

UNIT: Oceans

LESSON(S): Ocean Composition, Ocean Floor, and Ocean Currents

Essential Questions:

What are the characteristics of oceans, and why are oceans important?

- What are the causes and effects of the changing ocean floor?
- How do ocean currents affect weather and climate?
- How does global climate change affect marine ecosystems?

Frameworks Standards:

8.MS-ESS2-1. Use a model to illustrate that energy from Earth's interior drives convection that cycles Earth's crust, leading to melting, crystallization, weathering, and deformation of large rock formations, including generation of ocean seafloor at ridges, submergence of ocean seafloor at trenches, mountain building, and active volcanic chains.

8.MS-ESS2-6. Describe how interactions involving the ocean affect weather and climate on a regional scale, including the influence of the ocean temperature as mediated by energy input from the Sun and energy loss due to evaporation or redistribution via ocean currents.

Learner Outcomes (Knowledge):

Students will:

- Demonstrate an understanding of convection currents in the mantle, ocean, and atmosphere and how each contributes to moving energy throughout the Earth's systems.
- Analyze and interpret data regarding ocean currents to illustrate the movement of energy via ocean currents.

Vision of the Student as Learner skills:

Arlington Public School students will:

- work independently and collaboratively
- observe, analyze and synthesize information from a variety of sources to enhance existing understandings and construct new knowledge
- demonstrate perseverance by using repeated reasoning and inquiry
- participate in rigorous, focused discourse
- develop and defend arguments based on evidence and respectfully consider different perspectives
- create and critique original work

Vision of the Student as Global Citizen skills:

Arlington Public School students will:

- speak with and listen to others in a manner that is respectful of multiple perspectives
- cultivate and maintain healthy and rewarding relationships with diverse individuals and groups
- develop self-awareness and self-understanding
- think critically and reflect upon choices and their impact on others
- participate as a consumer of and contributor to the cultural and civic life of local and global communities

Instructional Strategies:

- Setting Objectives
- Cooperative Learning
- Summarizing & Note Taking
- Identifying Similarities and Differences
- Generating & Testing Hypotheses
- Direct & Scaffolding Instruction
- Inquiry-Based Teaching
- Alternative Assessments

Assessment Practices: Scientific modeling, On-line interactive labs, summative assessments, and CER writing.

Resources:

- Massachusetts Curriculum Frameworks 2016 - Science and Technology/Engineering
- McGraw Hill iScience Cause and Effect Grade 8
- Gizmos
- Edpuzzle
- pHet simulations
- Hands-on experiments