



Panoramic Hydrosphere [MS]

Grades: K-2

Time: 45 minutes to 1 hour

Goals: To use art to identify and classify aquatic organisms and their underwater habitat.

Objectives:

Students will be able to: classify aquatic species as vertebrate or invertebrate; describe different aquatic habitats; create a mural using the art form Gyotaku to depict a specific habitat; and understand how aquatic species survive underwater.

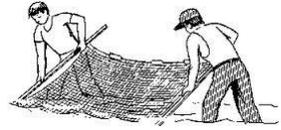
Materials:

Newspaper
Paint
Paint brushes
Rubber sea creatures (large)
Construction paper
Large mural paper
Scissors
Glue
Water
Paper towels

Preparation: Create a coastal underwater scene using construction paper on the large mural paper. Include sediment and water. This scene can be as detailed as you like and can be a coral reef, a barrier island/ocean, a salt marsh/estuary, or a lake/pond. Use an ecosystem that your students are familiar with.

Procedures:

1. Pre-Activity (introduction): Begin the lesson by asking the students how they breathe and what organs do they use. Compare this to how organisms underwater breathe and with what organs. Discuss the difference between vertebrates and invertebrates and some of the more well-known examples of each. Explore some aquatic examples for comparison.
2. Activity: Place newspaper on each of the students' desks and explain that they are going to recreate an aquatic ecosystem using a very ancient Japanese style of painting. For older students you can use the term Gyotaku. Pass out the paints, brushes and construction paper. For the younger students, make sure their clothes are covered by smocks; the older students should roll up their sleeves. Have each student share the rubber organisms among their classmates (a few students can paint fish or sea stars). They are to paint on the textured side of the organism only. When it is covered, assist them in flipping it over and patting it down on the construction paper, making a print of their organism on the paper.



Use safety scissors to cut out their creatures when they are fully dried and have the students glue them to the ecosystem mural. You can then hang the mural inside the classroom or out on the wall in the hallway near the classroom. Print their names below/near their organisms. For older students, have them find one fact about their organism and write that fact near their organism on the mural.

3. Post-Activity (review): Discuss with the class how art is a form of marine biology and how many marine biologists have become artists, either by painting, writing, or photography. Mention a few of the more famous marine artists. Ask the students to describe some of the morphological features they saw when doing the art project and how these characteristics helps biologists to describe these organisms.

Key Words:

Organism	Ecosystem	Habitat
Vertebrate	Invertebrate	Survival
Saltmarsh	Barrier island	Maritime forest
Estuary	Freshwater	Saltwater
Gyotaku	Morphology	

Background Information:

Adapted from Smithsonian Institute Ocean Portal

When Japanese fishermen needed a way to keep track of the number of fish they caught and what species, they would use a technique called Gyotaku. By applying ink to each fish in their catch, covering it with rice paper, and rubbing it thoroughly, they would create a replica of their catch preserved on the paper. When done properly, a lot of details were preserved on the rice paper and over the last century has become an art form, where more color has been used to match the life-like colors of the fish species.

It is also a great way for teachers to present anatomy and physiology to their students, as well as create ecosystem murals, like the activity in this lesson. This prepares students at a younger age to understand morphological features of species that they may not have access to until high school or college years. In recent years, the art has morphed from using real fish to using rubber replicas, still with as many details as the real species of fish. It has also been altered to include more species than just fish, so students have the opportunity to view many different vertebrates and invertebrates.