

Creature Features

Explore

Grade: 1	Implementation Practice: Whole Class
Subject Area: Science	Supporting Content: Writing
Objective(s): Students will record their observations, including labeled illustrations, of the creatures found on a coral reef.	

Standards Addressed

NGSS	Performance Expectation 1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.		
	Disciplinary Core Idea(s)	Science and Engineering Practices	Crosscutting Concept(s)
	<ul style="list-style-type: none"> • LS1.A: Structure and Function 	<ul style="list-style-type: none"> • Constructing Explanations and Designing Solutions 	<ul style="list-style-type: none"> • Structure and Function
CCSS	ELA-Literacy W.1.7 Participate in shared research and writing projects		

Vocabulary and Skills

Key Terms			Key Skills
structure	characteristics	fish	Observation
animal	survive	coral	Inferencing
ocean	thrive	habitat	Recording

Essential Question(s):

What characteristics (structures/body parts) help animals survive in their habitat?

Guiding Question(s):

What are the needs of animals?

How do animals get the things that they need?

What are the general characteristics of animals found on a coral reef?

How do the characteristics of animals that live on a coral reef help them meet their needs?

Teacher Background Information

5E Instructional Model – Explore

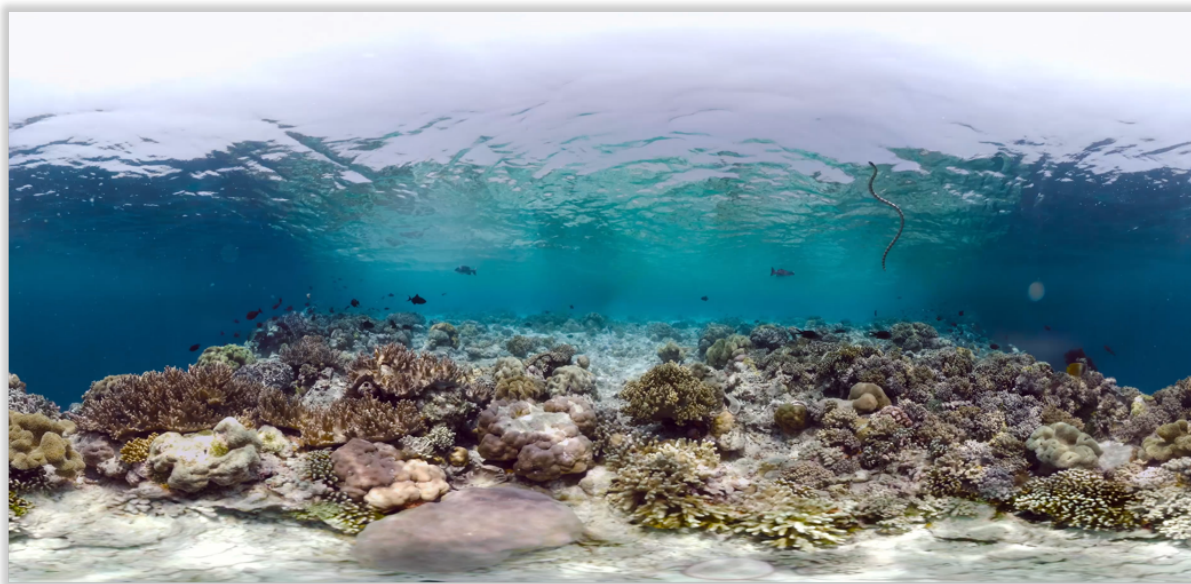
The 5E instructional model organizes learning experiences so that students have the opportunity to develop their own understanding of the concept over time by building what they know. There are five phases of learning including: Engage, Explore, Explain, Elaborate, and Evaluate. The Explore phase is an opportunity to “level the playing field” by creating a common experience for all students from which they can compare results and ideas and continue to build new knowledge.

During the Explore, students are expected to “mess around” or experiment and investigate and are not expected to have all of the answers. Students should be investigating new ideas and figuring out how to solve problems based on their observations and recorded data. Students should be encouraged to carry out their ideas and to share their ideas with classmates. The teacher’s role is to encourage students to interact with the materials as well as with each other. During this phase, it is critical that the teacher ask probing questions to help students make sense of their experiences, but not provide answers to every question. It is important to listen to students’ conversations and take note of misconceptions and misunderstandings as they arise for future resolution during the Explain phase. This should be a time for open exploration by the students.

As the lesson is introduced, be sure to let the students know that this is an opportunity for exploration and that no question or observation is too small or unimportant. Encourage students to use the tools at their disposal (classroom library, notebooks, each other, etc.) to engage in the lesson.

Content Background – Coral Reefs

In warm shallow waters, corals colonize rocky areas forming one of the most productive and diverse ecosystems in the world. Thousands of different organisms can be found on a single reef. 25% of marine life lives together on coral reefs and coral reefs take up less than 2% of the sea floor. With so many different species and individuals, there are many opportunities for organisms to work together and to compete with one another. Coral reefs are home to a variety of invertebrate and vertebrate animals as well as plants and algae.



The image provided is a still shot taken from the 360° video associated with this lesson. Note the complexity of the reef itself and the variety of organisms present including:

- Corals – invertebrate animals related to jellyfish and sea anemones
- Fishes – vertebrate animals similar to freshwater fish in form and function
- Sea snake – vertebrate animal related to terrestrial snakes

Content Background – Reef Fish

All animals display a set of characteristics shared by all living things. Animals are: made up of body parts, able to grow and develop, able to respond to their environment, able to reproduce, and able to break down food for energy. Animals living in the ocean have the same set of characteristics; they are just different and more suited for life in the water.

For example: All fish have mouths, eyes, and noses (typically small holes called nares above their mouths) that perform the same function as ours do, to eat/taste, see, and smell. Fish have fins instead of arms and legs. Instead of lungs, they have gills for gas exchange. Fish are covered in scales rather than fur or feathers for protection. Some fish lay eggs while other fish give birth to live young. However, all fish and other organisms that live in the ocean have unique structures that help them meet their needs.

Advance Preparation

- Teacher will need to preview the 360° video and be familiar with the technology used to view and manipulate the video
- Teacher will ensure student devices are preloaded or set to watch the video
- Teacher will review the background information provided
- Access to students' science notebooks

Potential Misconceptions

- Animals that live in the ocean (i.e. fish, coral) are not actually animals
- Fish do not breathe air. Instead they breathe water. (Fish and other animals with gills are able to absorb the oxygen molecules dissolved in water, and do in fact breathe air.)
- Animals found in the ocean do not have the same basic needs as animals living on land

Before Viewing

Discussion Question(s):

- What are animals?
- How are animals different from plants?
- What are the needs of animals? (air, water, food, shelter)
- How do animals get what they need from their habitat? (animal structures and their function)

Student Activity: *(Access student prior knowledge and build background knowledge.)*

Use the discussion questions to review the needs and characteristics of living things. Then, create a comprehensive class list of "Animal Needs and Characteristics." Once the list is complete, have students record it in their science notebooks for future reference.

While Viewing

Discussion Question(s):

What type of animals do you see?

What are the animals doing?

How are the animals getting around?

Do the animals you see look like animals on land?

What is different about them (compared to animals that live on land)?

What is the same (compared to animals that live on land)?

What does the reef look like? Is it flat and smooth or is it bumpy with lots of little hiding places?

What characteristics / structures do you think help the animals survive on the coral reef?

Student Activity: (How are students engaged? How are students recording their observations and processing what they are learning?)

Allow each student the opportunity to view the 360° video at least once. However, twice (or more) will give the students the opportunity to make more thorough observations. While the students are watching, ask the various discussion questions to get them thinking about the unique adaptations of the animals (primarily fish) they are observing.

While students are watching the video, record their commentary on the board for review.

After Viewing

Discussion Question(s):

How is a coral reef different from any habitat on land?

What sort of structures or characteristics help animals survive on a coral reef?

Student Activity: (How are students synthesizing and analyzing what they learned from the activity/video?)

In their notebooks, ask students to draw their own image of a coral reef. Their drawing should include the nooks and crannies found on the reef, the variety of coral shapes and sizes, as well as a variety of fish and other animals.

Once their reef drawing is complete, ask students to draw and label, to the best of their ability (Note: there are no right/wrongs this is an Explore), a fish and describe the attributes it has to survive on a coral reef. These attributes could include, but are not limited to, their observations of: fins, gills, being small in size, being fast moving, being brightly colored, etc. Students with more prior knowledge will be able to naturally provide more details; however, all students who watched the video should be able to provide a basic illustration of a reef fish.

Extension Ideas

- Students can compare and contrast the appearance of a coral reef habitat with the schoolyard habitat by identifying the sizes/shapes of the things that make them up as well as the various living things found in them.
- Students can compare and contrast, with illustration, their family pet (or other terrestrial animal) with their illustration and description of a reef fish.