Ocean Literacy Across Time and Spac

Authors: NMEA Ocean Literacy and International Committees

2002

Oceans for Life conference focuses on the importance of understanding the ocean within the context of geography education. It resulted in the publication *Oceans for life: A scope and sequence for geography education K-12*

2003

National Marine Educators Association (NMEA) ad hoc committee on science standards forms to determine how to infuse more ocean science content into the K-12 curriculum.

National Centers for Ocean Science Education Excellence (COSEE) Network identifies Ocean Literacy as its top strategic priority, and forms a strategic plan working group on Ocean Literacy.

COSEE New England identifies concepts thought to be the most important for the public to know about the ocean in their region.

US National Oceanic and Atmospheric Administration (NOAA) joins to support NMEA, COSEE and National Geographic Society in defining Ocean Literacy. An ad hoc, cross-organization working group forms.

America's living oceans: Charting a course for sea change calls for increased public understanding of the importance of the ocean (Pew Oceans, 2003).

2004

What every student ought to know about the ocean on graduation from high school published (Stewart, 2004).

A two-week online workshop to define Ocean Literacy and identify initial key principles results in publication in 2005 of *Ocean literacy: The essential principles and fundamental concepts of ocean sciences K-12,* hereafter referred to as The Ocean Literacy Guide.

An *ocean blueprint for the 21st century* calls for the inclusion of ocean topics in the K-12 and informal education system. (United States Commission on Ocean Policy, 2004).

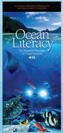
2005

A three-day meeting develops the first draft of the 7 essential principles and supporting fundamental concepts based on the products of the 2004 online workshop.

Special scientific review and public review of the Ocean Literacy definition, essential principles and fundamental concepts are conducted.

The Ocean Literacy Guide is published and presented for the first time at the NMEA conference.

NMEA Ocean Literacy committee is formed
to replace the ad hoc committee on science standards.



National
Marine
Educators
Association
making known the world of water

● North America ● Europe ● Asia ● South America ● Intercontinental ● Afric e

2006

The US Interagency Working Group on Ocean Education is established to coordinate ocean education and outreach among the US federal ocean agencies; Ocean Literacy is a core priority.

Integration of Ocean Literacy principles and concepts is a required component of NOAA's Environmental Literacy Grants competition.

Beginning of the work on the Ocean Literacy scope and sequence for grades K-12.

Conference on Ocean Literacy (CoOL) is held in Washington, DC during Capitol Hill Ocean Week (CHOW) and is webcast live around the country.

Follow up Ocean Literacy Scope and Sequence development meetings are held.

The first **New England Ocean Science Education Collaborative (NEOSEC) Ocean Literacy Summit** focuses on introducing the Ocean Literacy principles and how they can be used to frame ocean science research and teach a variety of audiences about ocean science. Subsequent summits each focus on one Ocean Literacy principle.

NOAA develops and publishes the Climate Literacy Guide based on the Ocean Literacy Guide.

2007

Creation of the Promoting Aquatic Marine Environmental Literacy Education Program at Tokyo University of Marine Science and Technology. Aquatic Marine Environmental Literacy is required for all sophomore students, and is based on US Ocean Literacy and the traditional knowledge and culture of Japan.

The Marine education white paper is published by the Taiwan Ministry of Education.

The **International Pacific Marine Educators Conference** in Honolulu, leads to formation of International Pacific Marine Educators Network (IPMEN).

Follow-up Ocean Literacy Scope and Sequence development meetings result in the completed first draft of the Ocean Literacy Scope and Sequence for grades K-12.

Essential principles and fundamental concepts of atmospheric science literacy is developed and published by University Corporation for Atmospheric Research (UCAR) based on the Ocean Literacy Guide.

Neuroscience core concepts: The essential principles of neuroscience is developed and published by Society for Neuroscience based on the Ocean Literacy Guide.

North American Association of Environmental Education (NAAEE) requires conference session proposals in the marine education strand to address the Ocean Literacy Framework.

National Science Foundation (NSF) request for proposals for COSEE recommends that funded activities should align with the Ocean Literacy Guide.

2008

First Ocean Education Fair in Chile - Primera Feria Educativa del Océano en Chile.

The **Japan Symposium on Ocean Literacy: A New Education to Maintain a Wholesome Global Environment for Eternity**, introduces Ocean Literacy to Japan.

The *National marine education curriculum in Taiwan* guides teachers to teach about the ocean for the first time.

The first **IPMEN conference** takes place in Townsville, Australia.

Ocean Literacy Scope and Sequence second draft completed.

More than 100 scientists and educators participate in the two-week online public review of the second draft of the Ocean Literacy Scope and Sequence.

Sant Ocean Hall opens at the Smithsonian's National Museum of Natural History, with exhibits that reference the Ocean Literacy definition and are aligned with Ocean Literacy Guide.

Key concepts in microbial oceanography developed and published by the Society of Neuroscience based on the Ocean Literacy Guide.

Second **NEOSEC Ocean Literacy Summit** focuses on Ocean Literacy Principle 1.

2009

Summit on Ocean Literacy takes place at Oregon Coast Aquarium to assess progress and focuses on informal learning about the ocean.

A two-stage expert review of the third draft of the Ocean Literacy Scope and Sequence takes place. Stage one is a review by scientists of the content for accuracy. Stage two is a review by science educators for educational appropriateness of the content.

Lawrence Hall of Science/COSEE California incorporates all the feedback from both expert reviews into a fourth draft of the Ocean Literacy Scope and Sequence.

The fourth draft of the Ocean Literacy Scope and Sequence is showcased at the NMEA conference.

Revisions made to the final draft of the Ocean Literacy Scope and Sequence.

The Earth Science Literacy Principles Guide funded by NSF and based on the Ocean Literacy Guide is published.

Using the Ocean Literacy Guide as a model, the *Great Lakes literacy: Essential principles and fundamental concepts for Great Lakes learning* is developed and published.

Life on an ocean planet (second edition), a high school ocean science textbook, is published. A subcommittee of the NMEA Ocean Literacy committee reviewed the text and aligned it to the Ocean Literacy Guide.

The NSF request for proposals for its Geoscience Education Program recommends that funded activities should "explicitly promote learning of the essential ideas outlined in the Ocean, Earth, Atmospheric, and Climate literacy frameworks."

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2010

Fifteen representatives from the US National COSEE Network meet in Beijing, China with representatives from 11 Chinese universities to establish COSEE China.

The Ocean Literacy principles and concepts are translated into Chinese by COSEE China.

The Tokyo University of Marine Science and Technology Graduate School makes the curriculum of Ocean Literacy Studies into a masters degree level course.

The second **IPMEN conference** is held in Sigatoka, Fiji, hosted by the University of the South Pacific.

Publication of *The NMEA special report #3: The ocean literacy campaign*, featuring the ocean literacy scope and sequence for grades K-12. Hereafter we refer to the combination of the Ocean Literacy Guide and the Ocean Literacy Scope and Sequence for grades K-12 as the Ocean Literacy Framework.

The College of Exploration launches the re-designed Ocean Literacy website making the entire Ocean Literacy Scope and Sequence for grades K-12 available online.

NMEA Ocean Literacy committee submits public comments, supported and also submitted by dozens of other institutions, that have a major impact on revisions to the first draft of the National Research Council's *Framework for K-12 science education,* dramatically increasing the amount of ocean science in the final framework.

The Obama Administration Executive Order 13547 calls for the stewardship of the ocean, our coasts, and the Great Lakes, including statements that it is the policy of the United States … "to improve our understanding and awareness of changing environmental conditions, trends, and their causes, and of human activities taking place in ocean, coastal, and Great Lakes waters; and … foster a public understanding of the value of the ocean, our coasts, and the Great Lakes to build a foundation for improved stewardship."

Third **NEOSEC Ocean Literacy Summit** focuses on Ocean Literacy Principle 5.

2011

The concept of the European Marine Science Educators Association (EMSEA) arises at the 2011 NMEA conference.

Adaptation of the Ocean Literacy Framework to the Portuguese curriculum *Conhecer o oceano, principios essenciais e conceitos fundamentais.*

The textbook, *The theory and practice of aquatic marine environmental education, including aquatic marine environmental literacy*, is published by the Tokyo University of Marine Science and Technology.

National Research Council publishes *A framework for K-12 science education*, including an appendix that acknowledges the extensive constructive, actionable comments from the Ocean Literacy community.

The ocean sciences curriculum sequence for grades 3-5, aligned to Ocean Literacy Framework, is published.

COSEE Coastal Trends works with Queen Anne's County Public Schools in Maryland to create a semester-long, secondary school ocean sciences course using the Ocean Literacy Framework as its foundation.

Energy literacy: Essential principles and fundamental concepts for energy education is developed and published by the US Department of Energy.

Banana Slug String Band releases their award winning album, *Only One Ocean*, with song about each of the Essential Principles of Ocean Literacy, and featuring George Winston and other special guests. Production of the album is sponsored by COSEE, NMEA, NOAA and Lawrence Hall of Science.

2012

The **First Conference on Ocean Literacy in Europe** is held in Bruges, Belgium, hosted by the Flanders Marine Institute (VLIZ).

As a result of the **First Conference on Ocean Literacy in Europe**, the European Commission requests the formation of a European Union expert group to develop an Ocean Literacy agenda for its future funding program, Horizon 2020, and to deliver recommendations on mechanisms and initiatives to better support marine science outreach and education in Europe.

The third **IPMEN conference** is held in Santiago and Patagonia, Chile.

Several coastal cities in China begin holding marine education classes and activities each year with the objective of changing the focus in China from marine consciousness to Ocean Literacy.

Beginning of the Ocean Literacy Campaign in Bangladesh.

The NMEA Ocean Literacy committee provides comments on all drafts of Next Generation Science Standards and coordinates dozens of stakeholders to do the same.

The National Science Teachers Association (NSTA) National Congress officially endorses Ocean Literacy and its inclusion in the Next Generation Science Standards.

Fourth **NEOSEC Ocean Literacy Summit** focuses on Ocean Literacy Principle 7.

EMSEA

European Marine Science Educators Association

2013

The expert workshop on **Defining an ocean literacy agenda for Horizon2020 and transatlantic cooperation** is held in Ostend, Belgium hosted by Flanders Marine Institute (VLIZ). The recommendations provided by this group help the European Commission launch a European call for proposals dedicated to funding projects on Ocean Literacy.

The first **EMSEA conference** is held in Plymouth, UK, hosted by the Marine Biological Association.

In its publication, *Navigating the future*, The European Marine Board, recognizes that Europe needs a consensus to enhance Ocean Literacy.

The Taiwan Marine Education Center develops integrated marine education resources and formally promotes Ocean Literacy at the central government level.

In May, high-level federal representatives from Canada, the European Union, and the United States meet in Galway, Ireland to launch a Transatlantic Ocean Research Alliance. They sign the Galway Statement on Atlantic Ocean cooperation. The concept of Ocean Literacy is included as follows:

> We further intend to promote our citizens' understanding of the value of the Atlantic by promoting ocean literacy. We intend to show how results of ocean science and observation address pressing issues facing our citizens, the environment and the world and to foster public understanding of the value of the Atlantic Ocean.

The first **TransAtlantic Ocean Literacy (TOL)** meeting is held to foster dialogue between Ocean Literacy partners from Europe, **Canada** and the US in order to share information, identify synergies, and to engage in a cooperative joint priority initiative.

The original Ocean Literacy Guide is revised and re-published reflecting current scientific research (e.g., climate change, ocean acidification) and including"discussion of the newly released Next Generation Science Standards.

The US Next Generation Science Standards are published, including some but not all of the ocean science content recommended by the NMEA Ocean Literacy committee. Much of the ocean content is removed between the last draft and the final publication to reduce the number of Disciplinary Core Ideas (DCI) and Performance Expectations (PE).

Canadian Network for Ocean Education (CaNOE) is formed.

Using the Ocean literacy principles to connect inland audiences to the global oceans (Current, 2013) is published.

2014

Second **EMSEA conference** is held at the University of Gothenburg in Sweden and includes the second **TOL meeting**.

Creation of the Rome Declaration highlights the importance of an ocean literate society and the full support of the European marine science and policy communities for this mission.

Fourth **IPMEN conference** in Japan, hosted by Tokyo University of Marine Science and Technology, explores Japan's recovery from the 2011 Tsunami.

Guangxi Academy of Sciences in China begins developing provincial marine education curriculum to promote Ocean Literacy throughout Guangxi Province.

The second **TOL meeting.**

The Vision statement for transatlantic ocean literacy is released.

The Ocean sciences curriculum sequence for grades 6-8, aligned to Ocean Literacy Framework and Next Generation Science Standards, is published.

Fifth NEOSEC Ocean Literacy Summit focuses on Ocean Literacy Principle 6.

2015

Launch of two European Union Horizon2020-funded Ocean Literacy projects: Sea Change and ResponSEAble. These multi-year projects involve many European partners and focus on building public awareness of Ocean Literacy.

The concept of the Asia Marine Educators Association (AMEA) arises at the **2015 NMEA conference** in Newport, RI.

EMSEA-Med forms to advance Ocean Literacy in the Mediterranean region.

The Blue Green Foundation is founded in Bangladesh to promote Ocean Literacy. The first **Ocean Literacy Campaign Conference** is held in Chittagong City.

AMEA is formally established at a workshop at Tokyo University of Marine Science and Technology.

State Oceanic Administration (SOA) of China publishes *Outline of citizen marine consciousness education*, which results in publication of a five year plan in 2016.

The third **TOL meeting** is held in Copenhagen, Denmark, hosted by the Danish Technical University.

Launch of the International Ocean Literacy Survey effort to measure levels of Ocean Literacy and assess progress toward achieving Ocean Literacy goals.

The project Atlantic Ocean Research Alliance (AORA) is funded by the European Union's Horizon2020 program. The main objective is to implement the 2013 Galway Statement to promote transatlantic collaboration on marine scientific research.

The **Global Ocean Science Education (GOSE) workshop** is held at University of Rhode Island Graduate School of Oceanography, US.

Publication of the document *The Ocean Literacy/Next Generation Science Standards alignment.*

The **Ocean Literacy in Canada Conference 2015** is held in Vancouver, Canada.

2016

The Two Oceans Aquarium in Cape Town advocates to the South Africa Ministry of Education for Ocean Literacy to be included in the South Africa secondary school national curriculum.

First **AMEA conference** is held at Taiwan National Ocean University.

The Korean Marine Educators Association begins developing marine education programs aligned with Korean Ocean Literacy and the Korean K-12 curriculum.

2016 IPMEN conference is held in Manado, Indonesia

Publication of the Chinese document, *The 13th five-year plan of citizen marine consciousness outreach, education and culture building.*

Second field test of the International Ocean Literacy Survey in 17 languages in 24 countries gathering more than 6,800 responses.

The second **GOSE workshop** is held in Paris, France at UNESCO headquarters.

Sixth **NEOSEC Ocean Literacy Summit** focuses on Ocean Literacy Principle 3.

AMEA
2016 AMEA Ocean Literacy

2017

The final draft of the Mediterranean Sea Literacy is presented at the fifth **EMSEA conference** in Valetta, Malta.

Second **AMEA conference** is held in the Philippines, launching Ocean Literacy efforts in that country. Following the conference, educators in the Philippines start implementation of Ocean Literacy for K-12 nationwide.

The second edition of the *Marine education white paper* is published by the Taiwan Ministry of Education.

Korean ocean literacy: An ability to understand interactions between humans and the ocean to practice their sustainable coexistence is developed by the Korea Research Council of Maritime Education and officially announced by the Korea Ministry of Oceans and Fisheries.

Tokyo University of Marine Science and Technology begins an Ocean Literacy doctoral course.

First **National Ocean Conference** is held in Bangladesh and Radiant Fish World, a privately held marine museum in Bangladesh, opens an ocean education and research section to focus on Ocean Literacy education.

Publication of UNESCO's *Ocean literacy for all: A toolkit* (Santoro et al., 2017).

The third **GOSE workshop** is held at the UNESCO office in Venice, Italy.

A **GOSE meeting** is hosted during the United Nations Ocean Conference in New York City, US.

The **Ocean Literacy for All** international conference is held at UNESCO office in Venice, Italy. The office is charged to develop a road map to support the UN's Sustainable Development Goal 14, and to support the International Decade of Ocean Science for Sustainable Development (2021-2030).

The **CaNOE conference, See Change: Tides of Environmental Learning**, is held with the Canadian Network for Environmental Education and Communication (EECOM) in Wolfville, Nova Scotia.

2018

Creation of the African Ocean Literacy Network.

Ocean Literacy Italia (Conoscere Il Mare) is established.

More than twenty model Ocean Immersion Schools, as well as other schools in Korea, begin to implement education programs based on Ocean Literacy developed by Korea Research Council of Maritime Education in grades K-10 in connection with science, history, society, technology and physical education.

The Korean Marine Science Museum is under construction and from its inception, its galleries are designed based on the Ocean Literacy Framework.

Publication of the book *Exemplary practices in marine science education: A resource for practitioners and researchers* (Fauville *et al.*, in press).

The **CaNOE National Symposium: Navigating Canadian Ocean Literacy** is held in St. John's, Canada.