3.2.3 In the Zone!

Overview

The vast size of the ocean makes it more complicated than a terrestrial environment to describe. While the characteristics that define a terrestrial habitat are the climate and the organisms that call it home, they are not sufficient to define ocean habitats. The immense variations in temperature, depth, salinity, light, and water pressure in the ocean ecosystem have led scientists to divide the marine environment into three zones. These include the intertidal zone, the pelagic zone, and the benthic zone. By recognizing the variations in habitats among the three zones, which relate to the differences in depth of water and distance to shore, scientists can make sense of the vast biodiversity of the ocean.

In the same way, students working to understand the complexity of the ocean's habitats can use an organizational tool called a concept map to make sense of the body of knowledge about the ocean. A concept map is a web diagram that illustrates conceptual knowledge. It gathers information into a visual tool that describes relationships among subgroups and categories. It helps students attain deep learning because they can see the whole picture.

Learning Objectives

- Scientists recognize that the ocean environment has a variety of habitats based on the depth of water and distance to shore.
- Each of the three zones, intertidal, pelagic, and benthic, has specific physical characteristics that, in turn, support a unique set of plants and animals.
- A concept map is a graphic organizer that illustrates the big picture connections among ideas surrounding a central concept.

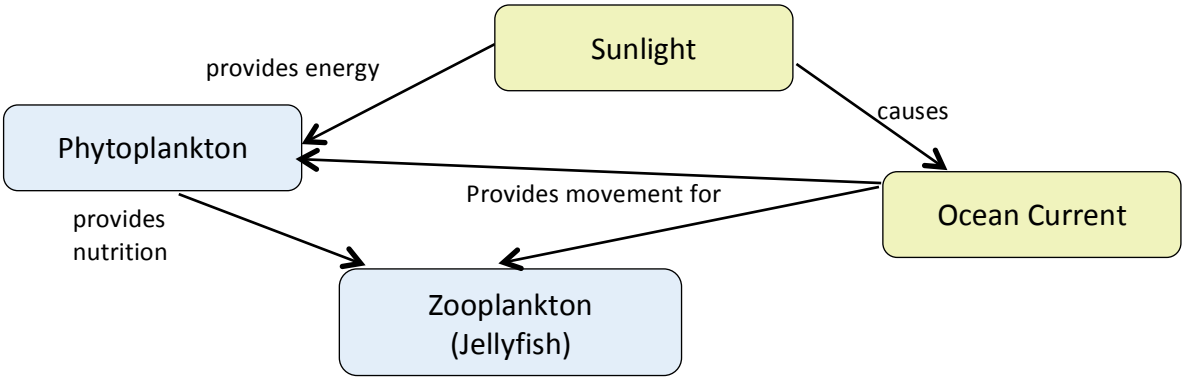
Student Activity: In the Zone!

Materials

Access to the Internet
Color printer
Poster board
Colored pens, markers, or colored pencils
Glue stick
Ruler (optional)

Advance Preparation

Practice making a concept map using some simple examples. For instance, you could make a concept map of the units you study in this year's science class. Or you could make a concept map of the defensive moves you practice as a soccer team. Pick a topic you know well so that you can get used to making connections among concept labels with arrows that create statements. See below for a brief example of a concept map.



Process and Procedures

1. Carefully read Unit 3: Ocean Ecosystems, Chapter 2: Marine Ecosystems. Take notes using a table like the one below:

Ocean Zones and Characteristics

Zones	Physical Characteristics	Biotic Characteristics (plants and animals)
Intertidal		
Pelagic		
Benthic		

2. Use your notes in the table to make a rough draft of a concept map that graphically organizes all the information from the table into a big picture of the ocean ecosystem and its parts. Be sure to have clear concept labels with connecting lines and statements.

3. Search the Internet for images of the plants, animals, and physical characteristics you have listed in your notes. Sketch or print small (about 3 cm across) copies of the images.

4. Assemble a final draft of your concept map on the poster board. Make clear concept labels using words and illustrate them with the pictures you collected in step 3. Use the ruler to keep your connecting lines straight so that you can easily write connecting statements. Use ink, markers, or colored pencils to make your work look professional.

Assessment

Exchange concept map posters with another student. “Read” the concept map by looking at each concept label and its connecting statements. Write down each of these conceptual statements in a list on a piece of paper. Evaluate the concept map:

- Which statements are factually correct?
- Which statements contain some errors?
- Are there any statements that are missing?
- How complete is the “big picture”?

Meet with the student with whom you exchanged concept map posters and share your evaluations.