

Create a Coral Polyp

Objective:

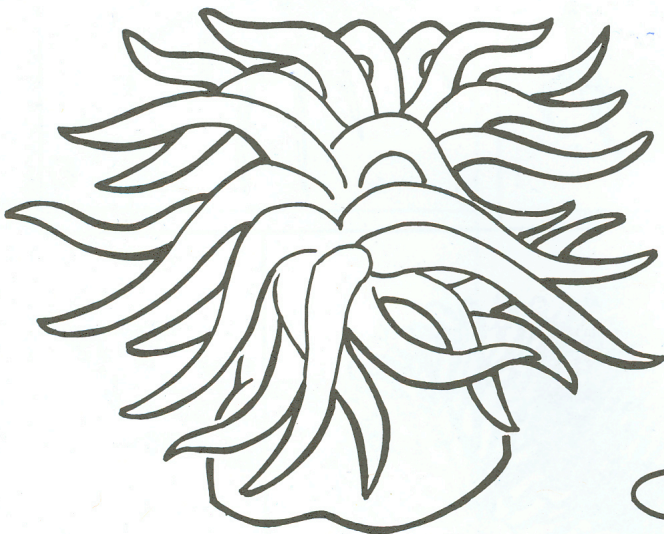
Students will explore the structure, colonial lifestyle, and feeding strategy of a reef-building coral.

Materials:

modeling clay
paper cups—one per student
one copy of the drawings at the bottom of this page (optional)
popsicle sticks (optional)

Action:

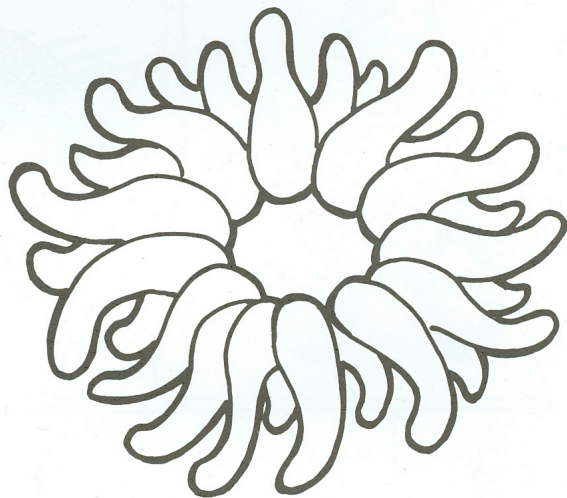
1. To help your students visualize what they'll be creating, use the drawings at the bottom of this page as a guide and draw each part of the coral polyp as you describe it. Or, use a photocopy machine to enlarge the drawings on this page. Cut out the coral polyp drawings of the base, mouth, and tentacles, and post them at the appropriate time. Keep the sea anemone drawing in one piece, but set it aside until later in the lesson.
2. Give each student a ball of clay. Instruct them to divide it into two balls (approximately $\frac{2}{3}$ and $\frac{1}{3}$ pieces). Explain that they'll be building a coral polyp as you describe it.
3. Have students use the larger ball of clay to make the polyp's *base*, a thick column that is wider at the bottom than at the top. Describe the base as a tubular, saclike structure that houses the stomach cavity and the nervous system. In most corals, the base is attached to a hard substrate (a rock, for example) and remains there for life.
4. Direct students to make the polyp's mouth—a rounded opening in the middle of the top of the base. Explain that the polyp's mouth not only takes food into the body, it's also where wastes are excreted.



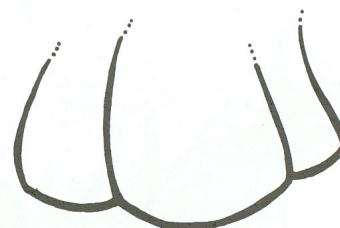
sea anemone



polyp mouth



polyp tentacles



polyp base

5. Have students pinch pieces off the smaller ball of clay and roll them to make the coral polyp's tentacles. Share with them that reef-building corals, also called stony corals, have tentacles in multiples of six. Soft corals have eight tentacles. Invite students to give their polyp six, twelve, or eighteen tentacles. Remind them to save a little bit of clay.

6. While students are adding tentacles, explain that coral polyps come in a range of colors such as white, red, orange, yellow, green, blue, and purple. A type of algae called zooxanthellae that lives in the tissues of reef-building corals gives the polyp a green, brown, or orange color.

7. Draw or post a picture of a sea anemone on the board. Invite students to help you identify the similarities and differences between the two animals (body shape, tentacles, mouth).

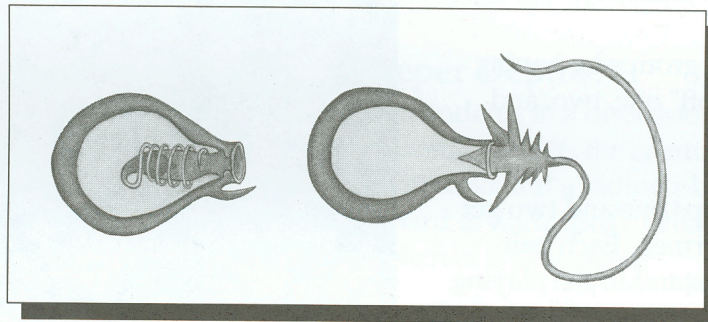
8. Have every five students join their polyps together to make a colony. Explain that this is how reef-building corals grow. When the polyps on the outer layer of a coral structure die, their skeletons remain. The next generation attaches to this hard surface. Coral reefs are a result of layer upon layer of successive generations of a single species of coral.

9. Give each student a paper cup. Have them place their polyp into the cup to demonstrate the calcium carbonate cup that protects the polyp.

Have each student make a slot in his/her cup and insert a popsicle stick, then have them gently push and pull the stick to demonstrate how a coral polyp withdraws into its cup during the day and comes out at night to feed. Describe the way the cup protects the polyp: when the polyp contracts, it's almost completely inside the skeletal cup.

10. How do corals feed? Have students demonstrate feeding by acting as if their fingertip is a small fish swimming toward the coral polyp. Describe how the polyp stuns the fish with its nematocyst (stinging cell), then grabs and moves it to its

mouth with its tentacles. Students can mold prey items with any leftover clay and attach them to their polyp's tentacles or place them in its mouth.



Corals use nematocysts to catch prey. A nematocyst contains a venom-filled barbed thread which is ejected when the capsule is stimulated.

Deeper Depths:

Divide the class into groups of four to

five students and have them research what colors and shapes different species of corals are. Ask each group to select one species of coral to recreate. Have them use the correct colors of modeling clay to create their polyps (remind them to study pictures or text in books to find out how many tentacles their species has). When they have made a number of small polyps, have them create a cup for each polyp by wrapping a strip of construction paper around the base. Or, use cut-up egg cartons (one polyp per cup). Have students glue or staple the cups together to make the formation their coral species develops.