Becoming a Marine Archaeologist: Putting together the puzzle
(as adapted from Immersion Presents)

FOCUS
Marine Archaeology

GRADE LEVEL
Primary (UK); 3-5 (US)

FOCUS QUESTION
How do archaeologists put the pieces of artefacts back together again?
How do archaeologists conserve objects from shipwrecks?

LEARNING OBJECTIVES
Students will draw inferences about objects from a shipwreck and piece them back together

MATERIALS NEEDED
- Ceramic plate, bowl, or flowerpot
- Colored permanent markers
- Paper Bag
- Tacky Glue

AUDIO VISUAL MATERIALS NEEDED
Movie clip on the Warwick wreck expedition 2011

TEACHING TIME
One 45-minute period

SEATING ARRANGEMENT
Groups of two to three students
KEY WORDS

**Artefact** - Discarded objects that have been made or changed by people
Examples: bones with cut marks, pottery, stone tools, coins.

**Shipwreck** - What remains of a ship that has wrecked, either sunk or beached

BACKGROUND INFORMATION

Setting sail from England on her voyage, the *Warwick* arrived in Bermuda on October 20th, 1619. She was carrying goods from England, additional settlers, and the third governor of Bermuda, Nathaniel Butler. The *Warwick* was on a stopover for re-provision, discharge of cargo and passengers and to load valuable products such as tobacco en route for the nascent colony of Jamestown, Virginia. On the second leg to Jamestown, the ship was to carry 40 more colonists and a newly appointed bailiff, along with much needed materials. Tragically, in a gale the ship was bashed and battered up against the rocks of Castle Harbour and sank in November of 1619. All passengers were safe on land during the storm, and were later sent to recover and confiscate all the goods that would have been on the now wrecked ship. She has sat beneath the calm waves of Castle Harbour, largely undisturbed for over 400 years, preserved in silt gaining some protection from teredos (ship eating worms).

The wreck was later sketched and artefacts recovered by a team in 1967 lead by Teddy Tucker and Mendel Peterson in collaboration with the Philadelphia Maritime Museum. In July of 2008, with the collaboration of the National Museum of Bermuda, an additional excavation was carried out by the Nautical Archaeology and Center for Marine Archaeology and Conservation at Texas A&M University. This excavation has continued for the last several years under the direction of National Museum of Bermuda staff member, Piotr Bojakowski.

Preliminary observations of the wreck suggest that construction of the Warwick is not typical for early 17th century shipbuilding. It has similarities to the *Mary Rose*, a tudor warship from 1545 and the 17th Century *Sea Enview* of Bermuda. It has been hypothesized that Warwick construction may be important in understanding the changes in the process of English shipbuilding.

Many artifacts have been recovered from the ship including pottery, coal, pipes, musketshots, , weaponry and an early version of the Gunter Scale.

Bermuda has various maritime laws that protect shipwrecks. The Historic Wrecks Act 2001 protects Bermuda’s Underwater Heritage. It provides protection for all shipwrecks in Bermuda’s territorial waters. The law states that it is illegal to interfere with or remove anything from a Shipwreck or Marine Heritage Site without obtaining a licence. For more information please see the Department of Conservation Services. http://www.conservation.bm/shipwreck-legislation-overview/
The Coral Reef Preserve Act states that it is an offence to remove, damage, or be in possession of plants or animals, whether dead or alive, from either the South Shore or North Shore Preserves of Bermuda (Wood and Jackson, 2005).

The Fisheries Protected Species Order prohibits the confiscation of any coral species, whether dead or alive, found anywhere within the stated 200 mile exclusive fishing zone (Wood and Jackson, 2005).

Here are some artefacts recovered from the site of the Warwick Wreck:

(all photos are courtesy of the National Museum of Bermuda)

![Figure 1: The roman pottery, which is approximately 1500 years older than the wreck was found in the ballast. Some of the ballast was most likely dredged from the River Thames, which is full of discarded roman pottery (river stone was typically used as ballast for ships). Archaeologists can not look at just one artifact find to date a site as it can be misleading i.e the example of the Roman Roman pottery. An archaeologist needs to look at the ship itself, all of the objects and the written record to make deductions of the date of the wreck.](image)
Figure 2: Clay pipe found on the wreck. You can tell a lot about the time frame of the pipe based on the length of the pipe as well and also about the size of the bowl, which is bigger in times when tobacco is less expensive!

Figure 3: that the Gunter scale is an early navigational tool (a calculating devise) used with a divider and map to calibrate mathematical equations to assist in navigation. It was the latest technology of the time and revolutionized ocean navigation.
Figure 4: Coal was a fairly new and expensive technology at the time of the wrecking. Little is written on the history of coal but discovering coal on the Warwick wreck tells us that the new colonies in their early development were using coal as a form of fuel.

**LEARNING PROCEDURE**

1. Each group will receive a ceramic plate, bowl or flowerpot, this will be the artefact for your group
2. Using the permanent markers decorate your artefacts with simple symbols, pictures and designs. Put your artefact in a paper bag with your groups’ names on it. Please hand the bag to your leader.
3. The leader will break each artefact into several pieces, You will receive your bag back with your groups artefact
4. The leader will remove a piece from each of the bags
5. Carefully pour the pieces of ceramic out of the bag
6. Work with your group members to figure out how to fit the pieces together.
7. Use the tacky glue to put the artefact back together
8. Students will sketch their object and sketch the piece that is missing, what are some of the clues that will help find the missing piece?

**FURTHER ACTIVITIES**

Putting together artefacts for conservation is a tricky process! Students can try their hand at putting together this china plate. They will practice putting together the pieces of the puzzle. Teachers can cut out the pieces or have students do so and try to tape the image back together. Pieces and full image are attached.
The History of The Blue Willow China” can be found here;

http://www.bluewillowinn.com/bluechina.htm

FURTHER THINKING

Invent a technique for recovering small, delicate items like an egg, fragile dish or eyeglasses from the earth. How would you do it? Draw your tools.

How is the work of a marine archaeologist different from that of one who works on land?

What kinds of equipment, tools and people might help you find artefacts on the bottom of the ocean and bring them to the surface?

* A marine archaeologist has to work with conditions underwater; their work is challenging and often relies on their ability to stay underwater for long periods of time. They use different tools, and usually use remotely operated vehicles to excavate a site because many of the sites are very deep underwater. They also have to deal with the deterioration of materials due to the sea and ocean animals. Artefacts can be buried under layers of rock, sand and mud. Often they are working in extreme conditions of hot or cold. The soil, animals and other factors may add to the deterioration of these objects.

(Answers may vary) Participants may say robots, remotely operated vehicles, or diver.

How do you think marine archaeologists find out what artefacts are and to whom they belonged?

* Archaeologists gather information from many sources. They try to determine what country the ship was sailing from and where it was headed. They compare found artefacts with artefacts that they already have information about. They look at the material used to produce the object, and they often use technology to date objects.

ADDITIONAL INFORMATION

http://www.immersionlearning.org/

http://www.nautiluslive.org/

http://oceanexplorer.noaa.gov/edu/welcome.html

Archaeology for Kids: Uncovering the Mysteries of Our past, by Richard Panchk
