

WP 7	Deliverable 7.5
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MARBEFES Project

Title: Ocean Literacy report
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1. Introduction

This report has been prepared based on the findings of the Milestone 58 and works which have been realized over a course of the 36 month of the project duration.

Ocean Literacy (OL) is the understanding of the ocean's influence on us—and our influence on the ocean. It involves comprehending principles and concepts that explain how the ocean functions, how it changes, how it supports life on Earth, and how our actions impact its natural environment. The ocean literacy philosophy is based on seven following principles which create its framework (<https://oceanliteracy.unesco.org>):

1. The Earth has one big ocean with many features.
All oceans are interconnected, forming a single global ocean system that drives climate, weather, and ecosystems.
2. The ocean and life in the ocean shape the features of the Earth.
Ocean currents, waves, and marine life contribute to geological processes like shaping coastlines and forming islands.
3. The ocean is a major influence on weather and climate.
It stores vast amounts of heat and carbon and drives weather patterns through interactions with the atmosphere.
4. The ocean made Earth habitable.
It regulates temperature and provides oxygen and water-fundamentals for life as we know it.
5. The ocean supports a great diversity of life and ecosystems.
From coral reefs to deep-sea trenches, the ocean is home to millions of species, many of which are still undiscovered.
6. The ocean and humans are inextricably interconnected.



We rely on the ocean for food, transportation, energy, and recreation. In turn, our activities—from pollution to overfishing—affect ocean health.

7. The ocean is largely unexplored.

Much of the ocean is unmapped and unstudied, leaving potential for scientific discovery.

Ocean literacy empowers individuals and communities to make science-based and responsible decisions about the ocean and its resources. Educated citizens, who also represent all stakeholders, are more likely to support solutions that aim at protecting marine environments and adopt sustainable practices. Ocean literacy, beside a great educational value, also involves easier to understand scientific research, citizen science initiatives, marine conservation efforts.

Ocean literacy provides ocean framework for all, including scientists and ocean and coastal communities. Therefore, the role of ocean literacy in the MARBEFES project is clearly important and the project philosophy, objectives and methodology of research reflect the ocean literacy principles. Vast engagement of a variety of stakeholders, the array which covers all interested parties, regardless of age and background throughout the project life, initiatives which aim at promotion of ocean and ocean science, co-creation of such events with representatives of different stakeholders, numerous workshops and surveys provide us with a great amount of pan-European information on the state of ocean literacy among citizens in all BBTs, which are studied within the MARBEFES project.

The importance of ocean literacy for the MARBEFES partner consortium was set at the kick-off meeting, which was held in October 2022 in Sopot, Poland, where Yolanda Koulouri presented the ocean literacy concept and its importance for the project including: OL in relation to Sustainable Development Goals (SDGs) and UN Ocean Science Decade for Sustainable Development, possible synergies with UN Action Programmes and other projects, policy brief documents, surveys, resources and research publications in relation to knowledge, attitudes and behaviour for different target groups.

Then, shortly after the kick-off meeting, during the Ocean Literacy Working Group virtual meeting on 7 November 2022, following ocean literacy actions were made:

- OL framework was presented in details by Yolanda Koulouri (HCMR).
- Sustainable education (e.g., knowledge, data, information, context, experience, application) was presented by Tymon Zielinski (IO PAN).
- Discussion was held by partners in relation to OL issues within the framework of MARBEFES project and the appropriate conclusions were made and later described in detail in the Milestone 7.5.



2. Ocean Literacy report

This report is fully based on the actions described in the Milestone 58 and its annexes, which include a comprehensive study regarding the OL activities across the world and the analyses of surveys used for the ocean studies of various kinds. It is also connected with Deliverable 7.6, since the surveys developed within this deliverable works are going to be used later in fall 2025 to produce data and information to fulfill the activities of the Deliverable 7.6.

In general, the ocean literacy principles' role in the MARBEFES lifetime involve the following steps, that are embedded in the project structure:

1. Focusing on the 5th (the ocean supports a great diversity of life and ecosystems) and 6th (the ocean and humans are inextricably interconnected) principles of the OL framework and their fundamental concepts concerning marine biodiversity and anthropogenic activities are essential for the project's objectives.
2. OL study set clarity to the concepts, keywords and terms used in WPs of the project.
3. Synergies with other initiatives and projects and communication-dissemination of results of the project at international events take place within the framework of the project.
4. Surveys targeting stakeholders by WP1 will provide OL outcomes and an additional survey for this target group in collaboration with WP1 have been proposed as an analysis outcome and further applied in the course of activities.
5. Available tools regarding knowledge, behavior, emotions of students, teachers, stakeholders, general public have facilitated the design and development of the "evaluation program".
6. A big survey across 12 BBTs (questionnaires including knowledge, perceptions, activism, communication, emotions) is being designed and developed targeting from 35 to 50 stakeholders and students of primary (K6) and/or secondary (K7-10) schools and/or university students (~150 students for each education level). This survey can be actually the evaluation program of the project.
7. Using the results of the analyses of the surveys we will map the OL related knowledge gaps and prepare guidelines for filling them in.

Using the framework of the above 7 points the evaluation program including monitoring and reviewing impact of ocean literacy activities is being constructed and includes the following steps:

1. Surveys targeting stakeholders by WP1 will give OL outcomes and an additional survey for this target group in collaboration with WP1 is proposed as an analysis outcome.
2. Already available tools in relation to knowledge, attitudes, behaviour, emotions of students, teachers, stakeholders, general public are used for the design and development of the "evaluation programme". The survey is being designed and



developed to retrieve insights, conclusions, and recommendations on the future expectations of how to create greater impact and visibility in terms of Marine Science Communication in Europe.

3. A big survey across 12 BBTs (questionnaires including knowledge, perceptions, activism, communication, emotions) will be designed and developed targeting students of primary (K6) and/or secondary (K7-10) schools and/or university students (~150 students for each education level).

Detailed information about the surveys.

OL survey targeting stakeholders of the project (WP1): A questionnaire has been developed including sections concerning questions/statements about: a) demographic characteristics (5), b) their relationship with the ocean/sea and coasts (3), c) knowledge and awareness (6), d) perceptions and attitudes (6), e) behaviour and activism (5), and f) communication (4). The questionnaire has been designed and developed based on previous experience of the partners and relevant surveys from published literature adjusted to the objectives of MARBEFES project. The goal is responses from ~35-50 stakeholders from each BBT of the project in order to evaluate OL levels for different OL dimensions. **This survey is included in Appendix I.**

OL survey targeting students of primary and/or secondary level schools: A questionnaire is being designed and developed including sections concerning questions/statements about: demographic characteristics (6), knowledge (7), perceptions (5), behaviour (5), experience (1), emotions (1). This short and simple questionnaire has been designed and developed based on previous experience of the partners and relevant surveys from published literature adjusted to the objectives of MARBEFES project, in collaboration with another European-funded project BlueLights and as a part of a Master Thesis that took place at HCMR in Crete within the IMBRSea program by Mrs Xenia Symeonidou. BlueLightS project aims at strengthening the knowledge and skills of European children and youth to deliver “blue” (rivers and seas) resilience and sustainability. The goal of MARBEFES project is responses from ~150 students (primary or secondary education level) from each BBT of the project in order to evaluate OL levels for different OL dimensions. **This survey is included in Appendix II.**

Examples of Ocean Literacy actions which project partners had run.

The MARBEFES partners have had a very active role in co-creating events related to Ocean Literacy, are present in expert bodies, are help to promote ocean issues in publishing activities. These include the following:

- OL survey within the framework of MARBEFES WP1 stakeholders 2nd meeting of BBT12 (6 February 2025). Results are currently analyzed.



- MARBEFES social survey of residents and visitors of BBT12 (summer 2025). Results are currently analyzed.
- MARBEFES OL surveys for WP1 stakeholders and students for the “evaluation program” of the project (2025-2026). Results are currently analyzed and more results will be made available for further analyses.
- Co-organization and membership in the scientific committees of the International Sopot Youth Conference 2025 Where the World is Heading and the International Sopot Youth Conference 2025 Where the World is Heading as MARBEFES partner. The conferences involved close to 200 participants from over 10 countries. Ocean issues were discussed over the course of two days.
- Membership of the legal board of the European Marine Science Educators Association.
- Co-chairing of the OL Working Group of EuroGOOS.
- Membership of the UN Ocean Decade Action Programme «Scientists for Ocean Literacy» led by OL WG of EuroGOOS.
- Membership of the UN Ocean Decade Action Programme “The Science we need for the Mediterranean Sea we want”.
- Membership of the EU4Ocean Platform promoting OL across Europe and support of its component EU Blue Schools network by collaborating with different schools of the BBT12.
- Organization of an OL session at the 10th EuroGOOS International Conference.
- Participation with an announcement concerning blue education at the One Ocean Congress, 3-6 June 2025, Nice, France.
- Participation in a discussion panel Round Table «Ocean Literacy – Blue Skills – Youth Engagement and Empowerment», 9th Our Ocean Conference, 15 April 2024, Stavros Niarchos Foundation Cultural Center, Athens, Greece.
- Guest Editor for a special issue entitled “Educational Research in the Era of 2030 Agenda for Sustainable Development 2nd Edition” of the Sustainability Journal.
- Organization of workshops and webinars for citizens (e.g. women’s associations, university students, teachers, stakeholders) within the framework of different european-funded projects such as MARBEFES, BlueLightS, RESIsles, BlueMinds4Teachers, YOU4BLUE, GES4SEAS.
- Bioblitz events in summer 2023 in Sopot, Poland and spring 2024 in Tromsø, Norway. The bioblitz events are the part of the WP7 (Task 7.4 Training, education and ocean literacy) of the MARBEFES project.

Appendix I.

MARBEFES stakeholders’ survey.

Appendix II.

MARBEFES students’ survey.



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Bibliography for survey preparations.

- Chen, Y.-F., Cannady, M. A., Fauville, G., & Strang, C. (2020). Working toward an international assessment of ocean literacy: Validating instrument with Rasch measurement model. American Educational Research Association (AERA) annual meeting, San Francisco, CA.
- Fauville, G., Strang, C., Cannady, M.A., Chen, Y.F., 2019. Development of the International Ocean Literacy Survey: measuring knowledge across the world. *Environ Educ Res* 25, 238–263. <https://doi.org/10.1080/13504622.2018.1440381>
- Greely, T., 2008. Ocean Literacy and Reasoning About Ocean Issues: The Influence of Content, Experience and Morality (USF Tampa Graduate Theses and Dissertations). University of South Florida.
- Hynes, S., Norton, D., Corless, R., 2014. Investigating societal attitudes towards the marine environment of Ireland. *Mar Policy* 47, 57–65. <https://doi.org/10.1016/j.marpol.2014.02.002>
- Koulouri, P., Mogias, A., Mokos, M., Cheimonopoulou, M., Realdon, G., Boubonari, T., Previati, M., Tojeiro Formoso, A., Kideys, A. E., Hassaan, M. A., Patti, P., Korfiatis, K., Fabri, S., JUAN, X. (2022). Ocean Literacy across the Mediterranean Sea basin: Evaluating Middle School Students' Knowledge, Attitudes, and Behaviour towards Ocean Sciences Issues. *Mediterranean Marine Science*, 23(2), 289–301. <https://doi.org/10.12681/mms.26797>
- Marine Scotland, 2019. Attitudes in Scotland on the Marine Environment and Marine Issues. Edinburgh.
- McKinley, E., Burdon, D. (2020). 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, 96 pp.
- Mckinley, E., 2010. A Critical Evaluation of the Application of Marine Citizenship in Sustainable Marine Management in the UK
- Mogias, A., Boubonari, T., Realdon, G., Previati, M., Mokos, M., Koulouri, P., Cheimonopoulou M.T. (2019). Evaluating Ocean Literacy of Elementary School Students: Preliminary Results of a Cross-Cultural Study in the Mediterranean Region. *Frontiers in Marine Science*, 6: 396. doi: 10.3389/fmars.2019.00396
- Noon et al., 2023. Assessing added values and impacts. Erasmus+ BlueS_Med: Supporting the development of socially inclusive Blue challenges in schools in the Mediterranean Basin. Intellectual Output 3, July 2023, 32 pp.

