Scientific Illustration & Observational Learning

This activity compliments the *Sandal and the Cave* DVD presentation and general study guide.

**Grade Level**  
Junior High (with extensions for High Schoolers)

**Time Required**  
2 to 5 classroom sessions (based on 50 minute sessions)

**Activity Objectives**

Students will learn:
- The ways in which archaeologists use techniques, such as illustration, to enhance their observational learning about objects and the people who made/owned the objects.
- Basic archaeological record management.
- The role research bias plays in historical interpretation.
- Artistic and technical illustration techniques.
- How, in illustration, objects can be broken down into basic shapes and designs.

**Materials**

- Object from home that represents the student
- Drawing pencil
- Eraser
- Markers or colored pencils
- Drawing paper
- Ruler or tape measure
- 5 x 7 notecard

*Fort Rock Type of Sandals*  
9,000 - 10,500 years old  
Illustrations by Kristine A. Kirkeby
**Procedure** (Note: These are suggested steps and can be modified according to instructor needs and resources)

**Pre-Activity Step** – Assign students to bring in an object/item that they feel represents them as a person (what their interests are, what their family is like, where they live, etc.).

The instructor will go over the requirements with examples (the instructor can bring in an object that represents themselves as an example) that meet the following criteria:

1. Objects need to be a complex combination of shapes with at least three to four shapes within in the overall shape (not a simple sphere shape like a baseball). An example would be a running shoe that has ovals, triangles, and rectangles within its overall shape.
2. Students will need to be able to adequately describe the reasons they picked this object to represent themselves. This can take the form of writing one-page paper. The description will need to go beyond simple statements such as “I chose a shoe because I like to run a lot”. Examples of taking the description further:
   - Why does the student like to run?
   - What does this say about them at this age? Did they always like to run? Do they think this will led to a long-term profession in running, or is it a hobby? Why or why not?
   - Are there other family members that like running and who might have influenced the student? Does the student’s running influence others in their family?
   - Are they part of a group of friends who like to run together? Is this an organized sports group?
   - Are their shoes made up of expensive materials or less expensive? What does this say about their standing within the society at large?
   - Does this shoe represent any traits of the culture in which the student is part of? Does this shoe go beyond just the owner’s personal meaning and represent the general culture?

When the students bring in their objects, there will be an exchange within the class. It is recommended that the students receive objects from someone they do not know well, so they can learn more about that person.

**Observation Step 1**– On a 5” x 7” card students will write the following descriptions about the object (See Appendix E):

- The basic shapes found in the object (circles, ovals, squares, rectangles, triangles).
- The basic dimensions of the object (height, width, diameter). Students will use a tape measure to record these dimensions.
- The object’s approximate weight (“light as a feather,” <1 pound, 1-2 pounds, >2 pounds, “heavy like a cement brick”). If you have a scale available, determine the exact weight.
- The materials that make up the object (stone, wood, glass, string, plastic, etc.).
- A basic overall description of the object, such as colors, additional shapes, lettering and/or pictures found on object, any damage and/or aging seen, etc.
- Date “discovered” = illustrated.
- Location of “discovery” (City, State, and Country).
- Name of the illustrator (student).

(Continued on next page)
Illustration Warm-Up – Instructor will introduce the students to the basics of drawing. This will include depth and perspective, alignment, proximity, contrast, shading, and other techniques appropriate to the grade level. Provide an example for each step (use Appendices A-C).

Illustration Step 1– Students will look for and draw the basic shapes in the object (circles, triangles, squares). Students can reference their 5 x 7 cards. (see Appendix A)

Illustration Step 2– Students will correct and connect shapes by erasing the basic shape lines that are no longer needed from Illustration Step One. (see Appendix B)

Illustration Step 3– Students will now study the detail of patterns in the object, and fill the patterns in. (see Appendix C)

Illustration Step 4– To complete the illustration the student will finish the pattern details, such as adding shading and/or color. (see Appendix D)

Observation Step 2– After the drawing is completed, students will develop a 1-2 paragraph hypothesis that addresses aspects of ethnography. This ethnographic analysis will address the questions:

1) How does this object/item represent the person who owns it?
2) How did you come up with this answer?

The hypothesis will be recorded on the back of the 5 x 7 card. For a more sophisticated audience, the hypothesis can be assigned as an essay.
**Terms**

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

**Artifact:** 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).

**Ethnography:** A method of research that focuses on small groups of people in their own environment. Ethnographic studies are a combination of **descriptive** and **interpretive** processes:

- Descriptive = using methods such as statistical information to understand a group’s lifestyles and habits.
- Interpretive = determining the significance of what is observed without using detailed scientific methods, such as using excavation site observation to create theories about a past population.

**Questions for Class Discussion**

1. Ask students to discuss their theories, then ask the owner to talk about what the object means to them. Compare the two answers.

2. Describe the ways in which drawing the object helped, or did not help, the understanding of who might be the owner of the object, and their interests.

3. As the illustrator, do you think that your idea of the object’s meaning makes it difficult to fully understand what the object means to the owner? If yes, how could you identify your ideas and meanings and separate them from the original owner’s meaning?

4. In what ways would illustrations of Great Basin artifacts by professional archaeologists be the same or different from the illustrations done by the class?

5. In what ways do you think the illustration and 5 x 7 record card work together in creating a detailed record of the object?

6. Why do archaeologists use drawings/illustrations to document artifacts? What are some advantages and disadvantages to using illustrations versus using photographs?
**ASSESSMENT**

*Student assessment may be based on the following specific exercises or in combination:*

- Student illustrations should be evaluated in terms of conveying the information found in Illustration Steps One – Four
  - Was the student able to accurately identify the basic shapes of the object?
  - Was the student able to accurately connect the various shapes?
  - Was the student able to identify object details?
  - Was the student able to sufficiently represent the object in their final illustration?

- Completion of 5 x 7 observation card and how well the student’s hypothesis sufficiently answers the questions:
  1) What this object/item represents to the person who owns it?
  2) How you came up with this answer?

- Participation in class discussion.

- Matching final student knowledge of the topics in relation to your state standards.

**EXTENSIONS**

- Watch the DVD presentation, *The Sandal and the Cave* by Don L. Hunter and have a class discussion around the topics presented (see general study guide).

- Create group (5 to 10 students) skits that portray a story revolving around the objects each student illustrated, which the groups will then act out.

- Assign students in higher grade levels to write an essay about their hypothesis.

- Assign students in higher grade levels to write a research essay about the ways in which archaeologists observe artifacts. How do they describe artifacts? How do they hypothesize how past peoples used objects? For example, students can look up archived newspapers about when archaeologists found the world’s oldest sandals in Eastern Oregon.

- Take a field trip to the Museum of Natural and Cultural History located in Eugene, Oregon. They can accommodate class tours, video presentations, and activities.

- Take a field trip to your local natural/cultural history museum.

- Do an art and/or history project involving petroglyphs.
Appendix A

Illustration Step 1- Look for and draw the basic shapes in the object

Cradleboard, 2005
Artist: Rose Kirk
Tribal Affiliation: Warm Springs Tribal Member

Illustration Artist: Lily Robertson
Appendix B

**Illustration Step 2** - Correct and connect shapes by erasing the basic shape lines that are no longer needed from Illustration Step 1.
Illustration Step 3 - Students will now study the detail of patterns in the object, and fill the patterns in.
Appendix D

**Illustration Step 4**– Finish the pattern details, such as adding shading and/or color

Cradleboard, 2005  
Artist: Rose Kirk  
Tribal Affiliation: Warm Springs Tribal Member  
Illustration Artist: Lily Robertson
Appendix E

On the 5 x 7 card, students will create a brief record for their illustration. Use the back of the card for the hypothesis.

Example: A running shoe

<table>
<thead>
<tr>
<th>Front</th>
</tr>
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<tbody>
<tr>
<td>Basic shapes:</td>
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<tr>
<td>Basic dimension:</td>
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<tr>
<td>Approximate Weight:</td>
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<tr>
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<tr>
<td>Location of discovery:</td>
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<td>Name of illustrator:</td>
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<table>
<thead>
<tr>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis:</td>
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