Lesson Plan

Rising Temperatures

Book: *Restoring the Great Barrier Reef*
Series: Saving Earth's Biomes
Level: Navigator

Objective

To help students interpret information in a graph and use that information to better understand a text about climate change.

Supplies

- Several copies of the *Restoring the Great Barrier Reef* book
- Sea Temperatures Over Time worksheet (attached)

Before the Activity

Read *Restoring the Great Barrier Reef* as a class, or assign it to students to read on their own. Print off a copy of the Sea Temperatures Over Time worksheet for each student. Divide students into groups of two and give each group a copy of the book.

Activity

Pass out the Sea Temperatures Over Time worksheet. Open the book to the infographic on page 15, "Sea Temperatures in the Great Barrier Reef." This graph shows how the reef's annual temperature compares to the ocean's average temperature. A positive difference means the reef is warmer than the rest of the ocean. A negative difference means the reef is colder. Students should use the graph to fill out the worksheet. They can also refer to the rest of the book to answer the questions.

Evaluation

Collect the worksheets at the end of class. Use the attached answer key to award students up to 14 points.

Standards

This lesson may be used to address the Common Core State Standards' reading standards for informational texts, grade 4 (RI 4.7).

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Sea Temperatures Over Time

1. How many years has the Great Barrier Reef been warmer than the rest of the ocean?

2. When was the greatest difference in temperature between the Great Barrier Reef and the rest of the ocean?

3. When was the least difference in temperature between the Great Barrier Reef and the rest of the ocean?

4. What pattern do you see over time?

5. What implications does this pattern have for the Great Barrier Reef and the organisms that live within it?

6. What is the cause of this pattern?

7. Can people address the cause to change this pattern? If so, how?

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Sea Temperatures Over Time Answer Key

1. How many years has the Great Barrier Reef been warmer than the rest of the ocean?
39 years (1 point)

2. When was the greatest difference in temperature between the Great Barrier Reef and the rest of the ocean?
1902—the rest of the ocean was 1.2 degrees Celsius colder than the Great Barrier Reef. (1 point)

3. When was the least difference in temperature between the Great Barrier Reef and the rest of the ocean?
1999—there was zero difference in temperature between the Great Barrier Reef and the rest of the ocean. (1 point)

4. What pattern do you see over time?
Over the past century, the Great Barrier Reef has been growing warmer than the rest of the ocean on average. (2 points)

5. What implications does this pattern have for the Great Barrier Reef and the organisms that live within it?
Corals can only live in certain temperatures, so as the reef grows warmer, more and more corals are going through a process known as coral bleaching in which they get rid of their microbes, run out of energy, and die. When many corals die quickly, plants and animals lose their homes. (3 points)

6. What is the cause of this pattern?
The cause is climate change. (1 point)

7. Can people address the cause to change this pattern? If so, how?
To address climate change, people need to make big changes. These changes include how people get their power, how they get food, and how they travel. People must demand action from their governments. Governments that have not already done so should sign the Paris Agreement. Governments that have signed the agreement should meet the goals they have set. They should produce far fewer greenhouse gases and move toward using wind and solar power, which are sources of energy that do not release greenhouse gases. Scientists are also studying the possibility of strengthening the reef by growing more corals that can survive in warm waters. (5 points)

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