

# Cave Whisperers

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## **GRADE LEVEL**

Upper elementary through high school students

## **LEARNING GOALS**

Students will learn:

- Cave archaeologists explore caves to find and study their sites.
- Cave archaeologists answer questions about a culture by studying artifacts found in caves.
- Cave archaeologists use the scientific method to study, categorize, and interpret archaeological sites.
- Scientists use observation and inference skills to interpret sites.
- Cave archaeologists work with other cave scientists to share data and solve problems together.

What students will do:

- Explore cave passages to discover an archaeological site(s).
- Document the site through illustrations and observations.
- Develop and record their hypotheses for the artifacts and culture.
- Compare their data with others and revise their findings accordingly.
- Compile a list of findings and unanswered questions.
- Develop one question for further research.

Students will indicate their understanding of these concepts by recording their observations, interpretations, and comparing their data to others. They will also generate a list of conclusions and questions that require further research. For younger students, the site should be simple, and for more advanced students, more complex.

## **TIME REQUIREMENTS**

Various. 1-5 class periods. It can take more time to prepare for this lesson than it takes to conduct it because you will need to create a cave fort. However, once you build your cave fort, you can use it for multiple lessons. The more detailed you develop your learning fort, the longer it will take to prepare the classroom. Once the archaeological site is ready, depending on the site's complexity, give students ample time to explore, observe, analyze, and present their data.

## **BACKGROUND INFORMATION**

Cave archaeologists study the ancient creations and discarded items found in caves! Cave explorers often find sherds, points, stoke marks, pottery, old tools, old shoes, bones, and lost or discarded objects of all kinds, and then contact an archaeologist to document the site. Sometimes ancient explorers simply lost or discarded their things in caves. However, materials theorized as intentionally left in caves are called "votive" items. Votive items can include figurines, pottery, jewelry or different rock art types like pictographs, petroglyphs, and mud glyphs. It is more common for cave archaeologists to find whole, well-preserved artifacts and rock art than surface archaeologists will discover, because caves are not subjected to the same weathering processes and are not as well-traveled. This difference makes caves very important for archaeological discoveries. Intact art and pottery have helped scientists to get a better picture of ancient cultures. Students should understand that buried gold and jewels do not occur in caves. The treasure in caves is the knowledge we gain from these items, which happens when archaeologists find them completely undisturbed and untouched.

Artifacts whisper their secrets as clues to scientists. Sites and artifacts are analyzed and interpreted. The interpretations give us a glimpse into how and why people used caves in the past. Artifacts found in caves can tell us about site population, occupations, activities, diet, travel and trade routes, the environment, and much

more. Archaeological discoveries and studies show that humankind's history intertwines with caves. Caves have served humanity as places to create, discover, worship, shelter, and recreate.

Many cultures, past and present, have a concept of an underworld. Cave entrances serve as doorways between the surface and subsurface, playing critical roles in dozens of religions' stories. Caves preserve many of these stories. Caves are humanity's first books. Their walls serve as pages on which humankind's oldest stories were drawn or carved. Epic hunts, creation myths, and political rituals have graced cave walls for thousands of years. Between these stone pages, on cave floors, cave archaeologists found humanity's first sculptures. Today, culturally significant art and artifacts have been replaced sadly by graffiti and trash. NCKRI's *Be A Cave Steward* is a great follow-up lesson for students to learn the importance of protecting these incredible places, so they may continue to whisper their secrets to future scientists.

A few notable cave archaeology discoveries;

[Humans in North America much earlier than thought](#)

[Chiquihuite Cave](#)

[Mayan Culture Clues](#)

[Sulawesi Cave \(oldest paintings\)](#)

[Lascaux Cave](#)

## **SITE PREPARATION MATERIALS AND SUGGESTIONS**

### **TURN YOUR CLASSROOM INTO A CAVE**

Kids of all ages love forts. For this lesson, you will need to turn your classroom into a large fort/cave. You can use many different methods, from turning the furniture in your classroom into passageways and then covering it with craft paper or fabric, using a fort building kit, inflatable forts, to connecting tents and crawl tubes. Be sure to set up your fort as a cave in a way that will keep kids safe and give them room to explore. The more creatively you design your cave, the more engaged students will be in the learning activities.

#### **Set-up**

Brown craft paper/or fabric, cave decorations (foam stalagmites and stalactites, paper mâché rocks), tape, tempera paint, flashlights, batteries, and objects (various items that would indicate a particular "culture"), science journals, pencils, measuring tape, camera.

#### **Clean-up**

Soap, water, paper towels.

#### **Preparation:**

Convert your learning space (classroom, outdoor classroom, library, gym, etc.) into a cave.

If you are looking for lessons across the curriculum, your art teacher may be willing to have students create cave decorations or to teach Group A, The Cave Whisperers. They will complete NCKRI's *Cave Rock Art* lesson, where the students will develop a message for another group through pictographs, petroglyphs, footprints, and other artifacts. They will then "decorate" your cave to tell this story. Group B, the Cave Archaeologists, will then explore the cave, study the site, and determine the message that was left behind for Group C, Future Generation, to complete *Be a Cave Steward*, which will address alteration, damage, or destruction of a cave.

You should collect or manufacture objects to suit the story you have in mind, compiling enough pieces for all the student groups to analyze. The diversity of items will allow students to infer what areas the items came from, how many people were using the cave, and why.

- Develop your cave fort for students to explore.
- Create pictographs/petroglyphs on the brown craft paper.
- Decorate the cave walls and floors with stalagmites, stalactites, and paper-mâché rocks.
- Place pictographs/petroglyphs and objects (artifacts) in a place or places for students to discover, observe, and analyze. For younger students, you can place all items together to indicate one culture. For older students, you could have different cultures represented and space rock art and artifacts accordingly.

Important notes:

Build the site to achieve the learning results you want for your students. One approach is to distribute objects to mirror the artifacts a cave archaeologist might find in rooms and passageways. Another method is to develop your own story of how the cave was used and distribute the objects accordingly. If you watch the video [Wolf River Cave](#), you will see the archaeologist point out different stoke marks from cane torches, cane torch fragments, and a firepit. Before seeing the footprints, these various artifacts tell a story of a group of ancient cave explorers reaching their destination. Many scientific papers are published on this discovery, the first significant paper documented the footprints and the second major paper determined how many people were there and if it was at the same time (some footprints left were of bare feet while some were wearing an ancient type of sandal). The question still remains as to why the people were there.

This lesson's most critical point is to allow students to mirror a cave archaeologist's behaviors and actions and practice with the scientific method. Too often, students think that a research study will conclude with a definite answer when, in reality, it frequently raises additional questions for research. Since cave research happens in small teams, students should be broken into groups from 4-6 and given a specific part of the cave to study.

A further note for how the cross-curriculum lessons would work together. Art students can develop a theme to decorate the cave with different types of rock art, footprints, etc., to give a particular message to the third group. A second group of students will work to study this site to determine the story for interpretation for the third group. A third set of students should paint over the original artwork and possibly destroy any footprints or items left on the floor, or move the items into different locations and positions to show how disturbing a site can lead to misinterpreting the purposes of those items in the cave. None of the groups should know the other groups are involved. At the end of the lesson, a group discussion would reveal the importance of the archaeological sites' stewardship and protection.

[NCKRI's YouTube Cave Archaeology Video playlist](#)

## **LEARNING ACTIVITY INSTRUCTIONS**

One day before, as a closing bell ringer, allow 10 minutes for students to watch [Footprints through time](#) and develop a journal entry to answer the question- The most exciting thing about being a cave archaeologist would be \_\_\_\_\_, because...

### **Day 1**

Depending on your cave fort's configuration or placement, you may want to have students line up in the hallway and begin your lesson there. You may also find it easier to start and end the class in an alternate place, like the library.

- Divide students into 4-6 member learning groups.
- Assign a section of the cave to a group for the study.
- Students should survey their site to document all artifacts and cave rock art in their section.

- Students assign one person as a "sketcher" to draw their section of cave passage (to scale if possible) while two students take measurements for the sketcher, and the fourth (fifth and sixth) person(s) document all artifacts found.
- Each student should sketch a picture of each artifact (including cave rock art) with measurements, and all observations, using proper content vocabulary.
- Students should work together to categorize the artifacts to make it easier to analyze and make sense of the materials. Students can develop as many different categories as necessary, for example:
  - Footprints: with or without shoes
  - Picture or signature and possible material (paint, charcoal, or ink)
  - Color: red, white, multi-colored
  - Type: food items, tools, lighting type
  - Theme: exploration, shelter, resource gathering
- Students should use the data and observations to develop their hypotheses and interpretations about the people who left the artifacts. Remember, when they return for their second visit, the site will be destroyed, damaged, or altered, so stress to the students, the better the documentation, the better their results. Allow students ample time to document their sites.
- Leave the site
- Students should understand the difference between observations and inferences. Instruct students to use their observations at the site and experiences with modern society to develop their own interpretation of the site. Each student should answer the following (allow for time to finish or assign as homework)
  - Who were the people?
  - What were they doing?
  - When were they there?
  - Where did they go inside the cave?
  - Why did they go into the cave?
  - How many people were there?
  - How old were they?
  - What gender were they?
  - How many inferences are based on modern cultural assumptions and personal bias that could be incorrect? (For example, does pink always = female? Blue always = male?)
  - What might be missing from the artifacts, and why?
- At the close of the class, you should tell students what to expect the next day. Students should be told they will work with their assigned group to visit the site one additional time. They will use this last visit as a way to verify their findings and develop a group presentation of their findings

## **Day 2**

In preparation, alter your site. If your set up will allow, students should not discover the differences until they arrive at the site with their groups. Give students 5 minutes at the site to document the differences before discussion with their groups. During group work, students should:

- Explain their process to determine the story of the cave whispers
- Summarize their observations
- Share their findings to the group
- Discuss how each group's findings fit together to tell the entire story
- Discuss if the changes were vandalism or disturbance by untrained visitors, and how it impacted their study

- Develop a group interpretation of the site for a group presentation.

Archaeologists revisit their findings and think again about what was found and what may be missing. Many times, archaeologists have revisited sites only to find them vandalized or artifacts once documented missing. At the end of this lesson, students should develop a reflective journal entry that summarizes how they felt documenting both a newly found site and an altered or vandalized site, as well as developing one idea that could have been implemented to prevent damage to the site.

If you develop the cave site with a story in mind, as a finale, you may decide to share or not to share it with your students. Archaeology is an interpretive science; on a real excavation, there would be no one around to tell the story of what the ancient explorers were doing and why. It is essential for students to understand there are no absolute right and wrong answers, as long as they use the data to back up their statements. You may have students develop reasonable interpretations for the site that are in complete opposition. This is OK; we can point to examples in science where this happens all the time, which usually indicates a further need for the study. These topics could make for interesting discussions about the scientific process.

Name \_\_\_\_\_

Date \_\_\_\_\_

## Cave Whispers Lab

Instructions: Visit the newly discovered cave whispers archaeological site. You should document the site with minimal impact. Observe and document the site without touching artifacts. Remember also to leave nothing but footprints.

Site Description:

Questions to Answer

- Who were the people?
- What were they doing?
- When were they there?
- Where did they go inside the cave?
- Why did they go into the cave?
- How many people were there?
- How old were they?
- What gender were they?
- How many inferences are based on cultural assumptions/personal bias that could be incorrect? (For example, does pink always = female? Blue always = male?)
- What might be missing from the artifacts, and why?

Observations:

## Hypothesis:

Who were the people?

What were they doing?

When were they there?

Where did they go inside the cave?

Why did they go into the cave?

How many people were there?

How old were they?

What gender were they?

How many inferences are based on modern cultural assumptions and personal bias that could be incorrect? (For example, does pink always = female? Blue always = male?)

What might be missing from the artifacts, and why?

## Your site interpretation:

## Cave Whispers Lab Rubric

Student/Group Members

<b>Category</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Content</b>	Shows a full understanding of the topic.	Shows a good understanding of the topic.	Shows a good understanding of parts of the topic.	Does not seem to understand the topic very well.
<b>Science Concepts</b>	Report illustrates an accurate and thorough understanding of scientific concepts underlying the project.	Report illustrates an accurate understanding of most scientific concepts underlying the project.	Report illustrates a limited understanding of scientific concepts underlying the project.	Report illustrates inaccurate understanding of scientific concepts underlying the project.
<b>Site Evaluation</b>	Demonstrates behaviors to suggest a full understanding of the fragility of site.	Demonstrates behaviors to suggest a good understanding of the fragility of site.	Demonstrates some behaviors to suggest a limited understanding of the fragility of site.	Demonstrates behaviors to suggest a lack understanding of the fragility of site.
<b>Data</b>	Professional looking and accurate representation of the site. Drawings are included as necessary and are well labeled.	Accurate representation of the site. Drawings are included with inconsistent or no labeling.	Accurate representation of the site in written form, but no drawings are included.	Data are not shown or are inaccurate.
<b>Hypothesis</b>	All questions are answered. Answers are clear and reasonable relating to the site.	Majority of questions are answered. Answers reasonable relating to the site and general knowledge.	Most questions are answered. Answers reflect a relationship between the site and general knowledge but appears to be based on flawed logic.	Minimal to no questions are answered.
<b>Interpretation</b>	Interpretation is logically based on the site and clearly written. The report is supported by the hypothesis, data, and knowledge gained from conducting the site study.	Interpretation is logically based on the site and includes some information from the hypothesis and data as well as what was learned during the study.	Interpretation is loosely based on the site but still includes what was learned from the experiment. Interpretation of the site is limited or not clearly written.	No interpretation is written or shows little to no effort and reflection.
<b>Group Conclusion</b>	Student/Group Members provided a detailed conclusion clearly based on the data and related to discussion of individual research findings.	Student/Group Members provided a somewhat detailed conclusion clearly based on the data and related to discussion and individual research findings.	Student/Group Members provided a conclusion with some reference to the data, discussion, and research findings.	No conclusion was apparent or important details were overlooked.
<b>Collaboration with Peers</b>	Almost always listens to, shares with, and supports the efforts of others in the group. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others in the group. Effort is given to work well with others.	Often listens to, shares with, and supports the efforts in the group but sometimes is not a good team member.	Rarely listens to, shares with and supports the effort of the group. Often is not a good team member.
<b>Presentation</b>	Presentation is 4-5 minutes long, organized, and delivered clearly at an appropriate volume.	Presentation is 3 minutes long, somewhat organized and appropriately delivered.	Presentation is 2-4 minutes long but is not well organized or appropriately delivered.	Presentation is less than 2 minutes or more than 5 minutes long.
<b>Listens to other Presentations</b>	Listens intently. Does not make distracting noises or movements.	Listens intently but demonstrates distracting noise or movement.	Sometimes does not appear to be listening but is not distracting.	Sometimes does not appear to be listening and has distracting noises or movements.

**Comments:**

**Total:** \_\_\_\_\_/40