



The *Bonhomme Richard* Series Lesson 2 Exploring a Shipwreck Site



LESSON OBJECTIVES

- Introduce the field of marine archeology
- Describe the methods that archeologists use to explore a shipwreck site

NATIONAL SCIENCE EDUCATION STANDARDS

Content Standard A: Science as Inquiry

Abilities necessary to do scientific inquiry
Understandings about scientific inquiry

Content Standard E: Science and Technology

Understandings about science and technology

Content Standard G: History of Nature of Science

Science as a human endeavor
Nature of Science

OCEAN LITERACY PRINCIPLES

Principle #7: The ocean is largely unexplored.

For more about the Ocean Literacy Principles, visit:

http://www.ngsednet.org/community/resource_uploads/OceanLitChart.pdf

INTRODUCTION

On September 23, 1779 one of the most fierce and famous battles of the Revolutionary War took place off the coast of Flamborough Head, England between the sailing ships *Bonhomme Richard* and H.M.S. *Serapis*. The *Bonhomme Richard* was captained by John Paul Jones, who is considered by some people to be the father of the United States Navy. The battle between the two ships took place at point-blank range and lasted almost three and a half hours. John Paul Jones emerged from the battle victorious and captured *Serapis* as his prize. Thirty-six hours after taking command of *Serapis*, John Paul Jones watched his beloved *Bonhomme Richard* sink into the North Sea. It was during this battle that his legendary words, "I have not yet begun to fight!" were recorded in American history. The Ocean Technology Foundation and its team of partners are searching for the remains of the *Bonhomme Richard*. Historians, technicians, and marine archeologists are part of their team. (For more information on the battle and the search, please visit www.bonhommerichard.org)

WARM-UP

Ask students: What is marine archeology? What does a marine archeologist do? List students' answers on the board, using the list below to guide them.

Archeologists may:

- find and map the sites of past societies and cultures
- map landscapes containing prehistoric features
- record items that are uncovered by digging or surveys
- draw and photograph items and sites
- examine and identify the traces or remains of prehistoric structures
- examine and analyze items to determine their age, cultural origin and use
- look for patterns of a settlement's environmental use and impact
- develop and test new theories on the origin and development of past cultures
- write and present research findings for books, journals and conferences
- assess archaeological sites for resource management, development, or conservation purposes
- teach at colleges and universities
- interpret sites for general public presentations

Download and present to the class a powerpoint presentation on marine archeology from http://www.oceantechnology.org/BHR_Education.htm (under Interdisciplinary Lesson Plans).

ACTIVITIES

1) Work through the “Classroom Activity: Exploring a Shipwreck Site,” which is presented as part of this lesson. (The activity is adapted from Texas Beyond History’s *Mapping and Excavating a Jello Mold* activity.)

2) Visit NOAA’s Office of Ocean Exploration website at:

<http://oceanexplorer.noaa.gov/edu/oceanage/04weirich/welcome.html> to see a short interview with Marine archeologist Jeremy Weirich. Would you like to have Jeremy’s job? Why or why not?

3) Visit <http://www.marinecareers.net/index.php> to learn about various careers in ocean science, including salary and job outlook information. Answer the following questions:

- a) Which field includes the study of waves, winds, and tides?
- b) Which field includes the study of the composition and history of the seafloor?
- c) What is the average salary range for a Marine Biologist who has a Ph.D. degree?

4) Visit the National Park Service’s Submerged Cultural Resources website at

<http://home.nps.gov/applications/submerged/projsub.cfm> to see if there are any shipwrecks in your region.

ADDITIONAL RESOURCES

Ocean Technology Foundation's Search for the *Bonhomme Richard*

<http://www.bonhomme-richard.org>

Archeology Excavations and Techniques

http://www.bbc.co.uk/history/archaeology/excavations_techniques/marine_01.shtml

Links to Marine Archeology sites

<http://www.vims.edu/bridge//archeology.html>

NOAA Ocean Explorer Website – Deep water archeology

<http://oceanexplorer.noaa.gov/explorations/06greece/background/archaeology/archaeology.html>

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CLASSROOM ACTIVITY

EXPLORING A SHIPWRECK SITE

Lesson Overview

Students will learn how archeologists map, describe, and excavate a shipwreck site by assuming the roles of marine archeology team members.

Materials

Plastic containers approximately 6.5 inches wide, 6.5 inches long and 2 inches tall (one for each group of 4-5 students) Square sandwich containers work well.

Gelatin in 2 colors (blue and green)

Raisins and grapes or “artifacts” such as fake coins, jewelry, toothpicks, etc.

Plastic spoons (2-3 per group)

Extra bowls or buckets for the materials excavated

Paper towels

2 sheets of Grid Paper per group

1 Artifact Description page per group

1 Recorder Page per group

1 ruler per group

Preparation

Before Class: Prepare one color of gelatin by the box directions and pour about ½ inch into each container. Insert artifacts into the gelatin and refrigerate. After gelatin is firm, prepare the second color of gelatin and gently pour over the first layer, inserting a few more artifacts, and refrigerate. You can also mix four gelatin colors together to produce a murky color. This works well for older students because the gelatin is harder to see through and makes the activity a little more challenging.

Activity

Divide students into groups of four. Assign each student a job:

Mapper – this person maps the shipwreck site. They use the grid paper (one for each layer) to draw the position of the artifacts in each layer of gelatin as accurately as possible.

Excavator – this person excavates the gelatin. After the Mapper maps the site, this student uses the plastic spoon to carefully excavate the site while trying not to disturb the second gelatin layer.

Recorder – this person is responsible for providing written descriptions of the artifacts that are recovered from the site. The student should note the color and size of the artifact, as well as any distinguishing characteristics.

Sketcher – this person is responsible for drawing the artifacts recovered from the site, and should make detailed drawings of the objects.

1) Hand out two pieces of grid paper, two artifact description papers and two artifact sketch pages to each group.

2) Have the *mapper* examine each sediment layer and record the exact location of each artifact and map them onto the grid paper, using a sheet for layer one and another sheet for layer two.

(Student Question: Why is recording the exact location so important?)

Answer: The locations of the artifacts in relation to one another can give clues about the wreck. For example, if there are dishes and cooking utensils on one area of the seabed, this might indicate the galley of a ship.)

3) Have the *excavator* carefully use the plastic spoon to remove the first layer of sediment, and separate each artifact from the sediment.

(Student Question: Why is it important to be careful not to stir up the seabed while you are working on an underwater wreck?)

Answer: If the seabed consists of muddy sediment, disturbing it will produce a cloud of sediment in the water, making it difficult to see.)

4) Have the *sketcher* draw in detail each artifact removed from layer one.

5) Have the *recorder* write detailed descriptions of each artifact (the object, color, size, etc.) from layer one.

(Student Question: Why is it important to record a detailed description of each artifact?)

Answer: When working on a shipwreck site, there is always the possibility that the artifact may crumble once out of the water, or it may be lost, so the written record is important.)

Repeat steps 2-5 above with the second layer of gelatin.

WRAP-UP

Discuss with students the challenges of working on a shipwreck site in the ocean. Answers may include: funding, weather, ocean currents, locating a shipwreck, determining the identity of a shipwreck, and others.

Ask students why the study of shipwrecks is important.

Ask each student to name one thing they learned from this lesson that they didn't know before.

Grid Paper

Recording Sheet for Artifact Descriptions

Artifact 1

Artifact 2

Artifact 3

Artifact 4

Artifact 5

Artifact Sketches

Artifact 1

Artifact 2

Artifact 3

Artifact 4

Artifact 5