



## Hands-on Marine Biology Activity 2

### Topic and Learning Objective:

Topic is ocean acidification and the role of dissolved carbon dioxide as a driving factor in ocean acidification.

Learning objective is to understand how a lower pH causes reefs (chalk) to dissolve faster.

### Alignment with NGSS Grades 3-5

#### Disciplinary Core Ideas

ESS2.C: The Roles of Water in Earth's Surface Processes

- Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.

#### Crosscutting Concepts

Scale, Proportion, and Quantity

- Standard units are used to measure and describe physical quantities such as weight and volume.

### Materials:

- White vinegar
- Chalk
- Water
- Cups
- Stopwatches
- pH strips

### Detailed Description

Students will be split up into groups and required to formulate a hypothesis on which substance, vinegar or water, will dissolve the chalk faster and why. After they have formulated their hypothesis, the students will measure equal amounts of water and vinegar and pour them into separate cups. The cups will be tested for acidity using the pH strips. Then they will place a small piece of chalk in each cup and time how long that it takes for each one to dissolve. Their observations will be recorded and compared.



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### **How will you conclude the lesson to enforce the learning objective:**

Students will be encouraged to share their data and results and discuss them as a class. Their attention will be drawn to real life examples of ocean acidification and how it is affecting our planet.

### **What science process skills will this lesson exercise?**

Scientific method and measuring and collecting data points to support their hypotheses.

**Safety precautions:** Minor hazard from the vinegar making sure that it does not get into their eyes and that they wash their hands.