and similar conflicts is thought to have been over scarcities in land and resources.

The blending of the Middle Missouri with the Central Plains tradition is also evident in the material culture of the Coalescent. Some of the characteristics of the Central Plains people include tobacco pipes and diamond-shaped knives, while the Middle Missouri people contributed such things as horn scoops and grooved mauls. Artifacts like these have been found in South Dakota and seem to be concentrated in central South Dakota at sites such as Arzberger in Hughes County, Black Partizan in Lyman County, and Talking Crow and Crow Creek in Buffalo County.

Variant Cultures (Extended Middle Missouri, Extended Coalescent Variant, Terminal Middle Missouri)

Extended Middle Missouri

The period from 1400-1700A.D. is thought to have been one of rapid change across the Plains as interaction between cultures increased due to a relatively unstable physical environment. Increased interaction spawned a series of new groups, the first of which was the Extended Middle Missouri. This cultural complex was located farther north than the Initial Middle Missouri, and was separated into two major factions located between the mouths of the Grand and Moreau Rivers One faction was located along the North and South Dakota border, and the other between the Bad and Cheyenne Rivers.

The Extended Middle Missouri complex is believed to have originated from the Initial Middle Missouri complex. The two complexes were culturally similar with evidence of material remains that indicate trade between the two groups. However, the interaction between the two groups was not always cordial as evidence of warfare, such as the remains of mutilated skeletons and burned lodges, is apparent at the Fay Tolton site in Stanley County.

Extended Coalescent

The Extended Coalescent tradition is believed to be a direct outgrowth of the Initial Coalescent tradition spanning from approximately A.D. 1550 to A.D. 1675. More than one hundred sites are found between the mouth of the White River and the North Dakota–South Dakota border. The material remains of the Extended Coalescent appear to be variations of the Initial Coalescent. The biggest variation was the settlement pattern. The people of the Extended Coalescent variant settled in small clusters spread along the Missouri River, which were generally occupied for a short period of time. Other modifications include the dwellings themselves. The Extended Coalescent lodges were often circular, similar to the Initial Coalescent people's, but with inconsistencies in entryways, fire pits, and support posts. These lodges and settlements were not often fortified. When they were it was usually on the extreme northern or southern reaches of the tradition's geographic boundaries to protect against invasion from outside groups.

The material culture of the Extended Coalescent is similar to that of other groups. There is evidence at Extended Coalescent sites of the diffusion of ideas and artifacts, such as fleshing tools, from the Middle Missouri tradition. Extended Coalescent artifacts also tend to be similar to those of the Initial Coalescent people, and, in the case of chipped stone artifacts, similar to both the Initial Coalescent and the Middle Missouri. In terms of pottery, there is an obvious distinction between Middle Missouri and Coalescent groups. Coalescent pottery tends to have thinner walls and different

rim shapes. Extended Coalescent artifacts can be found in South Dakota at sites such as the Scalp Creek site in Gregory County, and the Spain site in Lyman County.

Terminal Middle Missouri

The Terminal Middle Missouri tradition is thought to have developed near the mouth of the Grand River around the same time the Extended Coalescent tradition was thriving. This tradition was limited in range when compared with the Extended Middle Missouri. The Terminal also differed from the Extended in their housing as the Terminal settled primarily in long rectangular earth lodges that were in stark contrast to the smaller dwellings of the Extended. Archaeologists believe that much of the material culture is inherited directly from the Extended Middle Missouri. There are two Terminal Middle Missouri sites in South Dakota, the Jake White Bull and the Helb, but there is debate over whether these sites are of the Terminal Middle Missouri Tradition or not.

Effects of Eastern Influence

The time period from 1650 to 1700 marked the beginning of the influx of eastern influences onto the Great Plains. Among these influences were those from the Europeans and the Sioux. Although no contact was made between the Plains people and the Europeans until 1700, features of European culture had diffused into the area through trade and were well established by the time of the first meeting. Such cultural artifacts included items made of metal, guns, and brass and iron kettles.

A major consequence of contact was the displacement of indigenous people caused by European settlement in the East. These tribal groups were primarily Siouan-speaking, such as the Oneota, who moved into South Dakota from their homes in present-day Minnesota and Iowa. The first contact with Europeans came in the early 1700's with expeditions like that of the La Verendryes. This contact proved devastating for the Plains people, particularly the Arikara, who saw a dramatic increase in death rate and were forced to relocate. Disease and warfare decimated the Arikara and they were forced to endure extreme hardship to survive until finally, only a little over one hundred and fifty years after their first contact with the Europeans, their culture was barely recognizable.

The Sioux are believed to have come to the Great Plains with the horse in 1750. They were nomadic people that followed game. The Sioux would rise to power in this area through their success in hunting bison with horses and guns. New technology allowed them to take a large number of animals. They traded bison products with village tribes in exchange for crops. Many Sioux artifacts are found in South Dakota such as tipi rings in McPherson county, and boulder effigies in Codington County.

Archaeology has taught us that major changes continuously alter lifestyles throughout time. No one knows when the next drought or ice age will occur, forcing inhabitants to change their way of life. It is through the study of material remains from centuries ago that archaeologists are learning how the Middle Missouri and the Woodland peoples adapted to such environmental changes. It is of equal importance that people know the ethics of archaeology to protect information from being inadvertently lost due to looting, human error, carelessness, or neglect. Proper archaeological education will help to ensure that the answers to tomorrow's questions will not be lost.

Prehistoric Peoples of the Great Plains							
	Paleo-indians	**Plains Archaic**	**Wood-land**	**Middle Missouri**	**Central Plains**	**Coalescent**	**Post Contact**
Approx. Date of Origin	12000 B.C	6000 B.C.	500 B.C.	1000 A.D.	1150 A.D.	1300 A.D.	1650 A.D.
Approx. End Date	6000 B.C.	1 A.D	1000 A.D.	1400 A.D.	1250 A.D.	1800 A.D.	1890 A.D.
Subgroups	Clovis	Logan Creek	Loseke Creek	Great Oasis	St. Helena	Heart River	Nakota
(examples)	Folsom	McKean	Sonata	Mill Creek	Nebraska	Painted Woods	Lakota
	Plano	Pelican Lake	Dakota Mound	Cambria	Smoky Hill	Oneota	Dakota
Settlement (primarily)							
Nomadic	X	X					X
Sedentary			X	X	X	X	
Subsistence							
Hunting	X	X	X	X	X	X	X
Gather/Forage		X	X	X	X	X	X
Horticulture			X	X	X	X	X
Housing							
Temporary	X	X					X
Semi-permanent			X	X	X	X	X
Fortified			X	X	X	X	X
Cache Pits			X	X	X	X	X
Pottery			X	X	X	X	X
Burial Mounds			X				
Bone Tools							
Scapula Hoes			X	X	X	X	X
Deer-jaw sickles				X	X	X	X
Awls	X	X	X	X	X	X	X
Fish Hooks		X	X	X	X	X	X
Stone Tools							
Projectile Points	X	X	X	X	X	X	X
Axes		X	X	X	X	X	X
Diamond-shaped knives					X	X	X
Scrapers	X	X	X	X	X	X	X
Metal			X	X	X	X	X
Weapons							
Atlatl	X	X	X				
Bow & Arrow			X	X	X	X	X
Gun							X
Trade							
Between groups			X	X	X	X	X
w / Europeans						X	X
Horses							X
Sites in South Dakota							
*** N.D.**	Lange-Ferguson	Gant	Arp	Anton Rygh	^McIntosh	Sully	*Ice Glider
^ Neb.		#McKean	Sitting Crow	Travis I	^Sargent	Crow Creek	*Biesterfeldt
# Wyo.	Ray Long	^Tramp Deep	Arpan Mound	Fay Tolton	^Burkett	Scalp Creek	#Piney Creek

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Non-Fiction

Avi-Yohah, Michael. *Dig This!: How Archaeologists Uncover Our Past*. Minneapolis: Runestone Press, c1993. Discusses methods of archaeological excavations, ancient civilizations, the history of archaeology, and pioneers in the field. 96 p.
Libraries: RCP STG APM EMS

Duke, Kate. *Archaeologists Dig For Clues*. New York: HarperCollins, c1997. Describes how scientists can learn about the past and how ancient peoples lived by excavating rocks and other clues. 32 p.
Libraries: RCP SDS SDD AML LVE FGH WAT MPL YCL RPL

Evans, Eva Knox. *Archaeology: Secrets of the Past*. New York: Golden Press, 1969. Describes the tools, methods, and important finds of archaeologists. 79 p.
Libraries: SDW

Evans, Eva Knox. *The Adventure Book of Archaeology*. New York: Capitol Publishing Company, 1962. Introduces the work of scientists in the field of archeology, describing the sites they study and the records they find. Tells how to duplicate the techniques used by archeologists or the artifacts from old civilizations, such as plaster casts for molding prehistoric animal footprints or wax and clay tablets for writing and number wheels for marking time. 93 p.
Libraries: USD

Lauber, Patricia. *Who Came First: New Clues to Prehistoric Americans*. Washington, D.C.: National Geographic, c2003. Presents recent archaeological findings about the first people to settle the Americas, how they got here, and from what continent they came. 64 p.
Libraries: SDS

McGowen, Tom. *Adventures in Archaeology*. New York : Twenty-First Century Books, c1997. Discusses some of the discoveries made by archeologists around the world, including mummies found in Denmark and the sophisticated ancient city of Mohenjo-daro in Pakistan. 95p.
Libraries: RPL

Millard, Anne. *A Street Through Time*. New York: DK Publishers, 1998. Traces the development of one street from the Stone Age to the present day, from dirt track to the rebuilding of inns as wine bars, showing how people lived and what they did all day. 32 p.
Libraries: RCP SDW SDD AML

Panchyk, Richard. *Archaeology for Kids: Uncovering the Mysteries of Our Past.* Chicago: Chicago Review Press, c2001. Twenty-five activities support an overview of the science of archaeology as well as some of the secrets it has revealed from ancient civilizations throughout the world. 146 p.
Libraries: SDD EMS

Porell, Bruce. *Digging the Past: Archaeology in Your Own Backyard*. Reading, Mass.:Addison-Wesley, c1979. Stories, suggested activities, and games introduce the many facets of and the people involved in archaeology. 150 p.
Libraries: AML

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Libraries: SDS YHS USD SDD WMS CEB TCM LHS

Stuart, Gene S. *Secrets From the Past*. Washington, D.C.: National Geographic Society, c1979. Describes the work of archaeologists and discusses some significant archaeological finds in the old and new worlds and what they have revealed about man's progress and civilization through the ages. 104 p.
Libraries: SBR SDD AML SGC FPH SPF APM PHM DWD MDE HPL

Watts, Edith Whitney. *Archaeology: Exploring the Past*. New York: Metropolitan Museum of Art, 1965. 45 p.
Libraries: SDS USD HPL APM EMS WMS

Fiction

James, Carollyn. *Digging Up the Past: The Story of An Archaeological Adventure*. New York: F.Watts, 1990. Following proper archaeological procedures, Damien and Joe determine the origins of rocks and bones found in their neighborhood. 63 p.
Libraries: SDD APM WMS

Kittleman, Laurence R. *Canyons Beyond the Sky*. New York: Atheneum, 1995. Evan learns a great deal about self-reliance during the summer he spends on his father's archaeological dig in the Southwest, but nothing prepares him for the experience of being transported 5,000 years back in time and befriending an Indian boy from the ancient culture being studied by his father. 212 p.
Libraries: SDS SDO EMS WMS LWS

Teacher Bibliography

Archaeology on the Great Plains. Wood, W. Raymond, ed. Lawrence: University Press of Kansas, c1998. 522 p.
Libraries: BHS NSU RCP SDA SDB SDH SDW SMT USD SDD

Cassels, E. Steve. *Prehistoric Hunters of the Black Hills*. Boulder, CO: Johnson Books, c1986. 104 p.
Libraries: BHS NSU RCP SBR SDB SDF SDH SDS SMT STG USD SDD AML SDO SGC LVE SPF WAT MPL YCL DWD HPL

Frison, George C. *Prehistoric Hunters of the High Plains*. San Diego: Academic Press, c1991. 532 p.
Libraries: RCP STG USD SGC

Joukowsky, Martha. *A Complete Manual of Field Archaeology: Tools and Techniques of Field Work for Archaeologists*. Englewood Cliffs, NJ: Prentice-Hall, c1980. 630 p.
Libraries: NSU SDN SDS USD SGC

Moffett, Robert Knight. *Going on a Dig: A Guide to Archaeological Fieldwork*. New York: Hawthorn Books, 1975. Introduces the purpose, equipment, and basic techniques of archaeological field work for the amateur and includes tips on how to get on digs. 107 p.
Libraries: SDB SDS USD WTN

Practical Archaeology: Field and Laboratory Techniques and Archaeological Logistics. Dillon, Brian D., ed. Los Angeles: Institute of Archaeology, University of California, 1982. 125 p.
Libraries: USD

Smith, Shelley J., Jeanne M. Moe, Kelly A. Letts, Danielle M. Paterson. *Intrigue of the Past: A Teacher's Activity Guide for Fourth through Seventh Grades*. US Department of the Interior, Bureau of Land Management, 1996. 146 p.
Libraries: SDB SMT USD

South Dakota Archaeology: Educational Series. Vermillion: University of South Dakota, 1980-81.
Libraries: RCP SDA SDH

Sullivan, George. *Discover Archaeology: An Introduction to the Tools and Techniques of Archaeological Fieldwork*. Garden City, NY: Doubleday, 1980. 273 p.
Libraries: BHS SDF SDS SDD MIT LVE WAT WTN

Zimmermann, Larry J. *Peoples of Prehistoric South Dakota*. Lincoln NE: University of Nebraska Press, c1985. 143 p.
Libraries: BHS DSU NSU RCP SBR SDA SDB SDH SDS SDW SMT STG USD SDD AML MIT SDO SGC LVE FGH RHS RPL SPF WHS WAT MPL DWD MHS WTN WBS TCH HPL

Websites

www.digonsite.com/grownups/index.html
A comprehensive site with teacher's guides, games, activities, and quizzes.

www.kidsdigreed.com/
A student-oriented site with games, puzzles, and artifact galleries.

www.educationworld.com/soc_sci/archaeology/index/shtml#lessons
A site with lessons plans, teaching themes, interactives, and museum tours.

www.sdsmt.edu/wwwsarc/index/html
A good resource for South Dakota archaeology including frequently asked questions, artifacts, and exhibits.

www.blm.gov/education/LearningLandscapes/teachers/archaeology.html
Bureau of Land Management site with good ideas for both teachers and students

Purchasing *Intrigue of the Past*

Intrigue of the Past: Fundamentals of Archaeology. A Teacher's Activity Guide for Fourth through Seventh Grades.
By Shelley J. Smith, Jeanne M. Moe, Kelly A. Letts, and Danielle M. Patterson
Intrigue of the Past is a publication of Project Archaeology's Heritage Education Program of the U.S. Department of the Interior, Bureau of Land Management. It is aimed at educating teachers and students about the need to protect their cultural heritage.

Several of the activities in the *Archaeology in South Dakota* education kit have been reproduced with minor adaptations from *Intrigue of the Past.*

***Intrigue of the Past* may be purchased for $15 from the Natural Science Teacher's Association at 800-722-NSTA, or by calling Cindy Ramsay at 303-882-4811.**

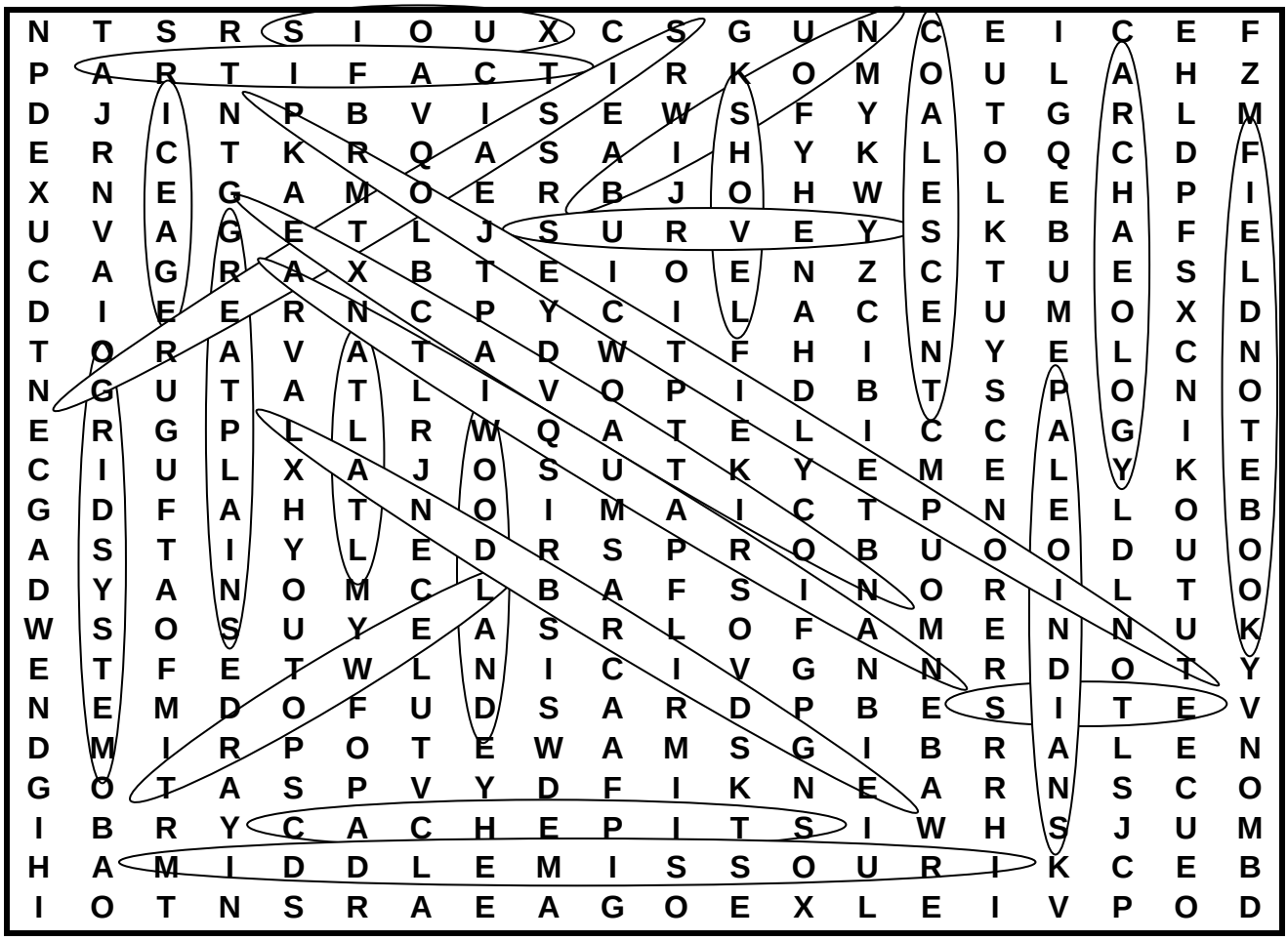
Word Find

N	T	S	R	S	I	O	U	X	C	S	G	U	N	C	E	I	C	E	F
P	A	R	T	I	F	A	C	T	I	R	K	O	M	O	U	L	A	H	Z
D	J	I	N	P	B	V	I	S	E	W	S	F	Y	A	T	G	R	L	M
E	R	C	T	K	R	Q	A	S	A	I	H	Y	K	L	O	Q	C	D	F
X	N	E	G	A	M	O	E	R	B	J	O	H	W	E	L	E	H	P	I
U	V	A	G	E	T	L	J	S	U	R	V	E	Y	S	K	B	A	F	E
C	A	G	R	A	X	B	T	E	I	O	E	N	Z	C	T	U	E	S	L
D	I	E	E	R	N	C	P	Y	C	I	L	A	C	E	U	M	O	X	D
T	O	R	A	V	A	T	A	D	W	T	F	H	I	N	Y	E	L	C	N
N	G	U	T	A	T	L	I	V	O	P	I	D	B	T	S	P	O	N	O
E	R	G	P	L	L	R	W	Q	A	T	E	L	I	C	C	A	G	I	T
C	I	U	L	X	A	J	O	S	U	T	K	Y	E	M	E	L	Y	K	E
G	D	F	A	H	T	N	O	I	M	A	I	C	T	P	N	E	L	O	B
A	S	T	I	Y	L	E	D	R	S	P	R	O	B	U	O	O	D	U	O
D	Y	A	N	O	M	C	L	B	A	F	S	I	N	O	R	I	L	T	O
W	S	O	S	U	Y	E	A	S	R	L	O	F	A	M	E	N	N	U	K
E	T	F	E	T	W	L	N	I	C	I	V	G	N	N	R	D	O	T	Y
N	E	M	D	O	F	U	D	S	A	R	D	P	B	E	S	I	T	E	V
D	M	I	R	P	O	T	E	W	A	M	S	G	I	B	R	A	L	E	N
G	O	T	A	S	P	V	Y	D	F	I	K	N	E	A	R	N	S	C	O
I	B	R	Y	C	A	C	H	E	P	I	T	S	I	W	H	S	J	U	M
H	A	M	I	D	D	L	E	M	I	S	S	O	U	R	I	K	C	E	B
I	O	T	N	S	R	A	E	A	G	O	E	X	L	E	I	V	P	O	D

*Words may be found vertically, horizontally, and diagonally, not backward.

ANTIQUARIAN
ARCHAEOLOGY
ARTIFACT
ATLATL
BISON
CACHE PITS
COALESCENT
EXCAVATION
FIELD NOTEBOOK
GREAT OASIS
GREAT PLAINS
GRID SYSTEM
ICE AGE
LAND BRIDGE
MIDDLE MISSOURI
PALEOINDIANS
PROJECTILE POINT
SHOVEL
SIOUX
SITE
SURVEY
TROWEL
WOODLAND

Word Find Key



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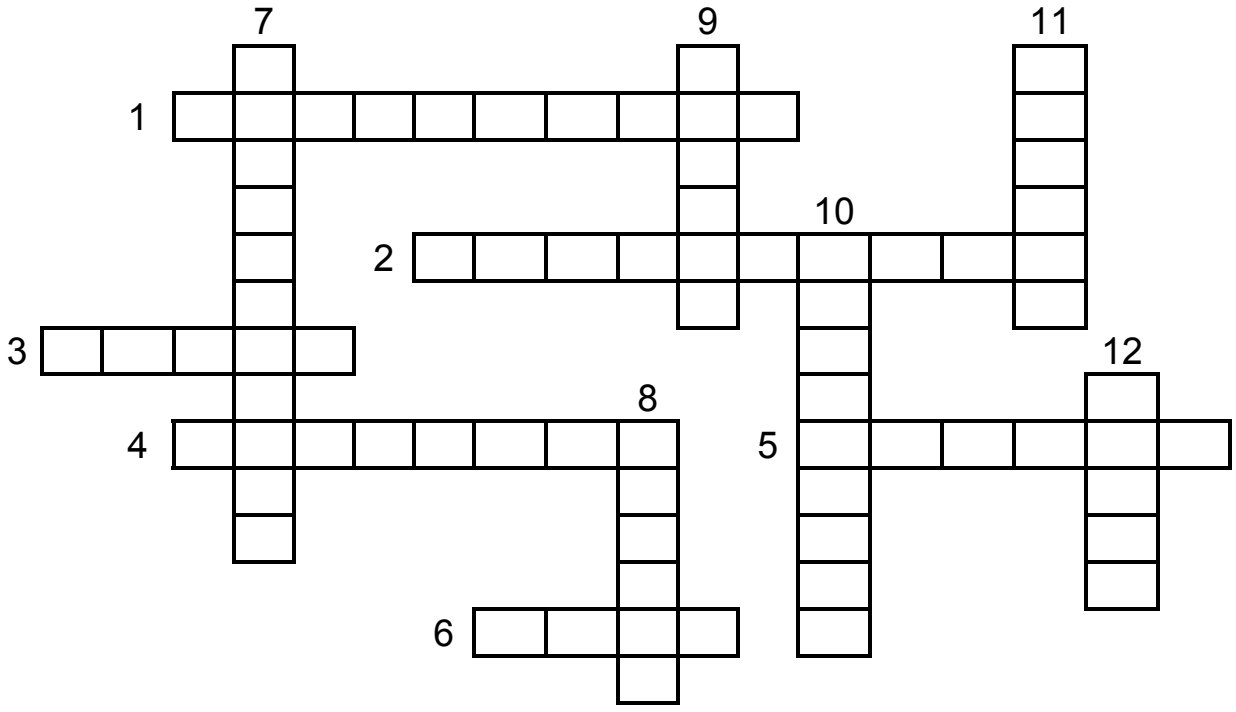
ANTIQUARIAN	COALESCENT	ICE AGE	SIOUX
ARCHAEOLOGY	EXCAVATION	LAND BRIDGE	SITE
ARTIFACT	FIELD NOTEBOOK	MIDDLE MISSOURI	SURVEY
ATLATL	GREAT OASIS	PALEOINDIANS	TROWEL
BISON	GREAT PLAINS	PROJECTILE POINT	WOODLAND
CACHE PITS	GRID SYSTEM	SHOVEL	

Crossword Puzzle

Word List					
Archaeology	Atlatl	Bison	Clovis	Crow Creek	Coalescent
Sioux	Trowel	Woodland	Darwin	Prehistory	Grid

ACROSS
1. The period of time before recorded history.
2. Taxonomic tradition that was formed with the union of the Central Plains and Middle Missouri peoples.
3. This animal was a primary resource for early Pre-historic plains people.
4. Pre-historic people characterized by the introduction of pottery and burial mound construction.
5. The first known American projectile point.
6. A system of criss-crossed parallel lines set up over a survey area to ensure that no part is over- or under-represented.

DOWN
7. The systematic study of past human life by the recovery and examination of remaining material evidence.
8. The scientist who inspired the study of pre-history with his book, The Origin of the Species.
9. The most common excavating tool used by archaeologists.
10. The site of a prehistoric massacre in which at least 500 people were killed.
11. A pre-historic spear thrower.
12. Historic nomads who rose to power on the Great Plains through their use of horses and guns.



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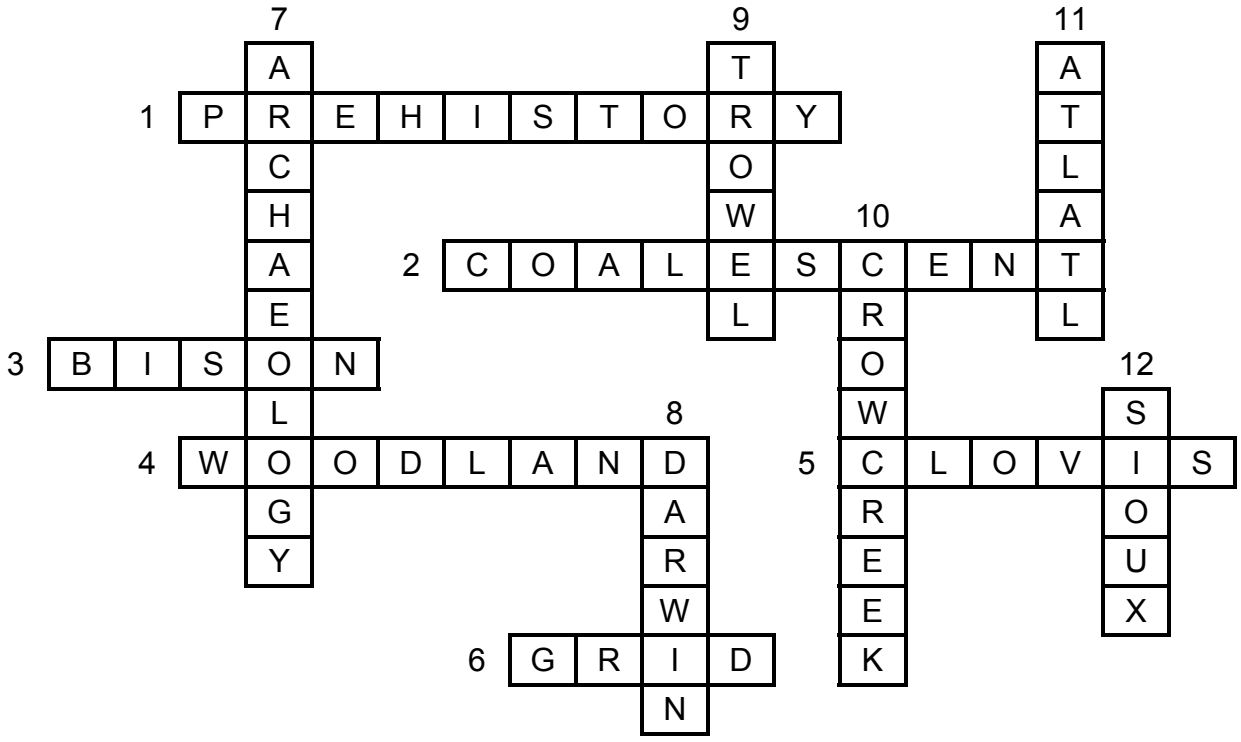


Word Scramble

Word List			
survey	Paleoindians	stratum	looting
climate	pottery	La Verendrye	midden

1. A major threat to Archaeological sites.

___ ___ ___ ___ ___ ___ ___ n o t l o i g
11 2

2. One of the first Europeans to make contact with indigenous Great Plains people.

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ a l y e v r e n r d e
13 3

3. The most common form of preliminary archaeological investigation.

___ ___ ___ ___ ___ ___ r e v y u s
9 12

4. Accumulation of human debris that indicates settlement.

___ ___ ___ ___ ___ ___ d i d n e m
7 4

5. A cultural aspect that was first introduced by the Woodland civilization.

___ ___ ___ ___ ___ ___ ___ o r y p t e t
6

6. A major factor in determining pre-historic settlement patterns.

___ ___ ___ ___ ___ ___ ___ m e c t l i a
14

7. A level of soil that archaeologists use to help them determine the age of artifacts.

___ ___ ___ ___ ___ ___ ___ t r a m u s t
10 1

8. Early American nomads who followed game animals across the land bridge (Beringia).

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ d a p i o a n e l i n a s
5 8

Fill in the letters from the numbered spaces above to find the answer below.

9. This is a group that was prevalent in South Dakota, characterized by large-scale agriculture.

___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___
1 2 3 4 5 6 7 8 9 10 11 12 13 14

Word Scramble Key

Word List			
survey	Paleoindians	stratum	looting
climate	pottery	La Verendrye	midden

1. A major threat to Archaeological sites.
   L O O T I N G n o t l o i g
   11 2
2. One of the first Europeans to make contact with indigenous Great Plains people.
   L A V E R E N D R Y E a l y e v r e n r d e
   13 3
3. The most common form of preliminary archaeological investigation.
   S U R V E Y r e v y u s
   9 12
4. Accumulation of human debris that indicates settlement.
   M I D D E N d i d n e m
   7 4
5. A cultural aspect that was first introduced by the Woodland civilization.
   P O T T E R Y o r y p t e t
   6
6. A major factor in determining pre-historic settlement patterns.
   C L I M A T E m e c t l i a
   14
7. A level of soil that archaeologists use to help them determine the age of artifacts.
   S T R A T U M t r a m u s t
   10 1
8. Early American nomads who followed game animals across the land bridge (Beringia).
   P A L E O I N D I A N S d a p i o a n e l i n a s
   5 8

Fill in the letters from the numbered spaces above to find the answer below.

9. This is a group that was prevalent in South Dakota, characterized by large-scale agriculture.

   M I D D L E M I S S O U R I
   1 2 3 4 5 6 7 8 9 10 11 12 13 14

Reading an Object

Objectives:

- Participants will recognize the variety of information that can be learned by examining objects.
- Participants will inspect objects and draw conclusions from their observations.

South Dakota Social Studies Standards

K	1st	2nd	3rd	4th	5th	6th
K.E.1.1		2.US.1.2 2.E.1.1	3.E.1.1		5.US.1.1	6.W.1.1 6.E.1.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.LVS.1.2 K.LVS.1.6	1.LVS.1.2 1.LVS.1.6	2.LVS.1.2 2.LVS.1.4 2.LVS.1.5 2.LVS.1.6	3.LVS.1.1 3.LVS.1.2 3.LVS.1.3 3.LVS.1.4	4.LVS.1.1 4.LVS.1.3	5.LVS.1.1 5.LVS.1.2 5.LVS.1.3	6.LVS.1.2 6.LVS.1.3

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1	1.E.1.2	2.P.1.1	3.P.1.1 3.E.1.2			

Timeframe: 30-60 minutes

Materials:

Included in kit
Kit artifacts
Object Identification Sheet

Background:

Every culture has used objects. These objects reflect the beliefs of the people who constructed, acquired, or used them. They also reflect the unique identity of the culture. If we study and/or teach only what's been written down about a culture, there are many things we miss. The same is true if we only look at cultural objects. When separated, written words and objects are both incomplete. When the two are studied together, a more complete cultural picture emerges. One of the main goals of this kit is to increase the participant's visual literacy skills and teach them how to learn from objects.

Activity Steps:

1. Arrange the participants so that it is easy to pass objects from one to another. Pass the objects around one at a time, allowing the participants to handle and examine them.
2. While the participants are examining the objects, use the points below to start discussion about the materials, construction, and history of the objects. Encourage the participants to share the visual and tactile information they get from the objects. You may ask each participant to consider a different aspect of the object (history, material, etc). Have the participants respond so the entire group can hear and enter into the discussion.

Materials and Construction

a. What materials is the object made out of? (wood, metal, stone, bone, plastic)
b. Is the material sturdy or delicate?
c. Can you tell how the object was made? (carved, cast, molded)
d. How would you describe the texture of the surface of the object? (rough, smooth, bumpy)
e. What does its size tell you about the object?
f. Is it a complete piece or a fragment of a larger work?

History and Function

a. What might be the purpose of the object? (hunting, farming, food preparation)
b. Who might have used the object and what actions would they perform with it?
c. Where might it have been used? (forest, field, home)
d. Is this object still used today for the same or other purposes?
e. What has changed about the object today?
f. Would you rather use the modern object or the object in the kit? Why?
g. Was the object used for a special task or occasion or was it an everyday item?
h. Is the object an artifact or an archaeology tool?
i. What questions do you have about the object?
j. Where could you find the answers to your questions?

Compare and Contrast:

1. Compare the different projectile points. How are they similar? How are they different? What sorts of things would cause people to use one over another?
2. After an object has been examined, share the information found on the Object Identification Sheet with the group.

Object Identification Sheet (kit 1)

T-2003-208 Clovis Point
Clovis points are the first known American projectile point. They were used by people of the Llano Tradition almost 12,000 years ago as a spear point to hunt big game like mammoth, bison, horses, and camels. Clovis points are characterized as a large point with fluting (the concave area on each face of the point) and basal grinding.

T-2003-216 Folsum Point
The Folsom point was adopted as the mammoth began to die off and be replaced by the giant bison. Folsom points allowed the people to hunt the bison in herds because it was smaller, lighter, and more refined. This point is marked by distinct fluting, prominent basal ears, and a deeply concave base.

T-2003-210 Licking Bison Point
Licking Bison points are Early Archaic points that could be used to hunt bison as a projectile, or as a thrusting weapon. These points are distinguished from the earlier lanceolate points of the Paleoindians by the presence of side notches.

T-2003-218 Pelican Lake Point
These points are thought to have been used almost 3,500 years ago. They are often found with large quantities of bison remains which indicate that these people were sophisticated hunters. Pelican Lake points are recognized by their triangular corner notched shape that features barbed shoulders.

T-2003-212 Avonlea Point
The use of Avonlea points is likely contemporary with the Besant-Sonata Woodland culture of A.D. 500-800. This point was also used to hunt buffalo, but with the new bow and arrow as opposed to a spear-throwing tool such as the atlatl. It is characterized as a small, thin, side-notched point, with basal concavities.

T-2003-214 Angostura Point
The Angostura point is an early lanceolate spear point that dates to around 9,000 years ago. This point gets its name from the Angostura Reservoir located near Hot Springs, SD. These points are long and narrow with no notching, and either a straight or a concave base.

T-2003-001 Bison scapula hoe
The bison scapula hoe was a common cultivating tool used by the Plains Village people around A.D. 1000-1500. The use of this tool marks the rise of horticulture on the Plains as groups began to stay in one place and raise crops for food rather than relying solely on hunting and gathering.

T-2003-003 Deer-jaw sickle
This tool is simply the lower half of a deer jaw. It was mounted on the end of a stick and used to cut grass. The sickle was useful for clearing grassy areas, and the grass could then be used to cover grass houses or for thatching roofs.

T-2003-005 Bone awl
These tools were made from pieces of bone, or of modified small bones. Bone awls were used through all prehistoric periods to punch holes in skins so they could be sewn into clothes. Awls may also have been used to make other woven artifacts such as baskets and matting.

T-2003-007 Bone fish hook
Bone fish hooks were first found among archaic remains. Their use progressed through prehistory. Fish hooks were a vital tool to the peoples who lived in what would one day be South Dakota as they relied on fish from the lakes and rivers to survive.

T-2003-009 Bone arrow wrench
This tool is commonly found at Plains Village Tradition sites as use of the bow and arrow became more common. The wrench consists of a single bone with a hole near one end. Arrows were heated to make them flexible enough to straighten. This tool allowed a person to hold the hot arrow while pressure was applied to straighten the shaft.

T-2003-220 Stone knife
Stone blades came in a variety of shapes and forms and are present throughout much of prehistory. Such knives were very useful in processing buffalo. Stone knives did much the same work that contemporary knives do today.

T-2003-222 Hammerstone
The hammerstone was the primary tool that prehistoric people used to make other tools. Hammerstones were used in knapping and trimming flakes to create stone projectile points. It was also used to break and pound nuts, bones, seeds, and other materials.

T-2003-224 Mano
This is a stone artifact used in conjunction with a metate to grind corn, beans, berries, and other foodstuffs. A mano looks like a common rock on one side, but the grinding side is unusually flat. The mano fits into the carved trough of the metate and is pushed back and forth over the foodstuff until it had been ground to the desired consistency.

T-2003-225 Metate
In its simplest form the metate is a flat rock against which another stone, the hand-held mano, is used to grind foods. A smooth trough was carved out of the slab by chipping away at the rock at the center. Food placed in the trough was ground by rubbing the mano back and forth over it. A mano and metate are similar to the mortar and pestle used for grinding in today's kitchens.

T-2003-011 Hand screen
Archaeologists use this tool for sifting artifacts out of the dirt. A small hand-held screen like the one in the kit would commonly be used during a survey for shovel tests when the archaeologist digs below the surface looking for artifacts. Screens used at excavation sites are much larger and are generally mounted on poles and chains to make shaking them easier.

T-2003-013 Dust pan
The archaeologist uses the dust pan to scoop dirt at an excavation into a bucket so it can be taken for screening.

T-2003-015 Bucket
A handy all-around tool on an excavation, the bucket is used to carry dirt back and forth to the screens, and to carry tools and other materials around the site.

T-2003-041 Wooden stakes (20)
Wooden stakes with string or rope between them are used to lay out the grid pattern on an archaeological dig site. The grid pattern lets the archaeologist keep track of exactly where each artifact on a site is found.

T-2003-043 Pin flags (50)
Pin flags are used to mark the location of artifacts when doing a survey. They allow the archaeologist to mark the spot where an item is found and continue on with the survey, coming back to the marked items later for further excavation.

T-2003-019 Tool box
An archaeologist uses a tool box to carry the small tools needed at an excavation. Having everything together in one place makes it easier to keep track of the tools and keeps them handy for when they are needed.

T-2003-020 Gloves
Archaeologists wear gloves to protect their hands from sharp objects and germs that exist in the ground.

T-2003-021 Sunscreen
Sunscreen is important on an excavation site because many summertime digs are done in high temperatures with prolonged exposure to the sun.

No number Paper bags
Archaeologists use paper bags to store artifacts until they can be cataloged. Only artifacts that will not be damaged if they dry out are put in paper bags. Artifacts that need to retain moisture are placed in plastic bags.

T-2003-022 Compass
A compass is used to make sure the archaeologist is using the right directions when they survey a site and map the artifact placement.

T-2003-023 Brushes
Archaeologists work carefully in the dirt when they are looking for artifacts. They use a variety of brushes to carefully uncover delicate artifacts.

No number Wooden skewers
Skewers are used much like brushes. They allow an archaeologist to clean delicate items by getting into narrow spaces with damaging the artifact.

T-2003-024, T-2003-042 Tape measure (2)
A tape measure is used to measure out each square as the grid pattern on an excavation site is established. It is also used to measure where are artifact is found within a grid square.

T-2003-025 Trowel
A hand trowel is the main hand tool archaeologists use to move dirt as they excavate a site. Its small size makes it easy to control.

No number Pencils and markers
These are used to write in the field notebook, mark the stakes for the grid and mark the bags artifacts are placed in after being dug up on a site.

T-2003-026 Pencil sharpener
It's no fun to have a dull pencil out in the field, so archaeologists keep this tool handy for sharpening their pencils without having to leave the dig site.

T-2003-027 Notebook
A field notebook is a vital piece of an archaeologist's equipment. Without good written notes it would be impossible to keep track of what artifacts are found and their location. Archaeologists also record the date of the excavation work, the names of the workers, and what the weather and ground conditions are like.

T-2003-028 Line level
Archaeologists use a line level to make sure that they are digging out a stratum or layer of dirt evenly. They dig down in 10 cm intervals. They need to know their ground level is straight so they don't dig too much or too little in one area.

T-2003-029 Plumb bob
Plumb bobs allow the archaeologist to make sure the dimensions of the grid on a site are accurate when working on uneven ground.

T-2003-047 Geometric compass (5)
These compasses are used for the Measuring Pots activity to recreate the circumference of a pot's rim.

Bag "Rim" Rim sherds
These rim fragments are used for the Measuring Pots activity. Archaeologists often find bits and pieces of pots and other artifacts in dig sites.

Bag # 1,2,3,4,5,6 Bags of sherds
These bags of sherds, or pieces of artifacts, are used for the Shifting Through Sherds activity.

T-2003-049 Arrowhead casts (7)
These arrowhead casts are used for the Gridding a Site activity.

Gridding a Site

Objectives:

- Participants will establish a grid system over an archaeological site, labeling each grid unit.
- Participants will determine the location of artifacts within each grid unit.
- Participants will construct a scientific inquiry concerning the location of artifacts on the site.

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1	1.P.1.1	2.P.1.1 2.L.3.3	3.P.1.1	4.P.1.1 4.P.1.2	5.P.1.1	6.N.2.1

South Dakota Mathematics Standards

K	1st	2nd	3rd	4th	5th	6th
K.A.2.1 K.A.3.1 K.G.1.1 K.M.1.5 K.N.1.2 K.N.3.1 K.S.1.1	1.A.4.2 1.G.1.1 1.G.2.1 1.M.1.5 1.N.1.1 1.N.1.2 1.N.2.1 1.S.1.1 1.S.1.2 1.S.2.1	2.A.4.2 2.G.2.1 2.M.1.6 2.N.1.2 2.S.1.1 2.S.1.3 2.S.2.1	3.A.2.2 3.M.1.5 3.S.1.1 3.S.1.2 3.S.2.1	4.M.1.3 4.M.1.4 4.S.1.1 4.S.2.1	5.G.2.3 5.S.1.1 5.S.2.1 5.S.2.2	6.A.3.1 6.A.4.1 6.S.1.2 6.S.2.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.LVS.1.1 K.LVS.1.2 K.LVS.1.6	1.LVS.1.1 1.LVS.1.2 1.LVS.1.6	2.LVS.1.1 2.LVS.1.2 2.LVS.1.4 2.LVS.1.6	3.LVS.1.1 3.LVS.1.2	4.LVS.1.1 4.LVS.1.2 4.LVS.1.3	5.LVS.1.1 5.LVS.1.2 5.LVS.1.3	6.LVS.1.3

Timeframe: 45-60 minutes

Materials:

Included in kit
The Lakeside Site transparency
The Grid master transparency
The Lakeside Site handout
Artifact Location Record handout
5x5 graph master handout
2 tape measures
20 stakes w/string (makes 5x5 grid)
25 flags
7 loose arrowheads
bag of rim sherds

Provided by instructor or participants
Rulers
Black pencil
Colored pencils (3 different colors)

Background Information:

Once a site has been dug (or in the case of sites with no depth, the surface artifacts have been collected) it is gone forever and can never be replaced. Because sites are destroyed during collection or excavation processes, archaeologists record them on paper to preserve the context of all the artifacts and structures. Archaeologists of the future can then study a site if good notes and maps are made. One way archaeologists preserve context on paper is through the use of the rectangular grid, or Cartesian coordinate system.

The first step in the excavation process is establishing a grid. A site datum is set at an arbitrarily chosen location and is designated as (0,0). Two perpendicular axes, intersecting at the site datum, are then established and a rectangular grid is superimposed over the entire site. Each square on the ground is marked with numbered stakes in the corners, so that each square has a unique "name" referred to by its coordinates. The coordinates indicate the distance of a given point north, south, east, or west from the site datum. Once the grid is established, all artifacts and structures are measured and recorded using the system. Before excavation actually begins, all artifacts visible on the surface are collected and their locations on the grid are recorded. As excavation proceeds, materials found under the surface are similarly recorded and collected. When the archaeologist returns to the laboratory, the maps and the data recorded in the field can be used to make inferences about past events and the lifeways of the site's inhabitants. If the exact location of each artifact is known the object can be tied to its place in the site. For this activity, participants will imagine they are a team of archaeologists who have found an archaeological site. Artifacts, including projectile points, pottery sherds, and stone flakes are scattered on the surface of the ground. They will make a map of the site.

Activity Steps:

1. Project the map of the "Lakeside Site" and explain this is the site they have found. Overlay a transparency of the grid matching the site datum points, to demonstrate that an archaeologist establishes a grid over the site to assist with accurate recording of data. Share background information about the importance of gridding a site for current and future study.
2. Divide the group into smaller groups if needed and distribute the Lakeside Site activity sheet to each small group. Point out the site datum in the lower left hand corner and explain that this is the point from which the grid is established. The name of the site datum is (0,0).
3. Using rulers, each group will establish a grid system using the scale 1"=1 meter, starting from the tip of the datum (see The Grid Sheet). It is helpful to model this procedure on the overhead projector.
4. Label each point on the grid. The southwest corner of each unit becomes the reference (designation) for that unit. Example: (1,2); (2,2); (2,3). Each coordinate indicates the location east and north of the site datum.
5. On the Artifact Location Record handout participants will record the grid unit designation and count and name the artifacts in each grid unit.

6. Following the procedure of scientific inquiry ask:
    a. What do you notice about the distribution of the pot sherds? **(observation)**
    b. Why is there a concentration of pot sherds in that part of the site? **(List some inferences.)**
    c. Choose one inference and formulate an hypothesis from it. Describe how the hypothesis might be tested. For example, there are a lot of pot sherds in one location. We might infer a pottery vessel broke here. If all of the sherds have similar attributes and fit together, thenwe could accept the hypothesis that a vessel broke in this location. What other reason could explain the concentration of sherds? **Note:** The students will not be able to actually test the hypothesis without access to the artifacts. This exercise is designed to have them think like archaeologists.
    d. Conduct a similar inquiry using the stone flakes or other artifacts.
7. Summarize the importance of gridding archaeological sites to assist with accurate recording and making inferences from data, now and in the future.

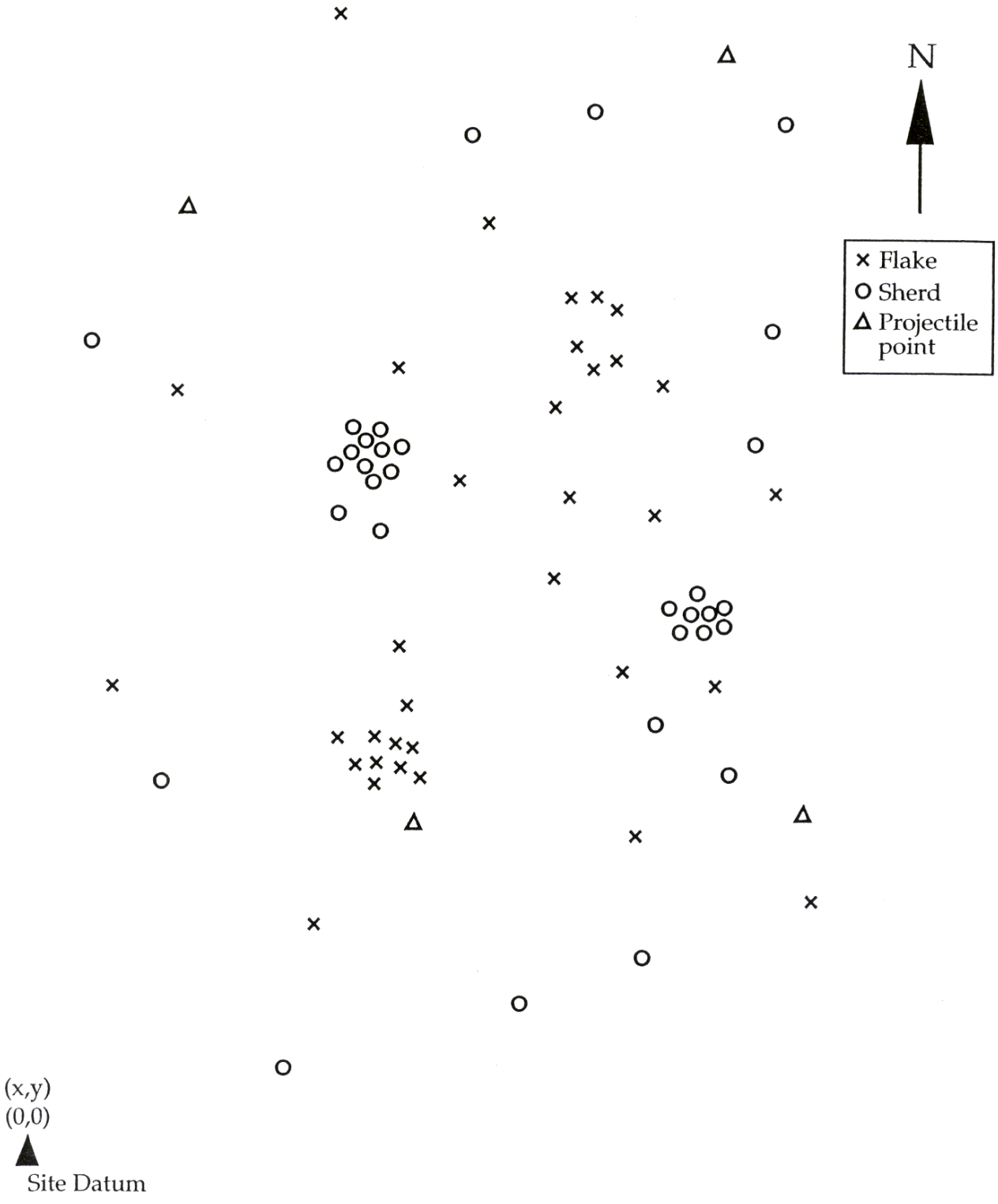
Extensions:

1. Create a site on the playground by depositing the arrowheads and rim sherds from the kit,and then gridding the playground. Construct a 5x5 grid using the stakes and string included in the kit. Map the findings on the 5x5 master graph.
2. With older students, precisely map artifacts within each grid unit. Measure the distance north and east of the grid unit's southwest corner to find the exact distance of each artifact from the site datum (0,0). Examples: (2.1,4.6) or (3.3, 8.8).

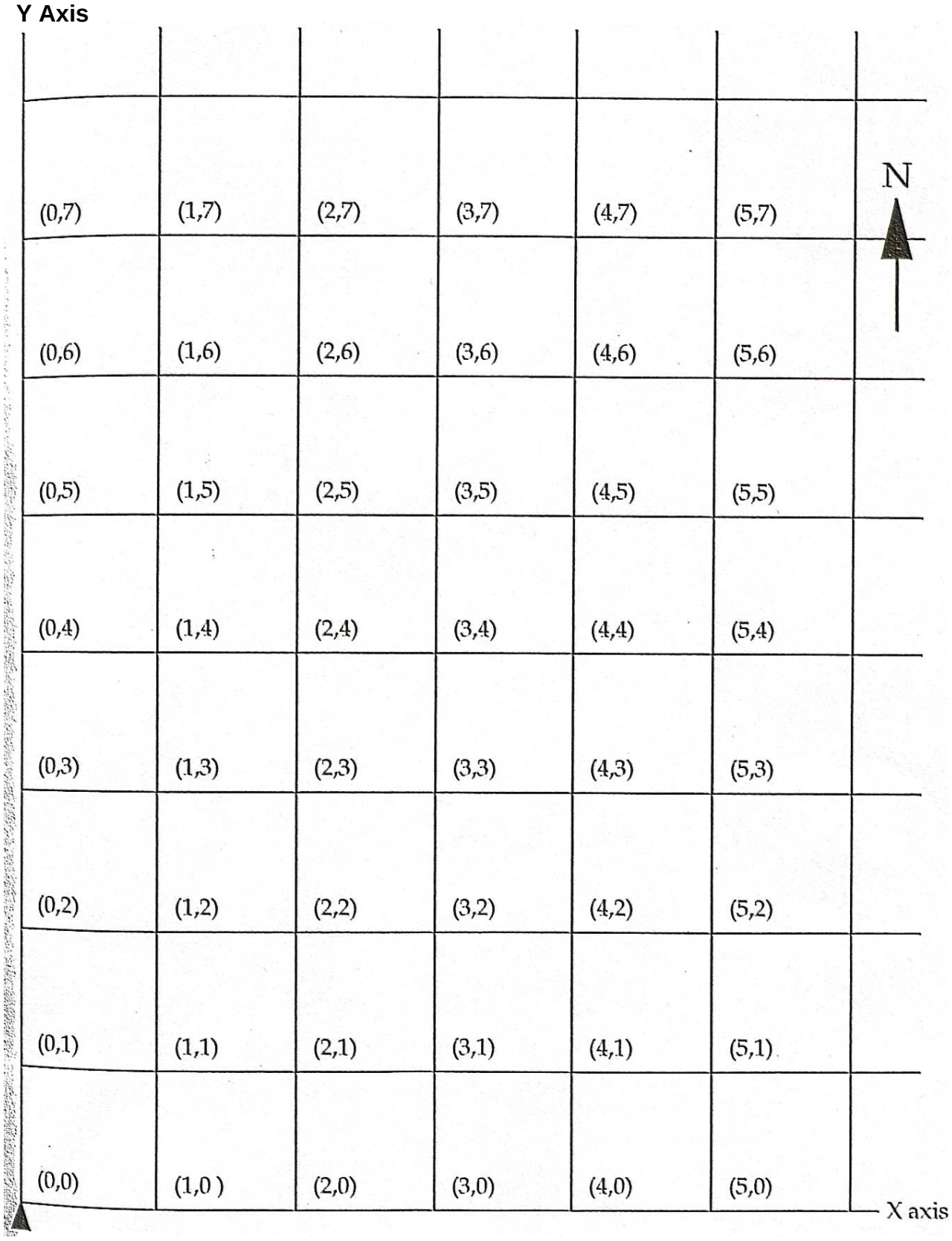
Lesson and activities adapted from
Intrigue of the Past / A Teacher's Activity Guide for Fourth through Seventh Grades
See bibliography for complete reference

Name_____

The Lakeside Site



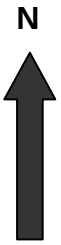
The Grid Sheet



Name_____

Artifact Location Record

Grid Unit	# Flakes	# Sherds	# Points

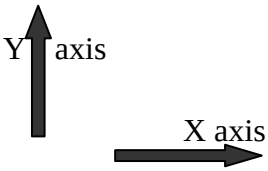


5x5 graph master

Function:
Use this graph to plot the artifacts that are found within the 5x5 grid.

(0,4)	(1,4)	(2,4)	(3,4)	(4,4)
(0,3)	(1,3)	(2,3)	(3,3)	(4,3)
(0,2)	(1,2)	(2,2)	(3,2)	(4,2)
(0,1)	(1,1)	(2,1)	(3,1)	(4,1)
(0,0)	(1,0)	(2,0)	(3,0)	(4,0)

Site Datum



Sifting through Sherds

Objectives:
- Participants will physically describe sherds.
- Participants will infer from sherds what location they come from.
- Participants will develop deeper understanding of the tasks of an archaeologist.

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1	1.P.1.1	2.P.1.1 2.P.1.3	3.P.1.1 3.P.1.3	4.P.1.1 4.P.1.2 4.S.1.1 4.S.1.2	5.P.1.1 5.L.3.1	6.N.2.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.LVS.1.2 K.LVS.1.6	1.W.1.2 1.LVS.1.2 1.LVS.1.6	2.w.1.1 2.LVS.1.2 2.LVS.1.4 2.LVS.1.6	3.LVS.1.1 3.LVS.1.2 3.LVS.1.3 3.LVS.1.4	4.W.1.2 4.LVS.1.1 4.LVS.1.2 4.LVS.1.3	5.LVS.1.1 5.LVS.1.2 5.LVS.1.3	6.LVS.1.2 6.LVS.1.3

Suggested Timeframe: 45 minutes

Materials:

Included in kit
6 bags of sherds
Shifting Through Sherds Worksheet

Provided by instructor or participants
pencils

Background Information:

After excavating a site, archaeologists bring the artifacts they have found back to the laboratory for analysis. At the lab, the artifacts are cleaned and sorted according to the unit at the dig site where they were found. Each unit at a dig site is assigned a specific number or letter. As the artifacts in the lab are sorted, they are also each given a unique number that is related to the unit number so archaeologists who study the artifacts later on will know where the objects came from. Since every artifact has a unique number, the items can be removed from their unit bags for study and then returned to the proper bag. In this activity, participants will examine the artifacts from a unit bag, make note of the individual number on each artifact physically describe each sherd, and then hypothesize about where in a house each unit bag was excavated.

Activity Steps:

1. Divide the participant group into six smaller groups and give each small group one of the gray bags of sherds numbered 1 through 6. Give each group, or each participant, a copy of the Sifting Through Sherds Worksheet.

2. Explain how archaeologists keep track of where each item on a dig site comes from by giving each item a specific number and keeping all the items found in one unit of a dig site together. Each gray bag of sherds is from a different unit on an imaginary dig site. The participants are going to write down the numbers found on the sherds, and then physically describe the sherds. They will then hypothesize, or make an educated guess, about where they think the sherds came from, and explain how they reached their conclusion.
3. Have each group empty their bag of sherds and examine them closely. NOTE: The edges of the sherds have been dulled, but participants should still use caution when handling them. Have participants write down the number they find on each sherd in Section 1 of the worksheet. Behind each number they should write a brief physical description of the sherd, including its size, color, texture, the material it's made of, and any other pertinent information. The number of sherds in each bag varies.
4. Once the sherd numbers and physical descriptions have been recorded, have the group decide what item on the list in Section 2 of the worksheet they think the sherd is from. There may be more than one sherd from some items, and none at all from other items on the list. Have the group count up the number of sherds that they think come from each item and write that number on the line next to the item.
5. Based on the items listed in Section 2, have each group hypothesize which room in the imaginary dig site their bag of sherds comes from. For example, if most of the items in their bag come from the plate, cup, and bowl, then the Kitchen would be a logical room choice for that unit bag. Have the participants explain why they chose a particular room for their unit bag in Section 3 of the worksheet.

   INSTRUCTOR NOTE: Bags 1 and 2 are Living Room bags; Bags 3 and 4 are Bathroom bags; and bags 5 and 6 are Kitchen bags. The individual sherd numbers will include an "L" somewhere in the number for the Living Room bags, a "B" for the Bathroom bags, and a "K" for the Kitchen bags. The majority of the items in each bag are from those particular rooms, however, each bag contains a couple of sherds that come from the other rooms as well.

6. Have each group share their conclusions with the rest of the class. Discuss how seeing and touching the sherds helped them get enough information for a sound guess when they had to choose a room where their unit bag came from.

Lesson and activities adapted from
the Department of Education at the Indiana University of Pennsylvania website:
http://www.lrp.usace.army.mil/lmon/arch_lessons.pdf
See bibliography for complete reference

Name_____

Sifting Through Sherds Worksheet

Bag Number _____

Section 1: Classifications:

Item Number	*Physical Description of the Item*
1)_____	_____
2)_____	_____
3)_____	_____
4)_____	_____
5)_____	_____
6)_____	_____
7)_____	_____
8)_____	_____
9)_____	_____
10)_____	_____
11)_____	_____
12)_____	_____
13)_____	_____
14)_____	_____
15)_____	_____

TOTAL NUMBER OF SHERDS _____

Section 2: Count the number of sherds that come from each item listed below and write that number next to the item.

_____ Plate	_____Candleholder	_____Toothbrush
_____Figurine	_____Soap dish	_____Picture frame
_____Bowl	_____Comb	_____Remote Control
_____Vase	_____Hairbrush	_____Toothbrush holder
		_____Cup

Section 3: Circle the room that you think your bag of sherds comes from.

Kitchen Bathroom Living Room

Explain how you reached your conclusion_____
_____
_____
_____

Artifact Classification

Objectives:
- Participants will classify or sort artifacts.
- Participants will infer answers to research questions based on their classification of the artifacts.

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1 K.L.1.1	1.P.1.1 1.L.1.3 1.L.3.1	2.P.1.1 2.P.1.3 2.L.3.1 2.L.3.2	3.P.1.1 3.P.1.3 3.L.3.1 3.L.3.3 3.E.1.2	4.L.2.1	5.P.1.1 5.S.2.1	6.N.2.1 6.L.1.2

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.W.1.1 K.LVS.1.1 K.LVS.1.6	1.W.1.1 1.W.1.2 1.LVS.1.3 1.LVS.1.6	2.W.1.3 2.LVS.1.3 2.LVS.1.4 2.LVS.1.6	3.W.1.1 3.LVS.1.1 3.LVS.1.2 3.LVS.1.3 3.LVS.1.4	4.W.1.2 4.LVS.1.1 4.LVS.1.2 4.LVS.1.3	5.W.1.1 5.LVS.1.1 5.LVS.1.2 5.LVS.1.3	6.LVS.1.2 6.LVS.1.3

Timeframe: 30-45 minutes

Materials:

Included in kit
"Ancient Artifacts" activity sheet
"Classification" activity sheet

Provided by instructor/participants
Scissors
Pen or pencil

Background Information:
The purpose of archaeological research is to learn about the lifeways of past peoples. For each archaeological project, a series of questions is developed and answered using the archaeological data. The artifacts from a site are an important part of the data base used to answer the research questions. To arrive at answers to the research questions, artifacts are classified or sorted.

Activity Steps:
1. Tell the group to imagine that they are a team of archaeologists. The team has completed excavation of an ancient site in the Southwest and are now ready to begin analyzing the artifacts to find out about the people who lived at the site. They will use the following questions to structure their inquiry.
2. What is the diet of the site's residents?
3. What did they use for personal adornment, or decoration?
4. How may different ways did they decorate their pottery?
5. How many different kinds of raw materials did they use to make their tools?

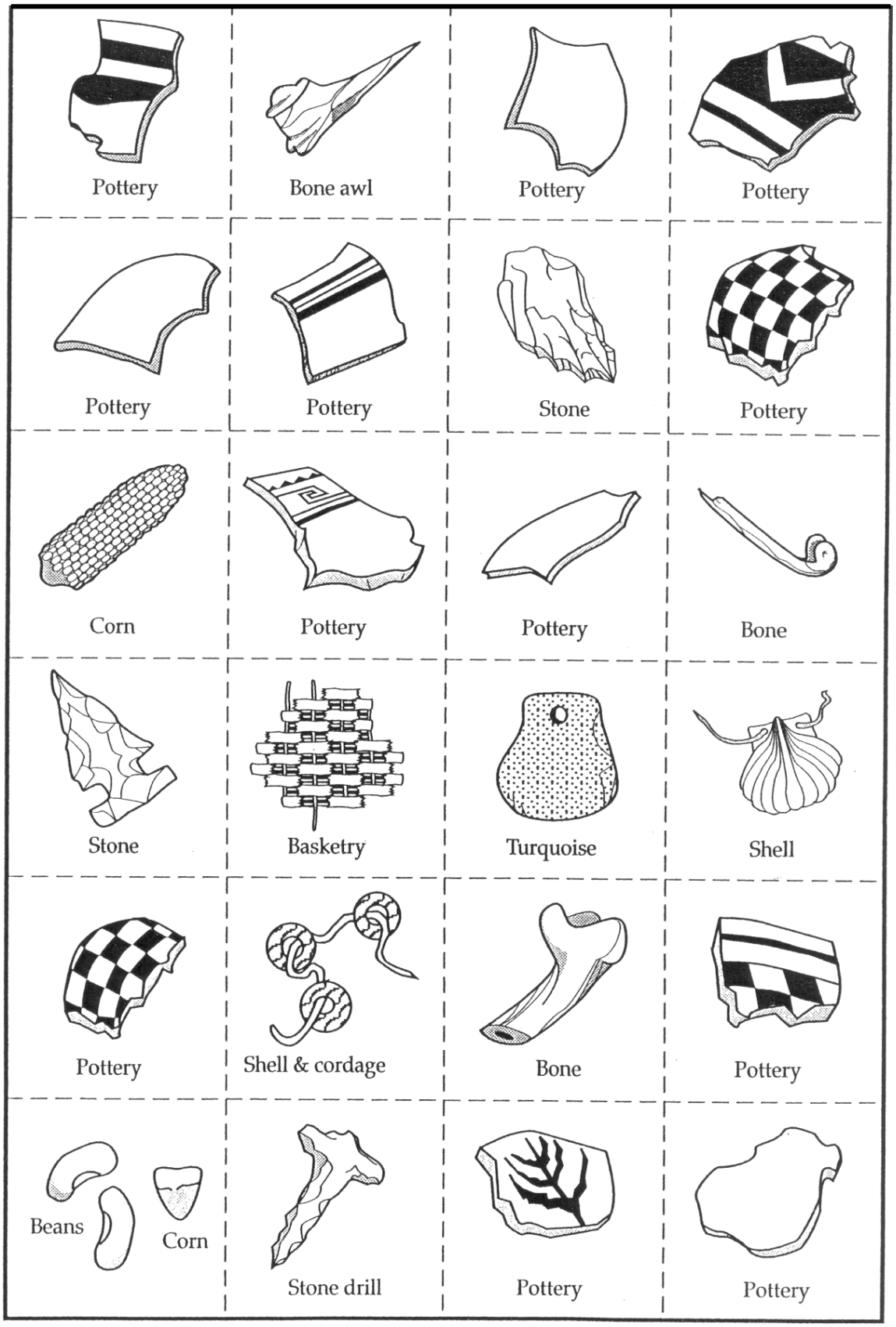
6. Distribute the "Ancient Artifacts" and "Classification" activity sheets. Working individually or in small groups, have participants cut out the artifacts on the "Ancient Artifacts" activity sheet. They can then group the artifacts to answer the questions on the "Classification" activity sheet. As they work, participants will find that objects fit more than one category, depending on the question asked. For example, the two pieces of shell could answer questions about diet and adornment so they could be classified as both food remains and as jewelry.
7. Have the group share their classifications with each other and explain their choices.
8. Have participants come up with one or more questions of their own about the artifacts. How might they classify their objects to answer these questions?

Classification activity sheet answers

a. corn, beans, meat, and shellfish
b. turquoise and shell
c. checkerboard, lines, dots, shapes, and plain
d. bone, stone, plant fibers, shell, and clay

Lesson and activities adapted from
Intrigue of the Past / A Teacher's Activity Guide for Fourth through Seventh Grades
See bibliography for complete reference

Ancient Artifacts Activity Sheet



Name_____

Classification Activity Sheet

1. What did the site's residents eat?

2. What did they use for jewelry and other decorations?

3. Describe the different ways they decorated their pottery.

4. What raw materials did they use to make their tools?

Measuring Pots

Objectives:

- Participants will compute circumference from a section of a circle.
- Participants will construct analogies about possible functions of ancient ceramics.
- Participants will describe modern containers and their uses and consider what equivalent containers may have been used for these purposes in ancient times.

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1	1.P.1.1 1.L.1.3	2.P.1.1	3.P.1.1 3.E.1.2	4.S.1.1	5.P.1.1 5.S.1.1	6.N.2.1 6.S.1.1

South Dakota Mathematics Standards

K	1st	2nd	3rd	4th	5th	6th
K.A.2.1 K.A.4.2 K.M.1.4	1.A.2.1 1.G.1.1 1.M.1.5 1.M.1.6 1.S.1.2	2.A.2.1 2.A.4.2 2.M.1.5 2.M.1.6 2.N.1.2 2.S.1.1	3.M.1.4 3.M.1.5 3.S.2.1	4.M.1.3 4.M.1.4 4.N.3.1 4.S.2.1	5.A.3.2 5.M.1.4 5.N.3.1 5.S.2.1	6.M.1.1 6.M.1.2 6.S.2.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.LVS.1.6	1.LVS.1.6	2.LVS.1.4 2.LVS.1.6	3.LVS.1.1	4.LVS.1.1 4.LVS.1.2	5.LVS.1.1 5.LVS.1.2 5.LVS.1.3	6.LVS.1.3

Timeframe: 45-60 minutes

Materials:

Included in kit
"Broken Pots" activity sheet
Bag of Rim Sherds
5 geometric compasses
tracing paper

Provided by instructor or participants
Ruler or yardstick
string
drawing paper

Background Information:

One of the more common types of artifacts archaeologists find in both prehistoric and historic sites is pottery. Fired clay vessels will last for thousands of years, even if they are lying on the ground surface. Because styles were distinctive to particular groups of people and changed over time, pottery helps archaeologists determine how old a site is, and which group of people lived there. Archaeologists also want to know what certain pottery vessels might have been used for, i.e. cooking, serving, or storing food or other substances.

Because pots are most often found broken into hundreds of pieces (sherds) it is a tedious, and often impossible job to glue them all back together. One quick way to get an idea of how large a pot was is

to calculate its original circumference. A pot's rim sherd will indicate how large the opening in the pot was. If enough of a pot is present, it is possible to calculate its volume, or storage capacity. Many clues about how a group of people lived can be gained by studying vessel sizes and shapes. Knowing the storage capacity of vessels lets archaeologists figure out how much stored food people had and estimate how many people lived at a site. Functions of different sizes of pottery can also be determined. A small-necked vessel probably stored liquids or very small seeds, rather than large seeds. Large open vessels, such as bowls, probably weren't used for storage, since they would be difficult to seal from moisture, rodents and insects. In this activity participants will determine the circumference of containers based on rim sherds. They will also consider containers we use today, and determine what kind of vessels might have been used in earlier times for the same purposes.

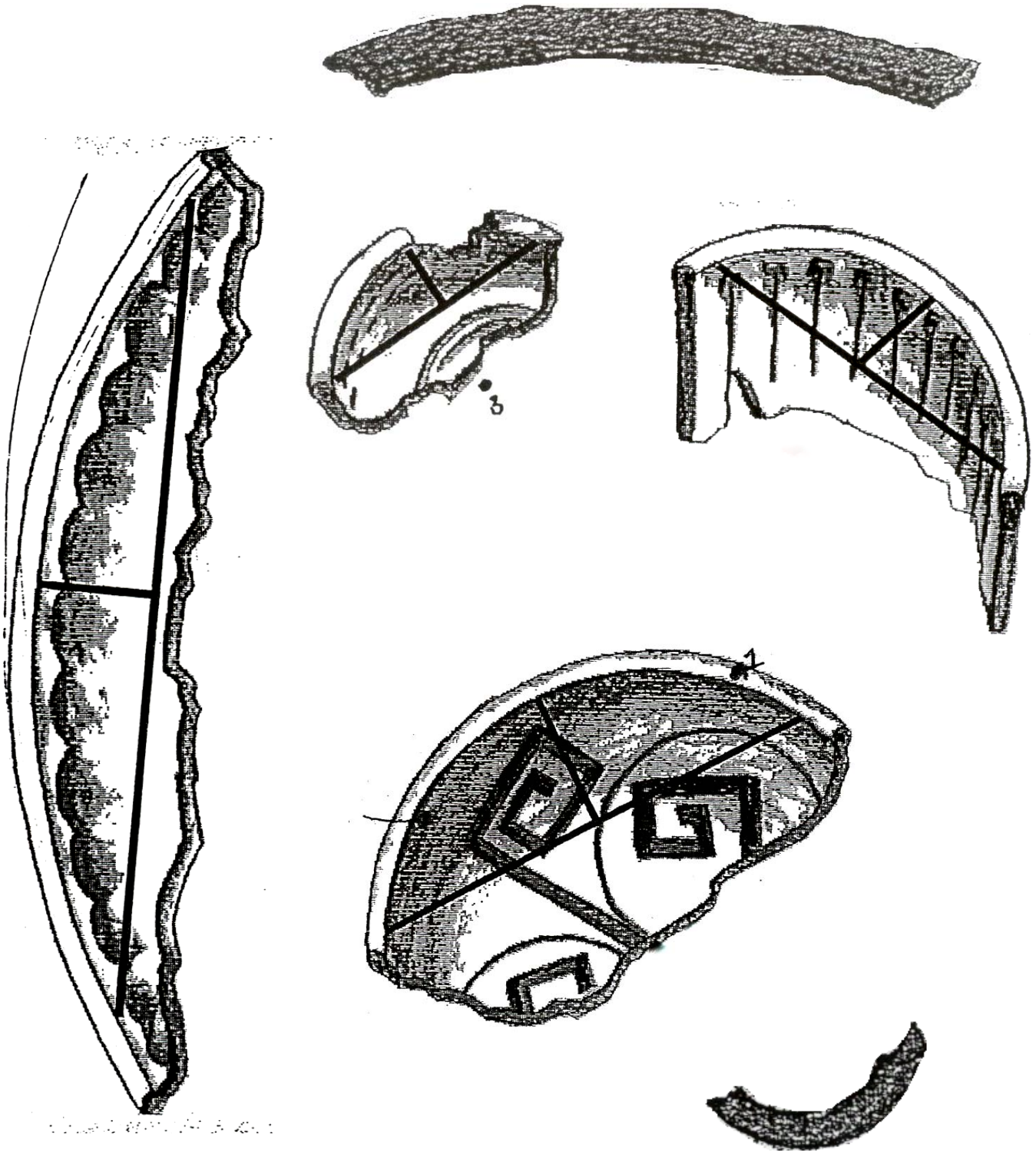
Activity Steps:

1. Share the background information about why archaeologists study prehistoric ceramics and how they use the information to study the lifeways of past people. Include a short discussion on how different sized and shaped vessels are used for different purposes. Have participants consider some questions that archaeologists might ask about the sherds such as "How big were the pots from which these sherds came?" How would they find out?
2. Break the group into five smaller groups. Distribute copies of the "Broken Pots" handout to each group. Have them trace the outlines of the fragments onto tracing paper. Using a compass, have them experiment with different arcs until they find the one that matches the curve of each fragment. Draw the rest of the circle for each fragment.
3. After the circles are drawn, have participants lay a string out on the circle, making sure it is long enough to go around the entire circle. Cut the string the size of the circle. You should now have a length of string that corresponds to the circumference of the circle. Use a ruler or yardstick to measure the length of string. Record this circumference to the nearest 1/8 of an inch. Repeat this procedure 1-2 times to ensure the measurements are accurate.
4. Have the participants trace around the rim sherds from the bag in the kit and follow the same procedure to find the circumference of those sherds.
5. Ask the students:
   Gather the five smaller groups together and have the participants discuss the following: Describe the different shapes and sizes of vessels in their kitchens. Write the descriptions or draw pictures of the vessels on the board. Are vessels of different shapes used for different purposes or occasions? Give examples. Are vessels of different sizes used for different purposes or occasions? Give examples. How might archaeologists interpret the presence of vessels of variable sizes and shapes in an archaeological site? Summarize the reasons why archaeologists compute the circumference of ancient pottery vessels.

Extension:
With older students, have them compute circumference using the standard formula $C=2\pi r$. Find the radius by drawing a line from one side of the circle to the circle's center point. Measure this line with a ruler to determine the radius. Have $\pi = 3.14$. Once the circumferences have been determined using this formula, compare the amounts to those produced with the string method. Round all answers to 2 decimal places.

Lesson and activities adapted from
Intrigue of the Past / A Teacher's Activity Guide for Fourth through Seventh Grades and
Archaeology for Kids: Uncovering the Mysteries of our Past, 1st ed
See bibliography for complete references

Broken Pots Activity Sheet



Communication through Images

Objectives:

- Participants will create a petroglyph and a rock art panel.
- Participants will consider the consequences of vandalizing rock art.
- Participants will discuss ways to protect rock art and other archaeological sites.

South Dakota Social Studies Standards

K	1st	2nd	3rd	4th	5th	6th
	1.C.2.2	2.C.1.2 2.E.1.1	3.W.1.1	4.C.2.1	5.US.1.1	6.W.1.1 6.E.1.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.LVS.1.6 K.LVS.1.7	1.LVS.1.6	2.LVS.1.3 2.LVS.1.6	3.LVS.1.3 3.LVS.1.4	4.LVS.1.2 4.LVS.1.3	5.LVS.1.2	6.LVS.1.3

South Dakota Visual Art Standards

	K	1	2	3	4	5	6
Std. 3: Relationship of art and history/culture, benchmarks 1-3	X	X	X				
Std. 3: Relationship of art and history/culture, benchmarks 1 & 2				X	X	X	
Std. 3: Relationship of art and history/culture, benchmark 2							X

Timeframe: One or two 45-minute periods

Materials:

Included in kit
"Rock Art Symbols" master
Photograph of SD rock art
Photograph of vandalized rock art
"Protecting the Past: Things NOT to Do" master

Provided by instructor/participants
Roll of brown wrapping paper
Sheets of brown construction paper
White Chalk
Hair spray or other chalk fixative

Background Information:

'Rock art' consists of images and symbols drawn on or incised into the walls of caves, cliff walls, or boulders. Rock art is found all over the world, in virtually every culture, some as old as 30,000 years, from the time of the last Ice Age. America is fortunate to have many fine examples of rock art, part of our rich archaeological heritage. This heritage is threatened by people who vandalize rock art. Collecting artifacts, digging sites, and defacing rock art and other ruins destroys data, the evidence of people who lived here before us. Sites are very fragile, and one person with a shovel can destroy hundreds of years of prehistory. When this happens we and future generations are robbed of the chance to learn about the past. Disturbing and vandalizing sites also attacks the cultural heritage of Native Americans. These sites are the burial grounds, homes, and sacred places of their ancestors. Archaeological sites can represent part of their spiritual and cultural legacy. To destroy or deface these places is like someone vandalizing your home, church, or cemetery. People who vandalize and destroy sites steal from all of us the opportunity to appreciate and understand other cultures. In this

activity, participants will create their own rock art and examine their feelings about having such art defaced or destroyed.

Activity Steps:

1. Give a copy of the "Rock Art Symbols" handout to the participants, along with a sheet of brown construction paper and a piece of white chalk. Give them time to observe and talk with each other about the symbols. Explain that they will be using symbols to make an artwork which resembles petroglyphs. They will also be making a rock art panel as a group.
2. Have the students draw their own petroglyphs on the construction paper. This can be a single picture or series of pictures that tell a story. They do not have to be exactly like the images on the handout, but can be individual creations in the same style. However, the picture is limited to the size of the construction paper. When they are done, spray each picture with the hair spray or fixative to set the chalk and keep it from smearing. Have the participants share with the group what their rock art symbol means.
3. Lay the roll of brown paper on a table or floor. After participants have completed their own "petroglyph" let them make a petroglyph on the paper roll. Space them a few feet apart, and have small groups work at a time. When everyone has added to the brown paper roll, spray it with hair spray to set the chalk. Exhibit the "rock art panel" in the classroom or hallway.
4. After the panel has been displayed for a while bring it into the classroom and ask "How would you feel if I were to write my name over the rock art panel? Would that harm it?" Connect their feelings about their rock art being damaged to how Native Americans, archaeologists, and the public might feel when they see vandalized sites. Show them the photo of vandalized rock art. Have them brainstorm solutions for repairing the damage and preventing future vandalism. Give each participant a copy of the "Protecting the Past: Things Not to Do" handout and talk about why these are important rules to follow for protecting rock art.

References:

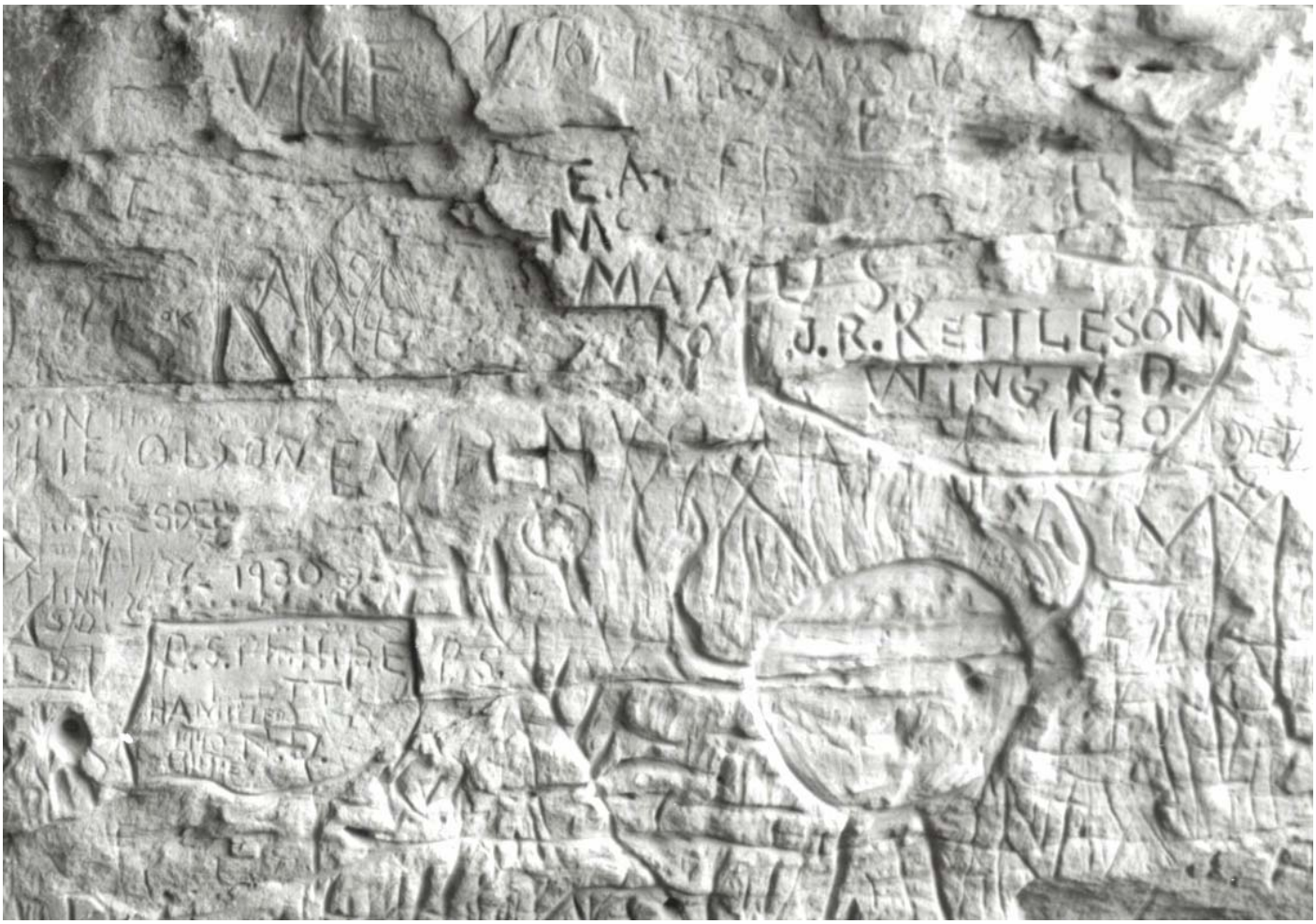
Hurst, Winston B., and Joe Pachak, 1989, Spirit Windows: Native American Rock Art Southeastern Utah. Edge of the Cedars Museum. Blanding, Utah.

Lesson and activities adapted from
Intrigue of the Past / A Teacher's Activity Guide for Fourth through Seventh Grades
See bibliography for complete reference

Rock Art Symbols

Rock Art Photograph
(South Dakota)

Defaced Rock Art
(South Dakota)



Protecting the Past: Things *Not* to Do

1. Touching rock art with your hands can harm it.

2. Making paper rubbings or tracings may crumble the rock art.

3. Making latex molds of rock art should only be done by professionals if the rock art is going to be destroyed by construction or development.

4. Building fires nearby can cause serious damage from smoke and high temperatures.

5. Taking it home. Some selfish people steal rock art by using rock saws and chisels.

6. Chalking is harmful to the rock art, and makes it impossible to use new methods of dating the figures.

7. Repecking or repainting a difficult-to-see image doesn't restore it, but rather destroys the original.

8. Defacement. Insensitive people often paint their names over rock art, or shoot bullets at it. Defacement is a sign of disrespect for other cultures.

9. Tunnel vision. People like rock art so much, they often forget to watch where they are walking and may trample or damage important artifacts.

10. Removal or rearrangement of artifacts destroys archaeological data. Artifacts should be left where they are found. While it is okay to pick up and look at most artifacts, you should not make piles of artifacts at the site or take them home.

11. Disturbance of the ground. Any digging at an archaeological site is not allowed. Even too many visitors walking around may damage an archaeological site. Visitors should tread as lightly as possible, especially on loose slopes and under rock overhangs. Driving off of designated roads may also damage archaeological sites.

(Adapted from Hurst and Pachak, 1989, pp.25-26.)

Stone Tools

Objectives:

- Participants will identify various stone tools and speculate on what each was used for.
- Participants will develop theories on how each tool was made.
- Participants will determine what makes each tool effective in certain tasks and inferior in others.
- Participants will compare stone tools and contemporary tools that serve the same function.

South Dakota Social Studies Standards

K	1st	2nd	3rd	4th	5th	6th
K.E.1.2		2.US.1.2 2.E.1.1	3.E.1.1		5.US.1.1 5.US.1.4	6.W.1.1 6.W.2.1 6.C.2.1 6.E.1.1

South Dakota Science Standards

K	1st	2nd	3rd	4th	5th	6th
K.P.1.1	1.P.1.1 1.L.1.3	2.P.1.1	3.P.1.1 3.E.1.2	4.S.1.1	5.P.1.1 5.P.2.2	6.N.2.1

South Dakota Communication Arts Standards

K	1st	2nd	3rd	4th	5th	6th
K.W.1.1 K.LVS.1.1 K.LVS.1.6	1.W.1.1 1.W.1.2 1.LVS.1.6	2.W.1.3 2.LVS.1.4 2.LVS.1.6	3.LVS.1.1 3.LVS.1.2	4.W.1.2 4.LVS.1.2	5.W.1.1 5.LVS.1.1 5.LVS.1.3	6.LVS.1.2 6.LVS.1.3

Timeframe: 45-60 minutes

Materials:

Included in kit
Stone Tools Activity Sheet
hammerstone
mano & metate
stone knife (boxed)

Provided by instructor or participants
Unshelled peanuts
dried corn kernels
Unshelled sunflower seeds

Background Information:

For thousands and thousands of years, our ancestors used tools made from stones they found lying around their campsites. At first, they simply used the stones as they found them but as they learned through their experiences, they began to change the shape of the stones by striking them against other stones. They discovered that tools of a certain shape and size were good for specific tasks. In this activity, participants will use stone tools to do a variety of jobs and compare the stone tools to modern tools that have the same function.

Activity Steps:

1. Take the group to a parking lot or playground with a hard concrete or asphalt surface. Bring the stone hammer, the mano and metate, the boxed stone knife, the peanuts, corn and sunflowers, along with copies of the Stone Tools Activity Sheet. Have the group imagine that they are prehistoric people that use stone tools to make their lives easier and more efficient.
2. Lay the stone tools on the ground in front of the group. Examine each tool and have the group guess how it was made and predict what it might be used for.
3. Break the large group into smaller groups. Put some peanuts, corn, and sunflower seeds next to the stone hammer and mano and metate. Have each small group try cracking a peanut shell, grinding the corn, and cracking sunflower seeds with the stone tools and rate the tools' performance during each task by placing an A, C, or F in the appropriate column on the "Stone Tools " handout.
4. Pass the boxed stone knife around to the participants (keep it in the box because it is very sharp.) Have them think about what jobs the stone knife could do in prehistoric times.
5. After all the participants have tried all of the stone tools, discuss what contemporary tools are similar to each of the stone tools. How are they similar to, and different from, the stone tools? What characteristics does each tool have that makes it effective in performing its functions, i.e. heavy, rough surface, sharp edge, etc. Record answers in Section 2 of the Stone Tools Activity Sheet.

Extensions:

1. Discuss what tools might look like in the future. Have participants use their imagination and design either a cutting tool, crushing tool, or grinding tool and present their design to the class.
2. Some people believe that tools are not made as well as they used to be. To prove or disprove this claim, have participants crack peanuts, grind corn, and crack sunflower seeds with modern tools to see if they are indeed an improvement over the stone tools.

Lesson and activities adapted from
Archaeology for Kids: Uncovering the Mysteries of our Past, 1st ed
See bibliography for complete reference

Stone Tools Activity Sheet

Name_____

Section 1: Rate the performance of each tool doing the task listed in each column

A = Good C = Average F = Poor

Stone Tool Performance			
	Grinding Corn	Cracking Peanuts	Shelling Sunflower Seeds
Hammerstone			
Mano & Metate			

Section 2: Compare stone tools with current tools
What current tools are similar to:

A hammerstone

A mano & metate

A stone knife

From the current tools listed above, list how is each tool similar to, or different from:

	Similar	Different
Hammerstone		
Mano & metate		
Stone knife		

What characteristics of both the stone and current tools make them good for certain jobs?