

Ocean Concept Mapping: Teacher Guide

Guiding Question

- How are large-scale ocean processes connected?

Purpose

- Understand the connections between ocean processes through concept mapping.
- Can be used to assess student prior knowledge.

Estimated Time

- 45 minutes

Materials and Tools

- Concept Map Handout (one per team)

Preparation

- Make handout copies

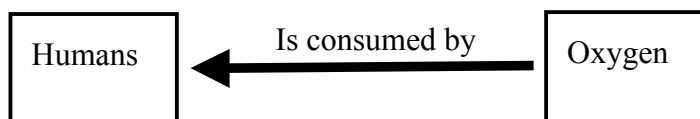
What to Do and How to Do It

Concept maps are graphic organizers that can help students organize their understanding of a topic. In this lesson, students will use a provided graphic organizer to demonstrate knowledge of large-scale ocean processes.

Divide students into 6 teams. Tell students that they will receive a concept map with only the boxes labeled. The boxes represent ocean pools, processes and the factors that influence them. Ask them to work with their team to connect the boxes with arrows and action words. They should be able to use the connecting word to form a sentence with the two boxes. For example:



Can be read as “Humans consume Oxygen.” If the arrow were pointed in the other direction, it would read incorrectly as “Oxygen consumes Humans.” However, you could write:



To read: “Oxygen is consumed by Humans.”

Each team will also receive one question to consider while they work (see questions below). They will work with their group to make as many connections as they can. They can draw in their own boxes if they think of other important ocean processes not represented. The boxes are grouped by color and shape, so as they work, they should think about what the colors and shapes may mean.

When students are done, have each team report on their question. Discuss what the colors/shapes represent (see below for answers). Discuss any other questions students may have and show Concept Map Example to fill in any gaps that were missed.

Concept Map Questions for Students:

1. How are humans connected to phytoplankton?
2. Why is ocean temperature important to zooplankton?
3. How do phytoplankton affect fisheries (indirectly)?
4. What do the circles represent?
5. How are humans connected to the global atmospheric temperature?
6. How do phytoplankton depend on the weather?

Concept Map Color/Shape Key:

Circle = Gasses

Blue = Below water variables

Purple = Above water variables

Orange = Humans

Green = Other life

Red = Bad events

Grey = Physical processes

Assessment

This activity can be used as a pre- or post- assessment of student knowledge. For assessment, use their answers to the team questions as well as the extent of the connections their team was able to make. The Concept Map Example can be used to assess the completeness of student work.