



# Evolution of Ocean Literacy

## IOC Group of Experts on Ocean Literacy Meeting

### November 2025



**Understand and beat  
marine pollution**



**Protect and restore  
ecosystems and biodiversity**



**Sustainably nourish the  
global population**



**Develop a sustainable,  
resilient and equitable  
ocean economy**



**Unlock ocean-based  
solutions to climate change**



**Increase community resilience to  
ocean and coastal risks**



**Sustainably expand the  
Global Ocean Observing  
System**



**Create a digital  
representation of the ocean**



**Skills, knowledge, technology  
and participation for all**



**Restore society's  
relationship with the ocean**



**Ambition, Action, Impact:**  
**The Ocean Decade**  
**Pathway to 2030**

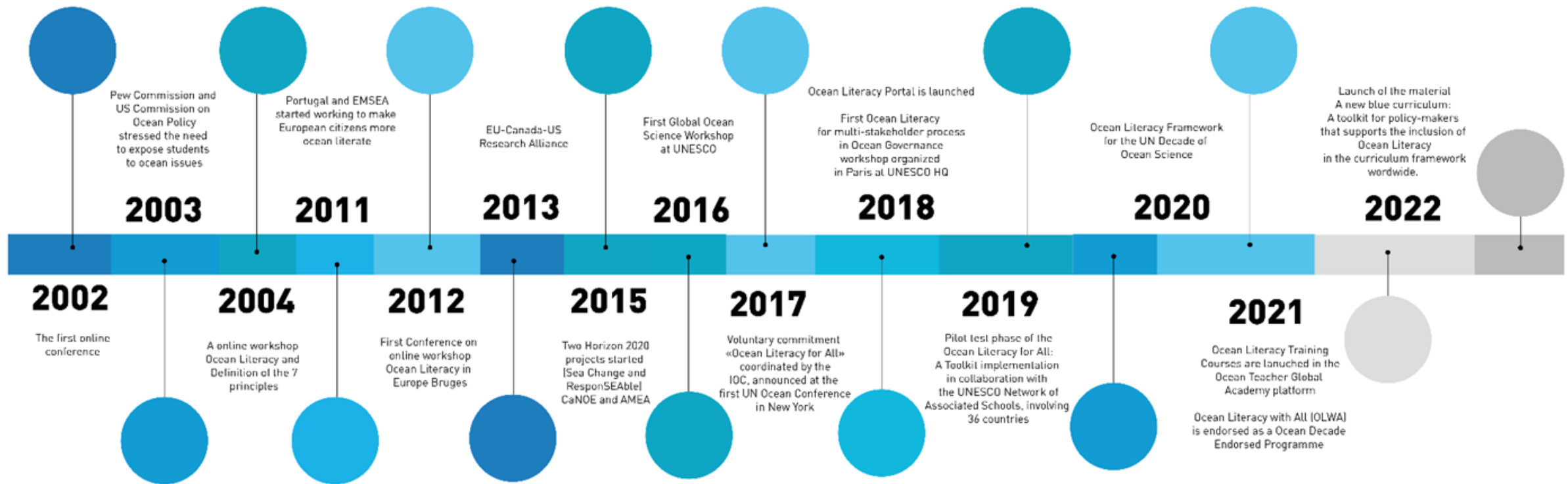
Consolidated Outcomes of the Vision 2030 Process



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



# Timeline of Major Ocean Literacy Events, Projects & Publications (2002-2022)



A vertical banner on the left side of the slide features a photograph of a walrus swimming in the ocean. The background is a deep blue, and the walrus is seen from the side, with its head and tusks visible above the water. The text is overlaid on this image.

## 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.

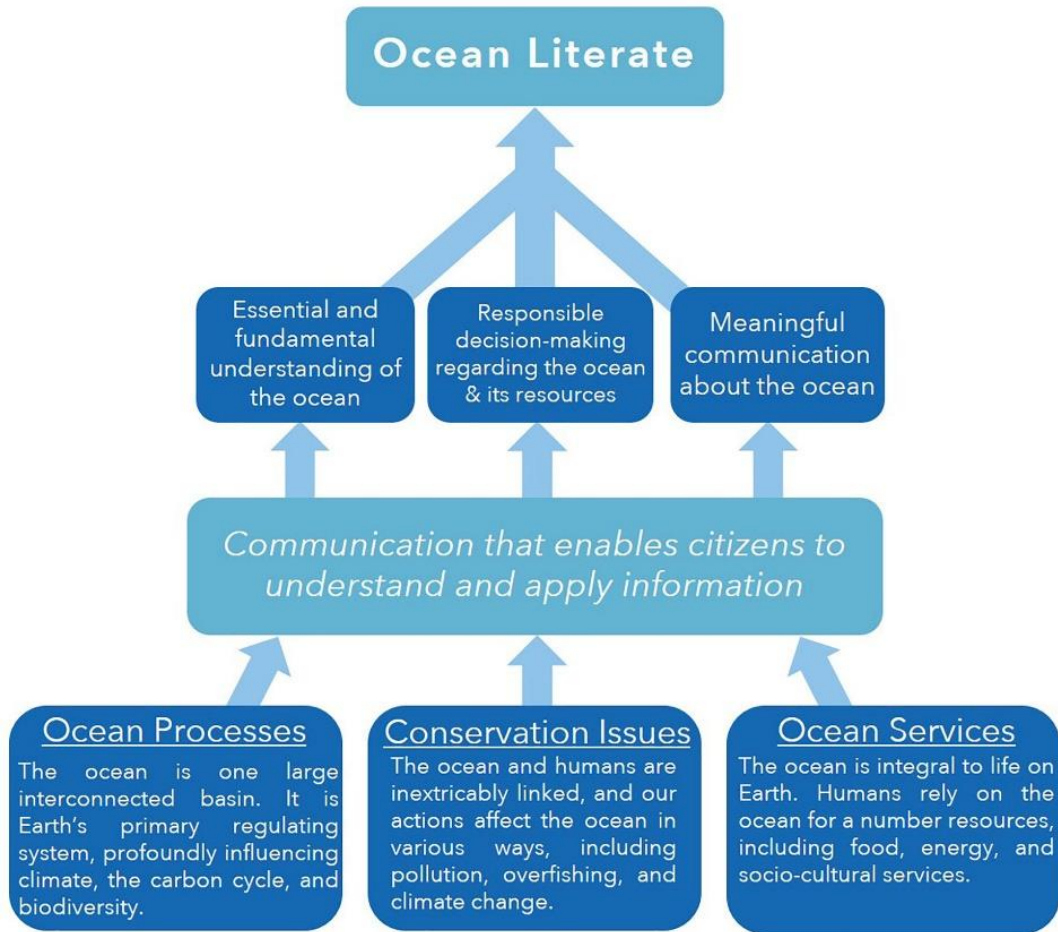
# Ocean Literacy is...

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

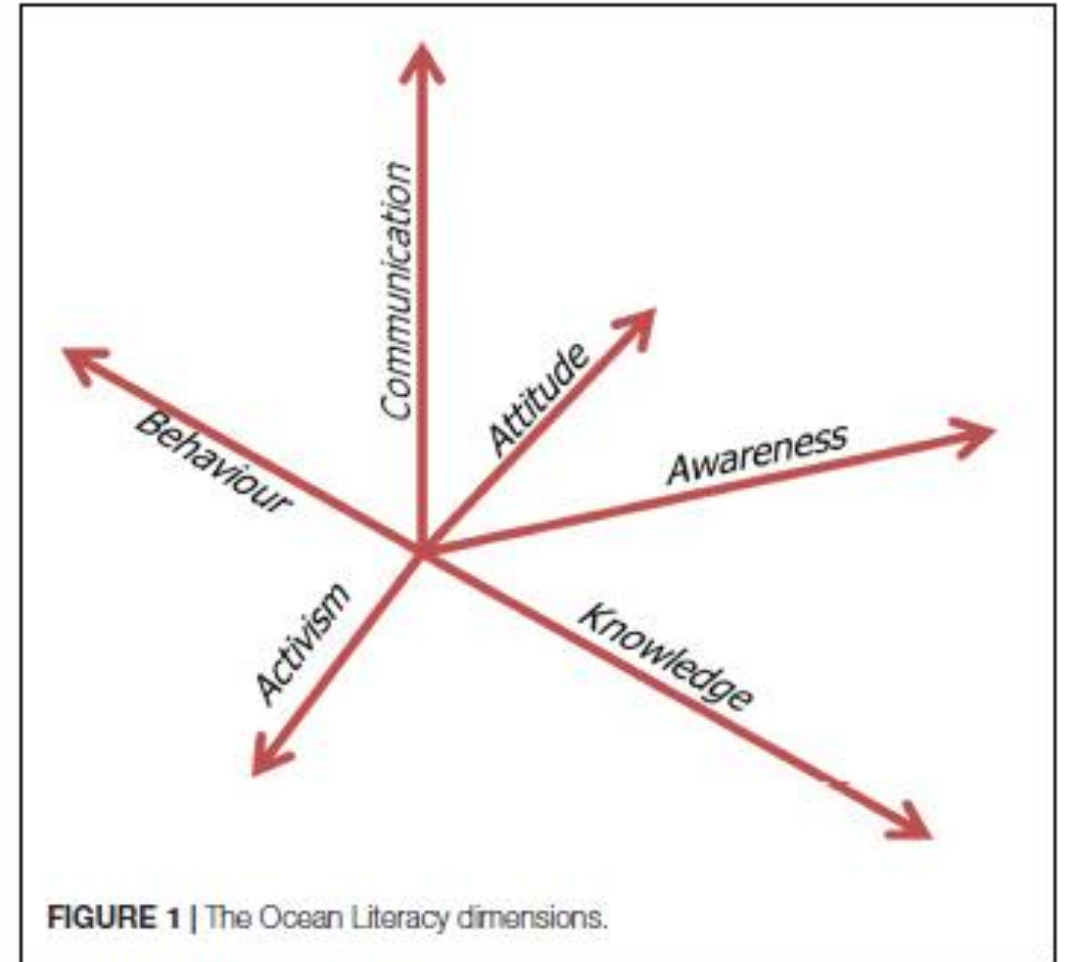
## An ocean-literate person:

- 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.

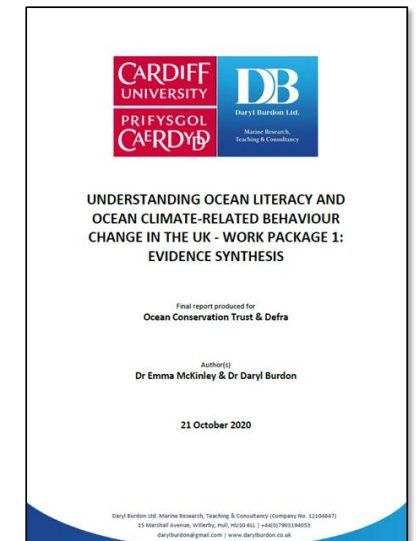
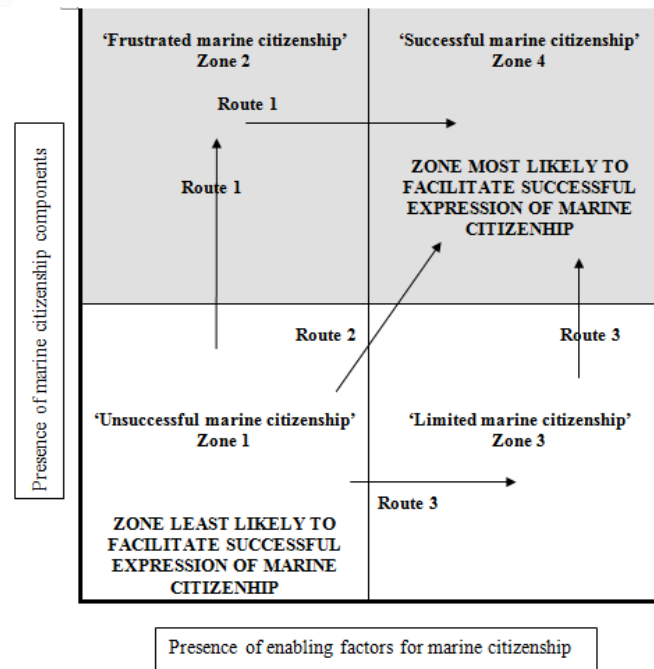
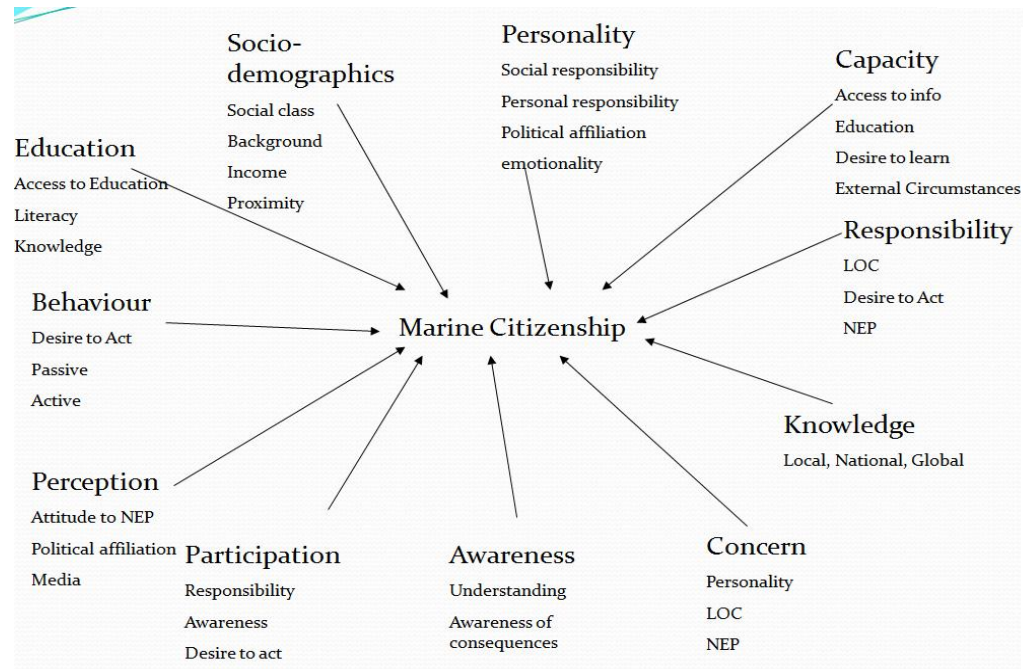
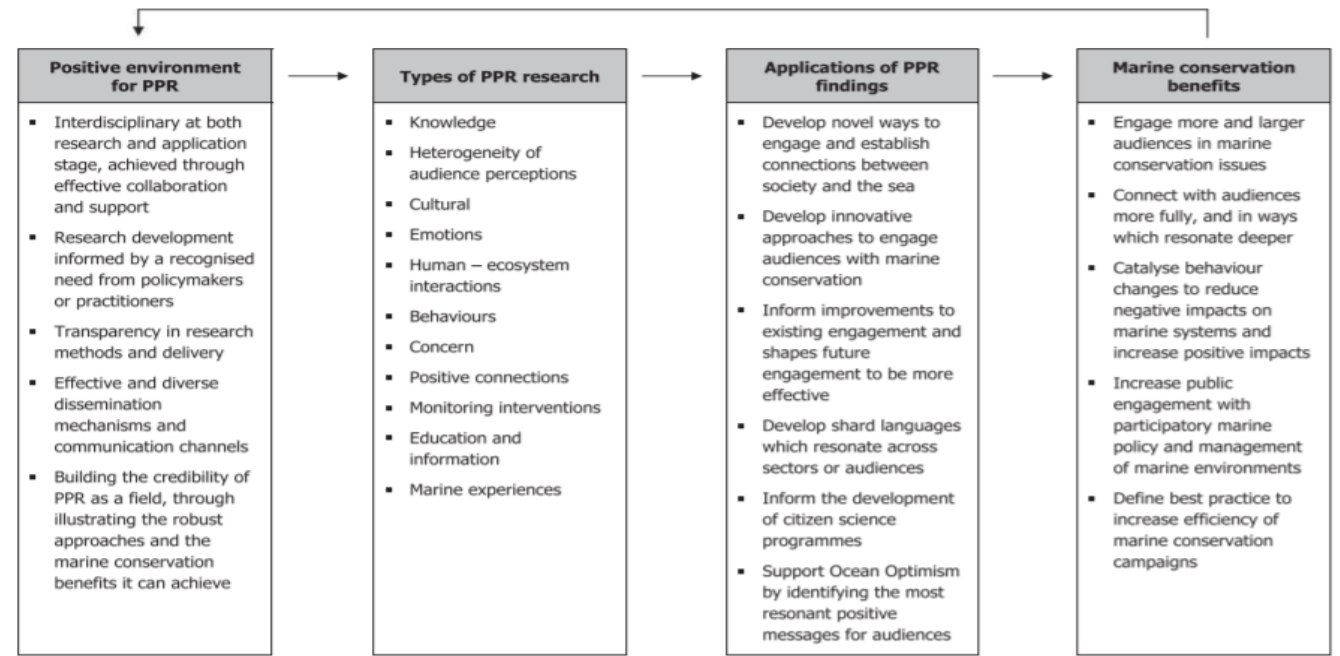
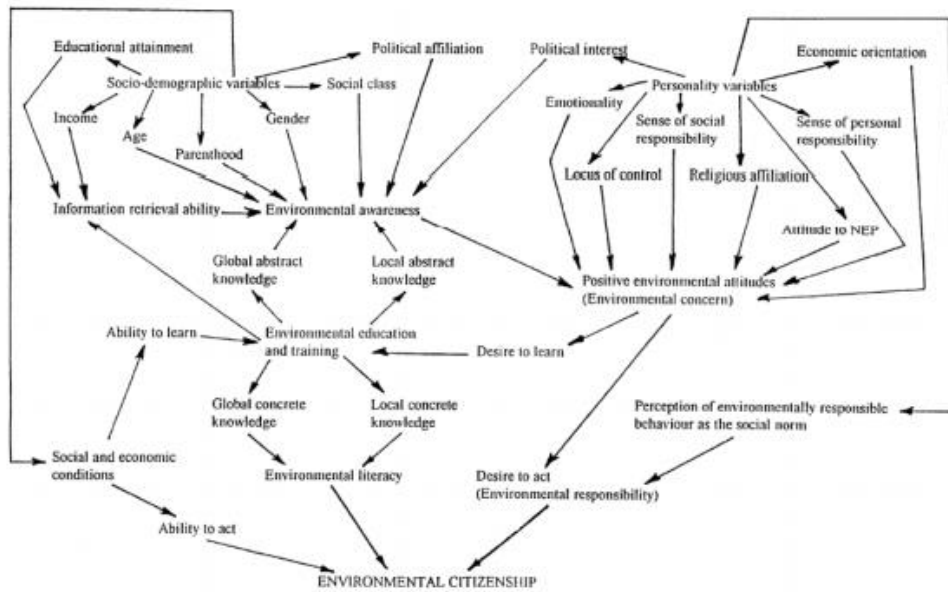
# Dimensions of Ocean Literacy

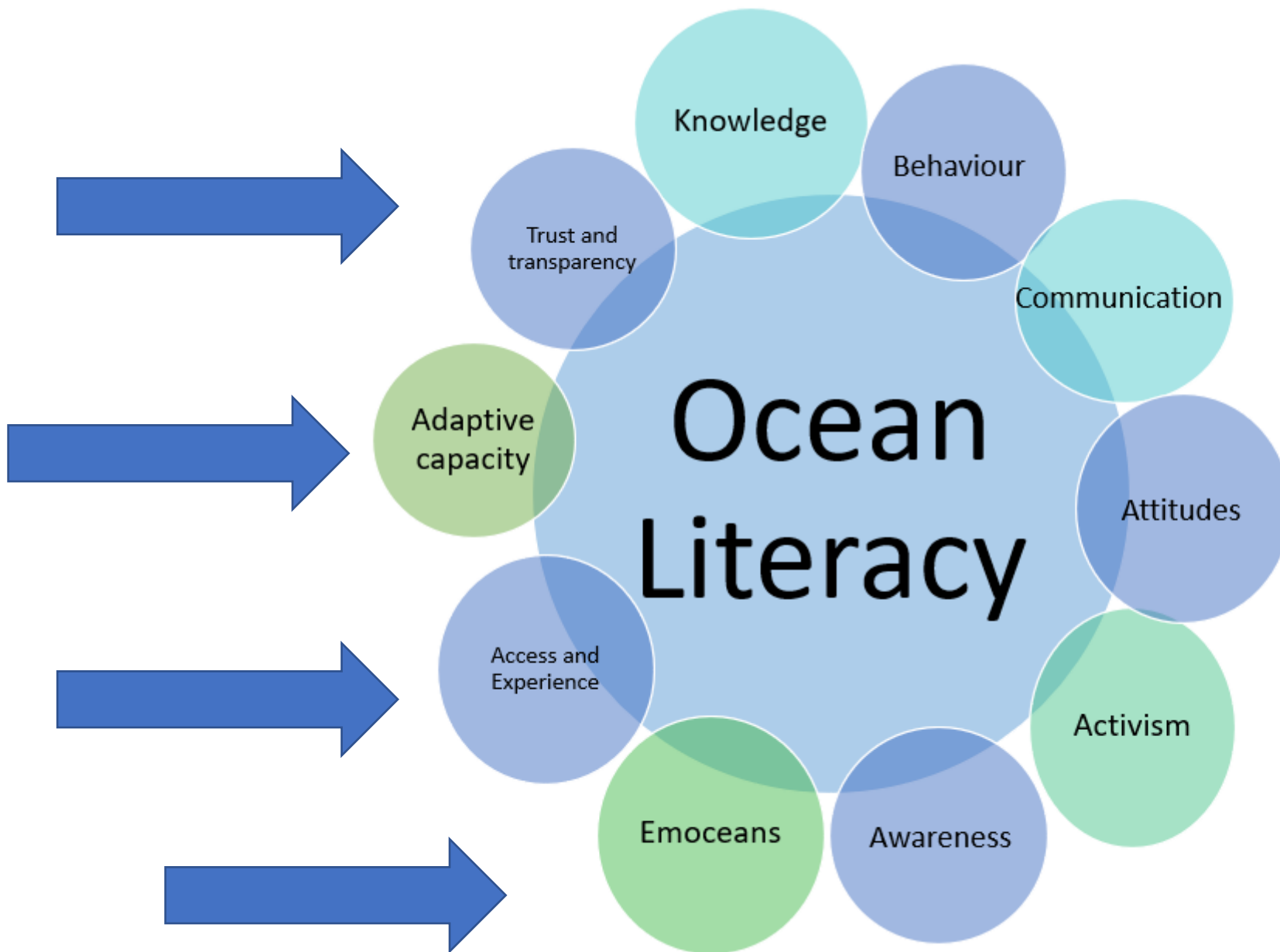


Kopke et al., 2019. Stepping Out of the Ivory Tower for Ocean Literacy. Front. Mar. Sci. 6:60. doi: 10.3389/fmars.2019.00060



Brennan et al., 2019. A System Dynamics Approach to Increasing Ocean Literacy. Front. Mar. Sci. 6:360. doi: 10.3389/fmars.2019.00360





## The evolution of ocean literacy: A new framework for the United Nations Ocean Decade and beyond

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### ARTICLE INFO

**Keywords:**  
Ocean literacy  
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Human-ocean relationships  
UN Ocean Decade

### ABSTRACT

First introduced in the early 2000s, the concept of ocean literacy has evolved in recent years, not least since its inclusion as a mechanism for change within the United Nations Ocean Decade's goals. Building on early definitions of ocean literacy, there has been increasing recognition of a range of additional dimensions which contribute to an individual or collective sense of 'ocean literacy'. Drawing on existing research, and parallel and supporting concepts, e.g., marine citizenship, ocean connectedness, and public perceptions research, this paper proposes ten dimensions of ocean literacy: knowledge, communication, behaviour, awareness, attitudes, activism, emotional connection, access and experience, adaptive capacity and trust and transparency, and recommends expanding previously recognised dimensions, in a bid to ensure that ocean literacy encompasses diverse knowledges, values and experiences. The paper provides a useful framework for ongoing ocean literacy research, and highlights aspects of ocean literacy which have received limited focus to date.



### UNDERSTANDING OCEAN LITERACY AND OCEAN CLIMATE-RELATED BEHAVIOUR CHANGE IN THE UK - WORK PACKAGE 1: EVIDENCE SYNTHESIS

Final report produced for  
Ocean Conservation Trust & Defra

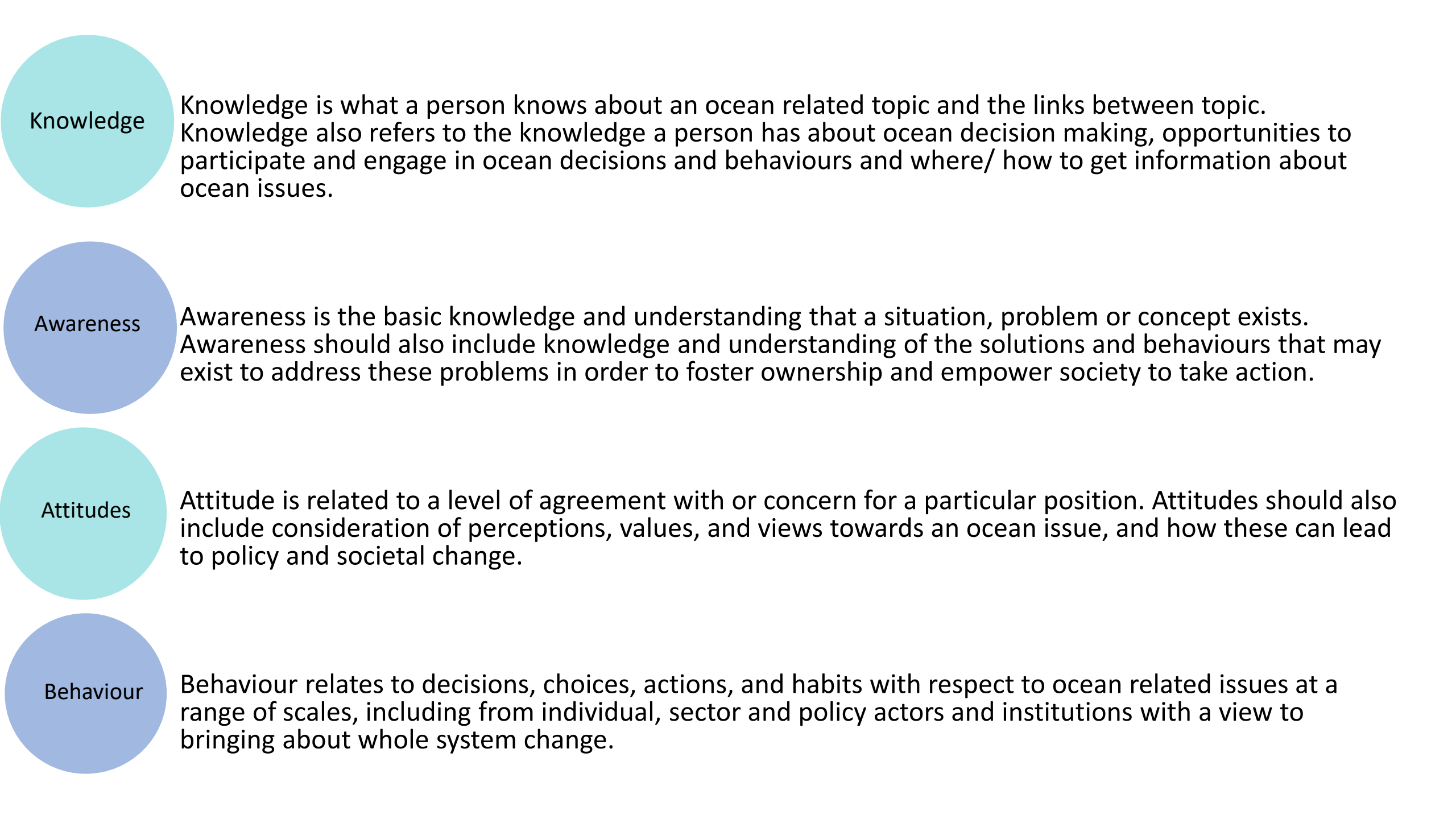
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21 October 2020

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## Diverse Marine Values



### Knowledge

Knowledge is what a person knows about an ocean related topic and the links between topic. Knowledge also refers to the knowledge a person has about ocean decision making, opportunities to participate and engage in ocean decisions and behaviours and where/ how to get information about ocean issues.

### Awareness

Awareness is the basic knowledge and understanding that a situation, problem or concept exists. Awareness should also include knowledge and understanding of the solutions and behaviours that may exist to address these problems in order to foster ownership and empower society to take action.

### Attitudes

Attitude is related to a level of agreement with or concern for a particular position. Attitudes should also include consideration of perceptions, values, and views towards an ocean issue, and how these can lead to policy and societal change.

### Behaviour

Behaviour relates to decisions, choices, actions, and habits with respect to ocean related issues at a range of scales, including from individual, sector and policy actors and institutions with a view to bringing about whole system change.



## Activism

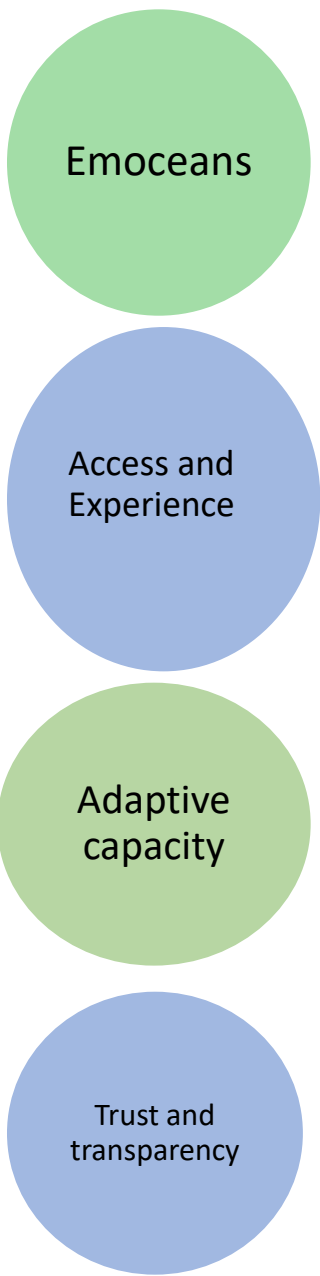
Activism is the degree to which a person engages in a wide range of activities, which can constitute activism, such as campaigning (for example through social media, attending public rallies or writing to elected officials) to bring about changes in policy, attitudes, behaviour, etc. Understanding this dimension must also take account of who gets to participate in activism and what the barriers might be.



## Communication

Communication in the context of ocean literacy must be considered from multiple perspectives.

- 1) Communication is the extent to which a person communicates with others, such as family and peer groups, on ocean related topics.
- 2) Communication should also consider how/ where people get their information about ocean issues from – how trustworthy are sources of information? What methods of communication are most effective?
- 3) At an organisational level, communication needs to consider how institutions and organisations are communicating to different audiences about ocean issues.



### Emoceans

Emotions is about how a person feels and emotionally responds when they think about, are near/ within, or consider issues relating to the ocean, coasts and seas. Emotions can be positive, negative or neutral and are all valid responses and will all contribute to behaviour change.

### Access and Experience

Access and experience relate to a person's real or artificial (through Virtual Reality, for example) experiences and engagement with the ocean, coasts and seas, and the various ways in which they can access these experiences. Barriers to ocean access and experiences should also be considered within this dimension.

### Adaptive capacity

Adaptive capacity relates to a person's capacity to adapt and respond to changing conditions relating to their ocean, coasts and seas (e.g. relating to climate change, change in ocean economies, or changing ecosystem structure or function).

### Trust and transparency

Trust and transparency relate to the level of trust a person places in sources of ocean information and knowledge, and their perception of how transparent information and associated platforms and processes are.



## Underwater virtual reality for marine education and ocean literacy: technological and psychological potentials

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### ABSTRACT

Given the crucial role the ocean plays in human and planetary health, ocean literacy (OL)—understanding the ocean's influence on us and our influence on the ocean—has been gaining momentum as a significant component and determinant of sustainable human-ocean interactions. Underwater virtual reality (UVR) enables participants to take a virtual dive while being simultaneously immersed in water. Through this unique double immersion, UVR is offering new avenues of psychological access and pedagogical opportunities toward the ocean; this study is thus the first to explore UVR's potential for OL and marine environmental education. Following two UVR activities in a pool, we conducted semi-structured interviews and survey questionnaires with 19 marine scientists and education experts. Our findings indicate UVR has important technological and psychological potentials, including (1) high levels of presence, (2) infrequency of motion sickness, and (3) the ability to trigger powerful emotions and affective states such as awe, empathy, and flow. In this way, UVR can create a realistic experience of the ocean that improves OL and reduces psychological distance to marine environmental issues. We also advance a new seven-dimensional OL framework, following our findings that UVR has unique potentials for improving 'emoceans', attitude, awareness, and ocean connectedness.

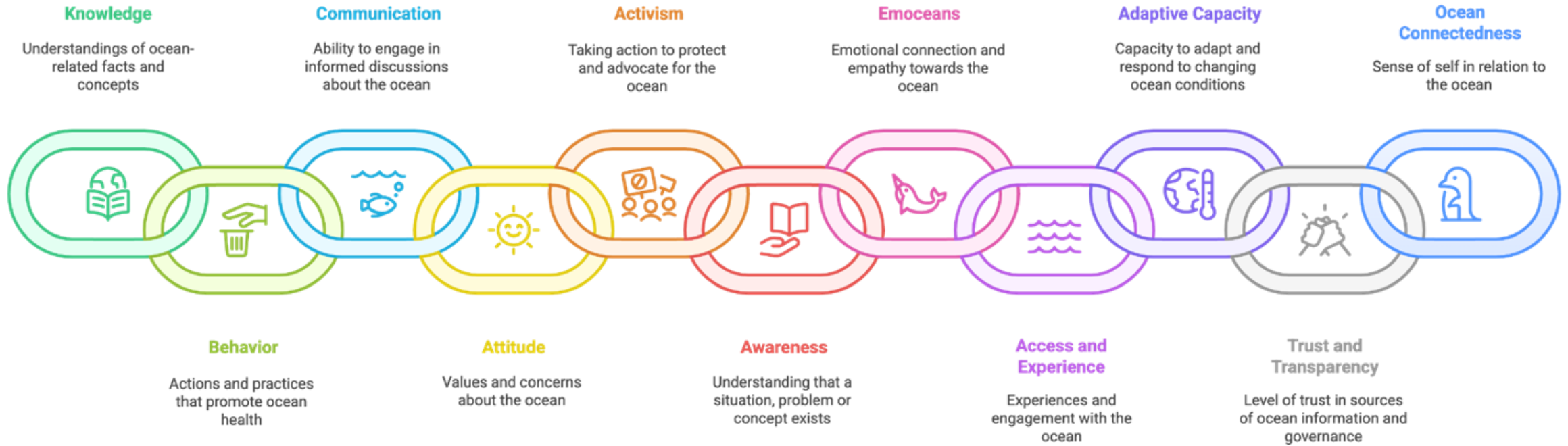
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### KEYWORDS

Underwater virtual reality; ocean literacy; marine education; virtual dive; awe; psychological distance; emotions; affect; virtual reality; SDG 14: Life below water

## Dimensions of Ocean Literacy



# Challenge 10

## Restoring society's relationship with the ocean

Ensure that the multiple values and services of the ocean for human wellbeing, culture, and sustainable development are widely understood, that society-ocean connections are strengthened, and that there is increased motivation, capability, and opportunity for people across **all sectors of society**, to make decisions and **behave in ways that ensure a healthy ocean**.



# By 2030, success for Ocean Decade Challenge No. 10 will be evidenced through:

a shift in the way that science is formulated, practiced, and communicated

a culture shift in the ocean community leading to implicit understanding that **ocean threats are an outcome of human behaviour**

all sectors of society have **strengthened connections** with the ocean,

people have increased **motivation, capability, and opportunity to make decisions and behave in ways that ensure a healthy ocean – across generations, regions, sectors, and scales**

widespread recognition of the ocean as a living ecosystem with its **own rights**

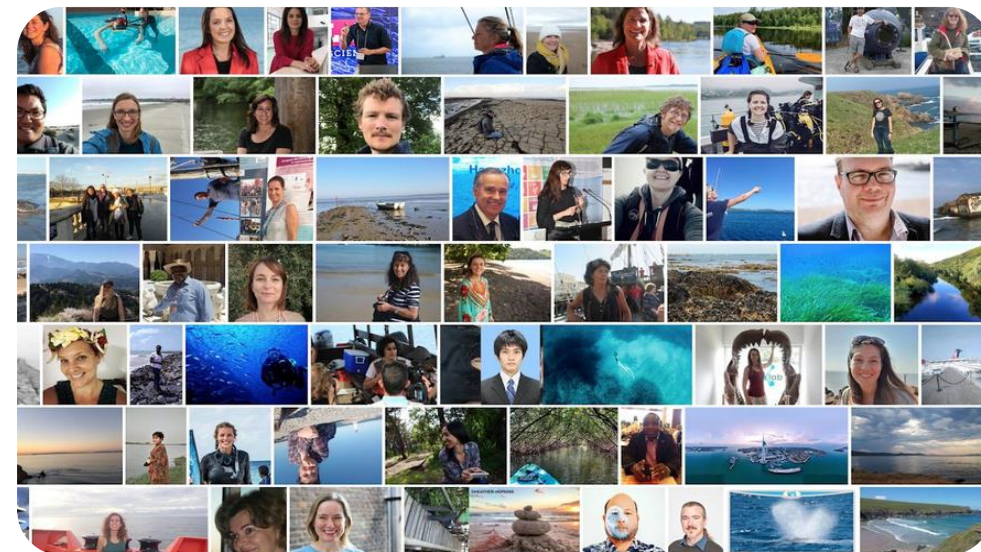
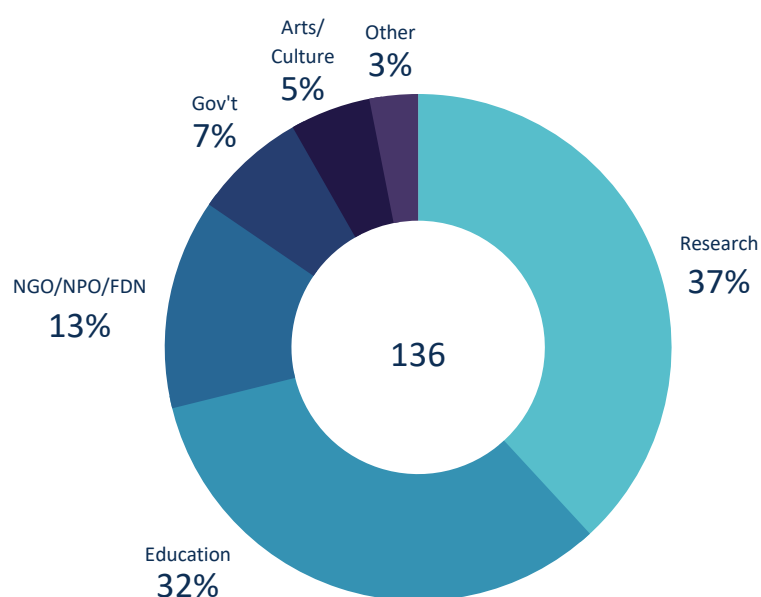
**Ocean literacy is an outcome** – a society that understands, values, and cares for the ocean.



**Ocean literacy is an outcome** – a society that understands, values, and cares for the ocean.

The ocean community needs to inspire and generate the **motivation, capability, and opportunity** for people across society to make decisions and behave in ways that ensure a healthy ocean, to sustain all life—current and future.

**Information sharing alone is not enough to drive the societal transformations required at scale.**



Iterative research process, informing parallel StoryMap design and integration

## Survey 1

Mapping the community.  
OLR members self-identify, and share where they are, their research interests, and projects.

## Workshop 1

A 'stock take' of ocean literacy research to date—what research has been done, by who, where, outcomes.

Data collected: Outcome summary document; 2 collated summaries from breakout sessions; summaries from 8 breakout group leaders; graphic design of facilitated discussion; 2 wordle clouds.

## Survey 2

Identifying where we are as a OL Research Community.

Exploring what our priorities and gaps should be as we work to co-develop an ocean literacy research program for the UN Ocean Decade.

## Workshop 2

Webinar discussion on gaps and priorities in ocean literacy research.

Data collected: 2 miro boards on OLR priorities and gaps—what have we indicated? what may be missing?

## Survey 3

Planning for outcomes.

Co-organizing ourselves into 4 research teams based on the priority areas identified in Survey #2 findings.

Data collected: Critical questions pertaining to each of the 4 priority themes; team member roles and interests.

## Workshop 3

Outcome Planning.

Research team breakout discussions to co-determine 1 research initiative & to map out an initial sketch/plan to focus efforts over the next 12 months.



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Human-ocean relationships: Exploring alignment and collaboration between ocean literacy research and marine conservation

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ARTICLE INFO

Keywords:  
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Ocean Literacy Dialogues  
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ABSTRACT

In recent years, global attention on marine conservation and sustainability has surged. Understanding the relationship between society and the ocean is crucial for achieving conservation targets, ocean sustainability, and community well-being. Toward these ends, the UN Ocean Decade recognizes ocean literacy as a transformative mechanism to reshape society-ocean relationships. Ocean literacy seeks to empower global communities to better understand, value, and care for the ocean in ways that support, restore, and ensure ocean-human health and well-being. By extension, ocean literacy research is an emergent transdisciplinary field of inquiry that explores diverse dimensions, drivers, and impacts of human-ocean relationships. It considers these relations across different socio-cultural, economic, political, and geographic contexts and perspectives. In this article, we position ocean literacy research and the wider concept of ocean literacy as a framework for exploring the relational aspects of marine conservation to inform effective policy and conservation. We begin by situating ocean literacy and ocean literacy dimensions, research priorities, and community alongside broader ocean conservation efforts. We next share insights gleaned from the third edition of the Ocean Literacy Dialogues series, led by the Canadian Ocean Literacy Coalition and the Marine Social Sciences Network, with support from IOC-UNESCO, held during the fifth International Marine Protected Area Congress (IMPACS) in Vancouver, in early 2023. Through a series of participatory sessions, we explored the application of ocean literacy research in supporting future marine conservation and management. Drawing on insights co-developed through this process, we outline potential agenda alignment between IMPACS marine conservation themes and co-identified ocean literacy research priority areas. We lastly speak to the importance of ongoing collaborative initiatives like the Ocean Literacy Dialogues series to foster global collaborations, dialogue, and capacity sharing to advance ocean literacy, marine conservation, and policy efforts.

1. Introduction

The ocean plays a life-dependent role in collective societal health and well-being [1], yet it is experiencing biodiversity loss and ecosystem degradation of unprecedented scales. The impacts of the twin climate and biodiversity emergencies are being felt across ocean systems and

coastal communities, resulting in an urgent need to rethink priorities, policies, and procedures within marine conservation, as well as reimagining opportunities for community bridging, capacity sharing, and aligning agendas [12,14]. Aligning marine conservation goals with marine social science research and practice offers a tangible area of focus to deliver the change needed to address ocean challenges. This is

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Objective: To establish a coordinated, collaborative, and inclusive OL research community for the Decade and beyond



# Ocean Literacy Research Community

## Ocean literacy research community: co-identifying gaps and priorities to advance the UN Ocean Decade

Jen McRuer<sup>1†</sup>, Emma McKinley<sup>2a†</sup>, Diz L. Glithero<sup>1†</sup> and Martha Paiz-Domingo<sup>3</sup>

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**Introduction:** The overarching goal of the UN Ocean Decade is to “change humanity’s relationship with the ocean.” While this may be a challenge, it is, at the same time, a once in a generation opportunity. How can 8 billion people, including those who don’t live near coastal areas, be inspired to value and care for the ocean? This is the essence of ocean literacy, and the driver of ocean literacy research (OLR).

**Methods:** In 2021, we began a research initiative to co-create a global OLR agenda by the developing OLR community, to better understand existing research themes, gaps, future priorities, actions, and impacts of ocean literacy initiatives. To deliver this, a series of virtual workshops – with the first taking place as part of the UN Ocean Decade Laboratories – was complemented by a participatory methodology using digital survey and mapping tools for crowdsourced collaboration.

**Results and discussion:** Through this process, four initial OLR priorities were identified, including measuring ocean literacy, the role of ocean literacy as a policy mechanism, and alignment of OLR with climate change and the blue economy agendas. Finally, a working definition of OLR was developed to further guide OLR priorities for the UN Ocean Decade and beyond.

### KEYWORDS

ocean literacy research, ocean literacy, UN Ocean Decade, marine social sciences, participatory research methodology, blue health, ocean-climate-community nexus

### ARTICLE

Open Access Journal

## The Ocean & Society Survey: A Global Tool for Understanding People–Ocean Connections and Mobilizing Ocean Action

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### Abstract

Recent years have seen calls for improved ways of assessing and understanding ocean literacy across a range of contexts. This article presents collaborative advances toward these ends on a global scale, through the co-creation of the Ocean & Society Survey. This Survey—based on national surveys in Canada, Brazil, and the UK—and the collaboration of 20 core partners, aims to capture diverse people–ocean connections. The article outlines the Ocean & Society Survey’s objectives to: (a) strengthen people–ocean relationships by exploring

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1

Objective: To establish a coordinated, collaborative, and inclusive OL research community for the Decade and beyond



# Some thoughts....

- Ocean Literacy is a \*much\* evolved concept – it is more than:
  - Ocean science
  - Ocean education
  - Ocean communication
- Work on the dimensions is underway – but there is much more to be done!
  - Ongoing evolution of the concept
  - ‘Final’ definition of dimensions
  - More to think about in how to measure each of them

