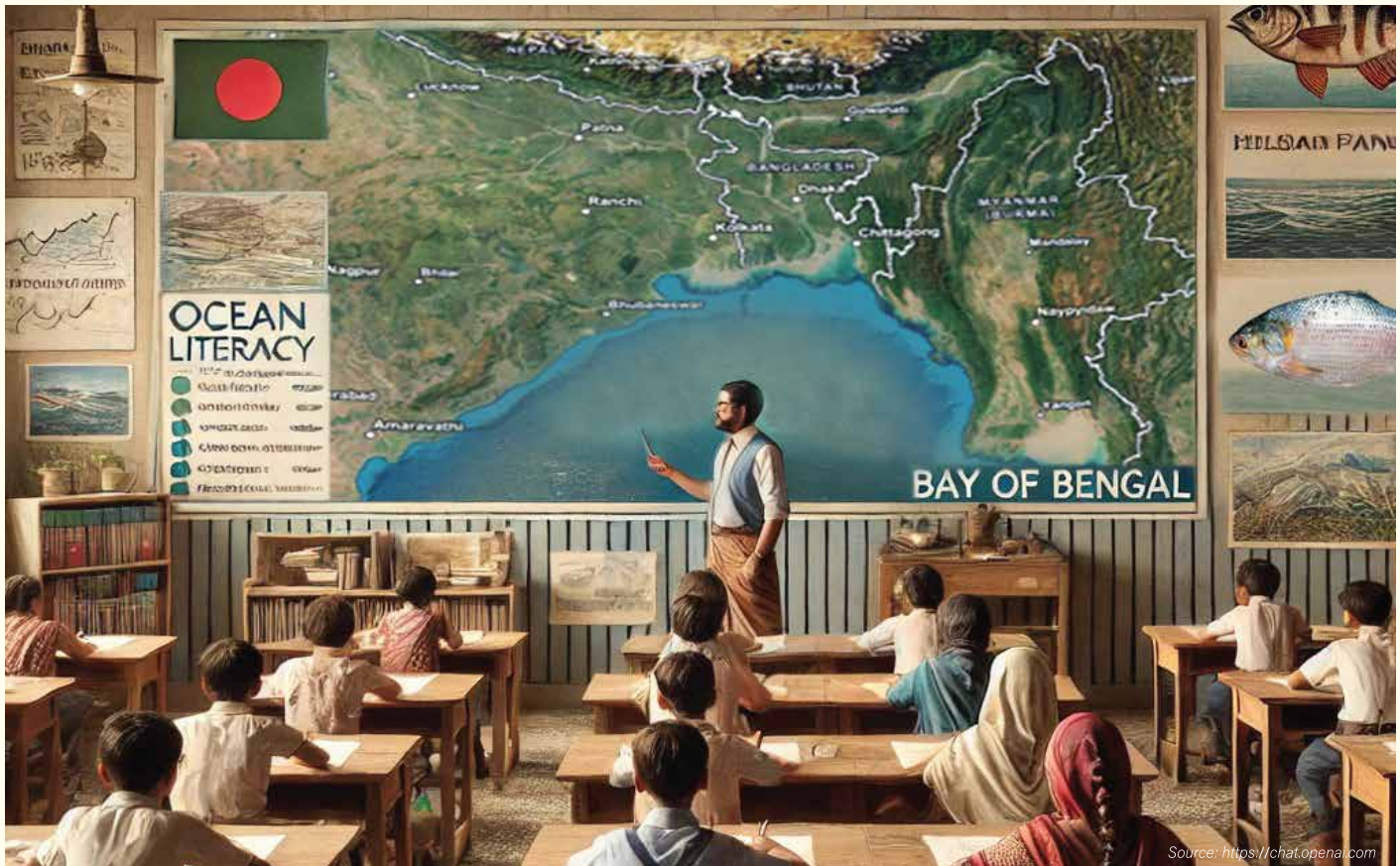


Embedding Ocean Literacy in School Curriculum: A Pathway to Sustainable Maritime Bangladesh

Lieutenant Commander Md Saiful Islam, (H1), psc, BN



Oceans are considered as the fundamentals to the existence of life on Earth. Five boundless, interconnected ocean basins, the Atlantic, Pacific, Indian, Arctic and Southern, make up the only ocean in our solar system and contain 97 per cent of Earth's water (Payne & Marrero, 2022). The wellbeing of human lives on Earth depends on the ocean's health. At the same time, human actions on Earth significantly affect the health of the oceans. Comprehending the ocean system is essential to understanding and protecting this blue planet on which we live. Ocean literacy, the understanding of the ocean's influence on people and people's influence on the ocean, is a concept aimed at improving public understanding of ocean-related issues, fostering stewardship, and encouraging responsible behaviour toward the ocean and its resources.

Bangladesh, a coastal state of South Asia with an expansive coastline along the Bay of Bengal, is heavily dependent on maritime activities and oceanic resources. The country relies on the sea for food, energy, security, trade, tourism, and climate regulation. Having a deltaic and low-lying mainland crisscrossed by numerous river systems directly connected to the sea, it also

faces moderate environmental and socio-economic challenges. Due to its reliance on maritime sectors and vulnerability to climate change, nurturing ocean literacy in the nation is indispensable. Despite its importance, ocean literacy is not sufficiently highlighted in Bangladesh's educational system. This essay explores the significance of integrating ocean literacy into the school curriculum in Bangladesh and offers a pathway for implementing this crucial educational modification.

What is Ocean Literacy?

Globally, the well-accepted definition of Ocean Literacy is "the understanding of the ocean's influence on us and our influence on the oceans" (NOAA, 2022). It contains seven fundamental principles:

- The Earth has one big ocean with many features.
- The ocean and life in the ocean shape the features of the Earth.
- The ocean is a major influence on weather and climate.

- The ocean made Earth habitable.
- The ocean supports a great diversity of life and ecosystems.
- The ocean and humans are inextricably interconnected.
- The ocean is largely unexplored.

The Intergovernmental Oceanographic Commission (IOC) of UNESCO (UNESCO-IOC) promotes that "an ocean-literate person understands the essential principles and fundamental concepts about the ocean, can communicate about the ocean meaningfully, and can make informed and responsible decisions regarding the ocean and its resources" (90th UNESCO-IOC Manuals and Guides, 2022). Ocean literacy is not only about informing or educating people about the ocean system and its significance to human wellbeing; it also encourages and helps people to do responsible behaviour towards the ocean to support the sustainable use of its resources.

The Need for Ocean Literacy in Bangladesh

Significance of Ocean: The Bay of Bengal, only gateway for Bangladesh to the rest of the world, plays a vital role in shaping the country's economic activities. The extensive 710 km long coastline, along with 118,813 sq km of sea area, houses enormous economic activities related to shipping, fisheries, ports and harbours, exploration of minerals, shipbuilding, ship recycling, aquaculture, tourism, coastal zone management, etc. In the country, more than 90% of international trade is seaborne. Moreover, the sea plays a significant role in shaping country's climate and weather, ensuring national security, and monitoring and preparing to reduce the loss caused by natural disasters.

Challenges Facing the Maritime Environment: The Maritime environment of Bangladesh faces various challenges, such as the impacts of climate change, coastal erosion, and overfishing. Low-lying coastal areas of Bangladesh are prone to the various adverse effects of climate change, including rising sea levels, increased frequency of cyclones, and coastal erosion (Mimura et al., 2014). Furthermore, unplanned and uncontrolled urbanization, non-compliance industrialization, and lack of awareness among mass people cause severe marine pollution, threatening ocean health. Plastic waste is an alarming anxiety for Bay of Bengal. According to the World Bank, the Bay of Bengal is one of the regions heavily affected by plastic debris (World Bank, 2020).

Linking Education and Sustainability: To ensure the sustainable management of ocean resources and to confront the challenging issues related to the ocean environment, Bangladesh has no alternative to make the nation truly ocean literate. To achieve that, it is imperative to incorporate ocean literacy into the curriculum at all formal and informal education levels. The country can empower its future generations to better understand and address these challenges by promoting ocean literacy.

Incorporating Ocean Literacy into the School Curriculum

The importance of embedding ocean literacy in the school

curriculum can easily be understood from the statement of the then Director General of UNESCO, Ms Audrey Azoulay. At the One Ocean Summit 2022 in Brest, she stated that:

"The international community must make education one of the pillars of its action for the ocean. Because if we want to protect it better, we must teach it better. On the occasion of the One Ocean Summit, I am setting a common goal for our 193 Member States: to include ocean education in school curriculum by 2025."

In July 2023, UNESCO-IOC circulated a letter calling to its member states to include ocean literacy in school curriculum by 2025 as a part of the Education for Sustainable Development (IOC Circular Letter no. 2951). In the same letter, IOC Secretariat offered support to Member States in the following aspects:

- "Advocating for the promotion of a Blue Curriculum within Educational Ministries, National Specialized Agencies, and Secretaries;
- Encouraging all regions to embed Ocean Literacy in national educational frameworks, including syllabuses, textbooks, and lesson plans;
- Ensuring that Ocean Literacy is adapted to local realities, allowing conscious decision-making regarding the ocean;
- Organizing locally tailored Blue Curriculum training in the local, national language, which can encourage efforts at the national level and help with coordinated action around the world, and
- Holding training workshops and developing resource materials in different languages."

Around the world, many nations have recognized the significance of ocean literacy in promoting sustainable practices and have incorporated it into their educational systems. For instance, the United States and Australia have developed comprehensive ocean literacy frameworks that have increased public awareness and improved marine stewardship (Cava et al., 2005). A study showed that, in Japan, 21.7 % of the content of elementary school textbooks and 34.5 % of high school textbook content are of topics related to rivers, oceans, and water (Sasaki et al., 2010).

The Current State of Ocean Literacy in Bangladesh's Educational Framework

According to an eminent promoter of ocean literacy in Bangladesh, "Although ocean literacy is a growing movement across Europe and worldwide, and the community of marine educators is increasing much faster than another sector, in reality, its necessity is yet to be felt nationally in most of the underdeveloped and developing countries like Bangladesh" (Moslem, 2015). To grow awareness of the sustainable use of ocean resources, institutions like Bangladesh Oceanographic Research Institute (BORI), Bangladesh Institute of Maritime Research and Development (BIMRAD), Institute of Bay of Bengal and Bangladesh Studies (IBBS), Blue Green Foundation

(BGF), Radiant Ocean Research and Education Center (ROREC), etc., are promoting ocean literacy in Bangladesh. Besides, the Bangladesh Navy and other government bodies also arrange seminars/workshops on Maritime Domain Awareness to bring the maritime stakeholders to a common understanding. National-level coordination among these disconnected initiatives will undoubtedly achieve much better positive outcomes.

In Bangladesh's formal education system, a dedicated Maritime University and a few other Public Universities have faculties related to marine sectors. These Universities focus on creating specialist educators on specific marine subjects like oceanography, marine fisheries, port and shipping management, maritime law, etc. Despite its undeniable importance, ocean literacy has minimal coverage in the school-level curriculum. The curriculum focuses mainly on terrestrial sciences and general environmental awareness, with little emphasis on the specifics of marine ecosystems and ocean processes (Miah & Rahman, 2016).

Pathway to Embed Ocean Literacy in Bangladesh's School Curriculum

International References: The 90th edition of the IOC Manuals and Guides (2022), titled "A New Blue Curriculum: A Toolkit for Policymakers", gives Member States comprehensive suggestions and guidelines for implementing ocean literacy in school curriculum. Section 5, Scope and Sequence, of this new blue curriculum provides clear guidelines on how best ocean literacy can be incorporated at different school levels. In 2021, the National Oceanic and Atmospheric Administration (NOAA) and the National Marine Educators Association (NMEA) published a book titled "A Handbook for Increasing Ocean Literacy- Tools for Educators and Ocean Literacy Advocates." This handbook is a good resource for learning, teaching, and communicating about the ocean.

Considering the undeniable dependence on oceanic activities and marine resources, there is no alternative to Bangladesh to make the nation ocean literate. The gaps highlight the need for a comprehensive approach to integrating ocean literacy into the educational framework. In this regard, the government must take a holistic approach, including reexamining and reconstructing the national education policy. According to Ahmad (2024), "the new education policy should include the UNESCO-IOC sponsored Blue Curriculum. Furthermore, the new policy should embrace ocean literacy for students at all levels and people from all walks of life."

Proposed Curriculum Modules: Several steps can be taken to incorporate the "Blue Curriculum" into Bangladesh's schools. For example, Integrating ocean literacy into Existing Subjects, Developing New Educational Modules, Training Teachers and Professionals, Developing Educational Resources, and Establishing partnerships. For Bangladesh, to develop a solid understanding of marine environments among the students at all levels, the following four levels of approaches can be adopted:

- **Primary Level:** Students at the primary level may be introduced to basic concepts about the ocean and its importance to human wellbeing. This may include the ocean's role in providing food, energy, climate regulation, and supporting biodiversity. They should learn about simple actions to protect the ocean, such as reducing plastic use and conserving water.
- **Secondary Level:** At this stage, more intricate topics like understanding the marine ecosystems, the impact of human activities on the ocean, and the importance of sustainable fishing practices may be included. Various practical hands-on experience programs such as beach cleanups or water quality monitoring may be added.
- **Higher Secondary Level:** Advanced topics like maritime policies, ocean governance, and the ocean's role in global climate systems may be added at this level.
- **Higher Study Level:** To address the significant challenges in the marine environment, students at higher study level, under the supervision of expert educators or researchers, should undertake critical research projects and find the best attainable policy to implement.

Benefits of Ocean Literacy for Bangladesh

Incorporating ocean literacy into the school curriculum will offer several significant benefits for Bangladesh:

Promoting Sustainable Development: Ocean literacy can foster the sustainable development of our nation by educating future generations with the understanding of marine resources along with the importance of the management and conservation of those invaluable and renewable possessions. Students accomplished with ocean science will be more likely to recognize and hold sustainable practices, such as reduction of pollution, responsible fishing, and protection of marine habitats. This awareness can bring a huge positive change and support to the practical management practices of the marine resources of Bangladesh (Mimura et al., 2014).

Enhancing Climate Change Awareness: Ocean literacy has become inevitable for the people of Bangladesh, most importantly for the new generations, as there is a huge connection between the ocean and climate regulations. According to Cava (2005), "Understanding the interconnections between ocean processes and climate will help the students recognize the impacts of climate change on the environment and economy of the nation. This knowledge will empower them to advocate for practical adaptation and mitigation strategies, such as coastal protection measures and climate-resilient infrastructure."

Empowering Future Generations: Incorporating ocean literacy in the school curriculum will provide students with knowledge and tools related to the ocean. By utilizing that, they can contribute to initiatives for sustainable management of marine resources and help protect the ocean environment actively. They will develop a sense of responsibility and a close connection with the ocean in the process.

Career Pathways in Maritime Sectors: Career opportunities connected to maritime sectors, like experts on marine biology, fisheries management, oceanography, and maritime law, are increasing daily. Following the developed nation, in support of national development, Bangladesh's government prioritized the promotion of sustainable blue economy initiatives. According to Islam and Haque (2018), "As Bangladesh looks to expand its blue economy, which encompasses the sustainable use of ocean resources for economic growth, education will play a crucial role in developing the skilled workforce needed to manage and protect marine ecosystems." Introducing ocean literacy in the school curriculum will provide the new generation with more opportunities to pursue multifaceted career paths in the maritime sector from their early life.

In conclusion, regardless of the inseparable connection between the ocean and human health, around the globe, especially in under-developed or developing countries like Bangladesh, the importance of ocean health is misunderstood, under-represented or absent from school curriculum. Due to the undeniable importance and dependency on the sea, Bangladesh needs to incorporate ocean literacy into the school curriculum. Without a strong foundation in ocean science, students may not fully understand the significance of marine ecosystems or the impacts of human activities on the ocean. The country can promote a greater awareness of the ocean and its vital role in supporting life by incorporating ocean-related information into already-existing disciplines, creating new educational modules, training teachers and professionals, and developing educational materials. Ocean literacy will play a crucial role in preparing students to safeguard and manage the maritime environment that their country depends on as it moves toward a more sustainable future.

To achieve this vision, policymakers, educators, researchers, and the community must cooperate and prioritize ocean literacy as a fundamental element of the educational framework. By doing so, Bangladesh can steer towards a future where the younger generation takes the lead in preserving its priceless marine resources and sets the standard for sustainable ocean stewardship. By equipping the next generation with the knowledge and skills to understand and protect marine environments, Bangladesh can ensure its nation's long-term health and prosperity.

References:

- Ahmad, S. M. (2024, September 03). *The Existential Meaning of Ocean Literacy for Maritime Bangladesh*. Retrieved from The Asian Age: https://dailyasianage.com/news/327087/the-existential-meaning-of-ocean-literacy-for-maritime-bangladesh#google_vignette
- Cava, F., Schoedinger, S., Strang, C., & Tuddenham, P. (2005). *Science Content and Standards for Ocean Literacy: A Report on Ocean Literacy*. National Oceanic and Atmospheric Administration
- Islam, M. S., & Haque, M. Z. (2018). *Challenges of Marine Resource Conservation in Bangladesh*. Dhaka: Dhaka University Press
- Miah, M. S., & Rahman, M. M. (2016). *Challenges and Opportunities in Integrating Environmental Education into School Curricula in Bangladesh*. *Asian Education and Development Studies*, 5(2), 177-189
- Mimura, N., Morita, T., & Hijioka, Y. (2014). *The Impacts of Climate Change on Coastal Areas of Bangladesh*. *Climate Change*, 123(3), 567-584
- National Oceanic and Atmospheric Administration (NOAA). (2022). *What is ocean literacy?* Retrieved from <https://oceanservice.noaa.gov/ocean/ocean-literacy.html>
- Payne, D. L., & Marrero, M. E. (2022). *Ocean literacy: The Essential Principles and Fundamental Concepts of Ocean Sciences for Learners of all Ages* (NOAA& NMEA)
- Sasaki, T., Kawashita, S., Manap, A., & Ghazali, M. (2010). *Japanese Fisheries High School Student Attitudes About the Fisheries School Technical Curriculum* (Doctoral dissertation, Tokyo University of Marine Science Technology)



Author: Lieutenant Commander Md Saiful Islam, (H1), psc, BN is presently serving as the Director (Admin) of BIMRAD. Email: imsaiful86@gmail.com

