

Splash into Action: Protecting Our Oceans
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Developed as part of the ARET@LTERS program, Summer 2024



Teacher: Shelton Reynolds	Unit: Under the Heat: How Marine Heatwaves Impact Oceans
Grade/Course: 6th Grade Science	Lesson Title: Splash into Action: Protecting Our Oceans
Objectives: I can explain ways we can take action to help protect our local ocean. I can explain how marine heat waves could impact our oceans.	Investigative Question: How can we protect our oceans? How can marine heatwaves impact our oceans?

NGSS Performance Expectation:
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.

Real World Phenomenon Addressed in the Lesson: Marine Heatwaves & Our Ocean

3 Dimensions of Science

Science & Engineering Practice(s) Used:

- Engaging in Argument from Evidence
- Constructing Explanations
- Obtaining, Evaluating, and Communicating Information

Crosscutting Concept(s) Used:

- System and System Models
- Patterns
- Stability and Change

Disciplinary Core Idea(s)

- Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities. (MS-ESS3-5)
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

Background Information

Prior Student Knowledge: Students will engage in this mini-unit after our oceans, atmosphere, and climate unit and before our climate change unit. Students will have information on ocean current salinity and be able to model and explain how we have different climates on Earth. Students will model why we have the climate in Ventura County. Students will learn what El Nio/ La Nia is and how it can also impact our ocean temperatures. Students only have a little information on the kelp forest ecosystems at this point besides looking at some organisms from the kelp forest under a microscope in our cells unit.

Furthermore, students will have background information on marine heatwaves, why they have been increasing, and some curiosities about how they might impact the oceans. Students will know how prior knowledge on the following topics depending on the choices they selected from the choice board: sea creatures, beach grooming, sea urchin anatomy, data analysis, oceans and climate change, and snowy plover habitat loss. Students will additionally learn how MHW can impact sea urchin consumption of kelp from the feeding trial lab and learn ways MHW can impact our oceans.

Possible Preconceptions/Misconceptions: Students may come into the lesson thinking the only way we can help our oceans is by picking up trash on the beach.

Content Information for Teachers: Teachers should understand marine heat waves, how climate change impacts our oceans and ways we can protect our oceans.

Google Slides for Lesson:

https://docs.google.com/presentation/d/1RI2NJmm7z2AS-vvf2nqwcacdT_REYdQoh7HN1n6XzBY/e/dit?usp=sharing

5E	Evidence of Use/Student Activity
Explain	For their science starter, students will explain how marine heat waves can impact our oceans.
Evaluate	Students will revisit their Predict-Observe-Explain from the start of the lesson series to formulate their explanation for how marine heat waves impact our oceans, using evidence from various activities in the lesson series.
Engage/Explain/ Evaluate	Students will create a choice project PSA Projects on How to Help Our Oceans . Students will create some sort of artifact to explain and share with the school community/public how climate change and MHWs impact our oceans and what we can do to help.
Explore/ Evaluate	Students will Gallery Walk of Projects and complete this graphic organizer as they explore and give feedback on their peers' choice projects.

Evaluate/Explain
Lesson Closure

To wrap up the lesson and choice board, students will take an action step and commit to doing one thing to help our oceans. Students will explain what they will do, how long they will do it, and the mode for which they will share with Mrs. Shelton what they did to help our oceans once they finish their task or activity change in their lives.