Khaled bin Sultan Living Oceans Foundation

STANDARDS

- **CCSS**: RST.9-10.1, 2, 3, 4, 5, 6, 7, 8, 10; RST.11-12.1, 2, 3, 4, 6, 8, 9, 10; W.9-10.2, 4; W.11-12.2, 4; SL.9-10.1, 2, 3, 6; SL.11-12.1, 2, 3, 6; HSN.Q.A.1; HSA.CED.A.1
- **NGSS**: ESS 2.A, HS-LS1-5, HS-LS1-7, HS-LS2-5, HS-LS2-6, PS 1.B, PS 3.D
- **OLP**: 4.A.1, 5.A.2, 5.A.6, 5.A.7, 5.B.5, 5.C.23, 5.C.40, 5.C.41, 5.C.42, 5.C.43

ONLINE CONTENTS

- Coral Feeding Quiz
- *Coral: What Does it Eat?* Video Coral polyps are mostly stomach, with a mouth on top. Symbiotic algae, zooxanthellae, live in the coral and provide them with energy. Corals also snatch zooplankton and other food particles right out of the water.

CORAL FEEDING

This lesson is a part of the *Coral Feeding* unit, which explains what corals eat, how they feed, and additional ways that they obtain energy. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. Background Information
   - Predation
   - Symbiosis
   - Photosynthesis
   - Cellular Respiration

B. Lessons

Watch it! Coral – What Does It Eat?
- A worksheet to accompany the *Coral – What Does It Eat?* video

It's Tentacular!
- An activity to simulate feeding strategies of corals

Symbiosis Charades
- A game of charades adapted to learn different forms of symbiosis

Round and Round
- An art project to show the relationship between coral and zooxanthellae, photosynthesis and cellular respiration

Read it! What's on the Menu?
- A worksheet to accompany the *What's on the Menu: Sunlight, Plankton or Organic Debris?* field blog

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LESSON 1 It's Tentacular!

OBJECTIVE: Describe two ways that corals feed using the different body structures and explain why corals need more than one way to obtain food.

How do you eat? Of course, you put food in your mouth with your hands. Very few animals have hands, so most animals, like fish or sea stars, have to move their body to line their mouths up with their food source. But what do you do when you are a coral that doesn't have hands, but also can't move?

PART A:

INSTRUCTIONS: Mouth only feeding strategy:

1. Choose which partner will be the "coral" first.
2. The "coral" should sit on the ground. Turn your head so it is facing up and open your mouth.
3. The other partner should drop a set of five pieces of cereal, all at once, on the "coral". The cereal represents dissolved organic matter, inorganic matter, sediment, phytoplankton, and zooplankton that is found in the water column.
4. The "coral" should try to catch as many pieces of cereal as possible, without using your hands. You may sway back and forth, but you cannot get up from your seated position.
5. Repeat steps 3 and 4 four more times.
6. Find all of the cereal pieces that missed the "coral's" mouth. Count them and write down the data in Column B of *Table 1*.
7. Switch roles and repeat steps 2 through 6.

PART B:

INSTRUCTIONS: Mouth and tentacles feeding strategy:

8. The "coral" should sit on the ground. Turn your head so it is facing up and open your mouth. Put the underside of your wrists on each side of your mouth. Extend your fingers and wiggle them, to simulate tentacles. You may open and close your hands to further move your "tentacles".
9. The other partner should drop a set of five pieces of cereal, all at once, on the "coral".
10. The "coral" should try to catch as many pieces of cereal as possible, using your "tentacles" to guide the cereal to your mouth. You may sway back and forth, but you cannot get up from your seated position. Repeat steps 9 and 10 four more times.
11. Find all of the cereal pieces that missed the "coral's" mouth and tentacles. Count them and write down the data in Column B of *Table 1*.
12. Switch roles and repeat steps 8 through 11.
13. Clean up the cereal.
14. Calculate the number of cereal pieces caught during each round in Column C; subtract your value in Column B from 25 (which was the total number of cereal pieces dropped on each coral).
15. Calculate the success rate of catching the cereal for each type of feeding in Column D; divide Column C by 25, and then multiply by 100.
16. Answer the questions below.

TABLE 1:

Column A: Feeding strategy	Column B: number of missed cereal pieces	Column C: number of caught cereal pieces	Column D: success rate
Partner 1: Mouth only			
Partner 2: Mouth only			
Partner 1: Mouth and tentacles			
Partner 2: Mouth and tentacles			

INSTRUCTIONS: Answer the following questions.

1. What do corals eat?

2. Describe the two ways that corals can obtain food from the water column that were demonstrated in this activity.

3. Which was more successful: using only the mouth or both the mouth and tentacles? Use data from *Table 1* to support your answer.

4. How else do corals capture food in the water column?

5. Why do corals need more than one way to get food?

6. What other factors may affect coral feeding?

7. How can this experiment be improved?