NATIONAL GEOGRAPHIC

MPA Designation and Management

Students engage in a discussion to determine the information they need to learn to solve a real-life problem: how to justify the designation of a new Marine Protected Area (MPA) in order to protect the ocean.

GRADES

9 - 12+

SUBJECTS

Earth Science, Oceanography, English Language Arts, Geography, Human Geography, Physical Geography

CONTENTS

2 PDFs

OVERVIEW

Students engage in a discussion to determine the information they need to learn to solve a real-life problem: how to justify the designation of a new Marine Protected Area (MPA) in order to protect the ocean.

For the complete activity with media resources, visit:

http://www.nationalgeographic.org/activity/get-involved-mpa-designation-and-management/

DIRECTIONS

1. Activate students' prior knowledge about Marine Protected Areas.

Activate students' prior knowledge about Marine Protected Areas, or MPAs. Remind students about the discussions they have recently had in class about the ocean. Talk about who owns the ocean, who makes decisions about it, and how the ocean is connected to students' lives. Refresh students' memories about what they have learned about Marine Protected Areas over the last few days. Ask: *How are all of these concepts related? Why are we talking about all of these topics in a biology class?* Discuss these questions as a class.

2. Introduce the MPA problem scenario and learning challenge.

Divide students into small groups of four. Distribute copies of the Problem Scenario: Gulf of Castellammare Fishery Reserve handout and Problem Scenario Notetaking worksheet to each student. Ask students to preview the problem scenario and the challenge they will be asked to resolve, as well as the notetaking worksheet. Have students brainstorm in small groups and list all of the questions they will need to research before proposing a solution to the challenge. Suggest writing questions that start with: *Who, What, When, Where, Why,* and *How.* Make sure students understand that they are only expected to preview the handout and worksheet and familiarize themselves with the problem scenario. Let students know that it is fine not to know how to propose a solution for the problem at this point. As in real life, finding a solution will require research, collaboration with others, and thinking creatively. Explain that the main objective of this activity is to find out what they need to learn to be able to propose a solution to the problem.

3. Organize questions by category and set up priorities.

Elicit questions from the teams and write them on giant sticky notes. Stick them to a wall in the room. Accept all questions. Explain to students that at this point all questions are valid. Once all of the questions have been posted, instruct students to move the questions around organizing them into categories. Questions can be organized by: Who? What? When? Where? Why? and How? Encourage students to propose alternative categories for question organization.

4. Have students prioritize the questions and restate the problem.

Ask each team to prioritize the questions. Then ask teams to select and share three questions that they think should have the highest priority for finding a solution to the problem. Each team will likely select different questions and priorities. Allow students to have a short discussion about their priorities. Explain that there is no right or wrong order. Part of becoming a problem solver is to reevaluate priorities. Priorities will change as they dig deeper into the problem. Ask students to copy the questions in their notebooks and keep them available for reference. Explain that the goal of this unit is to learn important facts and concepts about the ocean, marine life, and conservation while practicing what it takes to work on solutions to real-world problems. Ask students to spend five minutes rewriting the problem in their own words for submission.

5. Revisit the questions periodically throughout the unit.

Make sure to preserve the list of student questions and post them in a visible place in your classroom. Remember to revisit the MPA problem scenario, the challenge, and students' lists of questions as you work through the unit. As learning progresses throughout the unit, allow students to restate the questions and reevaluate their priorities as they learn more about the marine environment. Explain to students that throughout this unit they will be building their content knowledge about marine ecosystems and human interactions. This knowledge will allow them to better understand the problem and challenge presented in this activity. Keep track of new questions that students formulate throughout the unit. Be sure to revisit the questions after completing MPA-focused lessons, specifically lesson 6, Ecosystem Imbalance in the World, and lesson 8, Introduction to Marine Protected Areas.

Informal Assessment

Check students' understanding by reviewing their restatements of the problem. Provide feedback, as needed.

Extending the Learning

Have students investigate a problem related to one of their local marine, freshwater, or terrestrial protected areas. Ask students to write questions they think need to be answered before they can propose possible solutions. Have students present their findings to the class.

OBJECTIVES

Subjects & Disciplines

Earth Science

- Oceanography
- English Language Arts

Geography

- Human Geography
- Physical Geography

Learning Objectives

Students will:

- develop and prioritize questions that need to be researched in order to justify the designation of a Marine Protected Area and the development of a management plan
- restate the problem or challenge to be solved

Teaching Approach

- Learning-for-use
- Project-based learning

Teaching Methods

- Brainstorming
- Discussions
- Reading

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
  - Learning and Innovation Skills
    - Critical Thinking and Problem Solving

- 21st Century Themes
  - [Global Awareness](#)
- Critical Thinking Skills
  - Analyzing
  - Remembering
  - Understanding
- Geographic Skills
  - [Acquiring Geographic Information](#)
  - [Analyzing Geographic Information](#)
  - [Asking Geographic Questions](#)
  - [Organizing Geographic Information](#)

National Standards, Principles, and Practices

IRA/NCTE STANDARDS FOR THE ENGLISH LANGUAGE ARTS

- **[Standard 12](#):**

Students use spoken, written, and visual language to accomplish their own purposes (e.g., for learning, enjoyment, persuasion, and the exchange of information).

NATIONAL GEOGRAPHY STANDARDS

- **[Standard 14](#):**

How human actions modify the physical environment

- **[Standard 16](#):**

The changes that occur in the meaning, use, distribution, and importance of resources

NATIONAL SCIENCE EDUCATION STANDARDS

- **[(9-12) Standard C-4](#):**

Interdependence of organisms

- **[(9-12) Standard F-3](#):**

Natural resources

- **[(9-12) Standard F-4](#):**

Environmental quality

OCEAN LITERACY ESSENTIAL PRINCIPLES AND FUNDAMENTAL CONCEPTS

- **Principle 6b:**

From the ocean we get foods, medicines, and mineral and energy resources. In addition, it provides jobs, supports our nation's economy, serves as a highway for transportation of goods and people, and plays a role in national security.

- **Principle 6c:**

The ocean is a source of inspiration, recreation, rejuvenation and discovery. It is also an important element in the heritage of many cultures.

- **Principle 6e:**

Humans affect the ocean in a variety of ways. Laws, regulations and resource management affect what is taken out and put into the ocean. Human development and activity leads to pollution (such as point source, non-point source, and noise pollution) and physical modifications (such as changes to beaches, shores and rivers). In addition, humans have removed most of the large vertebrates from the ocean.

- **Principle 6g:**

Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.

ISTE STANDARDS FOR STUDENTS (ISTE STANDARDS*S)

- **Standard 2:**

Communication and Collaboration

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Giant sticky notes
- Markers

REQUIRED TECHNOLOGY

- Internet Access: Optional

PHYSICAL SPACE

- Classroom

- Large-group instruction
- Small-group instruction

BACKGROUND & VOCABULARY

Background Information

Marine Protected Areas are created to protect vulnerable habitats and species, increase biodiversity, prevent overfishing, conserve resources for future generations, and aid in scientific research. Successful MPAs include an enforcement program aimed at obtaining compliance, a coordinated public communication strategy, and broad-reaching outreach and long-term education initiatives, as well as analysis of the social and economic costs and benefits. Successful planning and designation of MPAs depends on cooperative stewardship and the involvement of all affected stakeholders.

Prior Knowledge

["Marine Protected Areas"]

Recommended Prior Activities

- Marine Critical Issues: Case Studies
- Marine Protected Areas
- Marine Protected Areas: Case Studies
- Marine Protected Area: Stakeholder Debate
- Our Interconnected Ocean
- Protecting the Ocean
- Your Ocean

Vocabulary

Term	Part of Speech	Definition
marine protected area (MPA)	noun	area of the ocean where a government has placed limits on human activity.

For Further Exploration

Websites

- [World Database on Marine Protected Areas](#)
- [Census of Marine Life: Investigating Marine Life](#)
- [NOAA: National Marine Protected Areas Center](#)
- [World Resources Institute: Marine Protected Areas of the World](#)
- [National Geographic Education: National Teacher Leadership Academy (NTLA)](#)
- [NOAA: Marine Protected Areas of the United States](#)

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