

LESSON PLAN | **BEGINNING LEVEL**

Grades: Upper elementary (3–5)

Subjects: Science and visual arts

Time required: 2 class periods (plus one week for submerging metal in water)

**Lesson Overview**

Students study an object from **antiquity** that was found in the sea off the coast of Italy in order to understand how **conservators** remove and prevent corrosion on **bronze** statues. They derive meaning from analyzing the pose of the statue. Based on what they observe in the sculpture and what they read about the statue, students speculate about how the sculpture was lost at sea.

**Learning Objectives**

Students will:

- Observe and understand the changes that occur to **metals** when submerged in water.
- Analyze the pose of an ancient Greek sculpture.

**Materials**

- Image of *Victorious Youth* (p. 17)
- Copies for students of information about the featured work of art (pp. 96–97)
- Image of *Victorious Youth* before conservation (p. 18)
- Pennies
- Periodic table
- Journal or bound paper
- Clear plastic containers
- Water
- Teaspoons
- Salt

**Lesson Steps**

1. Divide the class into groups of three or four. Hand out a penny to each group. Explain that the metal in a penny is an **alloy** of zinc and copper. Have the class identify these two metals on a periodic table. Have students draw their pennies and then answer the following questions in their journals, using adjectives to describe characteristics.
  - What color is the coin?
  - Is it shiny or dull?
  - How would you describe the texture of the surface?
  - Is the metal hard or soft?
2. Have students place the pennies in clear plastic containers, cover them with water, and then add a few teaspoons of salt to the water. Allow the coins to soak for a week. Then

have groups reexamine their coins. They should draw the pennies a second time and answer the questions above again in their journals. Each group should compare their two drawings and their observations. What has changed? What has stayed the same?

3. Display the pre-conservation view of *Victorious Youth*. Ask groups to discuss what they see in the image and to make guesses about what they may be looking at. Then explain to students that they are looking at an ancient Greek statue that was in the ocean for over two thousand years. Tell students that the statue is made of bronze. Explain to the class that over time the metal in their pennies would start to look like that of this statue, because the metal in the pennies would have a similar reaction to salt water. Explain that the statue has been affected by “bronze disease,” which occurs when **chlorides** and **oxygen** combine with metal in a damp environment. The disease takes the form of a sudden outbreak of small patches of corrosion and is distinguished by rough, light-green spots. In this case, the damp environment was the ocean, and the chlorides and oxygen came from the salt water. **Mineral** deposits from the water and incrustations left by corals and other sea animals caused the rough layer on the surface.
4. Display the post-conservation view of *Victorious Youth*. Explain that scientists and conservators were able to stop the corrosion and remove the incrustations by cleaning the object. They used various tools and treatments. Over a three-month period, conservators scraped off the incrustations using mechanical tools to reveal the original surface. They also used several other methods to clean the object, such as extensive washing of the bronze with **chemicals** that neutralized the corrosion. Finally, they placed the statue in a relatively low-humidity environment. As a result, we are now able to get a better sense of what the object looked like originally.
5. Give students time to look at the sculpture and then ask them for their initial observations. Lead a discussion about the work using the following questions:
  - What can you tell about the sculpture now that the incrustations have been removed?
  - What do you notice about the pose of the figure?
  - What is this person doing?
  - What other details do you notice?
6. Share background information about the work of art. Based on the information provided, ask students to make up a story about how the sculpture might have been lost at sea.