

Pueblo Grande Museum and Archaeological Park Garbology (Study of Trash) Program

Skills

Analysis, application, synthesis, evaluation, team work, writing skills, verbal skills

Strategies

Scientific inquiry, problem solving, discussion, observation skills, research skills, team building

Subjects/Standards

Science Grade 4: S1C1-01, C2-01, 05, C3-01-05, C4-01-03, S2C1-01-02

Science Grade 5: S1C1-01,02, C2-01, C3-01-03, 05, C4-01-03, S2C2-01-02

Science Grade 6: S1C2-01, 05, C3-01-03, C4-01, S2C1-01, C2-01-03

Science Grade 7: S1C2-01, 05, C301-03, 05, C4-01, S2C1-01, 04, C2-01-02

Science Grade 8: S1C2-01, 05, C3-01-03, 05, C4-01-02, S2C1-01, 04, C2-02

* Can be tied into writing, reading and history/social studies standards as well.

Time needed

60 to 90 minutes

Size of class

12 to 40 students, teams of 3 or 4 students

Objectives

Using archaeological methods and inquiry to analyze garbage from different places the students will:

1. Demonstrate competence in applying the concepts of culture, context, classification, observation, and inference, and chronology; and
2. Explain how their study of garbage relates to the methods of archaeology, using archaeological terms.

Materials

Garbage bags filled with “trash” from various places: school, home, stores, work places, etc selected to represent different function; Activity sheets, pencils and white board to write down concepts.

Vocabulary

Artifact - any object made or used by humans

Chronology - an arrangement of events in the order in which they occurred.

Context - the relationship artifacts have to each other and the situation in which they are found.

Culture - the set of learned beliefs, values and behaviors generally shared by members of a society. "The way the members of a group of people think and believe and live, the tools they make, and the way they do things" (Braidwood, 1967, p. 30).

Evidence - data which are used to prove a point, or which clearly indicate a situation. I.E. "How do you know what you know."

Inference - a conclusion derived from observations

Midden - an area used for trash disposal

Observation -recognizing or noting a fact or occurrence.

Setting the Stage

Before you start evaluating the garbage you need to have questions that need to be answered; WHO, WHAT, WHY, WHEN, and WHERE questions. Behavioral questions, hypothesis, classification categories, accept or reject the hypothesis, make a behavioral inference.

All people generate trash and it tells a lot about us. What do you think trash can tell? Have people have always had a special place for trash?

Middens both prehistoric and today, Where are they? If a midden is disturbed and the layers mixed, it becomes impossible to interpret the lifeways of past people. Vandals looking for artifacts dig in middens and destroy irreplaceable information about the past.

Franz Boas, reportedly said "...man never lies to his garbage heap." What do you think your family's garbage could tell about you? (Size, income, values, preferred foods and activities).

Procedure

1. Review the concepts of culture, context, observation-inference, classification, and chronology.
2. Complete the Observation versus Inference worksheet of the Boy in the Water and the Chronology timeline of a student's life today. (Note: Setting the stage, and Procedures 1 and 2 could be part of a homework assignment or a class the previous day.)
3. Explain to the students that they are going to be archaeologists, analyzing garbage (middens) to learn about the people who threw it away. Demonstrate some of the

information that can be learned from garbage by examining a small amount of trash from the trash in the classroom.

- a. What culture is this garbage from? Could it be mistaken for that of another culture? Is the garbage the same as garbage in China, Russia, and Phoenix 100 years ago? Are basic human needs represented in the trash?
 - b. What can you infer about the behavior of the people who threw away the garbage and the origin of garbage based on your observations?
 - c. Arrange the trash in chronological order. On the bottom is the oldest trash, on top the most recent. Look for dated items, newspapers, envelopes, etc.
 - d. Sort the trash into piles based upon some kind of similarity. This is classification. Perhaps categories like paper, food containers, and office supplies.
 - e. The trash is obviously from _____ because _____.
4. Divide the class into teams of 3 or 4 students. Have them choose a recorder for the team and a team leader who will present the information to the class.
 5. Hand out the bags of garbage. As they are sorting through the garbage have them write down what is the item on top and what is on the bottom, taking notice of the stratigraphy of the garbage bag.
 6. Pass out the Garbage Chart and have the group pick out a few of the items in the bag to sketch the item, then make observations and inferences of them then answer the questions on It's in the Garbage worksheet as they are "excavating" their bag.
 7. Have the teams divide the garbage into classification categories. Pass out the Archaeological Inquiry form and have the group fill out the form based on their garbage.
 - 8.

Example of Archaeological Inquiry:

Behavioral Question	Is the owner of the desk a saver or someone who throws things away?
Hypothesis	If there is a large number of items not required for school work in the desk, then the owner is a saver.
Classification Categories	Items required for school work and items not required for school work.
Accept or Reject the Hypothesis	There is a greater quantity of items not required for school work than items required for school work, so I accept the hypothesis.
Make a behavioral Inference	The owner of the desk is a saver.

9. At the end have the team leader present the summary of the teams findings to the class.
10. Have the teams repack their bags.

Closure

Lead a discussion using the following questions:

1. As students make inferences about the use or purpose of their garbage ask; "What would the activity you are proposing (hypothesis) look like archaeologically and what artifacts would you expect to find if your hypothesis is correct?"

Concept: When archaeologists suspect certain behavior, they make a hypothesis about what it looked like. For example, could hypothesize that people butchered large game where it was killed and took the best parts back to the village. In excavating the village this would prove or disprove their hypothesis based on the animal bones present.

2. Does your study of your garbage tell you everything about American society? Why or Why not?

Concept: One sample is only a glimpse into a complex society – this is the same for archaeologists as they excavate a site.

3. Can the contents of your garbage change throughout the year? Or as a result of special events (birthdays, other people over for dinner)? What mistakes might an archaeologist make about your family if he/she studied only the garbage from special events?

Concept: Archaeologist studies multiple sites over long periods of time in order to reflect the range of activities of a society.

4. How would the results of your study be different if we had mixed your individual garbage bags all together into one giant pile?

Concept: Context would have been lost and only very general statements about the culture could be made.

Evaluation

Collect the students' activity sheets and reports.

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Vocabulary Worksheet

Artifact

Any object made or used by people.

Attribute

Characteristics or properties of an object such as size, color, or shape.

Classification

Systematic arrangement in groups or categories according to established criteria.

Context

The relationship artifacts have to each other and the situation in which they are found.

Data

Information; especially information organized for analysis.

Hypothesis

A proposed explanation accounting for a set of facts that can be tested by further investigation.

Inference

A conclusion derived from observations.

Observation

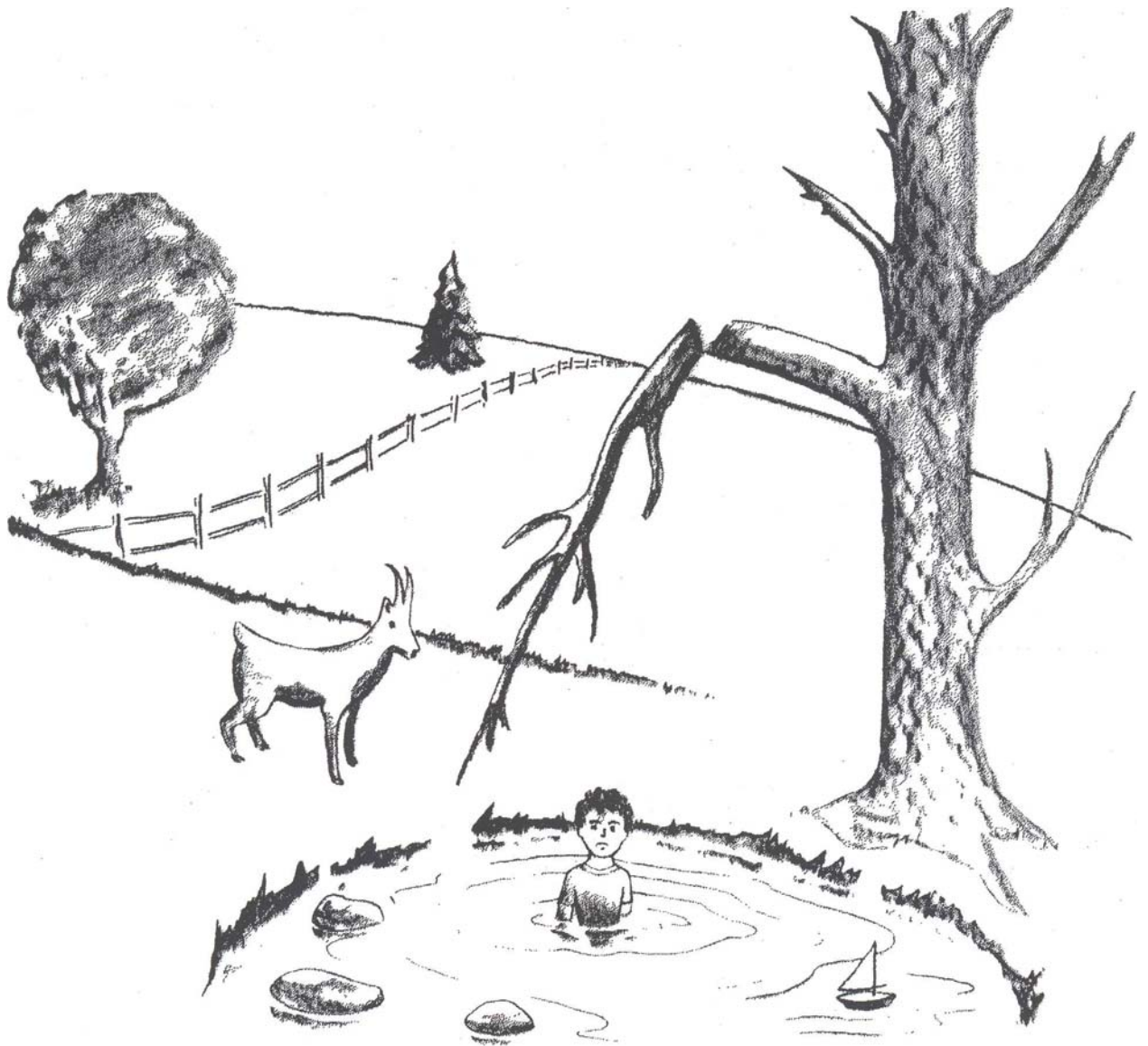
Recognizing or noting a fact or occurrence.

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Observation/Inference Worksheet

Name _____

Date _____



Name _____

Date _____

Directions: Place an 'I' if the statement is an inference, and an 'O' if the statement is an observation.

- ___ 1. The boy is in the water.
- ___ 2. The weather is cold.
- ___ 3. The tree branch is broken.
- ___ 4. If the boy crawled out of the water the goat would butt him.
- ___ 5. The boy fell off the branch.
- ___ 6. A goat is standing by the pond.
- ___ 7. The branch will fall on the boy's head.
- ___ 8. The boy fell off the rocks.
- ___ 9. There is a sailboat in the water.
- ___ 10. The sailboat belongs to the boy.
- ___ 11. The goat will soon leave the pond.
- ___ 12. The tree by the pond has no leaves on it.
- ___ 13. There are three rocks in the pond.
- ___ 14. The tree by the pond is dead.
- ___ 15. If it rains leaves will grow on the tree.
- ___ 16. The goat butted the boy into the pond.

ANSWER KEY

- | | | |
|----------------|-----------------|-----------------|
| 1. Observation | 7. Inference | 13. Observation |
| 2. Inference | 8. Inference | 14. Inference |
| 3. Observation | 9. Observation | 15. Inference |
| 4. Inference | 10. Inference | 16. Inference |
| 5. Inference | 11. Inference | |
| 6. Observation | 12. Observation | |

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Student Life Chronology Worksheet

Name _____

Date _____

Directions: Students should list eight events in their life in chronological order then come up with a symbol that represents that event. It should go from the most recent event to the oldest event.

Symbol	Event
Recent:	
Oldest:	

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Garbage Chart Worksheet

Name _____

Date _____

Sketch of Item	Description of Item (Observation)	Guess as to use or purpose (Inference)

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It is in the Garbage Worksheet

Name _____ Date _____

Directions: Use this sheet to take notes during your “excavation” of the garbage bag. Once you are finished you can use this information to complete your verbal report about the garbage. You must give reasons for your answers based on the “evidence” – the artifacts which support your answer.

1. Could you tell when your garbage was thrown away? If yes, how? If no, why not?
2. List two or more inferences you can make about the person(s) who threw away the trash.
3. From where did your garbage come?
4. Which basic human needs does your garbage show are being met?
5. Name two or more of the categories into which you classified your trash.
6. How do you know this garbage is of this culture?

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Archaeological Inquiry Worksheet

Name _____

Date _____

Directions: Fill out the questions below based on the garbage you have.

Behavioral Question	
Hypothesis	
Classification Categories	
Accept or Reject the Hypothesis	
Make a Behavioral Inference	