

# USC Sea Grant Lunch and Learn

Wednesday, June 8, 2022 • 12:00-1:00 PM PT

**Discussion Topic:**  
The Past, Present, and Future  
of Ocean Literacy

## Speakers

**Diana Payne**, *University of Connecticut & Connecticut Sea Grant*

**Sarah Schoedinger**, *NOAA Office of Education*

**Lynn Whitley**, *USC Wrigley Institute for Environmental Studies & USC Sea Grant Emerita*



# Ocean Literacy Essential Principles

1. Earth has one big ocean with many features. 

2. The ocean and life in the ocean shape the features of Earth. 

3. The ocean is a major influence on weather and climate. 

4. The ocean makes Earth habitable. 

5. The ocean supports a great diversity of life and ecosystems. 

6. The ocean and humans are inextricably interconnected. 

7. The ocean is largely unexplored. 

# The Challenge

- Public largely unaware of importance of ocean in their lives.
- Ocean-related topics often ignored in US K–12 classrooms because deemed irrelevant to existing national education standards.
- Few ocean scientists were involved in education & outreach.



# The Response to the Challenge

- Consensus reached...
  - Inclusive transparent process built on and credited past efforts.
  - No single institution had (or has) ownership.
  - Institutions, educators, & scientists lent authority and credibility.
- Developed definition & first guide of 7 Essential Principles and Fundamental Concepts of Ocean Literacy.



A walrus is shown swimming in the ocean, with its head and tusks visible above the water. The background is a deep blue color with a subtle pattern of white dots, suggesting a starry sky or a deep-sea environment. The text is overlaid on this background.

## The Essential Principles of Ocean Sciences

- 1 Earth has one big ocean with many features.
- 2 The ocean and life in the ocean shape the features of Earth.
- 3 The ocean is a major influence on weather and climate.
- 4 The ocean makes Earth habitable.
- 5 The ocean supports a great diversity of life and ecosystems.
- 6 The ocean and humans are inextricably interconnected.
- 7 The ocean is largely unexplored.

# Ocean Literacy is...

... an understanding of the ocean's influence on you—and your influence on the ocean.

An ocean-literate person:

- **Understands** the Essential Principles and Fundamental Concepts about the ocean;
- **can communicate** about the ocean in a meaningful way; and
- is able to **make** informed and responsible **decisions** regarding the ocean and its resources.

# Ocean Literacy Essential Principles

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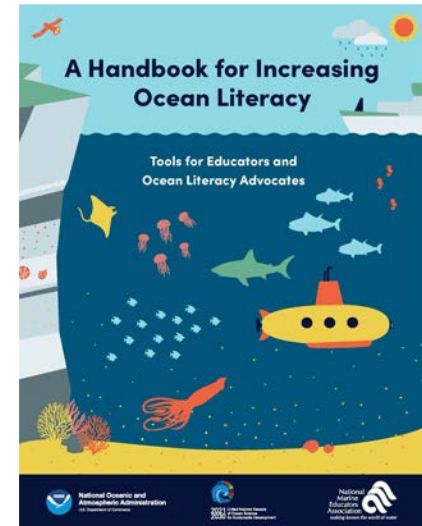
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# Building on the Success of the Guide

- Ocean Literacy Guide (“the Guide”)
  - Scope & Sequence for Grades K-12
  - NGSS/Ocean Literacy Alignment
  - International Ocean Literacy survey
- 
- ***A Handbook for Increasing Ocean Literacy***  
(Ocean Decade Endorsed Activity)
  - Translations of the Guide and other resources

## “The Framework”



# Resources: NMEA Webinar Series

## Want to learn more? Need a refresher?

NMEA's Ocean Literacy Committee hosted a series of three webinars exploring the:

1. scope & sequence;
2. alignment of the Ocean Literacy to NGSS; &
3. applications of the Framework in formal & informal education

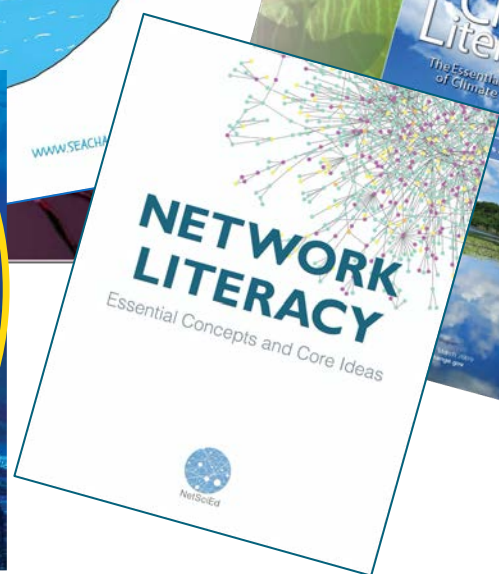
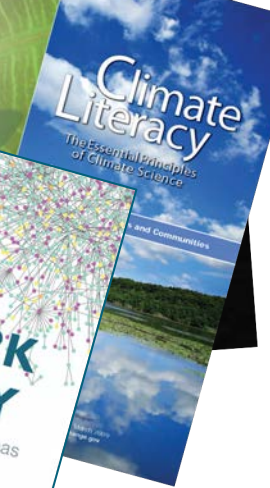
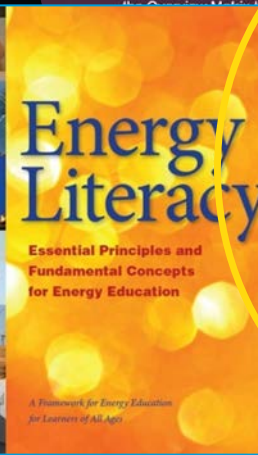
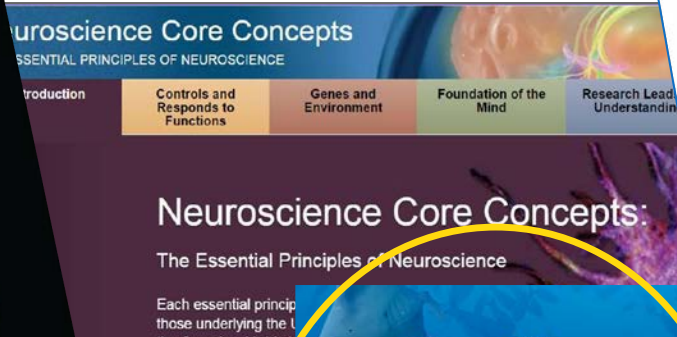
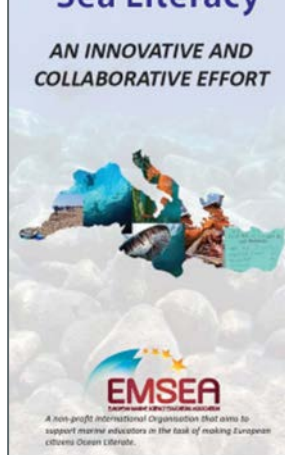
Visit <https://www.marine-ed.org/ocean-literacy/webinars> to access to the archived recordings and materials of these webinars.



# Impacts: A Model for Others

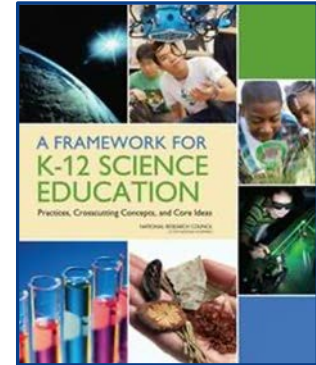


**Mediterranean  
Sea Literacy**  
AN INNOVATIVE AND  
COLLABORATIVE EFFORT



# Impacts of the Ocean Literacy Campaign: Influencing Curriculum & Instruction

- Ocean Literacy framework influenced a “Framework for K-12 Science Education” & Next Generation Science Standards.
- Translation of the Guide into multiple languages.
- In Korea, Japan, China, Taiwan, and the Philippines provincial & national education policies for curriculum and instruction adopt ocean literacy as a focus.
- South Africa has included Ocean Literacy in their secondary school curriculum.



# Impacts: Influence on Exhibit Design

Ocean or  
Oceans?

A single ocean  
spans the Earth  
- One global  
system





# Impacts: Influence on Exhibit Design



## Zone 3 : The Ocean that Flows as One

Oceans are connected to each other, forming one big mass and they circulate through ocean currents.

There are various types of ocean currents in the world. The East Sea of Korea, in particular, is a place where various currents meet and merge, creating an experimental field of ocean currents.

Let's find out what various physical environmental causes and chemical properties of ocean water make ocean currents circulate throughout the entire planet.

# Impacts: Themes & Messaging in Informal Education



Credit: www.123rf.com



## Ocean Literacy Concepts, Talking Points and Case Studies

Whether you live in Kansas or on Kauai, the ocean affects your life. Covering more than 70 percent of the planet, the ocean is a vital source of life on Earth. Every other breath you take originates from the ocean. Weather patterns and climate are influenced by its currents. Seafood provides 13 to 16 percent of the world's protein.

The health of our ocean and Great Lakes is influenced by global as well as local forces. Human beings depend on the ocean for a wealth of goods and services, yet climate change, overfishing, plastic pollution and other threats are diminishing the ability of the ocean to provide many of these benefits into the future.

The NOAA Office of National Marine Sanctuaries is charged with conserving and managing special ocean areas deemed to be of irreplaceable national significance. Education plays a key role in fulfilling this mandate. Over the past decade, sanctuary education programs have been a powerful force in building stewardship for these unique places and in stimulating marine education, but pressures on sanctuaries and the greater ocean continue to grow. Thankfully, so does the public's attention to ocean health issues. The National Marine Sanctuary System must capitalize on this opportunity to provide our constituents and policy-makers at all levels with the information they need to make intelligent environmental decisions.

One way to do this is to create an ocean-literate public. Ocean literacy is an understanding of the ocean's influence on you and your influence on the ocean.



## Ocean Literacy Concept #6c

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

### Sanctuary-Specific Talking Points

1. National marine sanctuaries are sources of inspiration, recreation, rejuvenation and discovery and they enhance our understanding of our cultural connections to the ocean and Great Lakes.

### Possible Sanctuary-Related Case Studies (Each field site should create their own case studies as appropriate. These are just a few examples.)

- Many native peoples paddle their traditional canoes in Channel Islands, Olympic Coast, and Hawaiian Islands Humpback Whale national marine sanctuaries and the Papahānaumokuākea Marine National Monument as a way to maintain their long-standing cultural connection with the ocean.
- Through time, many national marine sanctuaries have been recognized as irreplaceable areas for recreation, such as fishing, diving, kayaking, snorkeling, surfing, boating, swimming and more.
- National marine sanctuaries serve as important time capsules for our nation's maritime history (e.g., trade routes, shipwrecks).



Photo: Quik Tracker, NOAA National Ocean Service



Credit: Shutterstock/Mark Photography

# Impacts: Themes & Messaging in Informal Education



## MISSION AND MESSAGING PLAN

### MISSION OUTCOMES

Last modified: September 2016



At the Seattle Aquarium, we believe that the best way to develop an understanding of our relationship with the ocean is through understanding our local marine environment.

*Connect people to the life-sustaining oceans through a focus on Puget Sound and the Pacific Ocean. – Seattle Aquarium Strategic Plan 2011-2030*

Therefore, to make ocean science accessible and relevant to our audiences, we must place these Principles through two filters: a **regional filter** that considers the principles within the context of Puget Sound and the near Pacific, and a **collections filter** that considers examples relevant to our animal collection. In some cases, animals in our collection may be chosen to represent certain aspects of our outcomes, other times; we may choose to highlight certain outcomes based on our collection. While all the OLPs are important to a complete understanding of the ocean, some aspects are more relevant to our audiences, our region, and our exhibits than others. In some cases, we have adopted the fundamental concepts exactly, where they were particularly relevant to our region or collection.

### OCEAN LITERACY OUTCOME 1 (OLO1)

*Audiences will know the Earth has one big ocean with many features.*

- Puget Sound, its watersheds, the Salish Sea are connected to, and a part of, our one world ocean.
- Circulation systems that flow through the ocean also flow through Puget Sound, bringing organisms, nutrients, energy, and pollution to and from our shores.
- Changes happening here (positive and negative) affect the whole ocean. Changes to the ocean, affect Puget Sound.

### OCEAN LITERACY OUTCOME 2 (OLO2)

*Audiences will know the ocean and life in the ocean shape the features of Earth.*

- Erosion—the wearing away of rock, soil, and other biotic and abiotic earth materials—occurs in coastal areas. Erosion creates beach sand and can change the shape of coastlines.
- The ocean is the largest reservoir of rapidly cycling carbon on Earth. Many organisms use carbon dissolved in the ocean to form shells, other skeletal parts, and coral reefs.
- Tectonic activity, sea level changes, and the force of waves influence the physical structure and landforms of the coast.
- Puget Sound was formed after the retreat of the Cordilleran ice sheet. The unique shape and profile of the Sound influences the way species and nutrients move, creating a distinctive ecosystem.





# Impacts: International Organizations/Efforts

... to support Ocean Literacy across the globe

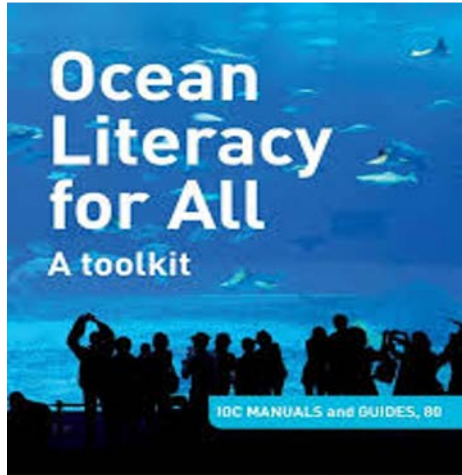


Marine Sciences Curriculum





# Impacts: International Organizations/Efforts



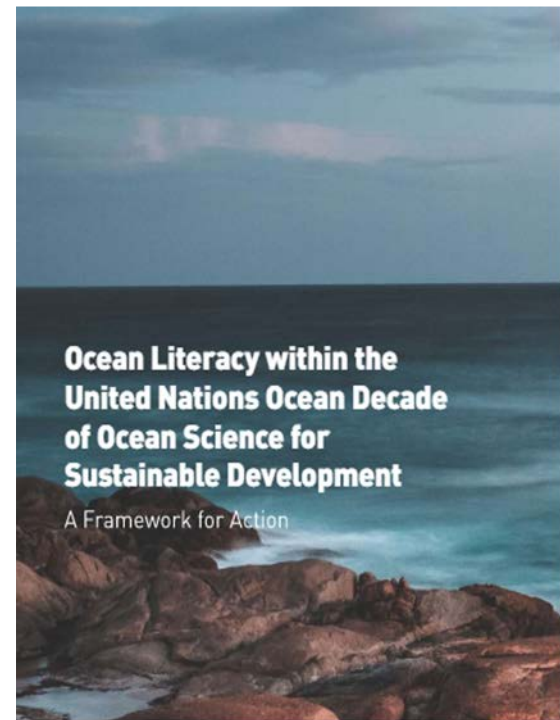
**2021**  
**2030** United Nations Decade  
of Ocean Science  
for Sustainable Development

***Ocean Decade Outcome 7: An inspiring and engaging ocean where society understands and values the ocean in relation to human wellbeing and sustainable development.***

# Ocean Literacy & the Ocean Decade

## Ocean Literacy With All (OLWA)

- Advance Ocean Literacy (OL) through **international partnerships/networks**.
- Design and implement transformative locally and **globally relevant research-based activities/** projects by and for diverse stakeholders.
- **Build capacity and behavior change to achieve an ocean literate society** to help ensure sustainable development of the global ocean.



**Ocean Literacy within the  
United Nations Ocean Decade  
of Ocean Science for  
Sustainable Development**

A Framework for Action



The United Nations  
Decade of Ocean Science  
for Sustainable Development  
**(2021-2030)**



# Want to Get Involved in the Ocean Literacy Campaign?

- Obtain copies of the Ocean Literacy Framework documents
- Join an organization that is promoting Ocean Literacy (e.g., NMEA)
- Advocate for Ocean Literacy in your state science education standards & assessments
- Represent the ocean & Ocean Literacy in climate & environmental education conversations, conferences, & communities of practice.
- Attend a conference, activity, and/or online course or workshop to promote Ocean Literacy

# How to Get Involved (cont.)

- Promote local aquariums, science museums, & marine education centers as places to be inspired, learn more, & make connections
- Be a voice for Ocean Literacy in public policy discussions
- Get funding for ocean sciences education programs
- Promote on Ocean Literacy on social media with #oceanliteracy #environmentalliteracy & @NatlMarineEd
- Environmental Literacy (including Ocean, Great Lakes, and Climate) is fundamental to all we do! The ocean is the defining feature of our planet and an essential component of environmental literacy.

# What's Next?

- Continued promotion/spreading of Ocean Literacy via various other regional/national/international organizations and the NMEA
  - Ocean Literacy-themed events and presentations at NMEA 2022
  - UNESCO's Dr. Francesca Santoro keynote at NMEA 10 July 2022
  - [NMEA, Ocean Literacy, and the Ocean Decade](#) 11 July 2022
- UN Decade of Ocean Science for Sustainable Development (2021-2030)
  - *Ocean Literacy For All: A toolkit* (publication; IOC-UNESCO)
  - Ocean Literacy Portal (online; IOC-UNESCO)
  - Ocean Literacy With All (OLWA) UN Decade endorsed programme
  - Ocean Decade [website](#) - join as a Stakeholder
  - [UN Ocean Conference](#) - Lisbon, Portugal 26 June-1 July

# Contacts

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# Q&A

