

UNIT 3: SAN DIEGO AND THE SEA

Ocean Literacy **Principle #6:**

“The ocean and humans are inextricably interconnected”

3 Fundamental Concepts that explain **Principle #6:**

A. The ocean affects every human **life**. It supplies freshwater (most rain comes from the ocean) and nearly all Earth’s oxygen. The ocean moderates the Earth’s climate, influences our weather, and affects human health.

B. The **ocean provides** food, medicines, and mineral and energy resources. It supports jobs and national economies, serves as a highway for transportation of goods and people, and plays a role in national security.

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

Scope & Sequence: Adjust for your Grade Level—

<u>K - 2</u>	<u>3 - 5</u>	<u>6 - 8</u>	<u>9 - 12</u>
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SUGGESTED ACTIVITIES

ACTIVITY 3.1— Every Human Life

6A. The ocean affects every human **life**. It supplies freshwater (most rain comes from the ocean) and nearly all Earth’s oxygen. The ocean moderates the Earth’s climate, influences our weather, and affects human health.

Discuss:

The first Fundamental Concept above states that: “*The ocean affects every human life.*” How does it affect your life? How does it affect other living beings on the planet?

Explain how, that no matter how far away you live from the ocean, it still

- *Moderates the Earth’s climate*
- *Influences our weather, and*
- *Affects human health.*

Jump Ahead to Unit 8:

Read United Nations Goal #13. Use it as a resource to explain Fundamental Concept 6A.

ACTIVITY 3.2— Ocean Safari

6C. The ocean is **a source of inspiration, recreation, rejuvenation, and discovery**. It is also an important element in the heritage of many cultures.

Launch a photographic safari around the San Diego Bay, the beachfront, or your own local river or lake. Look for examples of people who—by their behaviors—prove each of these statements to be true, and then capture the photograph:

- The ocean is **a source of inspiration**

- The ocean is **a source of recreation**
- The ocean is **a source of rejuvenation**
- The ocean is **a source of discovery**

If you can't take the pictures yourself, find examples of how pervasive these themes are in some form of media.

Finally: take (or find) photographs that provide evidence of this statement from Fundamental Concept 6A:

- The ocean is also an important element in the **heritage of many cultures**.

ACTIVITY 3.3— Three Ships

According to maritime history, Vasco Nuñez de Balboa sailed from Spain and landed in San Diego in 1509.

Today, we can see how life in San Diego, like other major cities from around the world, has been influenced by the sea. From surfing and fishing, to tourism, and the mighty warships of the US Navy, all have influence, a history, and deep roots in the culture of our community.

Critical Thinking Exercise #1:

There are three famous ships in the San Diego Harbor: the Star of India, our famed fleet of tuna boats, and the USS Midway. Research the history of each of these three. What is each one known for? What is their significance to the San Diego community? What do they have in common and what makes them the historical landmark that they are?

Critical Thinking Exercise #2:

If 100 years from now, a museum was being designed to represent San Diego's connection to the ocean, what vessel would best represent the era we currently live in: a jet ski (recreation), a cruise ship (tourism), a self-guided underwater drone (research), a luxury mega-yacht (economy), or a Coast Guard Cutter used to patrol the local waters (military)?

- What would each of these represent?

- How do each represent the current blue economy and the times we live in?
- What other ocean-going vessels might be appropriate for a museum depicting the evolving blue economy of the 2020's?

Critical Thinking Exercise #3:

- How might San Diego be different if it was not built on the edge of the ocean?

ACTIVITY 3.4— Gone Fishin’

Take a class field trip to the Ocean (or the closest waterfront.)

Visit the tidepools off of Sunset Cliffs, La Jolla Cove, or take a whale watching excursion or Bay cruise. Visit the Chula Vista’s Living Coast Discovery Center or the Scripps Aquarium.

Discuss:

- How has living by the ocean influenced our art, literature, movies and music?
- Sometimes schools add an “A” to their STEM programs and call it STEAM. That “A” refers to the Arts. Why is it important to balance the study of Science and Technology with the Arts? Identify examples where we strike a balance between art and science in our community.
- How have video documentaries and photography enriched our understanding of the oceans?

Critical Thinking:

Hollywood often depicts the ocean as a hostile world- (like it does with outer space!) What are some examples of this and how do those depictions sometimes lead to harmful consequences? (For example, research the movie “Jaws” and how it impacted the treatment of sharks in the wild after it was first released in movie theaters.)

ACTIVITY 3.5— Aquatics

Consider integrating aquatics for physical education during this unit on the connection between humans and the oceans.

For example:

- Assemble a fleet of **kayaks** (either through grants or donations) and conduct regular bay tours as a feature of your physical education curriculum. Offer tours on the weekends for students not currently enrolled in PE.
- Partner with the city recreation department to provide access to a **swimming** pool. Make sure every student working on *Vida Azul* can swim.

*(A disproportionate number of youth of color are never properly taught to swim or introduced to fundamentals of water safety. This is the perfect time to rethink physical education and get kids in the water.)

- Partner with a local dive shop and create a program for your students to become licensed **scuba divers**.
- Bike the 24-mile **Bayshore Bikeway**. You can start at the J Street Marina in Chula Vista, head south through Imperial Beach, and turn up towards Coronado. Fortunately, a ferry will take you and your bike across the Bay, where you'll travel through downtown, past Petco Park, Chicano Park, National City, and finish right behind Bayfront Charter High School.

ACTIVITY 3.6— What on Earth is The Blue Economy?

"The ocean produces at least 50% of Earth's oxygen, is home to most of the planet's biodiversity, provides food for billions of people and offers major economic opportunities. It makes a large and growing contribution to the global economy, driving growth in economic activity, jobs, innovation and business opportunities. The value of the blue economy is an estimated US \$2.5 trillion annually, equivalent to the size of the world's seventh-largest economy. The OECD projects that the ocean's contribution to the global economy will double in size by 2030 compared with 2010 levels."

– The World Ocean Initiative

The [World Bank](#) defines the *blue economy* as “the sustainable use of ocean resources for economic growth, improved livelihoods, and jobs, and ocean ecosystem health.”

[Conservation International](#) says: “At its simplest, “blue economy” refers to the range of economic uses of ocean and coastal resources — such as energy, shipping, fisheries, aquaculture, mining, and tourism. It also includes economic benefits that may not be marketed, such as carbon storage, coastal protection, cultural values and biodiversity.”

- Why is it so essential to the Blue Economy to carefully manage our natural ocean resources?

Fundamental Concept 6B of Ocean Literacy speaks directly to the economics of the ocean:

6B. The **ocean provides** food, medicines, and mineral and energy resources. It supports jobs and national economies, serves as a highway for transportation of goods and people, and plays a role in national security.

Discuss:

- Explain how Concept (6B) is the foundation to the Blue Economy. How does the ocean “support jobs and national economies?”
- How does the ocean influence the local economy? What job/career opportunities exist in the “blue economy?” (*see Activity 3.7.*)
- Explore the [Maritime Alliance](#) and its [BlueSTEM careers](#). What other vocations does it include that are also part of the Blue Economy?

Research:

There are a lot of career paths in the Blue Economy that you likely never heard about in schools. For example: [“Fish-looking Drones”](#)

Critical Thinking:

Why do you think **entrepreneurs** and **innovators** are so essential to the developing Blue Economy?



Resource:

- TMA [Blue Tech Workforce](#)
- Blue STEM [Career Videos](#)

ACTIVITY 3.7— Careers in the Blue Economy (Part 1)

“Even if you never have the chance to see or touch the ocean, the ocean touches you with every breath you take, every drop of water you drink, every bite you consume. Everyone, everywhere is inextricably connected to and utterly dependent upon the existence of the sea.”

--Sylvia Earle, Oceanographer, from her book *The World is Blue*.

Dr. Earle has been one of the most influential ocean explorers, scientists, authors, lecturers, and conservationists over the past 40 years. She has led more than 60 undersea expeditions worldwide, logging more than 6,000 hours underwater. She was captain of the first all-female team to live in an underwater habitat and has started her own companies that design underwater vehicles, allowing scientists to explore and study depths of the ocean that were previously inaccessible to humans. In the early 1990s, Dr. Earle was chief scientist of the National Oceanic and Atmospheric Administration, and she is currently an explorer-in-residence at the National Geographic Society.

Watch [Dr. Earle’s 2009 TED Talk](#)

Discuss: What do ocean oceanographers do? How did they get a job that allows them to work in the ocean every day? Who are some of the most prominent oceanographers, and what have we learned from them?



Resource:

- **Jump Ahead:** Activity 9.7— *Careers in the Blue Economy, Part 2*
- [Careers in the Blue Economy](#)
- [April 2023 Study on the Sustainable Blue Economy](#)

ACTIVITY 3.8— What is Design Thinking?

Design thinking is a process for creative problem solving and innovation. One of the pioneers in Design Thinking is a [Palo Alto-based company called IDEO](#). Their website says:

“IDEO has practiced design thinking for over 40 years. Every day, hundreds of designers, builders, entrepreneurs, engineers, data and behavioral scientists, teachers, researchers, and other specialists come together at IDEO to use the methods and tools of design to solve challenges alongside some of the world’s most forward-thinking global companies.”

Research the [“Phases of Design Thinking.”](#)

Try this creative activity:

Think of a tool, toy, product, machine or device that you would design *differently*. Use the “Phases of Design Thinking” and create a better model!

ACTIVITY 3.9— “Ghost Gear”- The Art Project

An Oregon-based organization called [Washed Ashore](#), is on a mission to “build and exhibit aesthetically powerful art to educate a global audience about plastic pollution in the ocean and waterways and to spark positive changes in consumer habits.”

There are many examples of the artwork they made from plastics that have washed ashore. Check them out here: [Washed Ashore Galleries](#)

Now it’s your turn:

Students are invited to create an original art piece, composed entirely from “ghost gear” that pose a threat to the natural ecosystems of our ocean. Use materials that are considered examples of ‘ghost gear’ and that might otherwise be found in the Great Pacific Garbage Patch. Name your art piece and write a brief description of its message on 3x5 index card.



Resource:

What is “Ghost Gear?”

- Ocean Conservancy: [Goodness Gracious, Great Balls of Ghost Gear](#)
- Ocean Conservancy: [Entangled, Eaten, Contaminated](#)
- Pacific Wild: [Ghost Gear: The Silent Killers of Our Oceans](#)
- Ocean Conservancy: [The Problem of Ghost Fishing Gear](#)

ACTIVITY 3.10— Gallery Walk

Invite students to exhibit their art projects from *Activity 3.9*.

Invite classes from around the school and guests from the community. Student-artists should have an opportunity to talk about their art project and the message they intend to convey about plastic pollution in our oceans.