

OCEAN CLASSROOM

Coral Reefs

EDUCATOR GUIDE

THE
UNIVERSITY
OF RHODE ISLAND
GRADUATE SCHOOL
OF OCEANOGRAPHY

Guiding Question

“How can we protect coral reefs?”

Good to Know

- The Earth has one big ocean with many features.
- The ocean and life in the ocean shape the features of Earth.
- The ocean is a major influence on weather and climate.

Activity 1

Research: Coral Reefs

Time required: approximately two 45-minute sessions

1. Distribute graphic organizer - Review categories to be researched
2. Utilize the sites listed to gather information.
3. Allow time for students to research independently
4. Gather as a whole group with graphic organizer and model note taking on graphic organizer
5. This activity allows students time to gather information and explain misconceptions
6. Assign groups of 4 students.
7. Each student is responsible for writing 2 informative paragraphs choosing the topics listed on the graphic organizer
8. Paragraphs are assessed: See Rubric below.

Activity 2

Coral Reef Informative Poster

(Students work in groups of four.)

Materials

- 1 four paint brushes
- four sponge brushes
- White poster boards (one per group)
- White cardstock for drawing corals
- Coral diagrams (See below.)
- Blue, green, yellow, pink, white, red and orange paint

Note Taking Skills

Purpose: Informative

Poster: Coral Reefs

1. Create a paint station
2. Make copies of coral drawings
3. Students work in groups to paint poster boards. Allow time to dry.
4. While students are waiting to paint the poster board: finish paragraphs and begin drawing coral diagrams. Each student is responsible to draw three to five types of coral on the white cardstock (See attached coral drawings)
5. Attach paragraphs to the painted boards
6. Students sponge paint coral diagrams using a variety of colors.
7. Allow time to dry.
8. Cut painted corals and attach to blue poster boards.
9. Students attach published paragraphs around the board and title the poster: Corals
10. If possible laminate the posters.

Activity 3

Coral Construction

View NOAA Video:

[NOAA For Teachers/Flower Garden Banks National Marine Sanctuary](#)

Complete Coral Construction activity

Wrap It Up

Coral Reef Presentations

Students present posters

(Invite other classrooms, parents or class to share information)

Resources

Student Advocates: Preventative Measures to Protect Ocean Life

Rethink: We All Need to Reduce, Reuse and Recycle

[Kids Take Action Against Ocean Plastics](#)

[Billions of Pieces of Plastic—Tween Tribune](#)

Articles

[University of Rhode Island: Coral Reefs Archives](#)

[What are Coral Reefs?](#)

[Tween Tribune: Scientist Prevent Wipeout of Coral Reefs](#)

Poster

[NOAA Coral Reef Chart](#)

Videos

[Coral Reefs 101/National Geographic](#)

[What are Coral Reefs and What's Their Purpose?](#)

[Jonathan Bird's Blue World - Exploring Coral Reefs](#)

[*Coral Realm Scuba Diving \(WARNING: Page Not Found\)](#)

Live Cam Underwater

[Great Barrier Reef Live Cam](#)

Educational Standards

Ocean Literacy Principles

- OLP 1 — The Earth has one big ocean with many features.
- OLP 2 — The ocean and life in the ocean shape the features of Earth.
- OLP 3 — The ocean is a major influence on weather and climate.
- OLP 4 — The ocean makes Earth habitable.
- OLP 5 — The ocean supports a great diversity of life and ecosystems.
- OLP 6 — The ocean and humans are inextricably interconnected.
(Much of the world's population lives in coastal areas.)
- OLP 7 — The ocean is largely unexplored.

NGSS, Grade 4

4-ESS2-1 Earth's Systems

- Science and Engineering Practices:
 - Planning and Carrying Out Investigations
 - Analyze and Interpreting Data
- Disciplinary Core Ideas:
 - ESS2-A: Earth Materials and Systems

Name _____ Date _____

**Note Taking:
Graphic Organizer****Coral Reefs**

Write the information below. If your source is printed material, include the page number. If your source is a web page, write the name of the page.

Source		
Page Number	Page Name	Date

Information

A. What are coral reefs? Where can they be found?	B. What are the parts of coral?	C. How does coral survive (eat and produce)?

Name _____ Date _____

Source

Page Number	Page Name	Date
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Information

D. What is bleaching?	E. What is the major threat affecting the survival of coral reefs?	F. What can be done to protect coral reefs?

Corals

Name _____ Date _____

What is coral?	What does it eat?
Describe habitat.	How do they reproduce?
Types of corals	What are the benefits of coral reefs?
What harms coral?	How can we protect coral reefs?

Corals

Name _____ **Answer Sheet, 1 of 2** _____ Date _____

<p>What is coral?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Animal <input type="checkbox"/> Related to jellyfish <input type="checkbox"/> Sessile <input type="checkbox"/> Polyp <input type="checkbox"/> 2mm to 30cm large <input type="checkbox"/> Symmetrical in shape <input type="checkbox"/> Makes and deposits calcium <input type="checkbox"/> Can live in colonies that create reefs <input type="checkbox"/> Soft and hard corals 	<p>What does it eat?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Corals have a symbiotic relationship with algae <ul style="list-style-type: none"> ▪ Algae provides: <ul style="list-style-type: none"> — 95% of coral needs (energy through the process of photosynthesis) — Oxygen — Gives coral its color ▪ Coral provides: <ul style="list-style-type: none"> — Carbon dioxide — Safe habitat <input type="checkbox"/> Coral also has tentacles with stingers that bring in food such as zooplankton <input type="checkbox"/> Mucus membrane traps nutrients/food from the water
<p>Describe habitat.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Corals live in the ocean <input type="checkbox"/> Shallow warm waters <input type="checkbox"/> Near equators <input type="checkbox"/> Sticks to hard surfaces <input type="checkbox"/> Layers create a reef 	<p>How do they reproduce?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Budding (Grows new coral that breaks off and attaches to hard surface) <input type="checkbox"/> Mass Spawning (Male and female release gametes into water, creates coral lava) <input type="checkbox"/> Brooding (Male releases gametes into water to be captured by female, creates coral lava) <input type="checkbox"/> Mass Spawning and Brooding occurs only once per year: <ul style="list-style-type: none"> ▪ Reproduce <ul style="list-style-type: none"> — lunar cycle, at night — Temperature of water is right — Colonies (reproduce at the same time)

Corals

Name _____ **Answer Sheet, 2 of 2** _____ Date _____

<p>Types of corals</p> <ul style="list-style-type: none"> <input type="checkbox"/> Hard Corals <input type="checkbox"/> Soft Corals <input type="checkbox"/> Brain Coral <input type="checkbox"/> Fringing Reefs <input type="checkbox"/> Barrier Reefs 	<p>What are the benefits of coral reefs?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Regulate planet temperatures <input type="checkbox"/> Colonies produce limestone <input type="checkbox"/> 30% of marine life depends on coral reefs for survival <input type="checkbox"/> Provides homes for ocean life <input type="checkbox"/> Protects coast from erosion <input type="checkbox"/> Produces sand for beaches
<p>What harms coral?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Climate Change (affects water temps.) <input type="checkbox"/> Fishing industries <input type="checkbox"/> Bleaching <input type="checkbox"/> Thermal stress <input type="checkbox"/> Deforestation <input type="checkbox"/> Ships and humans too close to reefs <input type="checkbox"/> Changes in storm patterns <input type="checkbox"/> Changes in precipitation <input type="checkbox"/> Pollution (Carbon Dioxide) <input type="checkbox"/> Burning fossil fuels <input type="checkbox"/> Fertilizers <input type="checkbox"/> Raising livestock <input type="checkbox"/> Deforestation 	<p>How can we protect coral reefs?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Avoid touching coral reefs <input type="checkbox"/> Reduce carbon footprint <input type="checkbox"/> Drive less (Less emissions in air) <input type="checkbox"/> Reduce, reuse, recycle <input type="checkbox"/> Energy efficient appliances <input type="checkbox"/> Use less water <input type="checkbox"/> Print less <input type="checkbox"/> Reduce fertilizers

Coral Paragraph Rubric

Lead Sentence

1. Lead sentence attempts to introduce the topic on coral.
2. Lead sentence begins to introduce the topic on coral and uses some descriptive and scientific language.
3. Lead sentence introduces the topic focused on coral and uses descriptive and scientific language to captivate the reader.

Detailed Sentences

1. Less than four sentences and/or not all information relates to the topic on coral.
2. Four to six detailed sentences that include relevant information regarding the topic on coral.
3. Four to six detailed sentences that include relevant and detailed information regarding the topic on coral.

Concluding Sentence

1. Concluding sentence is not included.
2. Concluding sentence begins to summarize the purpose of the paragraph.
3. Concluding sentence summarizes the purpose of the paragraph using descriptive language and details.

Grammar and Spelling

1. Paragraph contains some accurate grammar and spelling.
2. Paragraph mostly contains accurate grammar and spelling.
3. Paragraph contains accurate grammar and spelling.