Unit 1: Introduction to Marine Science
Marine Science

15 Classes

Created February 2026

Essential Questions

- How are oceans connected around the world?
- How do the unique properties of water affect marine life in different ocean zones?

Enduring Understandings with Unit Goals

EU 1: Our oceans are connected to each other and the land.
- Summarize the water cycle and how it connects to the oceans.
- Assess the impact of human activities on the health of ocean ecosystems.

EU 2: The unique properties of water affect marine life in different ocean zones.
- Investigate how the unique properties of water affect marine life in different ocean zones.

Standards

Common Core State Standards

- **CCSS.ELA-LITERACY.RST.6-8.1** Cite specific textual evidence to support analysis of science and technical texts.
- **CCSS.ELA-LITERACY.RST.6-8.3** Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- **CCSS.ELA-LITERACY.RST.6-8.4** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics.

Next Generation Science Standards

- **MS-ESS2-2:** Construct an explanation based on evidence for how geoscience processes have changed Earth's surface.
- **MS-ESS2-4:** Develop a model to describe the cycling of water through Earth's systems.
- **MS-ESS2-6:** Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation.
- **MS-LS2-4:** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-ETS1-2 Engineering Design** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

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- **MS-ESS3-3:** Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
- **MS-ESS3-5:** Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.
Competency 2: Speak to diverse audiences in an accountable manner.
Competency 3: Develop the behaviors needed to interact and contribute with others on a team.
Competency 4: Analyze and solve problems independently and collaboratively.
Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. **Introduction to Marine Science and Long Island Sound**
    - Importance of our oceans
    - Oceans around the world
    - Layers of the ocean- ocean zones
    - Our Long Island Sound Introduction

2. **Properties of ocean water**
    - Mixing Seawater and Cohesion Water Race
    - Extreme salinities and environments
    - Properties of water lab
    - Water cycle
    - Graphing sea temperatures

KeyTerms and Vocabulary: Longitude, Latitude,Tropical, Temperate, Polar, Photic, Aphotic, Pelagic, Benthic, Biotic Factor, Abiotic Factor, Biodiversity, Nekton, Littoral Zone, Neritic Zone, Oceanic Zone Epipelagic, Mesopelagic, Bathypelagic, Abyssopelagic, Hadalpelagic, Cohesion, Adhesion, Polarity, Condensation , Evaporation, Transpiration, Precipitation, Runoff

Interdisciplinary Connections: Language Arts, Mathematics, Science, Geography

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Daily Learning Objectives with *TWPS*

Students will be able to…

- Understand the importance of our oceans.*
  - *Why are our oceans important?*
  - *How do our oceans influence our world?*
- Research the differences between the Earth's oceans.*
  - *How are oceans different around the world?*
  - *What characteristics make each ocean unique?*
  - *How much of Earth is covered by ocean?*
- Identify the types of animals that live in the oceans.*
  - *How do characteristics vary among animals that live in the ocean?*
- Distinguish between the different layers of the ocean.*
  - *What are the zones of the oceans?*
  - *How do the layers of the ocean change as you dive deeper?*
  - *How do the organisms that live in these zones adapt to these changes?*
- Explain the properties of ocean water.*
  - *How does ocean water differ from freshwater?*
  - *What are the structural properties of the water molecule?*
  - *How do the properties of the water molecule influence life in the ocean?*
- Explain how extreme salinities affect life in the ocean.*
  - *What characteristics of animals live in extreme salinity environments?*
- Describe how water cycles around the Earth.*
  - *Why is it important that we understand the water cycle?*
  - *How is the water cycle impacted by climate change?*

Instructional Strategies/Differentiated Instruction

- Daily Warm Up Activities
- TWPS: Think Write Pair Share
- Lecture slides with guided note-taking
- Flexible grouping
- Exit slips
- Graphic Organizers
- Creating authentic connections for students
- Rephrasing and restatement of information and concepts
- Student use of headphones
- Independent reading
- Outlining of text
- Determining central ideas, paraphrasing
- Laboratory Experiences

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EL Differentiated Instruction:

- Sentence starters
- Simplified direction
- Prompting and questioning
- Alternate responses when needed
- Explicit modeling
- Key vocabulary
- Visuals
- Graphic organizers
- KWL charts
- Venn diagram
- Glossary

Assessments

FORMATIVE ASSESSMENTS:

- Warm Up Activities
- Daily check-ins with students
- TWPS
- Accountable Talk Discussions
- Close Reading of Text
- Guided Notes
- Homework
- Exit Slips
- Labs

SUMMATIVE ASSESSMENTS:

- Quiz on EU 1
- Quiz on EU 2
- Unit Task
- Unit Test

Unit Task

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Unit Task Name: "Zones of the Ocean"

Description: Students will be able to create a model that demonstrates the different zones of the ocean and analyze the properties of water that influence organisms in each zone. (EU1) Students will complete a project that includes creating a visual model of the ocean zones, a report detailing the properties of water in each zone, and an oral presentation explaining their findings. (EU2)

Evaluation: Teacher Created Problem Solving Rubric

Unit Resources

- Chromebook
- Internet Access
- Marine Touch Exhibit
- Pear Assessment
- Newsela