The Sandal and the Cave Presentation Study Guide

This study guide was made possible through a National Leadership Grant awarded by the Institute of Museum and Library Services. From 2003 to 2006 the University of Oregon Museum of Natural and Cultural History and University Libraries digitally archived nine presentations of Oregon’s sights and sounds onto DVD format. Local archivist and former University of Oregon Audiovisual Center director, Don L. Hunter, created the original presentations.

For more information about this archive project please visit our website:
http://natural-history.uoregon.edu/Pages/projects.html

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MAIN THEMES

• Early human settlement in Oregon’s Great Basin and High Desert regions.
• Relationship between environment and culture.
• Archaeological documentation and preservation processes.
Pioneering Oregon archaeologist Luther Cressman was instrumental in changing historical views of Native peoples of Oregon’s Great Basin region. One of Cressman’s important finds, made in 1938, was the world’s oldest shoes. The shoes (sandals) have been dated to be roughly 10,000 years old. The sandals were made of woven sage brush bark in the “Fort Rock Style”. Other artifacts from the ancient past - baskets, nets, weapons for hunting, and musical instruments maximized the productivity of the scarce desert resources. Early archaeologists took particular interest in Fort Rock Cave, and other protected sites where fragile fiber artifacts were preserved in the dry deposits.

To learn more about these caves archaeologists:
- Surveyed and mapped each site.
- Studied the surroundings.
- Excavated the cave itself.
- Made use of dating processes to estimate the ages of artifacts, rocks, and fossils.

Archaeologists initially believed that Oregon’s High Desert region was an unlikely place to find early human settlement because of its harsh landscapes. This view was overturned with Cressman’s research at the Fort Rock site in 1938.

**DVD (The Sandal and the Cave DVD is divided into the following chapters)**

1. Introduction to the Great Basin and Catlow Cave (00:00 – 04:52)
2. Dr. Luther Cressman and New Archaeological Theories of Oregon’s History (04:53 – 06:48)
3. Luther Cressman Recalls his Finding Catlow Cave and Regional Petroglyphs (06:49 – 09:18)
4. Catlow Cave’s Archaeological Discoveries (09:24 – 13:41)
### Questions for Further Discussion

1. Think of your 5 favorite items from home. How do you think those items will be preserved over time? Will they be preserved? Why or why not? One hundred years from now, what would your items tell someone about your interests and your daily life?

2. In *The Sandal and the Cave* presentation, Luther Cressman imagined what the owner of the flute (the artifact found in the Great Basin region) would be like. What made him come to think that?

3. Students can research archaeological stewardship and discuss: In what ways does archaeological site vandalism disturb and destroy the knowledge an archaeologist gathers? Do you think that an archaeologist also disturbs and destroys the evidence of past human cultures when they excavate a site? Are there any ways to minimize this damage?

4. What archaeological techniques was Luther Cressman able to use in his research? How did these techniques build upon research before Cressman’s time, and how does today’s research build upon Cressman’s? How did Cressman establish a foundation of archaeological stewardship for Oregon’s Great Basin Region?

5. Have the students visit the Museum of Natural and Cultural History and talk with an expert about: How were the cultures of the Great Basin area of Oregon spread throughout the region? Has their style of weaving been used in other areas? Are there other economic or cultural factors of influence found today that have been inherited from Great Basin cultures? (Or visit our Web site for additional Web resources on the Great Basin region.)

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### Suggested Activities (After viewing the DVD you might want to try these activities)

- **Scientific Illustration & Observational Learning Activity**—Have students use observation skills to draw an “artifact” and develop a hypothesis about who owned and/or made it and what it was used for. (The SCIENTIFIC ILLUSTRATION ACTIVITY can be found on this DVD)
- Have students research the Steen’s Mountain Prehistory Project. Is there anything students can do to help preserve this area?
- As a class watch a professional archaeological dig. Talk to local archaeologists to find a location.
- Have students research weaving techniques. Then do an activity where you weave baskets in a certain twining style.
- Have students research the eruption of Mt. Mazama and how it contributing to archaeological dating techniques?
- As a class do an art and/or history project involving petroglyphs.
- Have students write an essay answering one of the questions in the Questions for Further Discussion section.

### When looking at artifacts:

- **What is it?**
- **How old is it?**
- **Where was it found?**
- **How was it used?**

Come to the museum to find out!
GLOSSARY

Archaeology: Method of studying human cultures that includes the theories and practices of identifying, recovering, interpreting, and explaining physical evidence of the human past.

Archaeological Feature: Patterns left in the soil from human activity that cannot be removed intact from an archaeological site, such as burned soil from a fire hearth, or traces of excavated house floors or irrigation ditches (compare with artifacts that can be removed from a site).

Artifacts: Any object made, modified, or used by humans, as opposed to a naturally-occurring object. Archaeologists use artifacts to assist in learning about behaviors and lifestyles of past human populations. Examples include an Atlatl, obsidian projectile points, and Olivella shell beads. Artifacts are portable objects (compare with archaeological features that cannot be removed from a site).

Archaeological Dating Techniques:

Blood Residue Sampling Other important dating techniques...teaching chemistry, physics and kids love all the blood stuff.

The use of DNA: I realize these were not used for Sandal and the Cave, however, they are an important part of understanding modern archaeology. Somewhere it should be said that this is an ever-evolving science and much has happened since this slide show was made in the late 1970s, early 1980s. These were techniques not available to Cressman, but are part of the evolving scientific process of archaeology.

Obsidian Hydration: A relative dating technique used for obsidian artifacts, based on the thickness of the rind formed by microscopic water absorbed on the artifact surface (the thicker the rind, the older the artifact).

Radiocarbon dating: A technique used to measure the length of time since the death of a once-living organism, based on the known decay rate of radioactive carbon isotopes (14C).

Stratigraphy: The structure produced by the deposition of geological or cultural sediment in layers (or strata).

Typological Cross-dating: The temporal ordering of artifacts based on the assumption that cultural styles change over time, and that particular styles (or types) can be associated with certain time periods.
Archaeological Excavation: The careful and systematic documentation, removal, and study of materials directed toward recovering information about past materials at an archaeological site.

The following is a basic excavation procedure;

Pre-exavation:
1) Consult with landowners and other affected parties (such as Native peoples), examine the soil, determine the number of people needed.

Excavation
1) survey the site by measuring distances, directions, and angles;
2) establish a grid of squares.
3) remove soil from each square using brushes and specialized equipment.
3) record the position of artifacts and archaeological features, to create a permanent record of the site.

Post-excavation
1) The site is then returned back to, as close as possible, its original state. This is an important aspect of an archaeologist’s role as steward of the site.
2) It is important to note that excavation is only a small part of the overall archaeological process. More time is spent formulating questions, researching possible answers, developing and testing hypotheses, and reporting the results (see Ethnography and Past Lifeways). As such the actual “digging” is small, and sometimes unnecessary, element of the process.

Environmental Impact: The ways in which environmental events change the patterns of human populations. Examples include: rain or drought periods that influence the growth of food plants, or volcanic explosions that destroy or displace people.

Example: Mt. Mazama, in Oregon, erupted 7,500 years ago and created the Crater Lake caldera. With its ash distribution, lava flows, and other volcanic effects, the Mt. Mazama eruption had a huge impact on the human populations of what is now central-Oregon, One lasting effect was that the large amount of ash created a distinct layer across the landscape, which archaeologists can use to estimate the age of adjacent soil layers, and the cultural objects found within them.

Ethnography: Research that focuses on communities of people in their own environment. Ethnographic studies are a combination of descriptive and interpretive processes:

Descriptive = documenting a group’s lifestyles, values, and beliefs.
Interpretive = determining the meaning and purpose of behavior within the observed context.

Archaeologists often use ethnographic studies to understand and interpret archaeological sites, especially in cases where lifeways of the people being studied are not familiar to the archaeologist; for example, it is sometimes more useful for an archaeologist (accustomed to getting food at a grocery store) to study hunting societies, if he or she is investigating a hunting camp.
Glossary

Great Basin/High Desert: Fifteen thousand years ago, toward the end of the last Ice Age, lakes covering most of present-day Nevada and parts of California, Oregon, and Idaho began to dry up. Left behind was a vast, arid, and high-elevation basin known as the Great Basin High Desert ecoregion. Today this region is an arid desert. In times past, when weather patterns brought more precipitation, these basins filled with water, and a created rich, well-watered landscape.

Past Lifeways: Beyond the scientific analysis and dating of objects and sites, archaeologists serve as cultural historians. By creating an interpretative ethnography of past human populations, archaeologists learn about the ways peoples of the past lived, and attempt to write a history where no written history exists. After determining “When did these people live?”, the question becomes “How did the people live, and what was daily life like?

Petroglyph: Design chiseled or chipped into a rock surface.

Pictograph: A design painted onto a rock surface.

Stewardship needs to be mentioned, as care of these objects and the environment they were found in is very important to all, but especially to young people.

Strata: Layers of earth, such as sand, clay, volcanic ash, and gravel. Strata are deposited one on top of another, so that older layers are deeper. The position of a stratum relative to other layers provides a clue to the relative age of artifacts and features within.

Typological Cross-dating: The chronological ordering of artifacts based on the assumption that cultural styles change over time, and that particular styles (or types) of artifacts can be associated with certain time periods.

Woven Artifacts: Many prehistoric artifacts, such as baskets and shoes, were woven out of plant materials such as sagebrush bark, wetland rushes, grasses, and hemp. The most common technique used in the Northern Great Basin was twining. In other areas of the Far West coiling and plaiting were more commonly used.
<table>
<thead>
<tr>
<th>Sample Selected Standards (from Oregon Department of Education)</th>
<th>Category</th>
<th>Grade Level</th>
<th>Where found</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Create, present, and/or perform a work of art, selecting, using, and combining artistic elements and technical skills to achieve desired effect.</td>
<td>Art</td>
<td>8, 10</td>
<td>Scientific Drawing Activity Activity Part 1 Steps 2-5</td>
</tr>
<tr>
<td>2. Identify and give examples of economic, cultural, and environmental factors that influence population.</td>
<td>Geography</td>
<td>8, 10</td>
<td>Scientific Drawing Activity Activity Part 3 and Discussion Question 1</td>
</tr>
<tr>
<td>3. Predict the affect of a given economic, cultural, or environmental change on a population.</td>
<td>Geography</td>
<td>8, 10</td>
<td>Scientific Drawing Activity Activity Part 3 and Discussion Question 1</td>
</tr>
<tr>
<td>4. Understand how changes in a physical environment affect human activity.</td>
<td>Geography</td>
<td>8</td>
<td></td>
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<tr>
<td>5. Identify and give examples of changes in a physical environment, and evaluate their impact on human activity in the environment.</td>
<td>Historical Skills</td>
<td>10</td>
<td></td>
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<tr>
<td>6. Evaluate data within the context it was created, testing its reliability, credibility, and bias.</td>
<td>Historical Skills</td>
<td>8</td>
<td>Scientific Drawing Activity Activity Part 3 and Discussion Questions 1, 3, 4, &amp; 6</td>
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<tr>
<td>7. Compare and contrast historical interpretations.</td>
<td>Historical Skills</td>
<td>8</td>
<td>Scientific Drawing Activity Activity Part 3 and Discussion Questions 1, 3, &amp; 6</td>
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<tr>
<td>8. Interpret the relationship of events occurring over time.</td>
<td>Historical Skills</td>
<td>10</td>
<td></td>
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