

Lesson 2:

What is a Coral Reef?

INTRODUCTION

In this lesson, students will learn about life on a coral reef. A PowerPoint presentation introduces coral reefs through the organisms that live on them, providing students with information and pictures about coral, fish and urchins. Once students have a better understanding of what a coral reef is, students will create a class mural depicting coral reefs. Finally, students will act out life on a coral reef through a short skit. This artistic approach to studying coral reef habitats will engage many types of learners.

OBJECTIVES

Students will be able to:

- State three important parts of a coral reef
- Describe coral, fish and urchins
- Recognize examples of different parts of the coral reef
- Depict a coral reef and its parts through art
- Show how organisms work together on a coral reef through role playing

CALIFORNIA STATE STANDARDS

Life Science, Investigation and Experimentation Standards:

2.a. Students know different plants and animals inhabit different kinds of environments and have external features that help them thrive in different kinds of places.

2.b. Students know both plants and animals need water, animals need food, and plants need light.

2.c. Students know animals eat plants or other animals for food and may also use plants or even other animals for shelter and nesting.

4.a. Draw pictures that portray some features of the thing being described.

4.b. Record observations and data with pictures, numbers, or written statements.

Visual and Performing Arts Standards:

5.1 Apply the theatrical concept of beginning, middle, and end to other content areas. For example, act out the life cycle of a butterfly.

5.2 Demonstrate the ability to work cooperatively in presenting a tableau, an improvisation, or a pantomime.

1.3 Identify the elements of art in objects in nature, in the environment, and in works of art, emphasizing line, color, shape/form, and texture.

2.1 Use texture in two-dimensional and three-dimensional works of art.

2.2 Mix secondary colors from primary colors and describe the process.

2.4 Plan and use variations in line, shape/form, color, and texture to communicate ideas or feelings in works of art.

2.8 Create artwork based on observations of actual objects and everyday scenes.

BACKGROUND

A coral reef is a highly diverse marine habitat that supports a wide variety of life. Coral reefs are primarily found in clear (nutrient poor), tropical waters. Coral polyps (tiny animals that secrete a calcium carbonate exoskeleton) create the structure of a coral reef. Although individual coral polyps are tiny, most live in very large colonies and create large structures. Corals are animals, but they live together with a microscopic alga that grows inside their tissue. This symbiotic relationship between corals and this particular type of algae is why most reef-building corals need light and are found in clear shallow waters. Although corals get much of their nutrition from the algae living within their tissue, they also catch their own food (microscopic plankton) using stinging cells in their tentacles.

Thousands of species of fish and invertebrates live on coral reefs and depend on corals for the habitat they create. In fact, because corals create the entire habitat on which so many species depend, they are considered “ecosystem engineers.” The fish that live on coral reefs use the coral for both shelter as well as a place to feed. Some fish feed on the coral polyps themselves, while many more eat fast growing algae that grows on dead coral skeletons. Many fish also feed on invertebrates that live within and around the live and dead coral, and of course, other fish feed on smaller fish. These fish are carnivore because they eat other animals (fish that feed on fish are a special kind of carnivore called a piscivore). Algae eating fish are herbivores because they feed on primary producers (the “plants” of a coral reef). Herbivores are extremely important for coral reefs because they prevent fast growing algae from overgrowing slower growing corals. Other important herbivores on coral reefs include sea urchins, which scrape algae off dead coral skeletons and open up space for new corals to grow.

MATERIALS FOR 20 STUDENTS

Computer

“What is a Coral Reef” PowerPoint

Projector (optional)

Blue butcher paper

Markers

Crayons

Paint (optional)

Colored paper

Long strips of construction paper

White index cards

Glue

One sentence or fact for each child

PREPARATION

- Familiarize yourself with the “What is a Coral Reef” PowerPoint, looking in the “notes” section to get used to the names of the fish and other sea animals.
- Gather art materials for mural and “costume” making.
- Copy sentences (facts about coral, fish and urchins) on strips of paper to pass out for the skit. Adjust sentences for students’ ability levels.

ACTIVITY

Day 1 (30-40 minutes)

- Introduce coral reefs and ask students what they know about coral reefs. Using a K-W-L chart, record what the students know about coral reefs under the K column, and what the students want to learn under the W column.
- Explain to students that you are going to teach them about coral reefs through a visual presentation. Slowly show the PowerPoint presentation once or twice as needed, emphasizing the different part of the coral reef (coral, fish, and urchins) and why those parts are important.
- Once the presentation is thoroughly completed, ask the students what they learned and add their responses to the L column of the K-W-L chart.

Day 2 (40 minutes)

- Review the parts of coral reefs, and have kids comment on what they remember, using the K-W-L chart if necessary.
- Explain to students that today they are going to work together to create a coral reef mural.
- Break students into 3 equal groups of students with mixed ability levels. Assign one part of the coral reef to each group (or allow them to pick): coral, fish or urchins. Discuss expectations for behavior and group work and model some examples of products.
- Using the art materials provided, students will work together to create many animals that belong to the group they were assigned. The mural may contain cutout pictures, illustrations and words.
- Bring groups together to assemble artwork on blue butcher paper. As a class, discuss appropriate places for coral, fish and urchins. Once assembled, the mural will reflect a clear understanding of the three parts of a coral reef.

Day 3 (1or 2 40 minute sessions)

- Finally, each group of students will perform a short skit for the rest of their classmates to review and summarize the important facts about coral, fish and urchins.
- Each student in all three groups will have one sentence (a fact about coral reefs) as their “part” in the skit, along with an opportunity to create a “costume”- a headband with a picture glued to it.
- First, have students break up into the same groups used to create the mural.
- For 20 students, put 7 fish sentences in one basket, 7 coral sentences in another, and 6 urchin sentences in the last basket. Have the members from each group choose a sentence that will become their part in the skit.
- Give groups some time to create their costume and practice reading their sentence.
- Have the coral group stand in front of the mural and recite their parts. Continue with each group and ask questions as needed.

*Depending on the class and their ability to work together, give as much guidance as needed in working together to prepare the costume and script.

Sentences for Skit:

Coral group

1. Corals make the structure of a coral reef.
2. Corals are tiny animals, called polyps.
3. Each coral makes a hard, rock-like skeleton around itself.
4. The polyps divide as they grow.
5. Large coral colonies are made by many tiny polyps.
6. As the coral colonies build up on top of each other, they gradually form a coral reef.
7. Coral reefs create habitat for many different kinds of animals.

Fish Group

1. There are many kinds of fish that live on a coral reef.
2. Fish all use the coral in some way.
3. Some fish live in the coral.
4. Some fish feed on the coral.
5. Some fish hide in the coral at night.
6. Some fish sleep in the coral during the day.
7. Fish of all different sizes live on a coral reef.

Urchin Group

1. Urchins eat algae.
2. Urchins have long, sharp spines that protect them from fish.
3. The algae urchins eat can be harmful to corals.
4. Urchins can be black or dull shades of green, olive, brown, purple, and red.
5. Urchins move slowly, feeding mostly on algae.
6. Sea urchins are covered with long spines.