



Khaled bin Sultan
Living Oceans
Foundation

STANDARDS

- **CCSS:** RST.9-10.1, 2, 3, 4, 5, 7, 8, 9, 10; RST.11-12.1, 2, 3, 4, 8, 9, 10; W.9-10.1, 2, 4; W.11-12.1, 2, 4; SL.9-10.1, 3, 4, 6; SL.11-12.1, 3, 4, 6
- **NGSS:** ESS 2.A, ESS 2.C, ESS 2.E, HS-ESS2-1, HS-ESS2-7
- **OLP:** 1.A.4, 5.B.1

ONLINE CONTENTS

- [Reef Types Quiz](#)

REEF TYPES

This lesson is a part of the *Reef Types* unit, which explains bathymetric features of the ocean floor and how this relates to coral reefs. Below is a summary of what is included in the entire unit.

UNIT CONTENTS

A. [Background Information](#)

- Reef Types
- Bathymetric Features of the Oceans' Floor
- Coral Reef Geomorphology Introduction
- Types of Coral Reef Geomorphology

B. Lessons

[Where Can Corals Grow?](#)

- An activity to make a bathymetry model and analyze it for potential coral growth

[Reef Typing](#)

- An activity to classify reef types (barrier, fringing, atoll)

[Read it! Lagoon Reefs](#)

- A worksheet to accompany the [Lagoon Reefs of Fakarava](#) field blog



LESSON 2

TEACHER'S NOTES

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LEARNING OBJECTIVES

- Differentiate the three main types of reefs and other classifications of reefs.
- Recognize that corals may not fit perfectly into a single classification.

KEYWORDS

- Atoll
- Barrier Reef
- Coral Reef Geomorphology
- Fringing Reef
- Lagoon
- Patch Reef

MATERIALS

- Lesson 2: Reef Typing** student worksheet
- Appendix A: Reef Pictures** (one set per group)
- Notebook paper

INTEGRATING SUBJECTS

- Writing
- Public Speaking

STANDARDS

- CCSS:** RST.9-10.4, 5, 7; RST.11-12.8; W.9-10.1, 2, 4; W.11-12.1, 2, 4; SL.9-10.1, 3, 6; SL.11-12.1, 3, 6
- NGSS:** ESS 2.E, HS-ESS2-7
- OLP:** 5.B.1

PROCEDURE

- In order to reuse the activity, laminate the reef pictures found in **Appendix A: Reef Pictures**.
- Teach *Background Information* section B) *Coral Reef Geomorphology*.
- On the board or another place that will be visible throughout the class, have students brainstorm differences between the different reef classifications (fringing reef, barrier reef, atoll, and patch reef).
- Hand out **Lesson 2: Reef Typing** student worksheet.
- Assign groups of 2-3 students and give each group a copy of **Appendix A: Reef Pictures**.
- Explain to students that in science, you have to have evidence to back up your claim. Sometimes scientists see the same data and make different conclusions. Their explanation is what is important and it must include evidence of what they are trying to claim.
- Give the students time to classify each picture.
- Have students orally explain how they classified a picture. Try to call on every student. If you want to incorporate purposeful movement, have the students walk to an area of the room to vote for a classification. Ask students in each area why they chose that classification. Allow students a chance to change their vote after hearing from others.
- Have students answer questions on the student worksheet.

LESSON 2

REEF TYPING

INSTRUCTIONS:

1. Look through the pictures of different coral reefs of the Society Islands in French Polynesia.
2. Take notes on the characteristics of each one.
3. Decide how you would classify the reef. The choices are: fringing reef, barrier reef, atoll, and patch reef. Some pictures may have more than one type of reef. Some may fall in between different types.
4. If you think a picture has more than one reef classification on it, do a quick sketch of the picture in the notes box and label the specific areas with letters (A., B., etc.)
5. On your own paper, write a short paragraph for each picture which includes which reef classification(s) you see. Be sure to back up your answer with an explanation of why you think this using what you have learned today.
6. Answer the questions.

Photo #1

Reef Type(s): _____

Photo #2

Reef Type(s): _____

Photo #3

Reef Type(s): _____

Photo #4

Reef Type(s): _____

Photo #5

Reef Type(s): _____

Photo #6

Reef Type(s): _____

Photo #7

Reef Type(s): _____

Photo #8

Reef Type(s): _____

INSTRUCTIONS: Answer the following questions.

1. Were some pictures easy to classify? Why do you think this?
2. What characteristics did you use to classify the three main types of reefs (barrier, fringing, and atoll)?
3. Did everyone else have the same classifications as you did? Give an example.
4. After hearing from other students, did you want to change your classification? Why or why not?

LESSON 2

REEF TYPING

INSTRUCTIONS:

1. Look through the pictures of different coral reefs of the Society Islands in French Polynesia.
2. Take notes on the characteristics of each one.
3. Decide how you would classify the reef. The choices are: fringing reef, barrier reef, atoll, and patch reef. Some pictures may have more than one type of reef. Some may fall in between different types.
4. If you think a picture has more than one reef classification on it, do a quick sketch of the picture in the notes box and label the specific areas with letters (A., B., etc.)
5. On your own paper, write a short paragraph for each picture which includes which reef classification(s) you see. Be sure to back up your answer with an explanation of why you think this using what you have learned today.
6. Answer the questions. **Answers may vary.**

Photo #1

Reef Type(s): **Atoll**

This is an atoll because it is round in shape, enclosing a lagoon where a volcano once was.

Photo #2

Reef Type(s): **Barrier reef**

This seems to be a barrier reef because there is a lagoon between the reef and the land.

Photo #3

Reef Type(s): **Fringing and patch reefs**

Photo #4

Reef Type(s): **Barrier reef**

I think this might be a barrier reef. It does not seem circular, like an atoll. There is no land near it, so it is not a fringing reef. In the foreground are some patch reefs.

Photo #5

Reef Type(s): Patch, fringing, and barrier reefs

There are many types of reefs here. Front and center is a large patch reef. To the left of that is a fringing reef. Behind the island, there seems to be a small segment of barrier reef, where a lagoon has formed.

Photo #6

Reef Type(s): Fringing reef

It looks like there is a fringing reef taking up the bottom third of this photo. However, maybe it is shoreline and this picture actually shows a barrier reef, as there is definitely a lagoon in the middle of the photo, with reef in the backdrop.

Photo #7

Reef Type(s): Patch and barrier reef

In the foreground is a small patch reef. In the background is a thin barrier reef, with the lagoon taking up most of the photo.

Photo #8

Reef Type(s): Atoll

The circular shape of this reef makes me believe it is an atoll. It looks like there are small patch reefs in the lagoon.



INSTRUCTIONS: Answer the following questions.

1. Were some pictures easy to classify? Why do you think this?

Answers may vary.

2. What characteristics did you use to classify the three main types of reefs (barrier, fringing, and atoll)?

Barrier can be classified by there being a lagoon between land and the reef. Fringing reefs are right up against the land, without a lagoon. Atolls are approximately round in shape, since they form around a volcano.

3. Did everyone else have the same classifications as you did? Give an example.

Answers may vary.

4. After hearing from other students, did you want to change your classification? Why or why not?

Answers may vary.

PHOTO #1



PHOTO #2



PHOTO #3



PHOTO #4



PHOTO #5



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PHOTO #6



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PHOTO #7



PHOTO #8

