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**Slide-by-Slide Script for “Ocean Literacy: How the Concept of What Everyone Should Know about the Ocean Changed the World”**

*[Note to speakers: This script corresponds to the full-length version of the slide deck of this presentation.]*

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| Slide 1 | *--[title slide] --*  |
| Slide 2 | *-- [agenda slide]--* |
| Slide 3 | So we’ll start with learning a bit more about you... |
| Slide 4 | *[Note to speaker: Call for a show of hands**If someone raises their hands for “other” then ask them to tell us a bit more.]* |
| Slide 5 | *[Note to speaker: Call for a show of hands**If someone raises their hands for “other” then ask them to tell us a bit more.]* |
| Slide 6 | This presentation focuses on an overview of the Ocean Literacy Framework, which comprises these 3 tools. We will delve into each of these in more depth during this presentation. *[Note to speaker: Hold up a copy of each of these 3 tools as you mention them.]* |
| Slide 7 | *[Note to speaker: Call for a show of hands. For those who answer C or D, ask a follow up question regarding which ones they know and/or have used themselves.]* |
| Slide 8 | *[Note to speaker: Call for a show of hands**Make sure this doesn’t devolve into a discussion - keep people focused on responding.* *You could start with: “...thinking of the science content you teach, especially if you teach marine/aquatic science…”]* |
| Slide 9 | *-- [transition slide]--* |
| Slide 10 | So in this next part we’re going to look at the history of the Ocean Literacy Campaign - who’s been involved, why it was necessary, and we’ll explore the key components of the Ocean Literacy framework as well.  |
| Slide 11 | Now for a bit of history of the Ocean Literacy campaign…We call it a campaign because - like other campaigns (military, political, or otherwise) - hundreds of people and many organizations worked together in an *organized and active way toward a particular goal* - in this case a goal of building ocean literacy within K-12 and informal education. These organizations provided key leadership, staffing and funding that resulted in the ocean literacy framework and many related products that we’ll talk about today. |
| Slide 12 | * Why is there a Campaign for Ocean Literacy?
* Why did we define it and develop the Framework?
* Here are three reasons at the time why representatives from Nat Geo, NMEA, Centers for Ocean Science Education Excellence (COSEE), Sea Grant, The College of Exploration and NOAA began working together in 2004 to define what everyone ought to know about ocean sciences by the end of high school in order to be science literate. And that you can’t be science literate unless you are ocean literate.

*[Note to speaker: If you feel your audience needs more context for why it’s important for the public to understand the importance of the ocean to their daily lives, you could use the following text:* * *“The Ocean is the defining feature on our blue planet. All life, including our own, exists because of the ocean. Our lives depend, now and forever, on the health of the ocean. Understanding the ocean is essential to comprehending and protecting this planet on which we live. The Ocean Literacy Framework presents a vision of an ocean-literate society and outlines the knowledge required to be considered ocean literate.”]*

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| Slide 13 | * National Geographic’s Oceans for Life project (circa 2002) provided a model for convening the community of educators, scientists and others who were concerned about the public’s lack of knowledge of the ocean’s role in their daily lives.
* The constellation of organizations shown on an earlier slide provided the backbone leadership ensure that the process was as inclusive and transparent as possible.
* The result was a definition for ocean literacy (which will show in a minute), 7 “big ideas” or essential principles, under which there were 44 fundamental concepts.
* Reaching consensus was a lot of work, but the process helped ensure the resulting framework was adopted by many others not involved in the initial development. And the network of organizations involved also ensured the results of our collective efforts has had longevity.
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| Slide 14 | So here’s the definition and the 7 big ideas (we call them Essential Principles).Note the use of the word “ocean” in the singular. This is because there really is only one ocean on this planet and we’re all connected to it. We wanted the words to reflect that concept even though it flies against convention.Also note that this definition has 3 parts: Understanding alone does not make a person ocean-literate. One also has to be able to talk about it with others in a meaningful way and apply what you know to making responsible decisions about marine resources and the ocean. |
| Slide 15 | Ongoing US efforts included: * Development of Scope and Sequence - how to conceptually build through the grades,
* Revised the guide in 2013 so that the fundamental concepts reflected new issues and science.
* Alignment - between the Ocean Literacy Essential Principles and Fundamental Concepts, Scope & Sequence, and NGSS Disciplinary Core Ideas (the content)

Before we dive into each of the 3 specific components of the Framework, do you have any questions about what we’ve covered? *[Note to speaker: If someone asks what the changes were, the answer is: (a) we included a concept about ocean acidification under EP 6, we modified EP 4 slightly and added a concept about how the ocean provided and continues to provide water, oxygen, nutrients, etc. to support life on planet Earth.]* |
| Slide 16 | We’re now going to explore the top 3 in list, which I should note constitute the Ocean Literacy Framework.After that we’ll discuss other resources that are available to you and were influenced by the OL framework. So let’s look at the guide in more depth… *[Handout copies of the Ocean Literacy Guide now.]**[Note to speaker: in the short version of this presentation, you can simply cover the descriptive slide on each of these bullets, but in a longer workshop, you can have the audience download or look at hard copies to explore further – then do think, pair, share exercise to explore…]* |
| Slide 17 | *-- [transition slide]--* |
| Slide 18 | *[Note to speaker: Because some of the material on this and several slides further on may be hard to read, it may be helpful to remind people that you’ll provide not only a copy of the Guide (which they should already have in their hands) but as your proceed, they will also have copies of the Scope and Sequence, NGSS example and alignment documents to peruse...]* You now have a copy of the most recent version of the Guide, version 2. Revisions in the content were small but significant (for example, we added ocean acidification). The main revision was in eliminating the correlation to the National Science Education Standards and adding more explanation about the Ocean Literacy campaign and using the ocean as a teaching tool, and describing the Ocean Literacy Framework.So let’s walk through some elements of the inside of the Guide. There are seven Essential Principles - these are the big ideas that everyone should know. Beneath each Principle are several Fundamental Concepts, which help explain and support the Principles. Note that some principles have more fundamental concepts under them than others, and some also could fit under one essential principle as well as another or are related to each other. In the end, a choice was made not to have a fundamental concept under more than essential principle. So now let’s explore these Principles and Concepts… |
| Slide 19 | *[Note to speaker: There is no need to go through each one of these essential principles (but* ***do*** *emphasize Principle 1 - there is only one ocean.* *Talk about any of the others that are likely to resonate best with your audience.]*For example, there is ONLY ONE OCEAN. EP1 - More than 70% of the Earth is covered by ocean so it really should be called planet ocean. Note that we emphasize a single ocean, not the basins (which is what we learned in school… and is still emphasized in many official names) … because we’re all interconnected. Concept 1A notes the different ocean basins and Concept 1C describes the interconnected ocean circulation system.EP2 - The features of the Earth are shaped by the ocean. Examples include: Sea level, erosion, biogeochemical cycles…EP3 - How many of you are teaching about climate change and weather? If you’re not teaching about the ocean when you teach these topics then you’re not fully teaching those topics. For instance, if you’re teaching about climate are you also teaching about the role of the ocean in climate? If not, you should be. EP4 - Life as we know it on this planet could not exist with the one global ocean.EP5 - 5C: Most of the major taxonomic groups that exist on Earth are found exclusively in the ocean and the diversity of major groups of organisms is much greater in the ocean than on land.EP6 - This is where the role of the ocean and our influence on the ocean can be explored - if you teach social sciences, this is a good place to explore issues where science & society interact. It is also the most intuitively understood principle of the 7. EP7 - Because so little of the ocean has been explored, this is still an essential principle. We know more about the moon than we do about the ocean. |
| Slide 20 | *-- [transition slide]--* |
| Slide 21 | *[Note to speaker: Call for a show of hands**Make sure folks have copies of conceptual flow diagrams, if you’re spending time exploring them during the presentation.]*  |
| Slide 22 | * Like the original guide (EPs and FCs and definition), the scope and sequence for grades K-12 were developed through a thorough, iterative process,that involved the input of many educators and ocean scientists.
* Look to the “Honor Roll” online (see handout with URLs) for a list of all those who have contributed their time, expertise, and goodwill, much of it voluntarily, to make the Scope and Sequence.
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| Slide 23 | Here’s an overview of the scope and sequence as you will find it on NMEA’s web site…Here’s how to navigate it: * The Ocean Literacy Scope and Sequence is composed of 28 conceptual flow diagrams (which we’ll introduce in the next slide).
* There is one flow for each principle for each grade band (K–2, 3–5, 6–8, and 9–12) so that’s what the blue-green buttons under each principle lead to. Note that K-2 is on the bottom of the stack and 9-12 on the top, further emphasizing that the concepts taught in earlier grades are foundation to those taught later.
* Also on this web site (not shown on this slide), the CFDs for all 7 EPs are grouped by grade band.
* Each flow represents one possible way of breaking down and organizing the major concepts and supporting ideas for each principle for a grade band.
* The conceptual flow diagrams can be used as a suggested instructional sequence, indicator of conceptual progression, and/or organizer of ideas. Therefore, the scope & sequence is not just for formal K-12 education.
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| Slide 24 | *[Notes to speaker: Hand out a paper copy of this slide so attendees can follow along. Ask if folks are familiar with conceptual flow diagrams - if everyone is familiar you can quickly cover the navigation described below under “About conceptual flow diagrams”]*Here’s a quick view of the S&S. Please note that there is not a single conceptual flow diagram for each fundamental concept, but all fundamental concepts are covered by the 28 conceptual flow diagrams collectively. This is because some conceptual flows include more than one fundamental concept. This diagram is of medium complexity (compared with some for grades K-2 or grades 9-12).About conceptual flow diagrams: * The conceptual flow diagrams present an organized progression of ideas, as each flow resembles a map of nested concepts.
* The biggest ideas are supported by small ideas, and those small ideas are maintained by even smaller ideas that become learning sequence concepts.
* Conceptual flow diagrams are intended to be read and taught from top to bottom and from left to right.

This particular flow is focused on the grade band of grades 3-5 for Principle 1: The Earth has one big ocean with many features. In a moment we will give you a chance to explore this in more detail. This flow is one of 28 flows that make up the S&S - 7 Principles X 4 grade bands (K–2, 3–5, 6–8, & 9–12)Note that if you would like to know more about the education research underpinning this approach to these conceptual flows, we will be happy to share that with you post session. OR visit article online (URL is provided in the handout on online resources). |
| Slide 25 | Tiny bit of wayfinding to get the exploration started and to provide some common language when exploring and discussing. This image shows 2 of the 3 branches that make up grades 3-5 for Principle 1. The red circle is focusing on the C strand: Geographic and Geologic Features.In the scope and sequence, the capital A., B, C of the strands do not correspond to the fundamental concepts 1a, 1b, 1c etc. This is because each strand is unpacking a way to reach mastery of the essential principle and the strands may address/incorporate more than one fundamental concept so there isn’t 1-to-1 correspondence between fundamental concepts and conceptual strands in the scope and sequence. *Note: This excerpt of the conceptual flow diagram for EP1 grades 3-5 is on p.40 of the NMEA Special Report #3 (page numbers still work, even if you’re using printouts extracted from the report).* |
| Slide 26 | This slide and the figure on the following slide label the major components of each flow, using the flow for Principle 1 Grades 3–5 as an example.Figure 2. Branch A of conceptual flow diagram of Principle 1 for Grades 3-5. Here is a breakdown of the components in a branch. The branch is identified by topic for easy reference. The branch begins with a major concept and then nested below are two levels of ideas that support the bigger idea. Supporting ideas can be examples, but not always.Note: Look at p.32 of the conceptual flow diagrams in NMEA Special Report #3 if you can’t read the slide.  |
| Slide 27 | *[Note to speaker: Unless you can provide a hard copy of this to each attendee or they have computers on which they can view it, leave this slide out. It is too hard to read on a screen. This is from p.31 in NMEA Special Report #3.]* This diagram shows how there’s a progression top to bottom (bigger ideas to smaller)Left to right: Multiple branches under each big idea.Levels 1-5 show that concepts are on the same level of granularity.Dashed lines show how concepts are cross-linked to other principles.  |
| Slide 28 | *Notes to Speaker:* * *Give 20 minutes for the activity to explore the Scope and Sequence:*
* *Look at the S&S for 5 minutes; then 10 min to discuss the questions. Move around between tables and check in with the participants - ask what they noticed, how they would use it, etc.*
* *Then, give 5 minutes for report out of the activity. Speaker/facilitator can manage report-out.*
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| Slide 29 | *[Notes to speaker:* *In longer presentation, use this slide with the report out from the previous discussion. Highlight those reasons that were NOT mentioned by participants and skip the others. In a shorter presentation you won’t have time for exploration of the Ocean Literacy scope and sequence so this slide becomes more important to cover. In addition to the key messages on the screen, here are some additional things* ***to say to your audience]:*** * You can use the conceptual flow diagrams not only with formal K-12 education, but for any audience - this is still useful for thinking about what’s age appropriate for learners in an informal/non formal educational context.
* Even at a University level - intro oceanography, look at the high school level conceptual flows as a starting point.
* These learning progressions are based on research about how people learn.
	+ If you’d like to know more detail about how they were developed and the research that unpins them, please take a look at an article (see posted URL) in the NMEA Special Report #3. In that report there is a chapter on CFDs.

*[Note to speaker: you can also mention that for those of you knowledgeable of Understanding by Design (Wiggins & McTighe 1998) or “backwards design” principles or logic models, the Ocean Literacy scope & sequence is an excellent tool for this approach to instructional design.]*  |
| Slide 30 | *[Notes to speaker: This is a placeholder slide for when you want to have attendees pair/group, talk and share. The questions in the box can be adapted if used in a different place in this presentation. Suggested instructions for participants are:**3 min for jotting down ideas individually* *5 min for small group discussion**5 min for “Popcorn” report-out, i.e., just pick out people in audience to report out (doesn’t have to have everyone)]* |
| Slide 31 | Let’s take a [10-20] min break.  |
| Slide 32 | *-- [transition slide]--* |
| Slide 33 | *Here’s a few key reasons why we knew that these alignment documents that we’re about to share with you were important to provide.* ***Note to speaker:*** *Before continuing to the next slide, ask participants if they are familiar with 3-dimensional teaching and learning and NGSS. If there isn’t a strong response, explain what these are before proceeding with the next slide, i.e.:* *Three dimensional learning is meant to incorporate content, practices, and the “big ideas” to be practiced together - not in isolation. It is meant to better reflect science as science is practiced.****Disciplinary Core Ideas (DCIs):*** *content;* ***Crosscutting Concepts (CC)****: e.g., systems, patterns, cause and effect* ***Science and Engineering Practices (SEP):*** *e.g., analyzing and interpreting data, developing and using models.* |
| Slide 34 | *[Note to speaker: You really need to provide a handout of this slide. We don’t recommend handing out the complete alignment documents at this point because attendees will just focus on those instead of the following exercises. Make sure that audience knows what PE and DCI mean...]*Note that when we talk about alignment we’re talking about alignment to the Discipinary Core Ideas (or DCIs) - that is, the content - underpinning the Performance Expectations (or PEs). The reason for this is the OLEP and FCs are ***content***, so we want to compare apples to apples in this alignment. So a 1 is an exact, or almost exact match. 2,3, and 4 are all important - is not a ranking. A 2, 3, or 4 may be just as important as a 1. For a 2, you really need to understand the OL content to understand the DCI/PE. A 3 indicates that the OL content is an excellent example of the DCI/PE. And a 4 means that this is a foundational idea.Note that if a cell is blank it’s because there is no alignment among concepts. Let’s look at an example to help clarify….and later I’ll give you one to try! |
| Slide 35 | Here is an example of a 3, i.e., where Ocean Literacy fundamental concept or essential principle provides a good example for teaching the standard. Here’s the DCI from NGSS standard for Grade 4, Earth and Space Science 1.C. Why do you think this is a 3? What are some really good examples from OL? |
| Slide 36 | Here is the explanation that is provided for the 3 rating in this case with ties to Ocean Literacy Principles and Concepts as well as the Scope and Sequence. In this DCI, students are looking for patterns of rock formations as evidence of change over time due to Earth forces. Introducing marine terraces and other geological marine features would serve as a great example of a rock formation providing evidence of this scientific idea. [Show the NGSS connections]Note that we don’t align the Ocean Literacy framework to the Crosscutting Concept and Science & Engineering Practices of the NGSS because the framework is content-focused and the CCs and SEPs recur across all science disciplines. (In the next slide we show the EP, FC, and S&S connections)... |
| Slide 37 | And this is how it ties to the OLP 1b (in the most current version of the Ocean Literacy Principles and Fundamental Concepts)And how it ties to the OL Scope and Sequence for Principle 1, Strand C (Geographic and Geologic Features) |
| Slide 38 | So in summary: This is why it’s a “three” in our rating system... and these are all the pieces of NGSS, the OL Guide, and the OL Scope & Sequence that we used to determine the nature of the alignment.  |
| Slide 39 | Now here is one for you to try! **[Hand out the example for 5-LS2]**Take a minute to review this text… There’s a lot of words on here, but there are a few words or phrases that indicate that the concept is not fully developed or entirely accurate. Can you pick them out? Could they have chosen a different phrase or word?Is the concept incomplete?  |
| Slide 40 | How many of these did you all get? “Answers” are in orange. Pick out the key words: plants, plants, plants, or plant parts, soil, decomposition, matter cycling between air and soil and among plants!And, is photosynthesis the only way to convert inorganic matter to organic matter? **No** – chemosynthesis also does this! |
| Slide 41 | Here’s why we rated this as a 2 - ***Understanding this Principle/Concept is essential to understand the DCI and/or PE.*** *[****Note to speaker****: Let the audience know that this explanation was extracted verbatim from the grade-band alignment document for Grades 3-5. Hand out the four alignment documents and explain their organization, i.e., that the rating scale is on page 2 of each document and then the explanations for each alignment rating are on the subsequent pages.]* |
| Slide 42 | So just to remind you, we’ve talked about the 3 components of the framework. So when we refer to the Ocean Literacy Framework today we mean these 3 pieces even though they can be used independently.  |
| Slide 43 | So in case you’re wondering where you can find this so you can share this with others…  |
| Slide 44 | ***[Instructions for speaker (explain and follow this process)****:* *Ask everyone to get into 2 lines facing each other…* *People facing each other (1 on 1) discuss Question #1 for 2 minutes.* *Pause the conversation\* and ask for volunteers to share out something they learned. Do this for about 1 minutes.**Then one line stays in same order, but In the second line, ask the first person to go to the end of their own line and everyone else takes one step over to pair up with a new partner. Repeat with second question, etc.* *Note: This slide has animation set up so you can show one question at a time.* *\* One quiet but effective way to tell people it’s time to stop talking is to tell them you will start at one end of a row and pat the first person’s arm and when they feel that touch they stop talking immediately. That person does the same to their neighbor and so on until everyone has stopped talking. Then do the report out and repeat.]* |
| Slide 45 | *-- [Transition Slide with Agenda] --* |
| Slide 46 | Now we’re going to talk a bit about educational resources that were influenced by the framework; applications of the framework in formal and informal education; as well as other impacts both here in the US and abroad.  |
| Slide 47 | If you need refresher of the material we just covered, the first two recorded webinars in this series will provide that and will allow you more time to explore these elements of the framework in more detail; Webinar 3 focuses more on applications both in formal K-12 and informal education, some of which we’ll talk about in few minutes.  |
| Slide 48 | These are examples of Resources that have been informed by the ocean literacy framework and are strongly aligned to the NRC’s *A* *Framework for K-12 Science Education* as well as the Next Generation Science Standards. Ask the audience: What are some others that you know of ? The [Ocean Sciences Sequence curriculum](http://mare.lawrencehallofscience.org/curriculum/ocean-science-sequence) (OSS) for grades 3-5 and 6-8 is a collaboration between MARE, GEMS (Great Explorations in Math and Science), Rutgers University, and NOAA Scientists - Available through the Lawrence Hall of Science. These sequences will provide educators the tools to teach essential science concepts in the unique and important context of ocean science.Second examples is from University of Hawaii’s Curriculum Research and Development Group and is available through that program.  |
| Slide 49 | * In addition to influencing the content of instructional materials - such as the examples just mentioned - the OL framework was available to writers of the National Research Council’s 2012 publication “A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas” as well as to the writers of the NGSS.
* NMEA/COSEE/NOAA/Sea Grant members used it as a guide for providing feedback during the public comment periods for the development of both the NRC Framework and the Next Generation Science Standards.
* It remains a tool for state science & environmental education standards committees to include ocean sciences in development or revision of standards.
* The OL framework has proven to be flexible and somewhat universal although US-based.
* Other communities, cultures have been able to use this framework and modify it but still keep the general idea intact, in addition to translating the guide into multiple languages (e.g., Portuguese, Chinese, Japanese, Spanish, etc.)
* Just as important as the translations of the Guide into other languages, the curriculum and instruction in other countries has also been informed by the OL framework. We know of specific examples in China, Japan and Taiwan where this has occurred.
	+ In Japan, a curriculum for a Masters degree program…
	+ In China and Taiwan, they have established a national marine education curriculum based on it.
* Also, Marine education advocates in South Africa have also recommended that their secondary school curriculum integrate the concepts contained in the framework.
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| Slide 50 | Here’s a brief list of other literacy frameworks that are modeled on the Ocean Literacy Guide: Definition with small number of big ideas, supported by smaller concepts.* Atmosphere
* Climate
* Earth Science
* Energy
* Estuary
* Great Lakes
* Lake Erie
* Microbial Ocean Science
* Neurosciences
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| Slide 51 | One of the first examples where the Ocean Literacy Framework influenced a major exhibition and its related web sites and educational outreach is the Sant Ocean Hall at the Smithsonian’s National Museum of Natural History.The ocean literacy framework (first version) was published while the Sant Ocean Hall was in development and colleagues of mine at NOAA involved in that process ensured that the framework guided the themes and concepts explored within the exhibition space as well as the online extensions of the Ocean Hall (the Ocean Portal) as well as in the lesson plans and outreach materials related to it. So for instance, the words I’ve quoted on bottom of this slide are pulled from a description of the Ocean Hall on Smithsonian’s web site. It’s clearly related to many concepts embedded in the framework. **On the left of your screen is a screen-shot of the Ocean Portal (Sant Ocean Hall’s online presence)**, note the Themes along top navigation bar (orange outline). If you drill down into that site, you’ll see that educational activities and lesson plans that identify the specific OLP that they address. Also on this screen-shot, you can see reference to “Ocean Today”. There’s a kiosk in the Ocean Hall where the viewer can call up videos about the ocean on demand... and the editorial guidelines for these videos require identification of at least one OLP [(See http://oceantoday.noaa.gov/background\_docs/oceantoday\_editorialpolicies.pdf)](http://oceantoday.noaa.gov/background_docs/oceantoday_editorialpolicies.pdf%29).**In the photo on the right, note the reference to “The Global Ocean” i**n the words on the wall panel on the right side **and then just to the left of that panel**, you might be able to read the phrase “Ocean or Oceans”. Just underneath that, it says, “A single ocean spans the Earth - One global system”. **The fact that the ocean is referred to in the singular and not plural throughout** the Ocean Hall, and its related educational and outreach materials, is clear evidence of the influence of the Framework on the thinking of developers of this exhibition and its programming.**So, this another example of how the Framework guided and continues to guide the content covered in a major exhibition.** More recently, we have seen presentations by our colleagues in Korea where they are building a new marine science museum - the galleries of which were designed around the essential principles of Ocean Literacy (no images available yet).  |
| Slide 52 | Don’t try to read the words in these images…**The image on the left is the cover page of a guiding document** that assists staff at the 13 National Marine Sanctuaries and 2 Marine National Monuments in integrating the ocean literacy principles and concepts into their educational programs and communications. **The image on the right** is an example of this guidance related to OLit concept 6c (which says the ocean is a source of inspiration, recreation, rejuvenation, and discovery…and important in the heritage of many cultures). The guidance explains how concept 6c is relevant to the Sanctuaries and includes case studies that illustrate the concept so the Sanctuaries educators can draw upon this information when engaging visitors.And I should note here that they Sanctuaries have developed similar guidance regarding the Climate Literacy Framework, which - if you attended the first webinar - you probably know it was modeled on the OLF. All of ONMS programs have a thread of ocean literacy in them:* Their visitor centers have the principles on the walls for guests to see (and you’ll see an example of that in a few minutes),
* School programs incorporate them into their main themes and objectives,
* Lesson plans identify which OL principles they are meeting and
* and the OLP are considered in developing all outreach materials OLP

Finally, Sanctuaries’ educators focus on ocean and climate literacy in the evaluation of their programs. For example, when they focus on stewardship actions in programs offered at NMS, they link that action to EP6 - the inextricable interconnection between humans and the ocean.  |
| Slide 53 | And here’s an example from the Seattle Aquarium… they infused the OL principles and concepts into their mission and messaging plan.Again, **don’t try to read the words on the right.**  What this is showing is how the aquarium has taken the ocean literacy principles and concepts as outcomes and applied a regional filter to the messages that they are sending throughout the visitor experience at the aquarium and in their programs.  |
| Slide 54 | *[Note to speaker: The wordle is in the shape of Alaska (if anyone asks)]*The Alaska Sealife Center is another example where an aquarium is using the Ocean Literacy Framework to guide their programs and messaging holistically.* All their Informal programming for visitors has to be based on the Framework (EPs, FCs and Scope and Sequence)
* OL principles and concepts provide themes for various workshops and school programs and presentations at education conferences
* The Sealife Center has the 7 OLP are prominently displayed as posters in their on-site classroom.
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| Slide 55 | Need to note that the OL guide had an influence on funding from NSF and NOAA for a number of years (roughly 2006-2014) and as a result there were instructional materials, web sites, exhibitions, educator professional development and a national network of centers (NSF’s Centers for Ocean Science Education Excellence or COSEE) that all used the ocean literacy EPs and FCs and some the OL scope & sequence in their products and programs. Additionally, several conferences have used the OL principles as thematic areas:* NMEA’s annual conference asks presenters to identify the EPs their session addresses.
* The New England Ocean Science Education Collaborative (NEOSEC) chooses a different EP as its theme for each biennial summit
* NAAEE has offered ocean-focused strands, roundtables, and networking gatherings at conferences past.
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| Slide 56 | * Ocean Literacy in the United States gained attention around the world and resulted in the formation of these organizations to focus on Ocean Literacy in the specific global regions.
* NMEA conferences begat the International Pacific Marine Educators Network - IPMEN (Maui 2005) - and the European Marine Science Educators Association - EMSEA (Boston 2011), and the Asia Marine Educators Association - AMEA (Rhode Island 2015)
* CaNOE - the Canadian Network for Ocean Education - formed in 2015
* Want to know more about these organizations? Links are provided in the handout of web sites.
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| Slide 57 | These are examples of how countries and networks of countries have dedicated funding and other resources to support Ocean Literacy. * The European Commission funded “Sea Change”, a partnership of 17 organizations across Europe. This project (which ended in 2018) aimed to establish a fundamental “Sea Change” in the way European citizens view their relationship with the sea, by empowering them, as Ocean Literate citizens, to take direct and sustainable action towards a healthy ocean, healthy communities and ultimately a healthy planet.
* ResponSEAble is a project of 15 partners across Europe. Their focus is to “help people understand their connection to the sea.” Currently in the last year of funding (2019)
* The Atlantic Ocean Research Alliance (AORA) is a cooperative effort between Europe, Canada, and the US (signatories of the Galway agreement in May 2013). Their mission is to explore, understand, harness and manage the Atlantic Ocean's potential focuses on five key areas of cooperation:
	+ mapping the Atlantic Ocean
	+ observing and analysing ocean systems
	+ sustainable use of living marine resources (food from the ocean)
	+ marine research for a healthy ocean; and
	+ **ocean literacy.**
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| Slide 58 | * The International Ocean Literacy Survey (or IOLS) was developed to provide an open-source instrument to measure ocean literacy in the US and internationally among 15-17 year olds.
* Many governments and organizations around the world have been making investments to improve Ocean Literacy based on the Ocean Literacy Framework, but have had no way to know if these efforts are having any impact. So starting in 2015, a questionnaire was created whose questions are aligned to the 45 fundamental concepts of Ocean Literacy.
* At this stage, the instrument is still in development. This survey instrument has gone through several iterations of development with significant international collaboration, involving organizations and government agencies from 24 countries and 17 languages over the years. (Note: the image on the right is from a March 2018 peer-reviewed article about the development of the survey instrument. The bottom right - all the organizations that have partnered on this initiative.)
	+ V1: tested only in English
	+ V2: tested in 23 languages, more than 6,000 responses
	+ V3: submitted to the IOLS advisory board and updated to Version 4
* Version 4 was released in January 2019 in 15 languages. The first round of data collection with Version 4 was completed on March 22, 2019 and the analyses will be shared with all the participating educators and the broader marine education community once the analyses are completed by the Lawrence Hall of Science. Currently, educators whose students completed Version 4 will not receive the data from their own students because the tool is still under development and by taking the survey, they are contributing to the refinement and validation of the instrument.
* In the future, when the survey is in its final form, the questions will all be available online so that anyone can take the ones they are interested in and use them in school, for research, etc.
* The survey has not been designed as a teaching tool, although one could imagine someone developing this function for it in the future, but this is not the focus of this initiative right now.
* Finally, because this survey instrument is still in development, the team leading this initiative is not trying to say something about the level of ocean literacy of different demographic groups; they are testing the validity of the survey in different languages/cultures.
* If you would like more information on the creation of the assessment or want to get involved in using this assessment (or might know someone who does), please check out the links and contact information provided in your handout of URLs.

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| Slide 59 | Other than the Ocean Literacy Guide itself, the NMEA Special Issue #3 is probably the most significant publication on Ocean Literacy. Edited by Craig Strang and Lynn Tran, it contains the full, pull-out version of the Scope and Sequence as well as articles on how the campaign began, impacts, and research in on learning and teaching ocean and aquatic sciences.Published in 2018, *Exemplary Practices in Marine Science Education* is the first book dedicated exclusively to marine science education and improving Ocean Literacy. The book has 24 chapters with contributors from all over the globe.Frontiers in Marine Science is an edited journal issue focusing on Ocean Literacy, to be published in 2019. NMEA members have submitted chapters for review. |
| Slide 60 | In the last few years, UNESCO (United Nations Educational, Scientific, and Cultural Organization) has come out with several publications and an online portal. In December 2017, *Ocean Literacy for All: A toolkit* was released. It connects the Ocean Literacy Essential Principles and Fundamental Concepts with the UNESCO Sustainable Development Goal # 14: “Conserve and sustainably use the oceans, seas, and marine resources for sustainable development.” It also includes vignettes featuring perspectives of scientists on the importance of a global population that is ocean literate. The document also shares success stories and several activities aligned to Ocean Literacy Principles and UNESCO Sustainable Development goals (SDGs).The OL Portal provides an online venue for sharing of Ocean Literacy resources. It has a searchable database and, for those who sign up, provides shared workspace for the global Ocean Literacy community. Note that the Ocean Portal is not just focused on ocean science but also culture. ***[Note to speaker: if there is time in the session, GO TO THE OL PORTAL online and show the resource.]***The UN Decade of Ocean Science for Sustainable Development, led by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, are developing an implementation plan to kick off the decade in 2021.While the main focus is on scientific data collection and advancing ocean technology, education is a component of the plan for policy makers and the public, focusing on behavior change. The implementation plan will not be released until early 2021, so stay tuned to see how you can be involved. |
| Slide 61 | *--[transition slide of Agenda] --* |
| Slide 62 | *--[transition slide for Part 4 on how to get involved and future directions] --* |
| Slide 63 | * Obtain copies of the framework documents
	+ Download the Guide and the National Marine Educators Association Special Report #3 on Ocean Literacy (visit …)
* Join an organization that is promoting ocean Literacy
	+ e.g., National Marine Educators Association (NMEA) and its regional chapters.
* Advocate for ocean literacy in your state science education standards & assessments.
	+ Build on implementation of NGSS. Work with state science & environmental education standards committees to include ocean sciences in development or revision of standards; OL framework documents are tools that can inform those processes
		- There are 40 of states that have adopted either the NGSS or standards based on the Framework for K-12 Science Education so this represents the primary opportunity to include ocean concepts into formal K-12 education. (See <https://ngss.nsta.org/about.aspx>)
* Represent the ocean & ocean literacy in climate & environmental education conversations/conferences/communities of practice
	+ We’re all part of other networks and communities of practice so become informed about ocean literacy and be an advocate for ocean literacy in those other communities. There are many organizations focusing on climate literacy and EE and community resilience and seek out those organizations and bring the ocean voice to them.
* Attend a conference, activity, and/or online course or workshop to promote ocean literacy
	+ Note: Could be NMEA but could also be related conference where ocean conservation/education is relevant but not the sole focus.
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| Slide 64 | * Promote local aquariums, science museums, and marine education centers as places to be inspired, learn more & make connections
* Be a voice for ocean literacy in public policy discussions
	+ Ocean literacy as a tool for sound marine resource management
	+ Meet with State Science Supervisors, School District Science Coordinators and/or Directors or Curriculum & Instruction
* Get funding for ocean sciences education programs
* Participate in the International Ocean Literacy Survey initiative discussed earlier.
	+ If you are not on NMEA’s Scuttlebutt listserv, you should contact Craig Strang directly about participating (which means having your students participate - assuming they are 14-18 years old).
* Promote on social media with #oceanliteracy & @NatlMarineEd
	+ Promoting on social media - particularly to audiences that are not solely focused on ocean-related issues. #enviroliteracy
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| Slide 65 | *[Note to speaker: The first half of this slide reiterates some material covered in previous slides.]*So, what’s next? The Ocean Literacy campaign can only continue with help from people like YOU. Help us spread the word about Ocean Literacy by joining local, regional, or national organizations. Join your local NMEA chapters, EE and science teacher groups; support regional efforts like NEOSEC and NEEEA; and go to NMEA 2019 in New Hampshire, July 22-25 at the University of New Hampshire! Talk about Ocean Literacy at other national meetings - NSTA, NAAEE, AGU, ASLO!International Ocean Literacy Survey - youth aged 16-18 are the focus for taking the survey. If you can help recruit in this age group, contact Craig or Geraldine. If you are interested in the progress so far, we refer you to the article in Environmental Education research. As mentioned previously, UNESCO and the IOC are spearheading several programs in support of the UN Decade of Ocean Science for Sustainable Development, including the Ocean literacy for All toolkit, the Ocean Literacy Portal, and the Decade of Ocean Science for Sustainable Development. The Toolkit and Portal are ready and available for use now. International groups, led by UNESCO and the IOC, are developing an implementation plan to kick off the decade in 2021. Stay tuned for updates on activities as we hear about them! |
| Slide 66 | *[Note to speaker - Update contacts on the right as appropriate. Feel free to add your institution’s logo to this slide along with you, but please leave the 5 logos at the bottom on the slide because these institutions were lead supporters of OL efforts over the years.]* |
| Slide 67 | *--[transition slide for Back-up Slides] --* |
| Slide 68 | *[Note to speaker: Mention that these resources are available on oceanliteracy.net and some of them are also available on NMEA’s website. Also note that some of the resources mentioned earlier in the PPT are not accessible through these sites.]* |
| Slide 69 | *[Link to Sea Change video]* |
| Slides 70-84 | *[Note to speaker: Slides of the 45 Fundamental Concepts of Ocean Literacy by EP. Note these are text heavy slides so really are only meant if you need to project the actual text at a size for viewing on a large screen.]*  |