CORAL REEF ECOLOGY

Concepts
Coral colony growth
Observation
Data collection

HCPS III Benchmarks
SC 4.6.1

Duration
1 hour, over several days

Source Material
PRISM
MARE

Vocabulary
Calcium
Coral Skeleton
Crystal

Growing a Coral Skeleton

Summary

Students will simulate coral growth by growing crystals through a scientific procedure using household materials. Students will keep track of the growth process by making and documenting daily observations of crystal growth through writing and drawings.

Objectives

- Students will observe and describe the growth of crystals.
- Students will compare crystal growth to how coral polyps create their calcium cups

Materials

Plastic bowls (have students bring from home or purchase)
Pieces of charcoal, porous brick, tile, cement, or sponge
Water
Table salt (iodized or plain)
Liquid bluing (found with bleaches at grocery stores)
Measuring tablespoons
Masking tape
Pens
Food coloring
Ammonia
Sugar
Clear glass
"Crystal Growth Observations" worksheet

Making Connections

Students will see how biological processes can mirror each other, for example the growth of coral and crystals. The growth of crystals will serve as a representative for the growth of coral colonies.

Teacher Prep for Activity

Buy materials for the lesson. Photocopy "Crystal Growth Observations" worksheet for each student in the class. Find an image that shows how corals remove calcium from seawater to make their skeleton online. Another good diagram can be found on page 33 of Hawaiian Coral Reef Ecology by David Gulko.

Background

No additional background is necessary.

Procedure

NOTE: This activity can be done in groups at working stations where each station has materials for 4-5 students. Otherwise, one

working station can be set-up in front of the class and students can take turns coming up to get the materials needed.

1. To begin, ask the students to label their bowl with masking tape (with their names). Have them put pieces of charcoal, brick tile, sponge or cement into their bowls.
2. Students should pour two tablespoons of water, two tablespoons salt, and two tablespoons liquid bluing over the base material. Set bowls on counter tops as formations need free air circulation to develop.
3. The next day have them add two more tablespoons of salt.
4. On the next day have them pour in the bottom of the bowl (not directly on the base material) two tablespoons each of salt, water and bluing; then add a few drops of food coloring to the base material.
5. A crystal formation should appear by the third day. If not it may be necessary to add two tablespoons of household ammonia to aid the growth. (ONLY TEACHERS OR ADULTS SHOULD HANDLE THE AMMONIA). To keep your formation growing, just add more bluing, salt and water from time to time. Have students record their crystal growth formation observations (daily, bi-weekly, … etc.) in the "Crystal Growth Observations" worksheet as changes become noticeable.
6. Ask students to describe what they think happened between the bluing, water, and dissolved salt to create the formation. Explain to the students that when the three materials combined, a chemical reaction took place and formed a new substance. Show them the diagram on page 33 of Hawaiian Coral Reef Ecology by David Gulko or a picture you have found online. Tell students that coral polyps, with the help of zooxanthellae, remove dissolved calcium carbonate from seawater and use it to create the stony cup that protects their soft bodies.
7. Demonstrate the concept of dissolved substances by pouring some sugar into a glass of water. Ask the students if they can see the sugar. Stir the water vigorously for about five seconds. Ask the students if they can see any of the sugar in the water. Stir vigorously again, this time for about 1 minute or until all the sugar has dissolved. Ask the students if there is still any sugar in the water. Stress that although they cannot see the sugar, it is still there, in the dissolved form.

Homework: Have students write how they think a coral reef is formed by polyps in their journals.

Assessments

Completed Coral Growth worksheet and journal entry (homework)

Resources

Corals and Coral Reefs 4-8 Teacher's Guide. A Sea World Education Dept. Publication.

Crystal Growth Observations

Name_____

Directions: Describe your observations of what you see occurring inside your bowl as changes become noticeable. Use pictures to show what is happening with your crystal formation signifying how corals grow.

Day ___	Day ___
Day ___	Day ___

Day ___	Day ___
Day ___	Day ___