Carbon Cycle in the Oceans – Student Activity

Increased carbon dioxide in the oceans can cause ocean acidity. This can cause impacts such as coral bleaching which can kill the coral if the water remains acidic for a prolonged period of time. Water plants can help reduce the acidity of water by absorbing the carbon dioxide during photosynthesis.

Aim   **To demonstrate the effect of water plants on ocean acidity.**

Materials per group:
- Three plastic bottles with lids (500 – 750 mL bottles work best)
- Effervescent tablets (e.g., Aspro Clear)
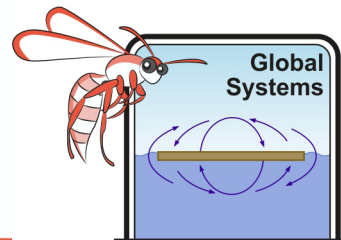- Water plant (e.g., Elodea/ Pondweed)
- pH indicator
- 3 x Beakers

Method
1. Fill each bottle nearly to the top with tap water.
2. Add an effervescent tablet to two of the bottles and screw the lids on tightly.
3. When the tablet has stopped reacting, add the water plant to one of the bottles and replace the lid.
4. Leave the sealed bottles in a well-lit position out of direct sunlight.
5. After four hours pour out about 50 ml of water from each bottle into separate beakers. Add a few drops of indicator to determine the pH. Record your results in the table.
6. Repeat step five after one day and two days.

Results

Test	pH after 4 hours	pH after 1 day	pH after 2 days
Tap water			
Tap water plus effervescent tablet			
Tap water plus effervescent tablet and water plant			

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1. What effect did adding an effervescent tablet to the water have on the pH? _____

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2. What happened to the pH of the water with the water plant in it over the experimental trial period?

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Discussion

Using scientific knowledge, explain how the plant effected the pH of the water?

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Kelp (a type of seaweed) is often hailed as one of the best absorbers of carbon dioxide from the oceans. Warming oceans are affecting many kelp forests negatively, what impact could this have on ocean acidification?

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Extension: Research more about what has happened to kelp forests in Tasmania and globally, and what some kelp farmers are doing to counteract this.