

A Deep Dive into Ocean Zones

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Grade Level	6
Duration	2-4 class periods

National Standards

GEOGRAPHY

Element 1: The World in Spatial Terms

3. How to analyze the spatial organization of people, places, and environments on Earth's surface.

Element 2: Places and Regions

5. That people create regions to interpret Earth's complexity

AZ Standards

ELA

Reading

Key Ideas and Details

6.RI.1 Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

6.RI.4 Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings.

6.RI.7 Integrate information presented in different media or formats (e.g., visually, quantitatively) as well as in words to develop a coherent understanding of a topic or issue.

Writing

Text Types and Purposes

6-8.W.1 Write arguments to support claims with clear reasons and relevant evidence.

a. Introduce claim(s) and organize the reasons and evidence clearly.

b. Support claim(s) with clear reasons and relevant evidence, using credible sources and demonstrating an understanding of the topic or text.

SCIENCE

Core Ideas for Using Science

U1: Scientists explain phenomena using evidence obtained from observations and or scientific investigations. Evidence may lead to developing models and or theories to make sense of phenomena. As new evidence is discovered, models and theories can be revised.

Life Science

6.L2U1.13 Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors.

Arizona Social Science Standards

GEOGRAPHY

The use of geographic representations and tools helps individuals understand their world.

6.G1.1 Use and construct maps, graphs, and other representations to explain relationships between locations of places and regions.

SIOP Elements		
Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Arizona English Language Proficiency Standards

Stage IV

Basic

Reading

Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas. The student will demonstrate knowledge of reading comprehension by:

B-8: Summarizing the main idea and supporting details from text.

B-21: applying understanding of content area vocabulary within math, science, and social studies texts.

B-23: locating information in print and electronic reference sources (e.g., encyclopedia, atlas, almanac, dictionary, thesaurus, periodicals, website, and textbooks) for a specific purpose.

Writing

Standard 1: The student will express his or her thinking and ideas in a variety of writing genres.

B-6: writing a variety of functional text (e.g., *instructions*, *directions*) that addresses the audience, stated purpose and context.

Overview

The ocean is one of the world's most complex and diverse ecosystems. There are five major zones in the ocean with distinct characteristics and life in each zone. As the ocean depths increase, the temperature drops, plant life becomes non-existent, and animals must adapt to their high-pressure, low-light surroundings in order to survive. Scientists are still learning about life in the lower layers of the ocean. In fact, more people have traveled to the moon than to the ocean depths. While space may be exciting, there is plenty of life yet to be discovered right here on our own planet just below the ocean's surface.

Purpose

In this introduction to the ocean and marine life at various depths, students will describe each layer as well as the traits commonly present in marine animals at these different levels. They will also learn key vocabulary for describing ocean layers and apply their understanding of animal adaptations by creating an animal that would survive at a specific layer and justifying their thinking. This lesson was designed with supports for ELs and other diverse learners.

Key Vocabulary

Note: Vocabulary resources are available at two levels and are embedded in the lesson procedures.

- **Sunlight/Epipelagic Zone:** First ocean layer that receives most sunlight

A Deep Dive into Ocean Zones

- **Twilight/Mesopelagic Zone:** Second ocean layer that gets darker, colder, and has increased pressure
 - **Midnight/Bathypelagic Zone:** Third ocean layer has no light or plant life, scarce food sources, and high pressure.
 - **Trench/Hadalpelagic Zone:** Deepest layer of the ocean located in underwater trenches.
 - **Abyss/Abyssopelagic Zone:** Ocean layer at the deep ocean floor with a muddy dirt and marine snow
 - **trenches:** a long narrow valley
 - **marine:** relating to the sea and the creatures that live in the ocean
 - **coral reef:** a ridge or group of rock-like structures made up of small sea animals shaped like tubes
 - **adaptation:** A change that makes it easier for an animal to survive
- a. Distribute the Write to Learn worksheet to students and project the NearPod module (or use other resources on the ocean).
<https://share.nearpod.com/dlgf2nX2gM>
 - b. Instruct students to write their notes in the various boxes in the first column. Acceptable notes are: sentences, phrases, or pictures. All language levels should be able to participate.
 - c. Have students share orally to the whole class some of their observations. Record these ideas on chart paper or whiteboard.
 - d. Now have students complete the Vocabulary Pre-Assessment. (**Preparation: Adapting content; Linking to Background. Scaffolding: Comprehensible Input; Integrating Process: Speaking, Listening, Writing**)

Materials

- Vocabulary Pre/Post Assessment (2 versions—EL and English proficient)
- Write to Learn worksheet
- Epipelagic Zone reading
- Mesopelagic Zone reading
- Bathypelagic Zone reading
- Abyssopelagic Zone reading
- Hadalpelagic Zone reading
- Ocean Zone Notes worksheet (2 versions—EL and English proficient)
- Vocabulary Cards (best if printed in color) (2 versions—EL and English proficient)
- Vocabulary Picture Sheet
- Designing a Marine Creature
- Classify and Justify worksheet (2 versions—EL and English proficient)
- NearPod Module to support this lesson can be found at: <https://share.nearpod.com/dlgf2nX2gM> or use an equivalent source for visuals
- Optional: Colored pencils/markers/crayons

Objectives

The student will be able to:

1. Define and describe the five ocean layers.
2. Describe and explain traits and adaptations of animals in various ocean layers.
3. Create a marine creature and justify an appropriate adaptation given to this creation.

Procedures

SESSION ONE

Engage:

SESSION TWO

Explore:

Prior to the lesson: Cut the Vocabulary Cards into 3 sections (pictures, vocabulary words, definitions)

- e. Distribute or project the Vocabulary Picture Sheet. Have students discuss the pictures in small groups or as a whole class. Allow them to state what they notice, tell stories, and ask questions. You might provide sentence stems for students like “In this picture, I see...” “This picture reminds me of...” “When I see this picture, I wonder...” (**Integrating Process: Speaking, Listening, Writing**)
- f. Distribute the Vocabulary Cards to each group. Have students sort the all of the cards into three piles: Pictures, Vocabulary Words, and Definitions.
- g. Then have students match the vocabulary words to a picture. They explain their thinking to the group. Group members **cannot** disagree at this point, but more than one card may go under a single category. (**Integrating Process: Speaking, Listening**)
- h. Now have students adjust the cards so each has vocabulary word is matched with one picture. At this time, students can agree or disagree with the placement of the cards and adjust as the team decides. Again, sentence stems may be helpful. “I respectfully agree/disagree because...” “I think this goes here because...” “One idea might be...” (**Integrating Process: Speaking, Listening**)
- i. Students then match the definition cards following the same pattern.
- j. When the groups are finished sorting the cards, use the vocabulary picture sheet to tell a story relating each word and picture. (For example, “Today we’re talking about **marine** creatures.”

A Deep Dive into Ocean Zones

Marine creatures live in the sea. There are **marine** plants and animals and a **marine** habitat. One type of **marine** animal is the **coral reef**. It's actually an animal, not a plant or a rock! It's made up of small polyps...ect")

- k. At this point the students can adjust the cards at their table to match appropriate pictures, words and definitions. Have groups to share out their ideas. **(Integrating Process: Speaking, Listening; Scaffolding: Comprehensible Input; Grouping Options: Small Groups; Application: Hands on, Promotes Engagement)**

SESSION THREE

Explain:

- l. Post in two separate areas of the room, the 5 readings dealing with the 5 ocean zones based on English proficiency. Distribute the appropriate level of the Ocean Zone Notes worksheet to each student.
- m. In small groups, students will complete a gallery walk to read and write information from each ocean layer.
- n. Have students discuss their notes with another group adding to their information and understanding.
- o. Share as a whole group and record class ideas on the whiteboard or chart paper. **(Scaffolding: Comprehensible Input; Integrating Process: Speaking, Listening, Reading, and Writing; Grouping Option: Small Group/Whole Group)**

Engage:

See extension ideas for a possible addition between this section and the following. This is an optional activity that may work to enhance understanding of adaptations.

- p. Redistribute or have students take out their Write to Learn worksheets. Use a second video or book to have students take notes and make connections to their learning from the last lesson.
- q. Discuss in small groups/whole class what students wrote.
- r. Continue recording class ideas on chart paper or on the whiteboard.
- s. Review charted ideas about ocean zones from last lesson using class chart and student notes. **(Preparation: Linking to background; Scaffolding Comprehensible Input; Integrating Process: Speaking, Listening, Reading, Writing)**

Elaborate:

- t. Distribute and explain the Designing a Marine Creature worksheet. Using the colored markers or pencils, students will draw their own marine creature, list/label adaptations their marine animal has, and justify the marine zone of their animal.

Either model drawing a marine creature or show a student example so students understand the task. **(Scaffolding: Modeling)** Designing a Marine Creature worksheets can be taken home and completed as homework.

SESSION FOUR

- u. When students are done, have them fold their paper to hide the justification of their zone. Have students trade papers and guess which layer they believed the marine creature would live in and why. Students can compare their thinking to that of other students and make adjustments at this time. **(Integrating Process: Speaking, Listening, Reading, Writing; Grouping Options: Small groups; Application: Hands-on, Promotes Engagement)**

Evaluate:

- v. Now have students complete the Vocabulary Post-Assessment and the Classify and Justify worksheet by writing a paragraph using three vocabulary words in the first response area.
- w. Instruct students to trade papers and read the paragraph of a peer. They will now add at least one more bit of information into one of the boxes (agree or disagree, ask a question, or support an idea). Students trade papers two more times with two new students repeating the process. The original author will review the input and write a revised paragraph incorporating the new ideas.

Assessment

Writing, Social Studies and Science

The Classify and Justify assessment can be graded using the 6 Traits Writing Rubric focusing on the area of Ideas and Organization. A 4 or higher will be considered mastery.

The Designing a Marine Creature worksheet can be graded for effort and completeness as well as correctly identifying the right ocean zone.

Extensions

Students can visit an aquarium website like <http://www.aquariumofpacific.org/> and use the webcam and online learning features to learn about and present information on a marine animal and the adaptations it has to survive at this layer. For the SEI/EL classrooms, this may be a helpful activity to insert into the lesson between learning about the layers and creating their own creatures. It solidifies and gives students different ideas about marine

A Deep Dive into Ocean Zones

adaptations. Students can present what they know by making a poster or digital presentation (Google Slides works well for collaboration).

Students may also work to create a model of the animal they created using recycled materials, markers, fabrics, and other found objects.

Using their marine animals, students and teachers could create a class book to showcase the animals and their adaptations with each student contributing a page.

Pictures for vocabulary cards and informational texts: Pixabay.com, <https://web.whoj.edu/hades/imagesvideo/>, and <http://www.aquariumofpacific.org/>

Teacher-created NearPod lesson for write to learn accessible at:

<https://share.nearpod.com/dlgf2nX2gM>

Suggested picture book for all ages:
Bessessen Brook. Look Who Lives in the Ocean.
Phoenix, AZ: Arizona Highways, 2009.

Sources