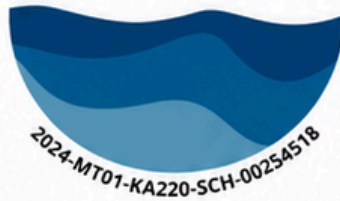


**BLUE OCEAN**

ERASMUS+ PROJECT



# **School Guidelines** for the institution of an **EU-Pacific Blue Education Area**



**Lycée Diadème  
Te Tara o Mai'ao**  
French Polynesia

**IS Isa Conti  
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**Igor Vitale  
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**General High  
School of Sitia**  
Greece

**Gozo College**  
Malta



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the European Union**

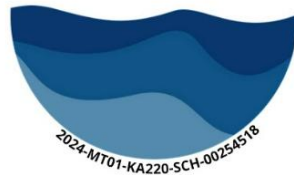
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ERASMUS+ PROJECT



# BLUE OCEAN

## CHAPTER 1

### **STRENGTHS AND WEAKNESSES IN THE PROMOTION OF BLUE CAREERS BY NATIONAL EDUCATION SYSTEMS**

In French Polynesia, Italy, Greece and Malta

**Lycée Diadème Te Tara o Mai'ao - French Polynesia**

**IS Isa Conti Eller Vainicher- Italy**

**Igor Vitale International - Italy**

**General High School of Sitia - Greece**

**Gozo College - Malta**

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## Introduction

The transition toward a sustainable blue economy requires not only technological innovation and policy alignment, but also education systems capable of preparing future generations for emerging ocean-related careers. In this context, defining common standards to assess strengths and weaknesses in the promotion of blue careers within national education systems becomes a strategic priority. Such standards enable a shared understanding across countries, facilitate comparability, and support the design of targeted interventions that respond to both local needs and global challenges.

This chapter builds on a collaborative analysis conducted by project partners focusing on four distinct yet interconnected contexts: Greece, Italy, French Polynesia, and Malta. These territories present diverse socio-geographical, economic, and institutional characteristics, but they share a strong dependence on marine and coastal environments. This is particularly evident in island and remote regions, where the blue economy is not only a development opportunity but also a necessity for resilience and sustainability. However, despite this shared relevance, education systems often struggle to fully integrate blue career pathways, whether due to limited institutional coordination, insufficient teacher training, or gaps in curriculum design.

By systematically identifying strengths and weaknesses in existing practices—ranging from school programs and vocational training to stakeholder engagement and policy frameworks—this work highlights both the progress achieved and the barriers that persist. Importantly, the process of defining these strengths and weaknesses is not merely diagnostic; it is transformative. It allows education stakeholders to recognize effective models, address structural gaps, and align educational outcomes with labor market needs in the blue sector.

Furthermore, this analytical framework is particularly critical for remote and island communities, where geographic isolation, limited resources, and economic vulnerability can exacerbate existing educational challenges. In such contexts, a clear understanding of system-level strengths and weaknesses becomes a key lever for unlocking opportunities, fostering local talent, and reducing dependency on external labor markets.

Building on these insights, project partners have worked collaboratively to develop a set of new school guidelines aimed at strengthening the promotion of blue careers. These guidelines will be tested through the “Experimentation of the School Guidelines for the Institution of an EU-Pacific Blue Education Area,” representing a concrete step toward harmonizing educational approaches and fostering innovation across regions. Ultimately, this chapter sets the foundation for a structured and evidence-based pathway to enhance ocean-related education and support the development of a skilled and future-ready blue workforce.

# I. French Polynesia

## A. Country Profile Overview

French Polynesia, an overseas collectivity of France located in the South Pacific Ocean, is composed of 118 islands spread across five archipelagos. The region boasts a diverse and breathtaking marine environment characterized by extensive lagoons, coral reefs, sandy beaches, rocky cliffs, and vibrant coastal ecosystems. The coastline is remarkably extensive, with varied coastal environments that support numerous economic activities. The area's key maritime activities include fishing—both artisanal and commercial—tourism, which attracts visitors to its pristine beaches and world-renowned diving sites, and shipping, which is vital for connecting the islands and supporting local economies. The region is known for its rich marine biodiversity, with numerous fish species, corals, and marine mammals. Several marine protected areas have been established to conserve this biodiversity, although coastal erosion remains a significant challenge, worsened by rising sea levels and climate change effects.

The climate in French Polynesia is tropical, with two main seasons: a wet season from November to April and a dry season from May to October. The region is susceptible to cyclones and is increasingly impacted by climate change, which poses threats to its coastal regions and ecosystems. The geographical setting features a mix of volcanic high islands and low-lying atolls, contributing to the diversity of habitats and environmental conditions across the islands.

In terms of governance, the educational system in French Polynesia operates under a combination of local and French national oversight. Education policies are managed by the Ministry of Education, which adapts national frameworks to the specific needs of the islands. This layered structure of governance aims to balance local cultural and environmental considerations with broader national standards.

Regarding marine policy and ocean literacy, French Polynesia aligns its strategies closely with both local initiatives and French national regulations. The area has established legal frameworks and protected marine areas aimed at sustainable fishing, conservation, and marine resource management. While ocean literacy is not yet fully integrated into the mainstream school curriculum, efforts are underway to raise awareness through public campaigns and community education initiatives. These initiatives aim to enhance understanding of marine ecosystems and promote sustainable practices among local populations and visitors alike, reflecting a growing recognition of the importance of ocean health for the region's future.

## B. SWOT Analysis by area of focus

For each subtopic (1-4) we will use the SWOT framework:

Strengths: Existing success stories, infrastructure, institutional support

Weaknesses: Gaps, limitations, or regional disparities

Opportunities: Emerging trends, funding, innovation potential

Threats: Political, environmental, or financial barriers

1. Preserving the Ocean School Projects (Quantity and Quality)
  - a) *Aires Marines Éducatives (AME)*



### **Strengths**

The Ocean School Projects are officially recognized and managed by the Department of Education (DGEE), serving as a national model following the success of the Marquesas Islands initiative launched in 2012. They empower students to understand and manage real marine areas by combining traditional ecological knowledge with civic science. The projects' scaled implementation across mainland France demonstrates their adaptability and the capacity for widespread influence, supported by strong coordination and monitoring efforts.

### **Weaknesses**

The implementation of these programs varies depending on schools' resources and capacity, which can affect consistency and effectiveness. Not all schools have adequate access to coastal zones or the necessary DGEE resources, leading to disparities in program delivery. The reliance on institutional support and models established in overseas territories may limit adaptability to different geographic and socio-economic contexts within French Polynesia.

### **Opportunities**

There is significant potential to develop a "Polynesian Ocean Literacy Strategy" based on the existing framework, serving as a model for other overseas territories and domestic regions. Linking these initiatives to UNESCO Ocean Decade activities and EU blue education platforms can further expand their reach and impact. This creates opportunities for international collaboration, increased funding, and broader awareness of marine sustainability issues in the Pacific region.

### **Threats**

Institutional silos and short-term project-based funding pose risks to the sustainability of these programs. Uneven investment across islands and territories may hinder coherent implementation. Additionally, the limited access to coastal areas in some regions, coupled with disparities in school resources, could restrict the program's scalability and long-term success, especially if unequal investment persists.

- b) *Projects promoting sustainable education, using the example of the "Moana Ambassadors" project*

Exemplified by peer-led, youth-driven school project with citizen science created by Ségolène D'Ortoli-Guichard in 2020.

### **Strengths**

The Moana Ambassadors initiative stands out as an innovative, youth-driven approach to

ocean education in French Polynesia, but it is one example among others. Founded in 2020, the program empowers young people to take an active role in environmental advocacy, combining peer-to-peer learning with citizen science and digital storytelling. Its strength lies in its ability to engage youth in a relatable and participatory manner, fostering leadership, communication skills, and environmental awareness. By leveraging social media and modern communication tools, the initiative reaches a broader audience and creates a dynamic platform for sharing knowledge and experiences.

### **Weaknesses**

Nevertheless, the initiative faces limitations due to its relatively informal structure. Unlike institutional programs, it lacks full integration into the formal education system, which can restrict its scalability and long-term sustainability. Its reliance on volunteer engagement and motivated individuals also introduces variability in participation and continuity. Furthermore, its reach remains uneven across the archipelago, with some remote communities having limited access to the program's activities and resources.

### **Opportunities**

A program like the Moana Ambassadors program has considerable potential for growth, particularly through partnerships with schools, NGOs, and international youth networks. Expanding its digital presence and developing structured educational modules could enhance its impact and integration into formal curricula. Additionally, increasing global attention to youth-led climate action presents opportunities for funding and collaboration, allowing the initiative to scale up and connect with similar programs across the Pacific region.

### **Threats**

The main threats to this type of programs relate to sustainability and institutional recognition. Without stable funding or formal support structures, its long-term viability may be uncertain. There is also a risk that, without strong scientific partnerships, the quality and credibility of its citizen science activities could be challenged. Finally, leadership turnover among youth participants may affect continuity and program development over time.



## 2. Promoting Studies and Blue Careers

### a) *Université de Polynésie Française - License SVT*

STEM pathways in scientific research

Mention : Science de la Vie (SV) Parcours : Biologie, Chimie ou environnement

#### **Strengths**

The Licence in Life Sciences provides a solid academic foundation for students interested in environmental and marine fields. Offered locally, it allows students to engage with topics directly relevant to French Polynesia's unique ecosystems, including marine biodiversity, coral reefs, and environmental management. This proximity to real-world case studies enhances the learning experience and prepares students for careers in conservation, research, and environmental monitoring.

#### **Weaknesses**

However, the program's relatively broad scope can be a limitation for students seeking specialized training in marine sciences. Additionally, many graduates pursue further studies or careers in mainland France due to limited local opportunities, contributing to a phenomenon of brain drain. Infrastructure constraints, particularly in laboratory facilities and research equipment, may also limit the depth of practical training available.

#### **Opportunities**

Growing global demand for expertise in biodiversity conservation and climate change adaptation presents significant opportunities for graduates of this program. Strengthening partnerships with research institutions and expanding field-based learning could enhance its attractiveness and relevance. There is also potential to develop more specialized marine tracks to better align with local economic and environmental needs.

#### **Threats**

The limited size of the local job market remains a major challenge, potentially discouraging students from pursuing these pathways. In addition, competition from larger international universities may draw talent away from the territory, further exacerbating the brain drain issue.



*b) Université de Polynésie Française - License STS TEMMI*

STEM pathways in scientific research

Mention : Science de la Transition Ecologique et Sociétale (STES) Parcours : Transitions en Milieux Multi-Insulaires (TEMMI) ou Insularité Durable (ID)

**Strengths**

The TEMMI program offers a unique interdisciplinary approach tailored to the specific challenges of multi-island environments. By integrating ecological, social, and economic dimensions of sustainability, it equips students with a holistic understanding of island resilience and transition processes. This specialization is particularly relevant in the context of climate change and sustainable development in the Pacific.

**Weaknesses**

As a relatively new and specialized program, it may lack visibility and recognition at the international level. Its interdisciplinary nature, while a strength, can also be challenging for students who may find it difficult to navigate multiple fields simultaneously. Limited faculty resources in certain disciplines may further constrain its development.

**Opportunities**

The increasing global focus on sustainability and island resilience provides a strong opportunity for the program to gain recognition and attract partnerships. Collaborations with regional organizations and other island territories could enhance its relevance and impact. It also has the potential to become a model for similar programs worldwide.

**Threats**

Funding constraints and fluctuating student enrollment may threaten the program's long-term viability. Additionally, without strong institutional support, it may struggle to compete with more established programs internationally.

*c) Université de Polynésie Française - License STS OD*

STEM pathways in scientific research

Mention : Science de la Transition Ecologique et Sociétale (STES) Parcours : Océan Durable

**Strengths**

This program is directly aligned with the blue economy and the sustainable management of marine resources, making it highly relevant to French Polynesia's context. It provides students with a focused understanding of ocean-related challenges and opportunities, linking scientific knowledge with practical applications in sectors such as fisheries, tourism, and conservation.

**Weaknesses**

The program may lack the technical depth required for certain specialized careers, particularly in engineering or advanced marine sciences. Its relatively narrow focus could also limit flexibility for students seeking broader career options.

**Opportunities**

As global attention to ocean sustainability increases, the program is well-positioned to benefit

from new funding opportunities and partnerships. It could play a key role in supporting the development of the local blue economy and in training a workforce equipped to address emerging environmental challenges.

### Threats

Competition from international programs and limited local employment opportunities may reduce its attractiveness. Additionally, environmental degradation could impact the sectors it is designed to support.

*d) Université de Polynésie Française - Master Biodiversité, écologie et évolution (BEE) de Sorbonne Université co-habilité avec l'UPF.*

STEM pathways in scientific research

### Strengths

The Master's program in Biodiversity, Ecology, and Evolution benefits from a strong partnership with a major French university, providing students with access to high-level academic resources and research networks. Its focus on advanced scientific training prepares graduates for careers in research and academia, particularly in fields related to marine and terrestrial ecosystems.

### Weaknesses

The program's limited capacity and reliance on external partnerships may restrict access for local students. Coordination between institutions can also present administrative and logistical challenges.

### Opportunities

The program offers opportunities for international collaboration and participation in global research initiatives, particularly in the fields of climate change and biodiversity conservation. It can also contribute to strengthening local research capacity.

### Threats

Dependence on external funding and institutional partnerships may create vulnerabilities. Additionally, graduates may be drawn to opportunities abroad, contributing to talent loss within the territory.



From the university's website : <https://www.upf.pf/fr>

e) *Université de Polynésie Française - Licence Sciences pour  
l'Ingénieur (SPI) Parcours Sciences et techniques durables*

STEM pathways in scientific research

### Strengths

The Engineering Sciences program provides students with practical and theoretical skills relevant to sustainable development, particularly in the fields of energy and infrastructure. Its focus on sustainability aligns well with the needs of island territories, where resource management and energy efficiency are critical.

### Weaknesses

The limited industrial base in French Polynesia may restrict opportunities for internships and employment. Students often need to continue their studies or seek employment abroad to fully utilize their skills.

### Opportunities

The transition to renewable energy and sustainable infrastructure presents significant opportunities for graduates. Partnerships with engineering schools and institutions in mainland France ([Polytech Annecy Chambéry](https://www.polytech.univ-clermont.fr/)) can enhance training and career prospects.

### Threats

The risk of graduate outmigration remains high, potentially limiting the program's contribution to local development. Economic constraints may also affect investment in infrastructure and innovation.



From the university's website : <https://www.upf.pf/fr>

f) *Ifremer Pacific, Institut Louis Malardé, CRIOBE*

STEM pathways in scientific research



### Strengths

Research institutions in French Polynesia play a crucial role in advancing knowledge of marine ecosystems, public health, and environmental change. Their work is internationally recognized, particularly in the study of coral reefs and biodiversity. They provide valuable opportunities for collaboration and contribute to the scientific credibility of the region.

### Weaknesses

These institutions often face limitations in funding, infrastructure, and human resources compared to larger research centers abroad. This can constrain the scale and scope of their activities.

### Opportunities

Increasing global interest in climate change and marine conservation creates opportunities for funding and international collaboration. These institutions can position French Polynesia as a key site for research on island ecosystems.

### Threats

Environmental degradation and climate change may outpace research efforts, while competition for funding at the international level may limit resources.

#### *g) Centre des Métiers de la Mer (blue careers center)*

Vocational pathways in aquaculture, eco-tourism, reef-restoration



From the CMM website

### Strengths

The Centre provides practical, vocational training aligned with the needs of the local economy, particularly in sectors such as aquaculture, eco-tourism, and marine conservation. It plays a key role in developing a skilled workforce for the blue economy.

### Weaknesses

Vocational training is sometimes perceived as less prestigious than academic pathways, which may limit student enrollment. Resources and facilities may also be limited.

### **Opportunities**

The growth of sustainable tourism and marine-based industries offers strong employment prospects. Expanding training programs and partnerships with industry could further enhance its impact.

### **Threats**

Environmental changes affecting marine ecosystems may reduce job opportunities in related sectors. Economic instability could also impact funding and program development.

## 3. Teacher Training Programs *INSPEE Polynésie, DGEE-led initiatives, NGO support*

### **Strengths**

Teacher training programs in French Polynesia are supported by structured institutions and benefit from a combination of local and national educational frameworks. Environmental topics are increasingly integrated into training, reflecting the importance of sustainability in the region.

### **Weaknesses**

There is still a lack of specialized training in ocean literacy, and geographic isolation makes it difficult to provide equal access to professional development across all islands.

### **Opportunities**

There is strong potential to develop specialized training modules focused on marine education and to strengthen partnerships with NGOs and research institutions. A video training program is currently being developed by Hugo Ariimonana Garbutt and Ségolène d’Ortoli-Guichard, in compliance with the DAPE-DGEE program and OFB (the French Office for Biodiversity). This is part of a national program for “outdoor education.”

### **Threats**

Teacher shortages and turnover, the cost of implementing such programs, particularly in remote islands, and limited funding for continuous professional development may hinder progress.

## 4. Partners and organizations

French Polynesia relies heavily on associations and organizations to deliver blue sustainable education because of the structural realities of its territory and socio-economic context. Spread across 118 islands over a vast ocean area, French Polynesia faces significant geographic fragmentation, with many communities located in remote or isolated atolls where access to formal educational infrastructure is limited or irregular. This dispersion makes it difficult for centralized public systems alone to ensure consistent, place-based ocean education, especially when transport between islands is costly and logistically complex. In addition, the high cost of pursuing higher education—often requiring travel to Tahiti or mainland France—creates barriers for many students, contributing to inequalities in access to scientific and environmental training. In this context, local associations and NGOs play a crucial

complementary role by bringing education directly to communities, adapting content to local ecosystems and cultural knowledge, and offering flexible, low-cost or free learning opportunities. Organizations such as Te Mana o te Moana or Tama no te Tairoto, for example, are able to operate at smaller scales, mobilize local actors, and integrate traditional ecological knowledge with modern science in ways that formal institutions often cannot. This decentralized and community-driven approach helps bridge gaps in infrastructure and accessibility, while also fostering stronger local engagement and stewardship of marine environments. As a result, associations are not just complementary actors but essential pillars of blue sustainable education in French Polynesia, enabling knowledge transmission and action in a context where geography, cost, and scale limit the reach of conventional systems.

*a) IREMP (Institut pour la Recherche sur les Ecosystèmes  
Mésophotiques et Profonds) for Shark preservation (2022, by  
Clémentine Séguigne)*

### **Strengths**

IREMP is a highly specialized scientific organization dedicated to the exploration, research, and conservation of mesophotic and deep-sea ecosystems, a field that remains largely understudied in French Polynesia. Led by scientists and technical divers, the institute benefits from strong scientific credibility and cutting-edge methodologies, including acoustic telemetry, deep diving exploration, and shark tracking programs. Its work has already contributed to tracking hundreds of sharks and generating new ecological knowledge on deep and isolated ecosystems, reinforcing its role as a key actor in research-driven conservation. ([LinkedIn](#))

### **Weaknesses**

However, IREMP remains a relatively small structure with limited human and financial resources, which constrains the scale and continuity of its projects. Its highly technical and specialized focus on deep ecosystems may also limit public visibility and accessibility, making it less prominent in broader environmental education or community engagement compared to more outreach-oriented NGOs. Additionally, its dependence on partnerships, expeditions, and project-based funding introduces operational uncertainty.

### **Opportunities**

IREMP is particularly well positioned to benefit from increasing global interest in deep-sea ecosystems, which are emerging as a frontier in marine science and conservation. Advances in technology (e.g., remote sensing, AI, deep diving equipment) and growing international funding for biodiversity research offer strong development potential. Its work could also inform marine protected area policies and contribute to global conservation frameworks, while collaborations with ecotourism actors and international expeditions may provide additional financial and logistical support.

### **Threats**

The institute faces significant threats linked to funding competition in the global research landscape, where large institutions may dominate access to resources. Environmental threats, including climate change and deep-sea exploitation, may also outpace scientific understanding. Furthermore, reliance on external partnerships—including private or

expedition-based funding—can create instability and raise ethical questions regarding the balance between science, conservation, and commercial interests.

*b) Tama no te Taioto (2021, by Vetea Liao)*

**Strengths**

Tama no te Taioto, meaning “children of the lagoon,” is a community-based association deeply rooted in local ecological and cultural knowledge. Founded in 2021, it focuses on participatory science, education, and the preservation of reef-lagoon ecosystems. Its strength lies in its ability to mobilize citizens, divers, fishers, and students through collaborative projects such as coral spawning observation networks and educational workshops. This participatory approach enhances both scientific data collection and community engagement, while reinforcing cultural connections to the lagoon. ([Association Tama No Te Taioto](#))

**Weaknesses**

As a relatively young and small-scale organization, Tama no te Taioto faces limitations in terms of funding, infrastructure, and long-term institutional support. Its reliance on volunteer networks and community participation can create variability in data quality and continuity. Additionally, its actions, while impactful locally, may remain geographically limited and lack the visibility needed to influence policy at a larger scale.

**Opportunities**

The association benefits from the growing recognition of citizen science as a valuable tool in environmental monitoring and conservation. Its model could be expanded across other islands and integrated into educational programs or research partnerships. The development of digital tools, such as mobile applications for data collection, also offers opportunities to strengthen its network and scientific contributions. Furthermore, increasing public awareness of climate change and reef degradation creates a favorable context for expanding its outreach and funding.

**Threats**

Tama no te Taioto operates in a fragile environmental context, where coral reefs and lagoons are increasingly threatened by climate change, pollution, and human activities. These pressures may undermine the ecosystems it seeks to protect. Additionally, limited financial resources and dependence on volunteer engagement pose risks to the sustainability of its initiatives. Without stronger institutional support, scaling up its impact may remain challenging.

*c) Te Mana o te Moana (2004, by Cécile Gaspar et Richard Bailey)*

**Strengths**

Founded in 2004, Te Mana o te Moana is one of the most established and influential marine conservation NGOs in French Polynesia, with a strong track record in research, education, and conservation. Its flagship initiative, the marine turtle care center, has treated hundreds of turtles and contributed significantly to scientific knowledge and species protection. The organization also reaches a wide audience through extensive educational programs, having

sensitized over 150,000 children, and benefits from solid infrastructure and partnerships, including collaborations with institutions and private sector actors. ([temanaotemoana.org](http://temanaotemoana.org))

### **Weaknesses**

Despite its maturity, the organization relies partly on external funding and partnerships, including private sector support, which may influence priorities or create financial dependency. Its broad scope—ranging from research to education and conservation—can also stretch resources and require constant balancing of activities. Additionally, while its outreach is strong, ensuring long-term behavioral change and measurable ecological impact remains a challenge.

### **Opportunities**

Te Mana o te Moana is well positioned to expand its leadership role in ocean education and conservation at both regional and international levels. Its long-standing experience and credibility enable it to develop innovative educational tools, strengthen partnerships, and access international funding. The increasing global focus on ocean conservation and youth education provides further opportunities to scale its programs and influence policy.

### **Threats**

The organization faces major environmental threats, particularly climate change, which directly impacts marine species and ecosystems it seeks to protect. Financial sustainability remains a concern, especially in a context of competition for funding among NGOs. Additionally, as environmental issues become more politicized, maintaining independence and credibility while collaborating with diverse stakeholders may present ongoing challenges.

## *a) Science 4 Reef*

### **Strengths**

Science 4 Reef distinguishes itself through its strong scientific foundation, being led by biologists and researchers with expertise in coral reef ecosystems. This gives the initiative a high level of credibility and rigor in its methodologies, particularly in reef monitoring, restoration techniques, and data-driven conservation strategies. Its work contributes directly to improving scientific knowledge in French Polynesia and supports evidence-based decision-making. The initiative also benefits from its ability to bridge research and field action, translating scientific findings into practical conservation efforts while fostering collaborations with academic and research institutions.

### **Weaknesses**

Despite its scientific strengths, Science 4 Reef may face limitations in terms of visibility and outreach compared to more media-oriented organizations. Its focus on scientific rigor can sometimes limit its accessibility to the general public, reducing its impact in terms of awareness and community engagement. Additionally, like many research-driven initiatives, it may depend heavily on project-based funding and grants, which can create uncertainty in maintaining long-term programs and staffing.

### **Opportunities**

Science 4 Reef is well positioned to benefit from increasing global investment in science-based conservation and climate research. Opportunities exist to expand partnerships with international universities, research centers, and conservation programs, as well as to integrate advanced technologies such as remote sensing, genetic analysis, and AI-assisted reef monitoring. Its expertise could also support policy development and strengthen the scientific backbone of marine management strategies in French Polynesia.

### **Threats**

The initiative faces significant external threats, particularly from the accelerating impacts of climate change on coral reef ecosystems, which may outpace the effectiveness of scientific interventions. Competition for limited research funding at both regional and international levels also poses a challenge. Furthermore, the gap between scientific knowledge and policy implementation may limit the real-world impact of its findings if not effectively translated into actionable governance measures.

## *b) Coral Gardeners*

### **Strengths**

Coral Gardeners has established itself as one of the most visible and impactful reef restoration organizations in French Polynesia, with concrete success in coral transplantation and ecosystem monitoring. Its strength lies in its ability to merge scientific practices with compelling storytelling and digital outreach, creating a strong global brand. The organization benefits from structured operational capacity, including coral nurseries and monitoring systems, as well as significant financial and visibility support through partnerships with international luxury brands. These collaborations provide stable funding streams and enable scaling of restoration activities that would otherwise be difficult to sustain in a remote island context.

### **Weaknesses**

Despite its success, Coral Gardeners faces structural limitations linked to its funding model and positioning. Its reliance on private partnerships—particularly with luxury brands—can create dependency and may influence communication priorities over scientific transparency. Additionally, while its projects are highly visible, their geographic scope remains limited compared to the vastness of French Polynesia's reefs, raising questions about scalability and long-term ecological impact. There is also a potential disconnect between global branding and local community integration in certain areas.

### **Opportunities**

The organization is well positioned to capitalize on growing global interest in nature-based solutions and ocean conservation. Its strong media presence and partnerships offer opportunities to expand funding, develop innovative restoration technologies, and replicate its model across other islands and regions. Collaborations with research institutions and integration into international frameworks such as global climate and biodiversity initiatives could further strengthen its scientific credibility and impact.

### Threats

Coral Gardeners operates within a complex risk environment, where climate change continues to degrade coral ecosystems faster than restoration efforts can compensate. Additionally, its partnerships with luxury brands expose it to criticism related to greenwashing, potentially affecting its credibility among scientific and local stakeholders. Financial dependency on private sponsors also poses a risk if partnerships shift or decline, while broader economic or environmental instability could further challenge the sustainability of its operations.

#### *c) Tore Tore (2005, by Matairi Maire and Denis Grosmaire)*

### Strengths

Tore Tore distinguishes itself through its strong integration of cultural heritage and environmental education, promoting a holistic understanding of nature rooted in Polynesian values. By combining artistic expression, traditional knowledge, and ecological awareness, the association creates engaging and culturally relevant educational experiences, particularly for younger generations. Its community-based approach allows it to operate close to local populations, fostering participation, identity, and stewardship of natural resources. This cultural anchoring is a key strength in a context where environmental protection is closely tied to ancestral knowledge and practices.

### Weaknesses

However, Tore Tore operates on a relatively small scale, with limited financial and institutional resources compared to larger NGOs. Its activities may depend heavily on project-based funding and volunteer engagement, which can affect continuity and long-term planning. Additionally, its focus on cultural and educational activities, while impactful, may limit its involvement in large-scale scientific research or policy influence, reducing its visibility at national or international levels.

### Opportunities

There is growing recognition of the importance of integrating indigenous knowledge into environmental governance, which creates strong opportunities for Tore Tore to expand its role. The association could develop partnerships with schools, research institutions, and other NGOs to formalize and scale its educational programs. Increasing interest in cultural sustainability, eco-tourism, and community-based conservation also provides avenues for funding and outreach, allowing Tore Tore to strengthen its impact across more islands.

### Threats

Tore Tore faces several external challenges, including financial instability and competition for limited funding within the non-profit sector. Cultural knowledge transmission itself is at risk due to modernization and changing lifestyles, which could weaken the foundation of its activities over time. Additionally, environmental degradation and climate change threaten the ecosystems and cultural practices the association seeks to preserve, while geographic dispersion across islands continues to complicate the scaling and coordination of its initiatives.

#### *a) Mokarran Protection Society*

### Strengths

The Mokarran Protection Society plays a critical role in shark conservation, particularly for endangered species such as hammerhead sharks, by combining scientific research, advocacy,

and awareness campaigns. Its strength lies in its specialized focus, which allows it to develop strong expertise and credibility in a niche but crucial area of marine conservation. The organization contributes to improving knowledge of shark populations and supports protective measures within French Polynesia's already progressive shark sanctuary policies.

### **Weaknesses**

However, the organization's highly specialized focus can also be a limitation, as it restricts its visibility and funding opportunities compared to broader environmental NGOs. Its operational capacity remains relatively small, with limited infrastructure and human resources, which can constrain the scale of its research and outreach activities. Geographic dispersion across islands further complicates consistent monitoring and data collection.

### **Opportunities**

Growing international concern for shark conservation and marine biodiversity presents significant opportunities for the Mokarran Protection Society. Increased funding for apex predator protection, along with potential collaborations with global research institutions and conservation networks, could strengthen its impact. Advances in tracking technologies and citizen science also offer new tools to expand research and public engagement.

### **Threats**

The organization faces ongoing threats from environmental degradation, illegal fishing, and climate change, all of which affect shark populations. Limited funding and reliance on project-based support can hinder long-term planning. Additionally, balancing conservation priorities with local economic activities such as fishing may create social and political tensions that complicate its mission.

## *a) Reva Atea*

### **Strengths**

Reva Atea stands out as a locally rooted environmental organization advocating for sustainable development and environmental protection in French Polynesia. Its strength lies in its strong civic engagement and its ability to mobilize public opinion on key environmental issues, including pollution, resource management, and ecological preservation. The organization plays an important watchdog role, contributing to transparency and accountability in environmental governance.

### **Weaknesses**

The organization's advocacy-driven model can also limit its operational scope, as it focuses more on awareness and policy influence than on implementing large-scale technical projects. Its resources are relatively limited, relying on volunteer engagement and modest funding, which can constrain its capacity to sustain long-term campaigns or expand its activities across all archipelagos.

### **Opportunities**

Reva Atea can benefit from increasing public awareness of environmental issues and growing demand for civil society participation in decision-making. Opportunities exist to strengthen partnerships with other NGOs, research institutions, and international organizations, as well

as to leverage digital tools to amplify its advocacy. Its role could expand further in shaping public debate and influencing policy in the context of climate change and sustainable development.

### Threats

The organization operates in a context where political, economic, and institutional pressures may limit the impact of advocacy efforts. Resistance from stakeholders with competing economic interests, such as development or industrial projects, can create challenges. Additionally, limited funding and potential volunteer fatigue pose risks to the continuity and effectiveness of its activities over time.

## C. Conclusion on French Polynesia

French Polynesia is progressively building a coherent and multi-layered network grounded in the principle of “learn to understand, understand to act, and act to build a better future,” by connecting education, research, community initiatives, and policy into a shared ocean-oriented vision. At the learning stage, institutions such as the Université de Polynésie Française and training structures like the INSPE Polynésie provide foundational scientific and pedagogical knowledge, while programs like the Aires Marines Éducatives supported by the Direction Générale de l’Éducation et des Enseignements immerse students in real-world ecosystems, blending traditional ecological knowledge with modern science. This knowledge is deepened through research institutions such as CRIOBE, Ifremer, and Institut Louis Malardé, which generate critical understanding of biodiversity, climate change, and marine systems. The transition from understanding to action is facilitated by youth-led and teachers-driven initiatives such as Moana Ambassadors and partners such as Te Mana o te Moana, which translate knowledge into awareness campaigns, citizen science, and behavioral change, despite facing challenges of scale, funding, and institutional integration. At the same time, vocational pathways like the Centre des Métiers de la Mer and applied academic programs in sustainable ocean and engineering enable learners to act concretely by entering blue economy sectors such as eco-tourism, renewable energy, and marine conservation. However, this evolving network is still shaped by structural weaknesses—including geographic fragmentation, unequal access to resources across islands, and limited local employment opportunities—that can hinder continuity and equity. Yet these constraints are counterbalanced by significant opportunities, such as alignment with global frameworks like the UNESCO Ocean Decade, increasing international funding for climate and biodiversity, and the potential to position French Polynesia as a model for island-based sustainability transitions. Ultimately, despite persistent threats from climate change, environmental degradation, and financial instability, French Polynesia’s interconnected system of schools, universities, NGOs, research centers, and community actors is gradually transforming knowledge into action, fostering a resilient and locally grounded pathway toward a more sustainable and ocean-conscious future.

## D. References and Citations



Co-funded by  
the European Union

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[Moana Ambassadors YouTube](#)

[Institut Malardé, IFREMER Pacific](#)

[French High Commission – Blue Economy Plan](#)

[Vice-Rectorat de la Polynésie française](#)

[CRIOBE – Coral Reefs Center](#)

[IREMP](#)

[tamanotetairoto](#)

[Te Mana o te Moana](#)

[ToreTore](#)

## II. Lipari, ITALY – Isa Conti ELLER Vainicher

### A. Introduction

Coastal and island communities have long been connected to the sea not only economically but also culturally, historically, and environmentally. In the European Union, the ocean and coastal environments represent essential ecosystems that sustain biodiversity, support livelihoods, and contribute to regional identity. However, marine ecosystems are increasingly threatened by climate change, pollution, overfishing, and unsustainable coastal development. These challenges require not only policy responses but also educational transformations that equip young people with the knowledge, values, and skills necessary to protect ocean resources.

The concept of Blue Education emerges as a response to these needs. Blue Education promotes ocean literacy, sustainable maritime practices, and awareness of marine ecosystems through educational programs that connect students directly with their coastal environments. The Council Recommendation of 16 June 2022 on learning for the green transition and sustainable development (2022/C 243/01) encourages Member States to integrate sustainability competencies across all levels of education and to promote place-based learning experiences that strengthen environmental responsibility.

In the Mediterranean region, the Aeolian Islands, particularly the island of Lipari, provide an ideal context for implementing such initiatives. Lipari's unique geological formations, marine biodiversity, fishing traditions, and historical maritime culture offer rich opportunities for experiential learning. At the same time, the island faces environmental challenges common to many coastal communities, including marine litter, pressures from tourism, and the need to preserve fragile ecosystems.

Establishing a Blue Education Area in Lipari can therefore serve as a model for integrating sustainability education into local school systems while strengthening the connection between students and their surrounding marine environment. Such an initiative aligns with broader European priorities such as the European Green Deal, the EU Mission Restore our Ocean and Waters, and international frameworks for ocean literacy.

This document presents five operational guidelines designed to support the implementation of Blue Education in Lipari. These guidelines are divided into two target groups:

1. Teachers, who play a key role in integrating sustainability into classroom practices.
2. Remote and coastal schools, which require tailored strategies to address geographical isolation and limited resources.

The guidelines aim to:

- Foster emotional and cultural connections between students and the ocean.
- Encourage student participation in marine conservation initiatives.
- Promote interest in blue careers and sustainable maritime professions.
- Strengthen environmental stewardship within local communities.
- Develop tools for monitoring and evaluating student engagement in sustainability activities.

By adopting these operational guidelines, schools in Lipari can become hubs of environmental innovation and community engagement. Through storytelling, inquiry-based learning, student-led projects, and local clubs, Blue Education can empower the next generation of island residents to become responsible guardians of their marine environment.

Ultimately, the success of a Blue Education Area depends not only on educational policies but also on collaboration among teachers, students, local authorities, researchers, and community organizations. Lipari, with its strong maritime identity and vibrant cultural heritage, has the potential to become a pioneering example of how island communities can integrate sustainability education into everyday learning.

## B. Policy and Educational Context

### The EU Framework for Sustainable Education

The Council Recommendation on learning for the green transition and sustainable development (2022/C 243/01) emphasizes that education systems must prepare learners to address environmental challenges and participate actively in the transition to a sustainable society. The Recommendation calls for:

- Integration of sustainability across curricula
- Development of environmental competencies
- Promotion of experiential and interdisciplinary learning
- Strengthening of partnerships between schools and local communities

Blue Education contributes directly to these objectives by providing a thematic framework centered on ocean sustainability.

### The Importance of Ocean Literacy

Ocean literacy refers to an understanding of the ocean's influence on people and people's influence on the ocean. Developing ocean literacy among students encourages responsible

behavior toward marine ecosystems and helps build long-term commitment to environmental protection.

Key principles of ocean literacy include:

- Understanding ocean ecosystems and biodiversity
- Recognizing human impacts on marine environments
- Appreciating the ocean's role in climate regulation
- Supporting sustainable marine resource management

For island communities like Lipari, ocean literacy is not only educational but also essential for the future of local economies.

### Lipari as a Blue Education Area

Lipari offers several advantages for implementing Blue Education initiatives:

- Proximity to diverse marine habitats
- Strong cultural heritage linked to fishing and navigation
- Opportunities for collaboration with marine scientists and environmental organizations
- Community interest in sustainable tourism and environmental preservation

However, challenges such as geographical isolation and limited access to resources require innovative educational approaches.

## Foster Sustainability Values through Storytelling

### The Role of Storytelling in Environmental Education

Storytelling is one of the most powerful educational tools for transmitting cultural knowledge and values. Stories allow students to emotionally connect with environmental issues and develop empathy toward nature. In coastal communities, storytelling can integrate scientific knowledge with local traditions and historical narratives.

When students hear stories about the sea—from myths and legends to contemporary environmental challenges—they begin to see the ocean not only as a natural resource but as a living system worthy of protection.

### Integrating Local Legends and Cultural Heritage

The Aeolian Islands possess a rich tradition of maritime folklore. Teachers can incorporate local legends, fishermen's tales, and historical accounts into lessons about marine ecology.

Examples include:

- Stories of traditional fishing practices
- Historical accounts of volcanic activity and its effects on the sea
- Legends involving sea creatures and maritime journeys

These narratives can serve as entry points for discussing broader environmental themes such as biodiversity, climate change, and ocean conservation.

### Case Study: The Women Fisher of the Aeolian Islands



*The Fisherwoman (painting by Raffaele Sènet)*

An important example of storytelling rooted in local heritage is the historical narrative of the **women fisher of the Aeolian Islands**, whose lives illustrate the deep relationship between island communities and the sea. Historical accounts describe how, from the late nineteenth century until roughly the 1960s, many women in the Aeolian archipelago actively participated in fishing activities alongside—or sometimes instead of—men. They rowed boats, handled fishing nets, and sold the fish to support their families, often in conditions of extreme poverty and hardship.

These women performed multiple roles simultaneously: they were mothers, workers, and navigators of the sea. In many cases they brought their children with them on the boats because they could not leave them at home, and oral testimonies recount that some women even **gave birth or breastfed their babies while working at sea**. These stories reveal the extraordinary resilience and determination of these “women of the sea,” who continued fishing even during pregnancy or while caring for young children, highlighting the harsh economic realities of island life in the early twentieth century.

Historical documentation also confirms that women participated actively in the maritime economy of the islands. They sometimes formed all-female fishing crews or traveled between islands to sell their catch. Ethnographic research and historical accounts from travelers and scholars describe women rowing boats and managing fishing equipment, demonstrating that maritime labor was not exclusively male in the Aeolian Islands.

Despite their important role, the contribution of these women remained largely invisible in official histories for many decades. Only recently has their legacy been recognized through historical research and cultural initiatives that celebrate their role in sustaining island families and communities. Their lives represent a powerful example of dedication to both family and the sea, embodying the resilience and maritime identity of the Aeolian Islands.

In the context of Blue Education, stories about the women fisher of the Aeolian Islands can serve as meaningful teaching tools. By presenting these narratives in the classroom, teachers can help students understand the historical relationship between people and the ocean while highlighting themes of sustainability, cultural heritage, and gender roles in maritime communities. These stories also encourage students to reflect on the social and environmental importance of the sea for island societies such as Lipari.

### Storytelling Activities for the Classroom

Teachers can implement storytelling through a variety of educational activities:

- **Story Circles:** Students gather in groups to share stories about the sea, including personal experiences, family traditions, or local legends.
- **Digital Storytelling:** Students create short videos or multimedia presentations about marine ecosystems or environmental challenges affecting Lipari.
- **Creative Writing Projects:** Students write fictional or historical narratives about life in coastal communities, focusing on the relationship between humans and the sea.

### Expected Outcomes

Storytelling-based education can lead to several positive outcomes:

- Increased emotional connection with marine ecosystems
- Greater student engagement in sustainability topics
- Improved cultural awareness and appreciation of local heritage

## Encourage Student-Led Marine Projects

### The Importance of Student Agency

Student-led projects empower young people to take active roles in environmental protection. Rather than passively learning about sustainability, students become participants in real-world initiatives.

This approach aligns with the EU's emphasis on **active citizenship and participatory learning**.



### Examples of Student-Led Marine Initiatives

Possible projects include:

- **Plastic Reduction Campaigns:** Students organize school campaigns to reduce single-use plastics and promote reusable materials.
- **Beach Clean-Up Programs:** Students collaborate with local organizations to remove marine litter from coastal areas.
- **Sustainable Fishing Awareness:** Students develop informational materials promoting responsible fishing practices.

### Collaboration with Local Communities

Successful projects often involve partnerships with:

- Local fishermen
- Environmental NGOs
- Marine researchers
- Municipal authorities

These collaborations help students understand the real-world impact of their initiatives.

### Monitor and Evaluate Student Engagement

## Importance of Monitoring

Measuring student engagement allows educators to evaluate the effectiveness of Blue Education initiatives and identify areas for improvement.

Monitoring also helps track long-term interest in ocean-related careers.

## Evaluation Tools

Teachers can use several tools to assess student engagement:

- **Surveys:** Regular surveys can measure student attitudes toward sustainability and marine conservation.
- **Project Logs:** Students document their participation in environmental activities and reflect on their learning experiences.
- **Participation Metrics:** Schools can track attendance in Blue Education events, workshops, and extracurricular activities.

## Indicators of Success

Key indicators may include:

- Increased participation in marine-related projects
- Improved knowledge of ocean sustainability
- Growing interest in marine science careers

## Use Inquiry-Based and Experiential Learning

### Learning Through Direct Experience

Experiential learning allows students to interact directly with marine environments, making education more engaging and meaningful.

### Hands-On Marine Science Activities

Examples include:

- **Water Sampling:** Students collect and analyze seawater samples to study salinity, temperature, and pollution levels.
- **Reef Observation:** Field trips to coastal areas allow students to observe marine organisms and habitats.
- **Biodiversity Surveys:** Students document species present in coastal ecosystems.

## Benefits of Experiential Learning

Research shows that hands-on activities:

- Improve knowledge retention
- Increase student motivation
- Develop scientific skills

## Develop Local Blue Education Clubs

### Creating Long-Term Engagement

Blue Education Clubs provide a structured platform for students interested in marine conservation.

### Activities of Blue Clubs

Possible club activities include:

- Organizing beach clean-ups
- Hosting environmental workshops
- Collaborating with marine scientists
- Participating in citizen science projects

### Community Impact

These clubs can become centers of environmental awareness within local communities, promoting sustainable practices beyond the school environment.

## Measuring Impact and Long-Term Sustainability

To ensure long-term success, Blue Education initiatives should include continuous evaluation and adaptation.

Key strategies include:

- Annual assessment reports
- Collaboration with universities and research institutes
- Integration with regional sustainability programs

## C. SWOT Analysis by area of focus

### 1. Preserving the Ocean School Projects (Quantity and Quality)

- a) *“Il Mare a Scuola” – Marevivo*
- b) *Ocean Literacy Italia – citizen science activities*
- c) *PON Environment projects supporting coastal schools*

### 2. Preserving the Ocean School Projects (Quantity and Quality)

- a) *“Il Mare a Scuola” – Marevivo*
- b) *Ocean Literacy Italia – citizen science activities*
- c) *PON Environment projects supporting coastal schools*

#### **Strengths:**

These projects have gained national recognition thanks to the strong involvement of both students and schools, showing widespread participation and engagement. Their coordination is supported by NGOs and scientific institutions, which guarantees a high level of technical expertise and reliability. As a result, the initiatives achieve a strong educational impact, mainly through hands-on activities and public awareness campaigns that actively promote learning and community involvement.

#### **Weaknesses:**

One of the main weaknesses is the lack of systemic institutionalization, meaning that these initiatives are not always fully integrated into the educational system in a stable and structured way. Additionally, there are significant regional disparities: schools in Northern Italy generally have more resources and opportunities compared to those in Southern regions and on the islands. Finally, some schools face limited access to coastal areas, which can restrict participation in certain activities and reduce the overall effectiveness of practical learning experiences.

#### **Opportunities:**

There are several important opportunities for future development. EU funding programs such as Erasmus+ and PON could help expand these initiatives and make them more standardized across the country. Another promising step would be the creation of national Blue School networks, which would allow schools to share best practices, resources, and successful experiences more easily. Finally, integrating these projects into international Ocean Literacy programs could strengthen their impact and connect Italian schools to a broader global educational framework.

**Threats:**

One major threat is the strong dependence on external or NGO funding, which can make these projects unstable in the long term if financial support decreases. Another issue is the uneven implementation across different regions, meaning that not all schools have the same opportunities to participate or benefit from the initiatives. Lastly, climate change represents a growing challenge, as it can directly affect coastal environments and limit or disrupt outdoor and sea-based activities that are essential for these educational programs.

**3. Promoting Studies and Blue Careers**

- a) *ITS Nautical and Maritime Academies*
- b) *PCTO and career days linked to marine sectors and eco-tourism*
- c) *Universities offering Marine Sciences, Marine Biology, Aquaculture (e.g., University of Bologna, Naples, Trieste)*

**Strengths:**

Italy offers a wide and diverse range of higher education opportunities in marine-related and STEM fields, providing students with many possible pathways for specialization. In addition, collaborations with marine research institutes and private companies help strengthen the connection between education, scientific innovation, and the job market. This is further supported by the growing interest of students in blue careers, showing an increasing awareness of the importance of the marine sector and its future professional opportunities.

**Weaknesses:**

One of the main weaknesses is the limited connection between school education and local career opportunities, which can prevent students from seeing clear professional pathways linked to what they learn. Moreover, these initiatives are often not promoted enough in inland or rural schools, reducing awareness and participation in areas that are farther from the coast and less directly exposed to marine-related activities.

**Opportunities:**

There are promising opportunities for growth, such as the development of specialized guidance and orientation pathways that help students pursue careers in the blue economy. Additionally, internationalization initiatives, including Erasmus+ and EU–Pacific projects, can broaden students' perspectives, foster global collaboration, and connect them to opportunities beyond their local context.

**Threats:**

A significant challenge is the low level of student awareness regarding career opportunities, which limits their ability to make informed choices about their future paths. Additionally, there

is often a mismatch between the skills students acquire in school and the needs of the labor market, creating gaps that can make it harder for graduates to successfully transition into relevant professional roles.

#### **4. Teacher Training Programs**

- a) MI-organized sustainability training*
- b) Online courses via Scientix and eTwinning*
- c) NGO and university-led courses on ocean literacy*

##### **Strengths:**

There are notable strengths in the educational offer, including a diverse range of programs and access to European networks, which allow students to benefit from international collaboration and exchange. Many of these courses are designed to be hands-on and interdisciplinary, providing practical experience while connecting different fields of knowledge to foster a more comprehensive understanding.

##### **Weaknesses:**

A key limitation is that participation is not mandatory for all teachers, which means that not every educator is involved or exposed to these initiatives. In addition, there is limited monitoring of how these programs impact daily teaching, making it difficult to fully assess their effectiveness or to identify areas for improvement in classroom practice.

##### **Opportunities:**

One clear opportunity for improvement is the implementation of mandatory, certified training for teachers, which would ensure consistent knowledge and competencies across schools. Additionally, forming partnerships with research centers and companies could provide educators with access to specialized skills and real-world expertise, strengthening the link between teaching and the evolving demands of the field.

##### **Threats:**

A significant challenge is that teachers often have limited time and motivation to engage in additional training, which can hinder the uptake of new programs or teaching methods. Furthermore, there are regional disparities in the availability of training opportunities, meaning that teachers in some areas have far fewer resources and support compared to others, creating an uneven educational experience across the country.

## 5. Partners and organizations

- a) *Ministry of Education, Ministry of Environment*
- b) *CNR, ISPRA*
- c) *Federazione del Mare, universities and marine research centers*

### **Strengths:**

A major strength lies in the well-established network of public and private entities that support these initiatives, creating strong collaboration and resource-sharing opportunities. This network also brings a high level of scientific and technical expertise, ensuring that projects are well-informed, credible, and grounded in current research and best practices.

### **Weaknesses:**

A key weakness is the lack of centralized coordination between regions and institutions, which can lead to fragmentation and inefficiencies. Additionally, there are overlapping initiatives that often duplicate resources, reducing overall effectiveness and making it harder to achieve a coherent national strategy.

### **Opportunities:**

There are significant opportunities for growth, such as participating in international networks like the UN Ocean Decade and EU Blue Schools, which can strengthen collaboration and visibility on a global scale. Additionally, creating shared platforms for exchanging best practices would allow schools and organizations to learn from each other, improving the quality and impact of their initiatives.

### **Threats:**

A notable threat is the dependence on external funding, which can make projects vulnerable if financial support decreases or is withdrawn. In addition, regional differences affect the uniformity of project implementation, meaning that not all schools and areas have equal access to resources or opportunities, which can limit the overall consistency and impact of these initiatives.

## A Scale of Measurement for Identifying Ocean Literacy

### D. Introduction

Assessing Ocean Literacy among students is an essential component of evaluating the effectiveness of Blue Education initiatives. Ocean Literacy refers to an individual's understanding of the ocean's influence on people and people's influence on the ocean. Within the context of the Blue Education Area in Lipari, measuring Ocean Literacy helps educators

determine whether students are developing knowledge, attitudes, and behaviors that support marine sustainability and environmental stewardship.

The development of a measurement scale allows schools to monitor student engagement with marine topics, evaluate educational outcomes, and identify areas where further learning support may be required. Such tools are particularly important in remote and coastal communities where environmental awareness directly influences local economies, cultural traditions, and long-term ecosystem protection.

The Ocean Literacy scale proposed in this chapter is designed as a **short survey instrument composed of ten questions**. The questionnaire can be administered periodically—such as at the beginning and end of the school year—to measure changes in student knowledge, attitudes, and behavioral intentions related to the ocean.

The questions focus on three key dimensions of Ocean Literacy:

1. **Knowledge and awareness** of marine ecosystems and ocean sustainability
2. **Attitudes and values** regarding the protection of marine environments
3. **Behavioral intentions and engagement** in activities related to ocean conservation

Teachers may use the results of this scale to monitor student progress, evaluate the effectiveness of storytelling activities, experiential learning projects, and Blue Clubs, and identify potential interest in ocean-related careers.

The scale is designed to be simple and accessible so that it can be used across different educational levels, particularly in remote or resource-limited schools. Responses can be recorded using a Likert scale (for example, from **1 = strongly disagree** to **5 = strongly agree**) or through multiple-choice formats depending on the educational context.

## E. Ocean Literacy Measurement Questions

The following ten questions are proposed as a basic instrument for identifying the level of Ocean Literacy among students participating in Blue Education activities.

1. How well do you understand the role of the ocean in regulating Earth's climate and supporting life on the planet?
2. How familiar are you with the marine ecosystems and biodiversity found in the waters surrounding the Aeolian Islands?
3. To what extent do you believe that human activities, such as plastic pollution or overfishing, affect marine ecosystems?
4. How important do you think it is for coastal communities like Lipari to protect marine environments for future generations?
5. How interested are you in learning more about the ocean and marine ecosystems through school activities or projects?

6. How often do you participate in activities related to ocean protection, such as beach clean-ups, environmental campaigns, or marine observation projects?
7. To what extent do school activities (such as storytelling, fieldwork, or Blue Clubs) increase your interest in ocean sustainability?
8. How confident do you feel in explaining to others why protecting the ocean is important?
9. How interested would you be in pursuing a career related to the ocean, such as marine science, sustainable fisheries, marine conservation, or maritime industries?
10. How willing are you to change your personal habits (for example reducing plastic use or supporting sustainable seafood) in order to protect marine ecosystems?

#### F. Use of the Scale in Educational Monitoring

Teachers and school administrators can use the responses to these questions to assess student progress in Ocean Literacy and evaluate the effectiveness of Blue Education initiatives. By administering the questionnaire at different points during the academic year, schools can measure changes in awareness, engagement, and behavioral intentions among students.

The results may also support broader educational planning by identifying areas where additional learning activities or community engagement initiatives are needed. For example, if survey responses indicate low awareness of local marine biodiversity, teachers may introduce more field-based activities such as coastal observation or marine species identification.

In addition, the scale can help identify students who show strong interest in ocean-related topics and may wish to pursue further education or careers in marine science, environmental management, or sustainable maritime industries.

#### G. Contribution to the Blue Education Area in Lipari

The implementation of an Ocean Literacy measurement scale contributes to the long-term development of the Blue Education Area by providing evidence-based insights into student learning outcomes. By systematically evaluating knowledge, attitudes, and behaviors related to the ocean, schools can strengthen their role as drivers of environmental awareness and community engagement.

In the context of Lipari and the wider Aeolian Islands, fostering Ocean Literacy among young people supports not only educational goals but also the sustainable management of marine resources that are central to the region's cultural identity and economic future.

## H. Alignment Between Ocean Literacy Assessment and Implemented Blue Education Guidelines

The Ocean Literacy measurement questions presented in this document are directly aligned with the operational guidelines implemented in the Blue Education framework for Lipari. Each question reflects key dimensions addressed by the guidelines, such as storytelling, experiential learning, student-led projects, and community engagement. For example, questions related to interest in ocean topics and emotional connection to the sea are linked to storytelling activities that foster cultural awareness and personal engagement. Questions focusing on participation and behavioral change correspond to student-led initiatives and hands-on marine projects, which encourage active involvement in environmental protection. Similarly, items addressing knowledge and understanding of marine ecosystems are connected to inquiry-based and experiential learning approaches, including fieldwork and scientific observation. Finally, questions about career interest and long-term engagement relate to the development of Blue Education Clubs and collaboration with local stakeholders. This alignment ensures that the measurement tool not only evaluates student outcomes but also provides meaningful feedback on the effectiveness of the educational strategies implemented within the Blue Education Area.

## Conclusion

Promoting a **Blue Education Area in Lipari** represents an important step toward integrating sustainability into the daily lives of students in coastal communities. By combining storytelling, student-led projects, experiential learning, and community engagement, schools can create powerful educational experiences that foster environmental responsibility.

These operational guidelines provide practical tools for teachers and schools to implement Blue Education initiatives aligned with European sustainability policies. Through these efforts, Lipari can serve as a model for other coastal regions seeking to strengthen ocean literacy and promote sustainable development.

Ultimately, educating young people about the ocean is not only about protecting marine ecosystems—it is about preparing future generations to live responsibly within the natural systems that sustain life on Earth.

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## III. Greece

### Country Profile Overview

Brief socio-geographic context, especially coastal and maritime features:

- Mention key maritime activities such as fishing, shipping, tourism, or offshore industries
- Describe the geographical setting of the area, including coastline length, types of coastal environments (beaches, cliffs, estuaries, etc.)
- Include environmental features like marine biodiversity, protected areas, or coastal erosion challenges
- Discuss climate and weather patterns impacting coastal regions

Educational governance structure:

- Outline the organization of the educational system (national, regional, local levels)

Status of marine policy and ocean literacy integration:

- Summarize existing marine and maritime policies, strategies, or legal frameworks
- Describe the extent to which ocean literacy is incorporated into school curricula or public awareness programs

### SWOT Analysis by area of focus

For each subtopic (1-4) use the SWOT framework:

Strengths: Existing success stories, infrastructure, institutional support

Weaknesses: Gaps, limitations, or regional disparities

Opportunities: Emerging trends, funding, innovation potential

Threats: Political, environmental, or financial barriers

### Preserving the Ocean School Projects (Quantity and Quality)

#### *Sea Change Greek Schools Program*

Example based on the given SWOT matrix

- **Description :** Adaptation of EU Sea Change project for Greek education, promoting ocean literacy
- **Strengths:** The program is backed by EU H2020; pilot materials translated. **Weaknesses:** The lack of institutionalization (not institutionalized in curriculum) may lead to inconsistencies in program delivery; Short-lived.
- **Opportunities:** By tapping into EU funding initiatives like Erasmus+ and PON, the program can be expanded with UN Ocean Decade framework
- **Threats:** Lack of teacher continuity or training

#### *Environmental Education Centers (KPE)*

Example based on the given SWOT matrix

- **Description :** Nationwide network providing marine education, often with field trips to coastal areas

- **Strengths:** The program is well-distributed (including islands) and is government-supported.
- **Weaknesses:** Lack of funds or staff ☐ Some centers are underfunded or understaffed
- **Opportunities:** The network could evolve into Ocean Literacy Hubs
- **Threats:** Austerity measures may affect sustainability

#### Promoting Studies and Blue Careers

##### Key Areas to Investigate:

Higher education offerings in marine sciences, engineering, aquaculture, etc.

Vocational training or maritime academies

National strategies for blue economy (alignment with EU Blue Economy Strategy)

Sources: National Blue Economy Strategies or Action Plans, University marine departments, EU Skills Panorama, Cedefop, EMODnet, Employment trends from national statistics offices

#### *Blue Careers Greece (Interreg Med)*

Example based on the given SWOT matrix

- **Description :** EU-funded project to map blue economy skills and promote training
- **Strengths:** Strong EU alignment; links education & industry
- **Weaknesses:** Limited dissemination; short project life
- **Opportunities:** Basis for national Blue Skills Strategy
- **Threats:** Fragmentation of blue job definitions

#### *Maritime Academies (Merchant Marine)*

Example based on the given SWOT matrix

- **Description:** Vocational training for seafaring professions
- **Strengths:** High employability; long-standing institutions
- **Weaknesses:** Limited to narrow marine sectors (navigation, engineering)
- **Opportunities:** Expand to cover ocean tech, aquaculture
- **Threats:** Gender imbalance; urban concentration

#### Teacher Training Programs

##### Key Areas to Investigate:

In-service and pre-service teacher training initiatives on ocean literacy

Partnerships with marine institutions for teacher development

Platforms like eTwinning or Scientix for teacher collaboration

Sources: Teacher training institutes or ministry programs, NGO-led courses or continuing professional development (CPD) offerings, Reports from Education and Training Monitor (EU)

#### *eTwinning & Scientix projects with marine focus*

Example based on the given SWOT matrix

- **Description:** EU platforms for the school education community. It is also the online community for schools in Europe
- **Strengths:** Large teacher network; digital resources

- **Weaknesses:** Optional participation; not focused solely on ocean
- **Opportunities:** Integrate Ocean Literacy with existing STEM programs
- **Threats:** Internet access issues in remote areas

*Training via KPE or NGOs like Archipelagos Institute*

Example based on the given SWOT matrix

- **Description:** Hands-on workshops and seminars for environmental education. The Sea4All Erasmus+ project develops school games and an online educational portal to raise environmental awareness, focusing on marine pollution. The curriculum combines inputs from teachers and scientists, with ICT tools presenting scientific data in engaging, playful ways. The goal is to help students better understand and care for the marine environment.
- **Strengths:** High engagement; island-specific training
- **Weaknesses:** Not standardized; varies by location
- **Opportunities:** Can be replicated across Aegean & Ionian islands
- **Threats:** Reliant on seasonal funding or volunteers

*Partners and organizations*

**Key Areas to Investigate:**

Governmental bodies involved (e.g., Ministries of Environment, Maritime Affairs)

NGOs and foundations

International collaborators (e.g., UNESCO, IOC, Ocean Decade projects)

Regional maritime clusters or marine institutes

Sources: Official websites, Participation in UN Ocean Decade or EU-funded initiatives,

Partnerships listed in national project documents or event reports

*Archipelagos Institute, HELMEPA, HCMR, Ministry of Education*

Example based on the given SWOT matrix

- **Description:** Mix of NGOs, academia, and state actors
- **Strengths:** Long-term marine research & outreach experience
- **Weaknesses:** Weak inter-ministerial coordination
- **Opportunities:** Form national Ocean Education Council
- **Threats:** Overlap, unclear mandates

*References and Citations*

[Sea Change Greece](#)

[Ministry of Education – KPE](#)

[Interreg Med Blue Careers](#)

[Ministry of Shipping](#)

[Scientix](#)

[Archipelagos Institute](#)

[HELMEPA, HCMR](#)

## IV. Malta

### Country Profile Overview

#### Brief socio-geographic context, especially coastal and maritime features

Malta is a small island nation in the central Mediterranean, composed of three main islands: Malta, Gozo, and Comino. Its identity, economy, and environment are deeply tied to the sea.

- **Key maritime activities:**  
Malta has a strong maritime economy including shipping (one of the largest ship registries globally), port services, tourism (especially coastal and cruise tourism), fishing, and emerging sectors like aquaculture and marine services.
- **Geographical setting:**  
The coastline stretches ~196 km and is highly indented, featuring rocky cliffs, small sandy beaches, bays, and natural harbors (e.g., Grand Harbour). Sandy beaches are limited and under pressure from tourism.
- **Environmental features:**  
Malta hosts important marine biodiversity, including seagrass meadows (*Posidonia oceanica*), marine protected areas (MPAs), and Natura 2000 sites. However, it faces challenges such as coastal erosion, marine litter, and habitat degradation.
- **Climate and weather patterns:**  
The country has a Mediterranean climate with hot, dry summers and mild, wet winters. Increasing sea temperatures, extreme weather events, and sea-level rise are emerging threats.

### Educational governance structure

- Malta has a **centralized education system** governed primarily by the Ministry for Education, Sport, Youth, Research and Innovation.
- Policy, curriculum, and standards are set at the national level.
- Schools include state, church, and independent institutions.
- Environmental education is integrated through national curriculum frameworks rather than regional governance.

#### Status of marine policy and ocean literacy integration

- Malta aligns with EU frameworks such as the **Marine Strategy Framework Directive (MSFD)** and Blue Economy initiatives.

- National strategies include marine environmental protection, sustainable fisheries, and maritime spatial planning.
- Ocean literacy is **partially integrated** into:
  - Science and geography curricula
  - Environmental education programs
- NGOs and EU-funded projects play a **significant role** in public awareness (e.g., beach clean-ups, citizen science).
- However, there is **no fully institutionalized, standalone ocean literacy strategy**.

## SWOT Analysis by Area of Focus

### 1. Preserving the Ocean School Projects (Quantity and Quality)

#### Eco-Schools Malta Programme

(Linked to Foundation for Environmental Education)

- **Description:**  
A nationwide program promoting sustainability and environmental awareness in schools, including marine topics such as pollution and biodiversity.
- **Strengths:**
  - Strong participation across schools
  - International framework and recognition
  - Hands-on student engagement
- **Weaknesses:**
  - Marine topics not always deeply emphasized
  - Depends on school initiative and teacher motivation
- **Opportunities:**
  - Expand explicitly into ocean literacy modules
  - Link with UN Ocean Decade initiatives
- **Threats:**
  - Risk of remaining broad environmental focus without marine specialization

#### Nature Trust – FEE Malta Marine Education Initiatives

(Nature Trust - FEE Malta)

- **Description:**  
NGO-led initiatives including coastal clean-ups, marine awareness campaigns, and school outreach programs.
- **Strengths:**
  - Strong NGO expertise and outreach
  - Active citizen science and youth engagement
- **Weaknesses:**
  - Project-based and not systemic
  - Limited long-term curriculum integration
- **Opportunities:**
  - Scale into national Ocean Literacy hubs
  - Strengthen partnerships with schools and ministries
- **Threats:**
  - Funding dependency
  - Volunteer reliance

## 2. Promoting Studies and Blue Careers

### University of Malta Marine and Maritime Programs

(University of Malta)

- **Description:**  
Offers courses in marine biology, oceanography, maritime law, and engineering.
- **Strengths:**
  - Strong academic foundation
  - Links to EU research and Mediterranean networks
- **Weaknesses:**
  - Limited program diversity compared to larger EU countries
  - Small talent pool
- **Opportunities:**
  - Position Malta as a Mediterranean marine research hub

- Expand interdisciplinary blue economy programs
- **Threats:**
  - Brain drain to larger EU markets
  - Limited national funding capacity

## Malta Maritime Sector & Training

(Linked to Transport Malta)

- **Description:**

Training and certification pathways for shipping, port operations, and maritime services.
- **Strengths:**
  - Strong global maritime reputation
  - High employability in shipping sector
- **Weaknesses:**
  - Focused heavily on shipping rather than broader ocean sectors
  - Limited exposure to emerging blue careers (e.g., marine tech)
- **Opportunities:**
  - Diversify into aquaculture, marine conservation, offshore energy
  - Align with EU Blue Economy Strategy
- **Threats:**
  - Over-reliance on shipping industry
  - Automation reducing traditional maritime jobs

## 3. Teacher Training Programs

### EU Platforms (eTwinning & Scientix in Malta)

(eTwinning, Scientix)

- **Description:**

Digital platforms supporting teacher collaboration and STEM education, including environmental themes.
- **Strengths:**
  - Access to EU-wide resources



- Encourages innovation and collaboration
- **Weaknesses:**
  - Ocean literacy not a central focus
  - Participation is voluntary
- **Opportunities:**
  - Integrate marine topics into STEM and climate education
  - Build Mediterranean-focused teacher networks
- **Threats:**
  - Uneven teacher engagement
  - Digital fatigue or lack of time

### **NGO and Project-Based Teacher Training**

(e.g., Nature Trust, Erasmus+ projects)

- **Description:**

Workshops and training sessions on environmental and marine education.
- **Strengths:**
  - Practical, hands-on learning approaches
  - Local relevance (island-specific issues)
- **Weaknesses:**
  - Not standardized across schools
  - Limited scale
- **Opportunities:**
  - Develop national certification in ocean literacy teaching
  - Integrate into teacher CPD frameworks
- **Threats:**
  - Funding instability
  - Dependence on external projects

## **4. Partners and Organizations**

### **Key National and International Actors**

- Ministry for the Environment, Energy and Public Cleanliness
- Transport Malta
- University of Malta
- Nature Trust - FEE Malta
- UNESCO (via Ocean Decade initiatives)
- **Description:**  
A mix of governmental bodies, academia, NGOs, and international partners working on marine sustainability and education.
- **Strengths:**
  - Strong international alignment (EU, Mediterranean region)
  - Active NGO sector
- **Weaknesses:**
  - Fragmented coordination between stakeholders
  - Limited national-scale integration
- **Opportunities:**
  - Establish a National Ocean Literacy Strategy or Council
  - Strengthen cross-sector partnerships
- **Threats:**
  - Overlapping roles and inefficiencies
  - Dependence on EU funding cycles

### References and Citations (indicative)

- Ministry for Education, Sport, Youth, Research and Innovation (Malta)
- Ministry for the Environment, Energy and Public Cleanliness (Malta)
- University of Malta
- Nature Trust - FEE Malta
- Foundation for Environmental Education
- EU Marine Strategy Framework Directive (MSFD)
- EU Blue Economy Strategy
- eTwinning / Scientix

## V. Conclusion

The comparative analysis of Greece, Italy, French Polynesia, and Malta underscores a central insight: the promotion of blue careers within education systems cannot be effectively advanced without a clear, shared, and context-sensitive understanding of existing strengths and weaknesses. Across all participating countries, important assets have been identified, including strong maritime traditions, established higher education programs, active NGO engagement, and alignment with broader regional or international frameworks. At the same time, persistent challenges—such as fragmented policy implementation, limited curricular integration of ocean literacy, insufficient teacher training, and uneven access to opportunities—continue to hinder the full development of blue career pathways.

In this regard, the establishment of common standards for defining and assessing strengths and weaknesses represents a critical methodological and strategic achievement. These standards enable not only cross-country comparison but also internal reflection within each education system. By providing a structured lens through which to evaluate current practices, they empower policymakers, educators, and stakeholders to move beyond isolated initiatives toward more coherent and systemic approaches.

This is particularly significant for remote and island territories, where the stakes are higher and the margins for inefficiency are smaller. In such regions, education systems play a pivotal role in shaping local economies and sustaining communities. The identification of strengths—such as strong community engagement or proximity to marine ecosystems—can serve as a foundation for innovation, while the recognition of weaknesses—such as limited training infrastructure or reliance on short-term projects—highlights areas requiring urgent intervention. In this sense, defining strengths and weaknesses is not only an analytical exercise but a key driver of resilience, enabling islands to transform structural constraints into opportunities for sustainable development.

The development of new school guidelines by project partners represents a forward-looking response to these challenges. These guidelines are designed to address identified gaps, build on existing good practices, and provide schools with practical tools to integrate blue career pathways into their educational offer. Crucially, their implementation through the experimentation phase of the EU-Pacific Blue Education Area marks a shift from theory to practice. This phase will allow for real-world testing, adaptation, and refinement, ensuring that the guidelines are not only conceptually sound but also operationally effective across diverse contexts.

Moreover, the process itself fosters collaboration across regions, bridging European and Pacific perspectives and reinforcing the importance of transnational cooperation in addressing shared ocean-related challenges. By creating a common educational framework while respecting local specificities, the initiative contributes to a more inclusive and interconnected vision of blue education.

Looking ahead, the success of this approach will depend on several factors: sustained institutional commitment, adequate funding, continuous teacher training, and the active

involvement of stakeholders from both the education and maritime sectors. Equally important will be the capacity to monitor and evaluate the impact of the implemented guidelines, ensuring that they effectively contribute to increasing student awareness, participation, and employability in blue careers.

In conclusion, this chapter demonstrates that the systematic identification of strengths and weaknesses is a cornerstone for advancing blue career promotion within education systems. It provides the evidence base necessary for informed decision-making, supports the design of targeted and scalable interventions, and ultimately contributes to the development of a skilled workforce capable of supporting a sustainable blue economy. For island and remote regions in particular, this approach offers a pathway toward greater autonomy, resilience, and prosperity, firmly rooted in the opportunities provided by the ocean.

**BLUE OCEAN**

ERASMUS+ PROJECT



# BLUE OCEAN

## CHAPTER 2 EU-PACIFIC ALLIANCE FOR THE BLUE EDUCATION AREA IN REMOTE SCHOOLS

French Polynesia

**Sékolène D'ORTOLI-GUICHARD – Lycée Diadème Te Tara o Mai'ao**

Co-Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.



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## Introduction

How an alliance of remote schools can shape Blue Career pathways on 3 different scales

Achieving meaningful promotion of ocean-related professions requires a comprehensive transformation at the level of the entire school. Rather than isolated activities, career orientation must become embedded in teaching practices, guidance systems, and community engagement. This is particularly critical in coastal and remote territories such as Tahiti, where the ocean is both a cultural foundation and an economic opportunity.

The EU–Pacific Blue Education Area initiative, illustrated through the collaboration between ISA Conti Eller Vainicher Institute, Igor Vitale Institute, Gozo College, Geniko Lykeio Siteias, and Lycée Diadème Te Tara o Mai'ao, demonstrates how coordinated strategies can reshape educational ecosystems.

We have been building a 3-scale strategy outlined above, embedding the Blue Education Area for remote islands.

How an Alliance of Remote Schools Can Shape Blue Career Pathways Across Three Scales

Achieving a real impact in promoting ocean-related professions requires more than isolated initiatives. It calls for a deep transformation of the school ecosystem, where career awareness becomes embedded in teaching, guidance, and community life. This is especially relevant in remote and coastal regions such as Tahiti, where the ocean is not only part of daily life but also a major economic and cultural driver.

The collaboration between ISA CONTI ELLER VAINICHER ISTITUTO, IGOR VITALE INSTITUTE, GOZO COLLEGE, Geniko Lykeio Siteias, and Lycée Diadème Te Tara o Mai'ao illustrates how a network of geographically distant schools can jointly construct a shared Blue Education Area. This alliance operates across three complementary scales, ensuring both local relevance and long-term sustainability.

## I. SCALE 1 – BUILDING A BLUE PATHWAY FROM THE LOCAL ENVIRONMENT

Building a Blue Career pathway from the immediate environment is not simply a pedagogical choice in remote islands—it is a necessity rooted in geography, culture, and sustainability. Whether in the Mediterranean context of Greece or Malta, or in the vast oceanic spaces of French Polynesia, island communities have historically developed strong traditions of self-reliance. This self-sufficiency is not only economic—through fishing, navigation, or local resource management—but also deeply cultural, shaping how young people perceive work, responsibility, and their relationship to the ocean. In such contexts, education that ignores the local environment risks appearing abstract or disconnected from lived reality. By contrast, grounding learning in the surrounding marine ecosystem—studying local reefs, fisheries, or coastal challenges—anchors knowledge in something tangible and meaningful. This grounding is essential: a student must first understand and value their own environment before they can meaningfully project themselves into broader, even global, career possibilities. When learners recognize that the lagoon, the coastline, or the sea routes they see every day are linked to complex scientific, environmental, and economic systems, their perspective shifts. Self-sufficiency then evolves into sustainability: students begin to see how local practices connect to global challenges such as climate change, biodiversity preservation, or sustainable resource use. From this solid foundation, horizons can expand. A young person who understands their own island's marine ecosystem is better equipped to engage with international opportunities—whether in research, innovation, or policy—without losing their sense of identity. In this way, building from the local does not limit ambition; it enables it, ensuring that future pathways in the Blue Economy are both globally informed and deeply rooted in place.

### A. Integrating ocean themes across all subjects

A powerful way to inspire students is to systematically connect academic content with marine environments and professions. Instead of limiting exposure to specific events, educators can weave ocean-related themes into everyday lessons.

For instance, biology courses may examine coral reef systems or biodiversity loss, while geography lessons might focus on maritime routes or the cultural significance of the sea in Pacific societies. Technology classes could introduce engineering concepts through underwater robotics or environmental monitoring tools.

This interdisciplinary integration reflects the philosophy of European Blue Schools, where the ocean becomes a central learning reference point. By doing so, students encounter marine-related ideas repeatedly, allowing curiosity and interest to grow organically.

Educational psychologists can support teachers in applying motivational methods such as inquiry-driven learning or collaborative projects connected to local marine challenges. In remote areas, linking lessons to nearby ecosystems or indigenous knowledge systems enhances relevance and strengthens students' emotional connection to learning. Contextualized and hands-on experiences have been shown to increase engagement, particularly in scientific and environmental disciplines.

In remote environments, the surrounding ecosystem becomes a powerful educational resource. Instead of treating the ocean as a separate topic, schools integrate it into everyday teaching.

Concrete examples:

At Lycée Diadème Te Tara o Mai'ao, biology classes study local coral bleaching, directly linking theory to nearby lagoons.

In Geniko Lykeio Siteias, geography lessons explore Mediterranean shipping routes, connecting students to maritime logistics careers.

At GOZO COLLEGE, mathematics classes analyze real fishing data, teaching statistics through local industry realities.

This repeated exposure builds familiarity and gradually shapes career imagination.

## B. Promoting hands-on and project-centered learning

Learning through direct experience plays a crucial role in developing both competence and motivation. Schools can create dedicated spaces—physical or virtual—where students engage in practical projects related to the marine world.

Examples include designing aquaponic systems, building environmental monitoring devices, or developing creative solutions to reduce marine pollution. These activities often combine multiple disciplines, reflecting the complexity of real-world challenges.

Participation in competitions or thematic challenges can further stimulate engagement by introducing clear objectives and opportunities for recognition. Field experiences—such as reef exploration, museum visits, or interactions with research teams—offer powerful moments that can shape long-term interests.

Where physical access is limited, virtual simulations and online collaborative projects can provide meaningful alternatives. Structured reflection sessions following these experiences help students connect what they have learned with potential career pathways.

Such approaches not only develop technical knowledge but also strengthen transversal skills like teamwork, adaptability, and problem-solving.

Learning becomes meaningful when students actively create, test, and solve problems.

Concrete examples:

Students design mini aquaponics systems, combining biology, engineering, and sustainability.

A robotics club builds a basic underwater drone to explore lagoon environments.

Art students create exhibitions using recycled ocean plastics, linking creativity with environmental awareness.

Field-based experiences:

Reef observation trips in French Polynesia

Visits to marine research centers in Italy

Coastal ecosystem mapping in Greece

Even when travel is limited, virtual simulations allow students to explore deep-sea environments or research vessels.

### C. Involving families and local communities

In geographically isolated or island contexts, the perspectives of families and communities strongly influence young people's ambitions. Schools must therefore actively engage these stakeholders.

Workshops for parents can highlight the opportunities offered by ocean-related professions, addressing misconceptions and presenting real-life examples of success. This helps build a supportive environment around students, reinforcing their confidence in pursuing such paths. Community-based activities—such as coastal restoration projects, sustainable fishing demonstrations, or environmental awareness events—allow students to apply their learning in real settings while strengthening social bonds. These initiatives demonstrate that marine stewardship is a shared responsibility.

Partnerships with local organizations and businesses are equally important. Internships, job shadowing, and collaborative projects provide direct exposure to professional environments. Even in areas with limited infrastructure, digital tools enable virtual mentorships and exchanges with experts worldwide.

Through consistent support from teachers, families, and community members, students are more likely to transform interest into concrete educational and career goals.

In island contexts, families strongly influence career decisions. Schools therefore extend learning beyond classrooms.

Concrete examples:

Parent workshops explaining careers such as marine biologist, eco-tourism manager, or ocean engineer

Community events like lagoon clean-ups involving students and local fishermen

Demonstrations of sustainable fishing practices led by elders

Work-based exposure:

Internships with local fisheries

Shadowing eco-tourism guides

Virtual mentoring sessions with professionals abroad

This creates a **supportive ecosystem**, where students receive consistent encouragement from all sides.

## II. SCALE 2 – EXPANDING THIS BLUE PATHWAY GRADUALLY

Expanding the “blue pathway” gradually is essential when motivating students from remote island communities—such as those in Italy, Greece, or French Polynesia—to explore blue careers, because their exposure to opportunities is often limited by geography, resources, and access to information. A step-by-step approach allows students to first connect familiar school subjects (like science, geography, or economics) to local marine environments, building relevance and confidence before introducing more complex possibilities such as university programs or international internships. This gradual progression helps reduce the psychological

and logistical barriers associated with leaving home, navigating foreign education systems, or imagining themselves in global careers. It also gives educators time to provide guidance, develop skills (language, digital literacy, adaptability), and involve families and communities in the process, making the transition more culturally and socially acceptable. Ultimately, a phased expansion empowers students to broaden their horizons without feeling overwhelmed, fostering both ambition and resilience while ensuring they remain connected to their island identities and can contribute meaningfully back to their communities.

#### A. Establishing a comprehensive ocean-centered framework

A structured progression ensures that students move from awareness to specialization.

Ocean awareness and career exploration should become defining elements of the school's identity. A structured framework can ensure that students progressively develop knowledge and understanding, from foundational concepts to specialized topics.

Connecting learning to local marine environments or industries enhances relevance and fosters a sense of purpose. A whole-school approach also creates a culture where ocean-related professions are widely recognized and valued.

##### a) Cross-subject projects

Students work on interdisciplinary challenges.

Example:

A project titled "Protect Our Lagoon":

Science: analyze water quality

Geography: map pollution sources

Economics: study tourism impact

Language: present solutions publicly

This mirrors real-world problem-solving.

##### b) From primary to secondary and beyond

The pathway must be continuous.

Example progression:

Primary school: discovering marine animals

Lower secondary: understanding ecosystems

Upper secondary: exploring careers and specializations

Post-secondary: internships or university pathways

This avoids late and rushed career decisions.

##### c) Partnerships with professionals

Direct interaction with experts strengthens realism and motivation.

Examples:

Marine biologists presenting coral restoration projects

Engineers explaining offshore energy systems

Fishermen discussing sustainable practices

In French Polynesia, programs like “a researcher in the classroom” connect students with scientists working in their own environment.

## B. Ensuring structured career guidance

All students should benefit from consistent support in exploring their future pathways. This includes regular counseling sessions, career workshops, and the use of validated assessment tools.

Maintaining individual career portfolios allows students to track their development over time.

Professional guidance helps broaden perspectives and supports informed decision-making.

Short term counseling for the next steps

Long term guidance with scholarship opportunities

Promoting international internships

### A) Short-term counseling (immediate decisions)

Students receive support for:

Choosing subjects

Selecting internships

Preparing applications

Example:

A student interested in the ocean chooses physics and biology after counseling.

### B) Long-term guidance (future planning)

Students explore broader opportunities.

Examples:

Scholarships in marine sciences in Italy

University programs in environmental engineering

Long-term career mapping (5–10 years)

### C) Promoting international internships

Mobility is key in remote regions.

Examples:

A Tahitian student completing an internship in Malta at GOZO COLLEGE

A Greek student joining a marine conservation project in Polynesia

These experiences expand horizons and build confidence.

### C. Building partnerships with the Blue economy

Collaboration with external partners creates direct connections between education and employment. Institutions can engage with research centers, environmental organizations, maritime industries, and higher education providers.

Advisory groups composed of these stakeholders can offer insights, mentorship, and opportunities for students. Such interactions make career pathways more visible and attainable.

Local partnerships

National partnerships

International partnerships

#### A) Local partnerships

Examples:

Fisheries departments

Local NGOs

Eco-tourism operators

Students gain immediate, accessible experience.

#### B) National partnerships

Examples:

Universities

National research institutes

Maritime authorities

These provide structured pathways and certifications.

#### C) International partnerships

The EU–Pacific alliance itself is the strongest example.

Students collaborate across:

Malta

Greece

Italy

French Polynesia

They share projects, data, and cultural perspectives, creating a global Blue identity.

### D. Using digital tools to overcome isolation

Technology plays a crucial role in connecting remote schools with global resources. Online platforms, virtual experiences, and digital collaboration tools expand access to knowledge and professional networks.

In many parts of French Polynesia, geographic isolation is not just a physical reality but also a digital one. Beyond the main island of Tahiti, numerous smaller and more remote islands in

archipelagos such as the Tuamotu or the Marquesas experience unstable or extremely limited mobile network coverage. In some communities, cell phone reception is intermittent, restricted to specific areas, or absent altogether, and reliable internet access may be unavailable or prohibitively expensive. This creates a significant digital divide: students and teachers cannot easily access online educational resources, participate in virtual exchanges, or explore global career opportunities. As a result, their exposure to emerging sectors—such as those linked to the Blue Economy—remains limited, reinforcing a form of educational isolation that mirrors their geographic remoteness.

When connectivity is introduced, however, the transformation is immediate and profound. Access to the internet opens doors to virtual classrooms, international collaborations, and a vast ecosystem of knowledge that was previously out of reach. A student on a remote atoll can suddenly attend an online workshop with a marine biologist in Europe, explore interactive simulations of ocean ecosystems, or participate in joint projects with peers from schools like GOZO COLLEGE or Geniko Lykeio Siteias. Teachers gain access to updated pedagogical materials, training opportunities, and global networks that enrich their practice. Perhaps most importantly, connectivity reshapes aspirations: it allows young people to envision futures beyond their immediate surroundings while still valuing their local environment. In this sense, internet access is not merely a technical improvement—it is a catalyst for educational equity, empowerment, and participation in a global dialogue about the ocean and its sustainable future.

Creating a centralized repository of resources—such as videos, webinars, and career profiles—ensures that both teachers and students can easily access relevant materials.

Promoting interactive tools to access knowledge and virtual classrooms

Implementing virtual exchanges with professionals, marine biologist scientists (UPF's project NARAMA "Un chercheur dans la classe" in French Polynesia)

a) Interactive learning tools

Examples:

Virtual labs simulating ocean ecosystems

Online courses on marine sustainability

Digital mapping tools

b) Virtual exchanges with experts

Example:

Through initiatives like the NARAMA program entitled "Un chercheur dans ma classe" from the UPF university of French Polynesia, students interact live with PHD students and marine scientists studying Pacific ecosystems.

c) Global collaboration platforms

Students co-create projects with peers abroad:

Joint climate studies

Shared presentations

Online innovation challenges

This transforms isolation into global connectivity.

### III. SCALE 3 – BUILDING A SUSTAINABLE SYSTEM FOR FUTURE GENERATIONS

Building a sustainable system for future generations is crucial to guide students from remote island communities—such as those in the Mediterranean or French Polynesia—toward sustainable blue careers, because long-term impact depends on continuity, not one-off initiatives. By training teachers, schools become consistent hubs of knowledge and inspiration, capable of integrating ocean-related topics, sustainability principles, and career pathways into everyday learning. This ensures that students are repeatedly exposed to relevant opportunities and can progressively develop the skills and mindset needed for emerging blue economy sectors. A well-structured system also reduces inequality by giving remote learners access to the same forward-looking perspectives as those in urban centers, helping them envision futures that go beyond traditional or limited local options. Importantly, it fosters innovation rooted in local contexts, empowering students to imagine solutions for their own islands—whether in marine conservation, renewable ocean energy, or sustainable fisheries—while building confidence that they can participate in global networks. In this way, investing in teacher training and systemic support creates a lasting foundation that not only educates but transforms how young people see their potential and their role in shaping a sustainable ocean future.

#### A. Continuous teacher training and collaboration

For systemic change to occur, educators themselves must be equipped and motivated to adopt new practices. Ongoing professional development is therefore essential.

Training programs can focus on integrating career discussions into lessons, applying student-centered teaching methods, and addressing biases that may influence career perceptions. Psychologists specializing in motivation and organizational development can play a key role in delivering these trainings.

Establishing internal coordination structures—such as a dedicated Blue Careers team—helps ensure coherence across initiatives. This group can include teachers, counselors, administrators, and even student representatives, fostering a shared vision.

Collaboration should also extend beyond the school. Networks connecting institutions across Europe and the Pacific enable the exchange of resources, experiences, and culturally adapted practices. The partnership involving the above-mentioned schools demonstrates how international cooperation enriches local implementation.

Ultimately, educators are central figures in shaping students' aspirations, and their support significantly influences career development.

Teachers must evolve alongside the system with a structured progression.

Examples:

Training on project-based learning

Workshops on motivating students toward science careers

Exchanges between partner schools

A “Blue Careers team” within each school ensures coordination.

### B. Creating and sharing long-term resources

Technology plays a crucial role in connecting remote schools with resources but also in helping teacher create new evolving materials.

Creating a centralized repository of resources—such as videos, webinars, and career profiles—ensures that both teachers can easily share and adapt materials. Especially with the blue ocean website.

Digital platforms allow knowledge to grow over time.

Examples:

Shared lesson plans across countries

Recorded expert talks

Student project databases

The Blue Ocean platform becomes a living library accessible to all partners.

### C. Monitoring progress and maintaining engagement

Sustained impact requires continuous monitoring and improvement. Schools should define indicators to measure student interest, participation, and progression toward ocean-related pathways.

Regular evaluation processes, combined with feedback from students and staff, help identify effective practices and areas for enhancement. Sharing results with the community reinforces commitment and celebrates achievements.

Evaluation ensures the initiative remains effective.

Examples of indicators:

Increase in students choosing science subjects

Participation in marine-related projects

Number of internships completed

Annual reports celebrate progress and guide improvements.

### D. Expanding guidance systems over time

A structured career guidance framework is essential, especially where students have limited exposure to diverse professions. Schools should develop or reinforce counseling services that provide both individual and group support.

Qualified professionals—such as psychologists or trained advisors—can administer tools that evaluate interests, abilities, and values. These instruments help students better understand their personal profiles and how they relate to ocean-based professions. For example, a student showing strong investigative and practical tendencies may be guided toward roles such as marine technician or environmental researcher.

In addition to quantitative tools, counselors can use reflective conversations to explore motivation and reduce uncertainty about future choices. Importantly, guidance should begin early in schooling and continue progressively, rather than concentrated in final years.

Data collected from these assessments can also inform school planning. If many learners express interest in marine ecosystems, schools can introduce specialized activities, invite

experts, or develop thematic clubs. Likewise, identified skill gaps can lead to targeted training initiatives.

Establishing a culture where all students receive career support normalizes exploration and broadens aspirations beyond traditional local pathways.

As the program matures, guidance becomes more sophisticated.

Examples:

Personalized career pathways for each student

Early identification of talents and interests

Creation of specialized clubs (marine robotics, ocean conservation)

Data collected helps schools adapt:

If interest in marine biology rises, you can create a dedicated program.

If technical skills are lacking, you can introduce STEM workshops.

## Conclusion

To conclude, these approaches, implemented through the EU–Pacific collaboration demonstrate how education systems can evolve to support sustainable futures. By aligning pedagogy, guidance, and community engagement, schools can play a transformative role in preparing young people for meaningful participation in the Blue Economy.

The collaboration between ISA Conti Eller Vainicher Institute, Igor Vitale Institute, Gozo College, Geniko Lykeio Siteias, and Lycée Diadème Te Tara o Mai'ao demonstrates that geographically distant schools can move beyond isolation to co-create a shared Blue Education Area grounded in cooperation and innovation. As highlighted by these schools, distance does not separate us—it connects us through a common ocean and a shared responsibility to prepare our students for its future. Working across local immersion, structured expansion, and long-term sustainability, they show that when pedagogy, guidance, and community engagement are aligned, education systems can evolve to support meaningful, future-oriented pathways. By learning from one another and building together, we enable our students not only to imagine but to actively shape sustainable blue careers. This collective effort confirms that remote schools are not peripheral—they are interconnected innovation hubs where geographical constraints are transformed into opportunities, empowering new generations to both protect and benefit from the ocean that defines their lives.

With the comprehensive analysis of Italy, Greece, French Polynesia, and Malta now completed, it is possible to say that remote schools are not isolated—they are interconnected innovation hubs.

By working across three scales— local immersion, structured expansion, and long-term sustainability, these institutions are building a new educational model where students can see, explore, and pursue meaningful futures within the Blue Economy.

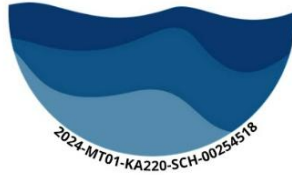
Through aligned teaching, guidance, partnerships, and technology, remote schools can transform geographical constraints into powerful opportunities—preparing new generations to both protect and benefit from the ocean that surrounds them.



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**BLUE OCEAN**

ERASMUS+ PROJECT



# BLUE OCEAN

## CHAPTER 3

### **SYSTEMIC SCHOOL STRATEGIES TO PROMOTE INTEREST TOWARDS BLUE CAREERS**

***The Role of Career Consultancy and Orientation Offered by Work &  
Organizational Psychologists***

Igor Vitale International - ITALY

Co-Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

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### 1. Introduction. Blue Education for Coastal and Remote Communities

Blue economy includes the range of marine and maritime careers in fields such as ocean science, marine conservation, fisheries, shipping, and coastal tourism. These Blue Careers are increasingly important for sustainable development: in Europe alone, the Blue Economy directly generates nearly 5 million jobs and 16% of Europeans live along coastlines (European Commission, “*Network of European Blue Schools*”). In Pacific Island nations, the ocean economy is even more critical, contributing a significant share of GDP and employment (for example, marine tourism accounts for ~40% of Fiji’s GDP and ~35% of Palau’s) (The Diplomatic Affairs, 2025). Yet, studies show many young people (and not only) lack awareness of the ocean’s importance and the opportunities it offers (European Commission, “*Network of European Blue Schools*”). This knowledge gap often translates into low student interest in blue sectors. So, bridging this gap is the main goal of our project.

In this context, we will focus on Work and Organizational Psychology (W&O Psychology); indeed, this psychological sector offers tools to help schools cultivate student motivation for Blue Careers in a systemic way. A systemic approach means implementing school-wide strategies, involving curriculum, culture, and multiple

stakeholders (students, teachers, families, community, and industry). So, this chapter examines how career consultancy and orientation services, guided by W&O psychologists, can drive such systemic change. We review relevant psychological and organizational models of motivation, highlight best practices for career guidance in remote and coastal settings, and propose evidence-based strategies for schools. In addition, we present **five operational guidelines** for mainstreaming the Blue Education Area across EU-Pacific contexts, based on psychological best practices. Finally, we include a psychometrically-grounded **10-item Impact Measurement Scale** to assess student interest in Blue Careers, which educators and psychologists can use to evaluate and refine their interventions.

## 2. The role of work & organizational psychologists in career orientation

Work & Organizational Psychologists (WOPs) are experts in human behavior in work settings, including how individuals develop career interests, make job choices, and adapt to organizational environments. In the school context, WOPs (in collaboration with school counselors and teachers) can serve as *career consultants*, bridging the gap between education and the world of work. In fact, research shows that the presence of trained career counselors/psychologists has tangible benefits - one study found that adding one school counselor can boost college enrollment by 10 percentage points (Brookings, 2019), underscoring the impact of professional guidance on student transitions.

Their role is especially important in remote or insular schools that may lack exposure to diverse professions.

In general, WOPs can support these schools by identifying emerging opportunities in the Blue Economy and translating industry needs into educational guidance. For instance, WOPs can inform teachers and students about new career paths in marine technology, renewable ocean energy, or sustainable fisheries, helping remote communities see a future in these fields. Furthermore, they are crucial in recognizing and addressing psychological barriers that students from isolated communities might face when considering blue careers. These barriers can include fear of leaving one's home island, lack of role models in science, or low self-efficacy ("*I'm not sure I can succeed as a marine biologist*"). In this context, WOPs can apply motivational and counseling techniques to build resilience and growth mindset in students, encouraging them to pursue aspirations beyond local stereotypes. They also can promote inclusivity and diversity, ensuring girls and underrepresented groups in these regions are actively encouraged to explore marine and maritime fields; this is important, given the noted lack of diversity in ocean science careers (Windleharth, Holladay, & Katagiri, 2023). Finally, WOPs can help by using psychometric tools (described later) to help students in coastal areas discover their interests, strengths, and values related to Blue Careers.

Indeed, especially in the context of our project (but not only) WOPs will be trained to administer and interpret vocational interest inventories, personality assessments, and aptitude tests, ensuring that even in small island schools, each student gets personalized career orientation.

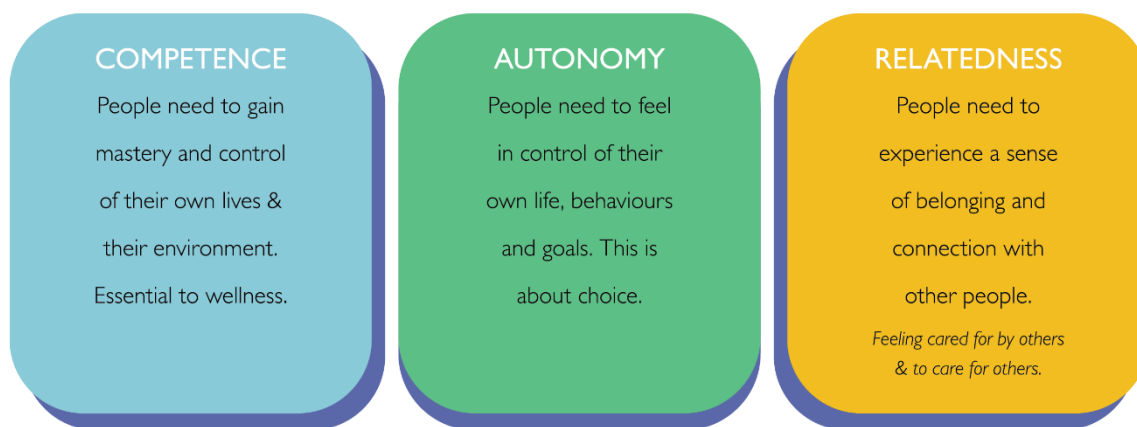
### 2.1. Psychological models driving student motivation for blue careers

Promoting student interest in any career domain requires understanding the psychology of motivation and vocational choice. Several established **theoretical models** can guide the development of interventions and orientation programs for Blue Careers:

- **Self-Determination Theory (SDT):** SDT is a theory of human motivation positing that individuals thrive and develop intrinsic interest when **three basic needs** are met (Deci & Ryan, 2012): **autonomy** (a sense of volition and ownership), **competence** (feeling effective), and **relatedness** (connection to others). In educational settings, SDT suggests that students will be more motivated to explore Blue Careers if the learning environment supports these needs. For example, giving students choice and agency in projects (autonomy), teaching marine topics in a way that builds mastery and confidence (competence), and linking ocean issues to students' community and cultural identity (relatedness) all fuel *intrinsic motivation*. Research in STEM education shows that when teachers support these needs, students internalize their learning, experience more joy and value, and show greater persistent interest in the subject (Chiu, 2023). Applying SDT to Blue Education means designing activities that allow student-led exploration of ocean topics, competence-building through hands-on experiments or citizen science (e.g. monitoring local water quality), and nurturing a sense of belonging - such as connecting students with local marine professionals or peers in other islands (creating a community of practice). This intrinsic drive is crucial because interest rooted in personal values and enjoyment tends to be sustained over time, even in the face of challenges (Chiu, 2023).

# self-determination theory

HUMAN BEINGS HAVE THREE BASIC NEEDS:



Based on the work of Richard Ryan and Edward Deci.

- **Social Cognitive Career Theory (SCCT):** SCCT (Lent, Brown & Hackett, 2002) provides a framework specifically for career interest development, drawing on Bandura's social cognitive theory. SCCT identifies **self-efficacy beliefs** ("Can I do this?"), **outcome expectations** ("What happens if I do this – will it be rewarding?"), and **personal goals** as key factors that shape career interests and choices (Windleharth, Holladay, & Katagiri, 2023). According to SCCT, students develop interest in a field (like marine science) when they feel confident in related activities and expect positive outcomes (e.g. interesting work, good pay, ability to help the community). Thus, to boost interest in Blue Careers, school strategies must build **self-efficacy** in relevant skills and **expose students to positive outcomes** of those careers. For instance, a student in a coastal village may doubt their ability to become an ocean engineer due to lack of examples. Through SCCT-informed interventions, a psychologist might arrange hands-on robotics workshops (mastery experience to build self-efficacy), show videos of successful Pacific Islanders in marine engineering (vicarious learning to enhance beliefs and outcome expectations), and facilitate mentoring so that encouragement and feedback are given (social persuasion). Such experiences align with Bandura's four sources of self-efficacy and have been shown to increase interest and goal-setting in that domain. A recent qualitative study applying SCCT to marine science careers found that early **informal learning experiences** (like hobbies of snorkeling or visiting aquariums) and participation in ocean-related recreation were powerful drivers of career interest, whereas barriers like high education costs or limited job availability could deter youth (Windleharth, Holladay, & Katagiri, 2023). These findings underscore SCCT's point that interest blossoms when supportive experiences outweigh the barriers. Schools can thus employ SCCT by proactively providing positive, enriching ocean experiences (field trips, science clubs, competitions) and addressing perceived barriers (financial

literacy, scholarship information, local job creation) to nurture and sustain Blue Career aspirations.

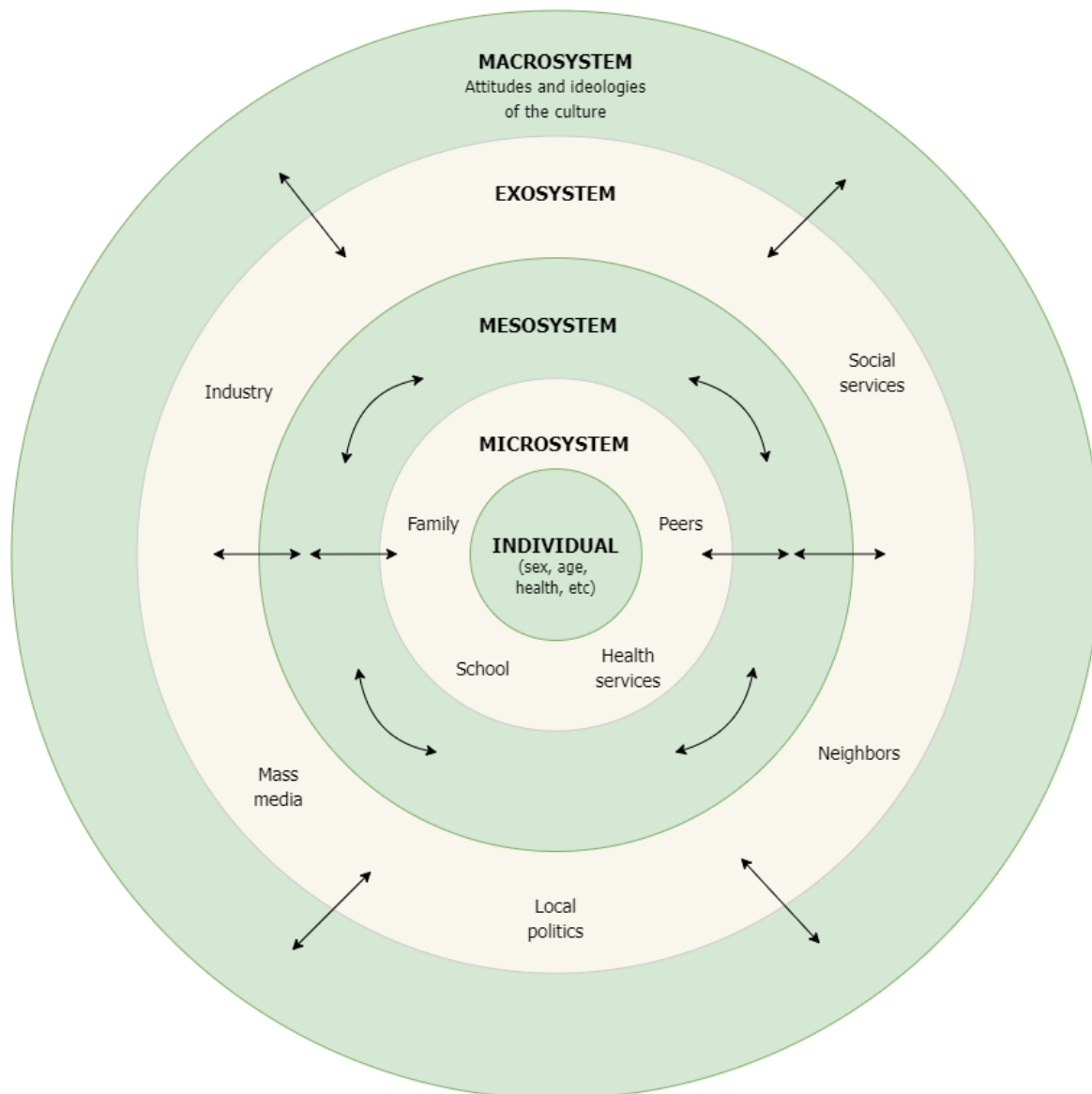
- **Holland's RIASEC Vocational Interests:** John Holland's theory of career choice (1997) is a trait-factor model that categorizes both people and work environments into six interest types: **Realistic**, **Investigative**, **Artistic**, **Social**, **Enterprising**, **Conventional** (RIASEC).



The premise is that career satisfaction and interest are highest when there is a good **person-environment fit**, meaning individuals choose occupations matching their predominant personality/interest type. This model can be a useful tool in Blue Career orientation. Many ocean-related jobs correspond to certain Holland types: for example, a marine biologist or oceanographer would appeal to *Investigative* types who enjoy science and research, a scuba diving instructor or marine park ranger might attract *Realistic* types who prefer hands-on outdoor work, and an environmental campaign manager could fit an *Enterprising* or *Social* profile (leading initiatives, educating communities). By helping students identify their RIASEC profile using interest inventories, work psychologists can guide them to blue professions that resonate with their intrinsic interests. Moreover, exposing students to the **diversity of roles in the Blue Economy** expands their perception beyond a one-size-fits-all notion of “marine career.” Holland’s theory reminds educators to showcase varied pathways - from creative roles (e.g. marine illustrator or nature photographer, aligning with Artistic interests) to analytical roles (e.g. ocean data scientist, aligning with Investigative) - so that each student can “find themselves” in the blue sector. In practice, career counselors in schools can utilize RIASEC-based tools (like the O\*NET Interest Profiler or Holland Code assessments: <https://www.truity.com/test/holland-code-career-test>) to spark discussions: for instance, a student who scores high on Social and Artistic might be intrigued to learn about careers like environmental education or crafting sustainable seafood products in coastal communities. Aligning career options with personal interest types not only boosts motivation but also follows best-practice in vocational psychology, which holds that personality-career match is linked to higher persistence and achievement in that field.



- **Systems and ecological approaches:** Modern career development theories also emphasize that a student's career choice is influenced by a system of interrelated factors - family, school, community, culture, and economic context (an application of Bronfenbrenner's ecological systems theory to career development). Bronfenbrenner's ecological systems theory, in fact, proposes that a child's development is influenced by various interconnected environmental systems. These systems range from the immediate surroundings (like family and school) to broader societal structures and cultural contexts. The theory emphasizes how these systems interact and affect each other, shaping a child's growth and behavior. The Five Systems are represented in the image below and here explained:
  1. **Microsystem:** this is the child's immediate environment, where they have direct interactions. It includes family, school, peers, and neighborhood.
  2. **Mesosystem:** this system encompasses the connections and interactions between different microsystems. For example, the relationship between a child's parents and teachers, or how experiences at home affect performance at school.
  3. **Exosystem:** This system includes settings that indirectly affect the child, even though they are not directly involved in them. Examples include a parent's workplace, the local government, or community resources.
  4. **Macrosystem:** This system represents the broader cultural context, including cultural values, customs, laws, and social conditions.
  5. **Chronosystem:** This system encompasses the dimension of time, including changes and transitions in the child's life and their environment over time, such as family structure changes or historical events.



*Bronfenbrenner's ecological systems theory*

For remote and island schools, this perspective is crucial. It means that promoting Blue Careers cannot rely only on changing the student's mindset; it must also engage **the surrounding environment**. Psychological models like the **Systems Theory Framework (STF)** (McMahon & Patton, 2018) encourage looking at all levels: e.g., how school policy (exosystem) supports career guidance, how teachers and peer culture (microsystem) value or talk about marine jobs, how parent attitudes or local traditions (mesosystem) come into play, and even how national Blue Economy policies or labor market trends (macrosystem) affect student opportunities. A systemic intervention might involve community awareness sessions (to get parents on board with the idea that Blue Careers are viable and prestigious), industry partnerships (so local employers become part of the guidance system, offering internships or talks), and virtual exchanges between EU and Pacific classrooms (broadening cultural horizons and peer support networks). These systemic strategies are informed by organizational psychology as well - treating the **school as a learning**

**organization** that adapts and responds to its environment. By applying an ecological lens, W&O psychologists help ensure that the push for Blue Careers is not happening in a vacuum, but is reinforced by a supportive community and policy context.

In summary, these models - SDT focusing on intrinsic motivation, SCCT on self-efficacy and learning experiences, Holland's RIASEC on interest fit, and systems theory on contextual influences - provide a robust theoretical foundation. They guide us to create learning experiences that make Blue Careers **appealing** (sparking interest and joy), **attainable** (building confidence and skills), and **relevant** (connecting to personal and cultural values). The next sections translate these insights into concrete school strategies.

### 3. SWOT analysis of at best practices, guidelines and school regulations for the promotion of blue careers in Italy

In this section, we examine ten Italian educational practices and policies aimed at promoting careers in the Blue Economy, with a focus on secondary and vocational education. Each initiative is analyzed through a SWOT framework, highlighting its **Strengths (S)**, **Weaknesses (W)**, **Opportunities (O)**, and **Threats (T)**.

#### 1. PCTO - Work-Based Learning in Blue Economy Sectors

Percorsi per le Competenze Trasversali e l'Orientamento (PCTO) is the national work-based learning program for upper secondary students, formerly known as alternanza scuola-lavoro. Schools partner with organizations (e.g. marine research institutes, ports, maritime companies) to provide students with internships or project-based experiences in Blue Economy fields. The goal is to integrate classroom knowledge with practical workplace skills in areas like oceanography, marine biology, nautical engineering, and coastal tourism (Istituto nazionale di oceanografia e di geofisica sperimentale, [ogs.it](https://ogs.it)).

- **S:** Mandated nationwide, ensuring broad student exposure to real work environments. When applied to Blue Economy, PCTO leverages Italy's rich maritime industries for learning - e.g. students can intern at ports or research centers, gaining scientific and technical skills in oceanography, marine geosciences, and related fields (Istituto nazionale di oceanografia e di geofisica sperimentale, [ogs.it](https://ogs.it)).
- **W:** Quality and relevance of placements vary. Not all schools, especially inland ones, have easy access to Blue Economy partners. There are also concerns about safety and oversight after incidents in work-based learning, which have raised public scrutiny (Orizzontescuola, 2023).
- **O:** Strong potential to orient more youths toward marine careers by expanding partnerships (e.g. with marine parks, aquaculture farms, shipping companies). Also, PCTO experiences in blue sectors can inspire students to pursue specialized studies or vocational training in the field.



- **T:** Negative perceptions due to isolated accidents or poor experiences happened in Italy could reduce student and parental support for PCTO (Orizzontescuola, 2023). If maritime industries face downturns, opportunities for placements might shrink. Without continuous safety insurance, policy support and funding (again, for insurance or for transport, etc.), schools might limit off-campus activities.

## 2. Nautical Technical Institutes (Istituti Tecnici Nautici)

Italy's technical high schools for "Trasporti e Logistica" – formerly known as Nautical Institutes – have long prepared students for maritime professions. These secondary schools offer specialized tracks such as ship navigation (Conduzione del mezzo navale) and marine engine maintenance (Conduzione di apparati e impianti marittimi), as well as shipbuilding (Costruzioni navali). Graduates can directly qualify as cadet officers (deck or engine) after completing required trainings (e.g., [informagiovanioroma.it](https://informagiovanioroma.it)). The curriculum combines general education with nautical science, navigation, meteorology, logistics, and English, reflecting the needs of maritime industries.

- **S:** Established network of schools with experienced faculty and industry-aligned curricula. They supply a steady pipeline of entry-level professionals (officers, technicians) to the shipping and boating sector. The program's structure (five-year diploma with maritime specializations) is tailored to meet international maritime standards, giving students a clear route to professional certifications (for reference: [informagiovanioroma.it](https://informagiovanioroma.it)). Strong practical orientation (simulations at sea, mandatory basic safety courses) builds relevant competencies.
- **W:** Being a traditional pathway, it can be slow to update curricula for emerging blue sectors (e.g. renewable marine energy, advanced digital navigation systems). Also, not all coastal regions have such institutes, and inland regions lack similar programs, possibly limiting accessibility.
- **O:** Modernizing these schools to incorporate sustainability and new Blue Economy topics (such as ocean environmental monitoring, maritime robotics) could attract more students and better align with Blue Growth trends. EU and regional funds can support upgrading equipment (e.g., simulators, labs) and teacher training. Partnerships with the Navy, Coast Guard, or private companies could expand apprenticeships or dual-training schemes, enhancing student employment prospects.
- **T:** Demographic decline or competition from other education paths could reduce student intake. If the maritime job market shifts (automation in shipping, fewer seafaring jobs), graduates may find it harder to secure roles at sea.

## 3. ITS "Blue Academies" - Advanced Technical Courses for Maritime Careers

Istituti Tecnici Superiori (ITS) are two-year post-secondary vocational academies. Several ITS foundations in Italy specialize in the Blue Economy, often called “Accademie del Mare” or Blue ITS Academies. For example, the **Accademia Italiana della Marina Mercantile** ([Accademia Marina Mercantile - Settore Marittimo Portuale](#)) and the **Fondazione ITS G. Caboto** ([ITS Fondazione G. Caboto ~ Un' opportunità sulla tua rotta](#)) offer high-tech programs for merchant marine officers, port logistics managers, cruise hospitality staff, and naval technicians. These programs, developed with industry input, lead to a “Higher Technician” diploma and boast very high job placement rates (often above 90% within a year) (Città della Spezia, 2025; for reference: [cittadellaspezia.com](#)).

- **S:** Strong industry linkage by design - companies and port authorities are directly involved in governance and training. This results in curricula that match labor market needs and internships that frequently turn into job offers. For instance, the Accademia Marina Mercantile reports post-diploma employment rates around 97.5%, thanks to close collaboration with maritime and logistics firms (Città della Spezia, 2025; for reference: [cittadellaspezia.com](#)). ITS courses are practice-oriented (at least 30% of instruction by industry experts) and often free for students, supported by public funds, ensuring inclusion. They effectively address the skills gap in maritime transport, shipbuilding, and port operations.
- **W:** Admissions are competitive, and not all interested students secure a spot. Geographic distribution is uneven; many are concentrated in maritime hubs (Genoa, Naples, Gaeta), potentially disadvantaging students from other areas.
- **O:** The 2022 reform elevating ITS to “ITS Academy” status and increased funding presents an opportunity to expand Blue Economy offerings. New courses (e.g. in sustainable nautical design, marine biotechnology or coastal tourism management) can be launched in regions like Puglia, Sicily, etc., capitalizing on local Blue Economy niches. There is also scope for internationalization: ITS academies could form networks with similar institutions abroad, allowing student exchanges or joint credentials, thereby broadening learners’ horizons in the global maritime sector.
- **T:** The ITS model’s success depends on continued financial support and industry engagement. Economic downturns or shifts (e.g. reduced cruise industry activity, automation in ports) could reduce industry involvement or demand for certain skills. If government priorities change, funding might be reallocated, imperiling niche courses. Additionally, competition from new university programs in Blue Economy (which offer an academic alternative) might draw some students away, possibly undermining the vocational route if not differentiated well.

#### 4. European “Blue Schools” Initiative (Ocean Literacy in Curriculum)

Italy participates in the European Blue Schools network, an EU and UNESCO-IOC initiative to embed ocean literacy into school curricula (for reference: [Join the Network](#))

[of European Blue Schools - European Commission](#)). Schools become “Blue Schools” by developing ocean-related projects and meeting criteria set by the EU4Ocean coalition. The aim is to foster understanding of how our lives are connected to the ocean and to promote sustainable use of marine resources. For instance, all schools on Italy’s Elba Island joined the network, making Elba the first territory with 100% Blue Schools, considered a model for others (Anter, 2024; for reference: [anteritalia.org](#)). Teachers are supported with a step-by-step guide of ideas and tools to implement ocean topics across subjects.

- **S:** Enhances interdisciplinary learning and student engagement through real-world marine issues. Italian schools gain access to a rich repository of resources and become part of a prestigious EU-certified network, which can boost their profile. This initiative also aligns with UNESCO’s Ocean Decade goals, ensuring schools contribute to global sustainability awareness.
- **W:** Participation is voluntary; it relies on motivated teachers and school leaders. Without dedicated hours in the formal curriculum for ocean topics, activities may be extracurricular and reach only a subset of students. Some schools (especially inland) might struggle to find context or partners for marine projects, potentially limiting the depth of engagement. Additionally, the program’s impact hinges on continued external support (training, materials), which if lacking could result in superficial implementation.
- **O:** The Blue Schools framework can be leveraged to introduce new content into science, geography, and civics classes nationally. Italy could develop its own complementary “Blue Education” certification or award for schools, spurred by the EU model.
- **T:** If EU support wanes after 2025, schools might lose momentum or resources to continue. There’s also the risk that activities focus only on environmental aspects and do not highlight career pathways, thus missing the workforce development angle unless consciously included.

## 5. National Sea Day in Schools (Giornata del Mare)

Since 2018, Italy officially recognizes April 11 as the “Giornata del Mare” in schools (Redazione nautica, 2025; for reference: [nautica.it](#)). This annual Sea Day, driven by an alliance of the Ministry and maritime stakeholders (like Confindustria Nautica and the Italian Navy), is dedicated to raising students’ awareness of the cultural, economic and professional importance of the sea. Schools across the country - of all types and not just coastal - organize educational activities, often with external experts. For example, the 2025 national event in Ostia involved over 1,000 students from 20 schools engaging in workshops, hands-on demonstrations, and a conference on job opportunities in boating and nautical sports (ibidem).

- **S:** High visibility initiative backed by law, ensuring that maritime culture is celebrated in the education system. It mobilizes a broad range of actors: Coast Guard officers, marine scientists, yacht captains, shipyard engineers, and more,



directly interact with youth. This exposure can ignite students' interest in marine careers and convey the diversity of maritime professions. The day's activities often include safety at sea and environmental education, building a well-rounded "ocean citizenship" ethos. Moreover, distributing engaging materials (e.g. the animated video "*Il Mare vissuto dal Mare*" to all high schools) extends the impact beyond the event itself.

- **W:** As a one-day celebration, its depth is limited - follow-up is needed to translate inspiration into sustained learning or career pursuit. The quality of activities can vary by location; not all schools have equal access to maritime experts or facilities. There's a risk of being symbolic if not tied to curriculum or guidance (e.g., a fun day that students enjoy but soon forget).
- **O:** The Giornata del Mare could serve as a springboard for longer-term programs, such as launching "sea weeks" or integrating maritime modules in the following weeks. It also presents an opportunity to identify and mentor enthusiastic students - e.g., through contests or projects whose winners get visits to ports or maritime academies. The event's multi-stakeholder nature could evolve into a permanent network linking schools with maritime employers for career talks or internships beyond the day itself. Additionally, including Blue Economy topics (like sustainable blue innovation, marine biotech careers) in the Sea Day agenda can broaden students' understanding of future job possibilities.
- **T:** The initiative depends on continued commitment from sponsors and institutions; any lapse (funding cuts or organizational issues) could diminish its scale or frequency. If the events are not refreshed annually, there is a threat of "fatigue" where schools and students see it as routine and pay less attention. Also, any safety incidents during interactive demos (e.g., boating try-outs) or controversy (e.g., if seen as industry propaganda) could provoke public backlash, threatening the program's reputation.

## 6. BLUE KEP – Cross-Border Maritime Student Mobility

**BLUE KEP** (Blue Knowledge Exchange Program) was an EU-funded pilot project (Interreg Italy-Croatia, 2018–2019) facilitating student mobility and curriculum harmonization among Italian and Croatian nautical institutes. It enabled 38 students from 12 technical and nautical high schools to undertake 45-day study-abroad and internship experiences in the neighboring country (for reference: [informest.it](https://informest.it)). The project focused on the "sea supply chain" training, aiming to standardize competencies and promote innovation in maritime education across the Adriatic. Students earned recognition of skills and credit for their periods abroad, thanks to agreements between the participating schools and education authorities.

- **S:** Pioneering example of internationalizing vocational education at secondary level. It strengthened foreign language skills, cultural adaptability, and introduced students to different port operations and technologies, enhancing their overall competence. The cross-border partnership also yielded common



guidelines for mobility programs (covering selection, skill recognition, etc.), which can be reused for future exchanges. Also, involving regional governments and agencies, BLUE KEP built a strong institutional support network. The success (documented by positive student/teacher feedback and a formal Infoday sharing results) showcased the feasibility of extending Erasmus-like mobility to the high school vocational context in maritime studies.

- **W:** Being a time-bound project, it reached a small cohort; scaling to the entire network of schools is challenging without sustained funding. Differences in national curricula meant not all training content perfectly matched, requiring extra coordination for credit recognition. There were also logistical hurdles (visa paperwork, travel costs - though funded, it required significant planning). Such programs heavily rely on committed staff; not all schools have the capacity to send students abroad for extended periods during the school year.
- **O:** The project demonstrated a model that could be institutionalized: e.g., an ongoing exchange program between Adriatic maritime schools or even a broader “Erasmus for Blue High Schools” in Europe. Its framework for skill standardization could contribute to a transnational curriculum in certain maritime subjects, facilitating student mobility and mutual diploma recognition in the long term. Regions could capitalize on this by establishing dual-diploma agreements (Italy-Croatia or beyond) for naval technicians. The positive publicity of BLUE KEP can encourage more schools and students to participate in future, increasing the talent pool with international experience.
- **T:** Continuity is at risk if new funding isn’t secured; once the initial project ended, momentum could be lost. Educational authorities might be reluctant to send minors abroad without the structure of a funded project, citing safety or administrative concerns. Additionally, if not actively maintained, the partnerships between schools may fade as staff turnover. There’s also the broader threat of uneven support - if one country’s policy shifts away from vocational mobility, the bilateral nature of the program would suffer.

## 7. MareSkill - Cross-Border Blue Skills Development

**MareSkill** is a recent initiative (Interreg Italy-Croatia 2021–2027) aiming to bridge the skills gap in the Blue Economy labor market through innovative education and training program (for reference: [arti.puglia.it](https://arti.puglia.it)). It builds on prior experiences (like the InnovaMare Academy) to design pilot courses for upskilling and reskilling in sectors such as maritime technology, coastal tourism, quality aquaculture, and offshore renewable energy. With a consortium of Italian and Croatian universities, regional agencies (e.g., Apulia’s ARTI), and innovation centers, MareSkill is creating a “transboundary knowledge hub” to promote blue skills development in both formal education and professional training.

- **S:** Addresses both current workforce needs and future skill requirements in emerging blue sectors. By identifying skill gaps through stakeholder

engagement, the project ensures training content is demand-driven. It encourages educational innovation - e.g., new methods for teaching circular economy, digital transformation in maritime contexts - which can modernize existing curricula. The cross-border collaboration adds value by pooling expertise and resources from two countries, promoting standardization of qualifications and mutual learning. Pilot courses and the planned knowledge platform will leave tangible outputs that can be scaled or integrated into regional education systems.

- **W:** As a project, its impact is limited unless outcomes are mainstreamed into regular programs. Universities and institutions involved might face challenges integrating pilot courses for credit or sustaining them after project funding. The broad scope (multiple sectors and objectives) could dilute focus; ensuring depth and quality in each pilot course requires significant coordination. There is also a potential disconnect between the project's higher-education/professional training focus and secondary school level - the direct benefit to secondary vocational students may be indirect unless specific bridges (like involving technical institutes) are built.
- **O:** MareSkill provides a framework that regional authorities could use to reform or enhance vocational education in Blue Economy fields. For example, Apulia could adopt successful pilot modules (say, on offshore energy basics or smart aquaculture) into their ITS or technical school offerings. The creation of a transnational "Blue skills hub" could evolve into a permanent center of excellence, attracting EU Blue Economy funds beyond Italy-Croatia. It also offers the opportunity for public-private partnerships; companies in blue sectors might continue sponsoring courses developed under MareSkill to keep training their prospective workforce.
- **T:** Dependence on EU funding means any delays or changes in Interreg priorities can hamper progress. If the designed courses do not find institutional "homes" (e.g., accredited in university programs or recognized by employers), they risk becoming orphan outputs.

## 8. "Percorsi nel Blu" - Ocean Literacy & Citizen Science in Schools

**Percorsi nel Blu** ("Blue Paths") is an Italian grassroots best practice that has gained international attention for integrating Ocean Literacy and Marine Citizen Science into school curricula (Mioni, 2022; for reference: [ejournals.epublishing.ekt.gr](https://ejournals.epublishing.ekt.gr)). Initiated in 2011 by a science teacher in La Spezia, Liguria, it established a network of schools, researchers, and local institutions to engage students (from kindergarten through high school) in hands-on coastal and underwater research activities. Students progressively build knowledge in marine biology, ecology, and conservation, participating in data collection at coastal sites (e.g., within the Pelagos Sanctuary for Mediterranean marine mammals) as part of real scientific campaigns. The project aligns with UN Sustainable

Development Goals and promotes STEM skills through experiential learning in a long-term “vertical” curriculum approach.

- **S:** Highly innovative educational model that breaks silos between formal education and real research. By involving students in authentic marine science (identifying species, monitoring water quality, etc.), it significantly boosts their interest in STEM and environmental sustainability. The longevity of the program (covering all grades) ensure continuity - younger students aspire to activities the older peers do, creating a pipeline of motivated learners. It also yields scientific value (e.g., records of marine species, some potentially novel) which gives students a sense of contribution and can be a point of pride for schools.
- **W:** Being driven largely by individual teachers and ad-hoc partnerships, it may lack institutionalization. Not all schools have educators with the expertise or coastal access to replicate such extensive programs.
- **O:** The “Blue Paths” model could be formally adopted or supported by education authorities (e.g., a toolkit for Ocean Literacy in all coastal school districts, based on this project’s methods). Its citizen science aspect aligns with the EU’s push for open science and could attract funding or sponsorship (from foundations or EU Ocean Decade grants) to expand into a nationwide program. There is also opportunity to integrate with vocational pathways - for example, linking high school participants with marine institutes or university marine biology departments for further study or mentorship, thereby directly channeling them into blue careers.
- **T:** The continuity depends on the dedication of specific individuals; retirements or turnover could threaten the program’s survival. Moreover, without official recognition, such projects might be viewed as extra-curricular and be vulnerable if curricula become overloaded with “core” subjects.

## 9. BAPSI - Blue Academy for Seafood Industry Professionals

**BAPSI** (Blue Academy for Professionals of the Seafood Industry) was a transnational project (2019–2022) Involving Italy, Spain, and Portugal, funded under the EU’s Blue Economy calls (for reference: [cinea.ec.europa.eu](https://cinea.ec.europa.eu)). It tackled the need for upskilling in the fisheries and seafood sector by creating a “Blue Academy” program of 12 specialized courses and practical experiences for university students and young professionals. The curriculum covered legal, economic, and production aspects of the seafood industry, aligning with sustainability goals (EU Farm-to-Fork strategy) and new technologies in aquaculture and processing. Italian partners (led by industry association Assoittica and universities like Sapienza and Federico II) played a key role in designing and delivering these courses.

- **S:** Directly addresses a niche – the seafood industry – which is significant in Italy (fishing, aquaculture, processing) yet often faces a skills gap. By facilitating dialogue between industry and academia, BAPSI ensured that the training targeted real workforce needs, such as regulatory compliance, supply chain

efficiency, and innovation adoption in seafood production. The project's outputs (course materials, case studies, and even child-friendly infographics/videos on topics like marine biodiversity and plastic pollution) have enduring value for education and outreach. Participants benefited from a cross-country perspective, learning best practices from different Mediterranean contexts, which is a strength in building a more versatile skill set.

- **W:** Focused more on higher education and professional training, BAPSI did not interface much with secondary schools or general vocational tracks - thus its impact on school-level blue career promotion was indirect. The courses ran during 2021; sustaining them post-project depends on whether universities continue to offer them (which may face credit or funding issues). As a short-term initiative, the number of trainees was limited. There is also the question of recognition: unless these courses are accredited or linked to qualifications, participants might not get formal acknowledgment of their new skills, potentially reducing incentive.
- **O:** BAPSI's model can be replicated for other Blue Economy sub-sectors (e.g., a Blue Academy for renewable marine energy technicians, or coastal tourism operators). For the seafood sector, there is an opportunity to integrate the developed courses into regular university curricula or professional certifications (like adding modules to fisheries science degrees or creating an EU-wide seafood industry credential). The partnerships formed (between industry bodies and universities) could evolve into longer-term training alliances, influencing policy - for example, recommending updates to fisheries education or apprenticeships in Italy based on lessons learned. Its alignment with EU Green Deal objectives also positions it well for further funding to expand or update the content for broader audiences, including possibly adapting some modules for technical schools or PCTO programs in coastal areas.
- **T:** If the seafood sector faces economic difficulties (overfishing issues, market volatility), companies might deprioritize training investments, making it hard to continue the Academy concept. Furthermore, competition from other training providers (or traditional academic courses) might limit the uptake of BAPSI-developed courses if they are not formally endorsed or recognized in career advancement paths.

## 10. Port Centers and Maritime Career Orientation Events

In several Italian port cities, **Port Centers** (such as the Genoa Port Center) and special events have emerged as effective tools for school-wide orientation to Blue Economy careers. The Genoa Port Center, for instance, is an educational exhibition facility at the old port that, since 2009, has welcomed student groups to discover port operations, shipping logistics, and related professions through interactive tours and workshops (for reference: [cittametropolitana.genova.it](https://cittametropolitana.genova.it)). In its first three years it engaged about 18,000 students and 1,400 teachers, targeting high schools to stimulate interest in the diverse

jobs linked to port activities. Similar outreach occurs during events like “Italian Port Days” and the **SailOr** initiative - a week-long voyage where hundreds of students sail on a ship (turned floating orientation lab) to meet maritime professionals and visit multiple port cities (ANSA, 2025; for reference: [ansa.it](https://www.ansa.it)).

- **S:** Experiential learning at its best - students get to step into the world of ports and ships, making abstract concepts concrete. By meeting workers (dockers, customs officers, naval pilots, cruise staff, etc.), they hear real career stories, which can be far more impactful than classroom lectures. The large number of participants in Genoa shows strong demand and the ability to reach many youths. Such initiatives often involve local government, port authorities, and businesses in a collaborative effort, strengthening the education-industry link. They also improve the community’s maritime culture, especially in port cities where historically the port might have been seen as separate - now it becomes accessible to its citizens, including young people.
- **W:** These programs can be resource-intensive - maintaining an exhibition center or organizing a sea cruise for students requires steady funding, security measures, and administrative effort. Outreach might still miss students from schools that do not opt in or those far from the port. There is also a risk that the excitement of a field trip doesn’t necessarily translate to sustained career pursuit - without follow-up resources or guidance, students might not know the next steps to take if interested.
- **O:** The Port Center model could be expanded to other major ports in Italy (some have started smaller versions or “open port” days). For example, creating a network of Port Centers (Trieste, Naples, Palermo, etc.) under a national coordination could share best practices and traveling exhibits. There’s an opportunity to integrate these visits with school curricula – e.g., a module on logistics or international trade in economics classes, capped by the Port Center tour. The events like SailOr could be scaled to more regions or become annual, and virtual reality technology might extend the experience to inland schools (virtual port tours, etc.). EU programs (e.g., **European Maritime Day** initiatives) might also support these as a way to promote blue careers on a wider scale.
- **T:** Port authorities’ priorities can shift - if faced with budget cuts or crises (like a pandemic or port disruptions), educational outreach might be scaled back. Ensuring student safety and security in busy port areas is critical; any incident could lead to suspension of visits. There’s also the challenge of keeping youths’ attention - if the content isn’t engaging or if it’s repeated each year without innovation, the appeal could diminish.

#### 4. School-wide strategies for systemic change towards blue careers

Implementing effective Blue Career promotion requires **school-wide strategies** that embed career orientation into the *fabric* of education. Below we outline strategic approaches that schools (particularly in coastal, marine, and remote settings) can adopt, leveraging the expertise of psychologists, guidance counselors, and educators. Each strategy is informed by the psychological principles discussed and by best practices in career education.

**1. Include ocean literacy and blue themes across the curriculum:** Academic subjects can be great vehicles for career inspiration when teachers intentionally relate content to real-world ocean issues and jobs. A **cross-curricular integration** of Blue topics ensures that students continuously encounter the relevance of ocean science and maritime activities. For example, in science classes students might study marine ecosystems or climate change impacts on coral reefs, in geography they might explore maritime trade routes or the cultural importance of the ocean in Pacific societies, and in technology they could learn about robotics by building a simple underwater ROV (remotely operated vehicle). This approach aligns with the European Blue Schools concept of “*bringing the ocean into the classroom*” through *project-based learning* (European Commission, “*Network of European Blue Schools*”). By doing so, schools create an environment where interest in marine topics can emerge naturally, not just during a dedicated “career day.” W&O psychologists can train and support teachers (see the training programs of our project, you can find them in our website: [OceanBlue – BlueOcean: mainstreaming a Blue Education Area in Europe](#)) to incorporate motivational techniques - e.g. using inquiry-based learning to satisfy students’ curiosity (tapping into Investigative interests) or collaborative projects with coastal community impact to fulfill students’ need for relatedness and purpose. **Place-based education** is particularly effective in remote coastal areas: tying lessons to local marine issues or indigenous ocean knowledge enhances relatedness (students see their own community in the curriculum) and can ignite a passion to contribute back. Research suggests that making learning contextually relevant and hands-on increases student engagement and persistence in STEM fields, which presumably extends to marine and environmental fields (Chiu, 2023).

**2. Strengthen career guidance services and psychometric assessments:** A robust guidance program is the backbone of career preparation, especially where informal exposure is scarce. Remote schools should establish or strengthen dedicated **Career Counseling and Orientation** services. This involves having trained counselors or psychologists (possibly shared across a region if resources are limited) who provide one-on-one and group guidance. These professionals can administer *interest inventories, aptitude tests, and values questionnaires* to help each student identify potential alignments with Blue Careers – an individualized approach shown to raise students’ career decision readiness. For instance, a guidance counselor might use Holland’s RIASEC-based interest profiler to identify a student’s top interest codes (<https://www.truity.com/test/holland-code-career-test>), then discuss how those could translate to maritime jobs or ocean-related entrepreneurship. **Psychometric diagnosis tools** give students concrete feedback (e.g. “You scored high on Realistic and Investigative interests; let’s explore marine technician, marine biologist, or

oceanographer roles that fit those interests.”). Alongside tests, counselors employ qualitative techniques like motivational interviewing to explore students’ passions and address ambivalence. Regular counseling sessions should be scheduled, not just in the final year of schooling. It is important starting **early** (even in middle school) to gradually build career awareness. Crucially, **feedback from these assessments should inform school planning**: if many students show interest in marine ecology, the school could invite a marine biologist for a talk or start an ecology club. If aptitude tests reveal gaps in STEM preparation, psychologists can recommend targeted skills workshops (linking to WP2 teacher training efforts). Thanks to the data on student interests and competencies, the school can tailor programs to nurture those interests further. Moreover, establishing a norm where every student receives career guidance and assessments helps normalize career exploration in communities where traditionally career paths might have been limited to a few local options.

**3. Engage families and communities as partners:** In remote and insular areas, family and community attitudes greatly influence youth aspirations (as highlighted by ecological models of career development). Schools must thus adopt a **community-inclusive strategy**. Psychologists and counselors can hold workshops for parents about the value of Blue Careers - dispelling myths (e.g., “marine jobs are only for those who leave the island” or “ocean science doesn’t pay well”) and sharing success stories of people from similar backgrounds thriving in blue fields. Such workshops build social support for students’ ambitions, which SCCT identifies as an important contextual support for career choice (Windleharth et al., 2023). Additionally, schools can organize community projects or events related to the ocean: beach clean-ups, coral planting, sustainable fishing practice demonstrations, etc., where students work alongside community members. This reinforces learning (through real-world application) and signals communal endorsement of ocean stewardship and careers. Partnerships with local businesses and organizations are also key. **Work-based learning opportunities** like internships, job shadowing, or cooperative education programs with local ports, marine research stations, aquaculture farms, or eco-tourism operators provide invaluable firsthand experience. For example, a student in a coastal village might spend a week with the local fisheries department, or a group of students might collaborate with a marine NGO on a mini-project. These experiences bolster self-efficacy (“I have done related tasks, so I can envision myself in this job”) and provide realistic previews of careers, aligning with SCCT’s call for experiential learning to build interest (Windleharth et al., 2023). Even if a community lacks large employers, technology can bridge distances: virtual mentorships or video calls with marine professionals (e.g., a Pacific Islander working in oceanography abroad connecting with students back home) can widen perspectives. The overall goal is to create a **supportive ecosystem** around the student, so that their interest in Blue Careers is nurtured both in and out of school. When a student hears consistent positive messages - from teachers, parents, community - about the importance of the ocean and sees pathways to succeed, their motivation is likely to solidify into concrete educational and career goals.



**4. Implement experiential and project-based learning initiatives:** Experience is a formidable teacher. Schools should implement programs that allow students to *learn by doing* in contexts related to Blue Careers. For example, a “**Blue Labs**” or **Blue Makerspace** initiative could provide a physical or virtual space where students undertake projects like designing a small aquaponics system, building a weather station to track coastal climate data, or creating art from recycled ocean plastics. Such projects, especially when student-driven, satisfy SDT’s autonomy and competence components, making learning inherently motivating (Chiu, 2023). They also often integrate multiple disciplines (STEM, economics, art), reflecting the interdisciplinary nature of real-world problems. Another proven approach is participation in competitions or challenges with ocean themes - e.g., an Ocean Science Quiz Bowl, a marine robotics competition, or a social innovation challenge for protecting local reefs. Competitions provide goals and feedback, enhancing goal-setting behavior (as per SCCT’s personal goals element) and can spark intense interest as students strive to excel. Field trips and outdoor education are also irreplaceable: a day spent snorkeling on a reef, visiting a maritime museum, or touring a research vessel can ignite a spark that classroom lectures cannot. A study on marine science professionals noted that recreational activities and informal exposures in youth were often cited as the genesis of their career interest (Windleharth et al., 2023). Therefore, schools should find ways to give students *real encounters with the marine world*. If physical trips are tough due to budget or geography, consider **virtual reality (VR) field trips** (simulating a dive or a ship tour) which are increasingly available and surprisingly immersive, or engaging with online citizen science projects (like contributing to global ocean data initiatives). W&O psychologists can help design these experiential programs by ensuring they include reflection components (debriefings where students discuss what they learned about themselves and the careers) which is important for internalizing the experience into career interest. Experiential learning also builds soft skills (teamwork, problem-solving, adaptability) which increase students’ confidence for the future.

**5. Continuous professional development and collaboration for staff:** A systemic change requires that *teachers, administrators, and staff are on board and skilled* in the new approach. This ties closely with the manual of our project (training teachers in motivation for Blue Careers; you can find it in our website: [OceanBlue – BlueOcean: mainstreaming a Blue Education Area in Europe](#)). Ongoing professional development should be provided to educators on topics like: how to integrate career discussions into lessons, how to use inquiry methods that spark interest, how to recognize and counteract gender or cultural biases about careers, and how to use basic counseling techniques when students seek advice. Work & Organizational Psychologists can lead these trainings, bringing their expertise in motivation and organizational change. Furthermore, establishing a **collaborative team** - perhaps a Blue Careers Committee in the school - can coordinate efforts. This team might include a W&O psychologist (or external career consultant), the school counselor, science and geography teachers, and even student representatives. Regular meetings allow sharing of insights (e.g., a teacher notes a student’s budding interest in marine art, and the counselor can follow up with resources on related careers), and ensure consistency in messaging. It is also

helpful for staff to connect with peers beyond their school: a network of Blue Career educators across EU-Pacific could share best practices, culturally adapted materials, and success stories. Such a community of practice could be facilitated through the project's online platform ([OceanBlue – BlueOcean: mainstreaming a Blue Education Area in Europe](#)) or Erasmus+ exchanges. In essence, this strategy recognizes that teachers and staff are key influencers of student motivation; also, studies indicate that teacher support and mentorship significantly shape adolescent career development (Chiu, 2023).

Such systemic approaches are necessary to achieve lasting impact in reducing the school-to-work transition gap, as one-off interventions seldom produce sustained changes in attitudes or trajectories. The next section will distill these ideas into concrete guidelines that can be adopted across different contexts in the EU-Pacific region.

## 5. Five operational guidelines for mainstreaming the EU–Pacific Blue Education Area

Drawing on the above strategies and psychological best practices, we propose **five common operational guidelines** to help schools institutionalize the Blue Education Area concept. These guidelines are meant to be practical principles that any coastal or remote school (whether in Europe or the Pacific) can adapt to **mainstream Blue Careers orientation** into their educational system:

1. **Adopt a whole-school ocean literacy framework:** *Make ocean awareness and Blue Career promotion a core part of the school's identity and curriculum.* Every subject and grade should contribute to building ocean literacy and showcasing marine and maritime career connections. This means developing a school-wide plan (or “Blue Curriculum Framework”) ensuring continuity and progression - from basic ocean knowledge in early years to specialized career exploration in later years. **Best practice:** Identify local ocean issues or industries as anchoring themes each year to keep learning relevant. **Rationale:** Research emphasizes that integrating career-related learning throughout schooling (not just at the end) increases student readiness and interest (Brooking, 2019). A whole-school approach also fosters a culture where pursuing Blue Careers is normalized and encouraged by all staff, fulfilling the need for relatedness and support in students.
2. **Ensure access to professional career guidance and psychometric tools:** *Guarantee that every student receives quality career counseling and has the opportunity to discover their interests through assessments.* Schools should either hire or partner with qualified career professionals (e.g., W&O psychologists or certified career counselors) to design and deliver guidance activities. Regular career workshops, one-on-one counseling, and career classes should be part of the timetable. Incorporate validated **psychometric assessments** - such as interest inventories (RIASEC-based) or career values surveys - and discuss the results with students to inform their decision-making. **Best practice:** Begin assessments by middle school and



maintain an individual “career development portfolio” for each student, updated annually. **Rationale:** Systematic guidance helps students, especially in disadvantaged or remote areas, to broaden their aspirations beyond what they see at home. Psychometric feedback increases self-awareness and person-job fit, which is linked to better career outcomes (for reference: [Holland's theory](#)). Moreover, having a trained professional interpret the ever-evolving job market (e.g., new roles in the Blue Economy) ensures students get up-to-date and realistic advice.

3. **Promote partnerships with blue economy stakeholders:** *Build strong links between schools and the marine/maritime sector to create pathways from education to employment.* Schools should actively collaborate with local and international partners, including marine research institutes, environmental NGOs, fisheries cooperatives, shipping or aquaculture companies, coast guards/navy, and universities with ocean programs. These partnerships can yield guest lectures, mentorship programs, field visits, internships, and joint projects. **Best practice:** Establish a “Blue Career Advisory Board” for the school, comprising representatives from these stakeholders who meet with school staff and students regularly (virtually, if distance is an issue) to provide input and opportunities. **Rationale:** Direct interaction with industry and role models addresses several psychological factors: it enhances outcome expectations (students see tangible benefits and roles in the field; Windleharth et al., 2023), provides social support and networking (which buffers against uncertainties), and gives learning experiences that build self-efficacy (e.g., completing a real task for a marine organization). It also helps align the skills taught in school with those needed in the workplace, thereby smoothing the school-to-work transition.
4. **Leverage technology and E-learning for inclusivity:** *Use digital tools to overcome geographic barriers and enrich Blue Career education.* Remote coastal schools can benefit from the wealth of online resources and networks. For instance, implement e-mentoring platforms that connect students with ocean professionals worldwide, utilize virtual reality for immersive ocean exploration experiences, and integrate massive open online courses (MOOCs) on Blue topics (such as the BlueOcean project’s EU-Pacific MOOC; you can find it here: <https://www.blueoceanerasmus.com/mooc/>) into classroom activities. Encourage students to participate in online global challenges or communities (like the EU4Ocean network; [https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/eu4ocean-coalition\\_en](https://maritime-forum.ec.europa.eu/theme/ocean-literacy-and-blue-skills/ocean-literacy/eu4ocean-coalition_en)) to broaden their perspective. **Best practice:** Create a digital “Blue Careers Hub” at the school - a portal or even a simple shared drive that curates videos, webinars, career profiles, virtual tour links, etc., that teachers and students can easily access. **Rationale:** Technology can simulate exposure that remote students might otherwise lack. Virtual engagement has been shown to spark interest similarly to real-life exposure when well designed (for example, virtual field trips can increase interest in science careers by providing visual and interactive stimuli; e.g., <https://www.youtube.com/watch?v=OzzmjIKFYyY>). It also allows Pacific and European schools to collaborate across oceans, fostering intercultural exchange and collective problem-solving (which enhances relatedness and a sense of global mission

among students). Ensuring all students have equal access to quality information and inspiration via technology helps democratize career guidance.

5. **Monitor, evaluate, and sustain motivation initiatives:** *Treat the promotion of Blue Careers as an ongoing, improvable process by measuring its impact and refining strategies.* Schools should establish clear indicators of success (e.g., number of students expressing interest in Blue Careers, enrollment in marine-related courses or clubs, internship uptake, eventual pursuit of related studies/jobs) and use tools like the **Impact Measurement Scale** (presented below) to gauge student interest levels over time. Conduct annual evaluations - surveys, focus groups, or even informal feedback sessions - to learn which activities students found most motivating and why. Involve psychologists in analyzing this data to identify trends (for instance, do autonomy-supportive activities correspond to higher interest?). **Best practice:** Publish a short annual “Blue Careers Report” for the school, summarizing achievements, student interest metrics, and plans for the next year. Celebrate improvements (e.g., a rise in students considering marine engineering or an increase in girls joining the oceanography club) to keep momentum and buy-in high. **Rationale:** As with any organizational change, continuous improvement is key. Measuring impact not only justifies the efforts (to funders or the community) by showing outcomes, but also keeps the faculty and partners engaged by highlighting progress. It ensures that the initiative does not fizzle out after initial enthusiasm. By using a standardized scale and qualitative feedback, schools can pinpoint which psychological needs might not be fully met or which student groups need extra support, allowing for targeted interventions (for example, if interest is lagging among female students, one might introduce more women role models or address specific barriers).

These five guidelines are designed to be **common to EU and Pacific contexts**, yet adaptable: each school or region can tailor the specifics (for instance, the kind of industry partners or cultural context of ocean literacy) while adhering to the underlying principles derived from psychology and proven practice.

## 6. Impact Measurement Scale: assessing student interest in Blue Careers

To support the evaluation of interventions (as highlighted in Guideline 5 above), we developed an **Impact Measurement Scale** for student interest in Blue Careers. This is a psychometric instrument that educators and psychologists can use to measure changes in students’ motivation and interest regarding marine and maritime careers. The scale is theoretically grounded in both Self-Determination Theory and Holland’s vocational interest framework, among others, and uses a Likert-type response format for ease of administration and analysis.

The scale consists of **10 items** that capture different facets of interest and motivation towards Blue Careers. Several theoretical constructs underpin these items: (a) *Intrinsic motivation* (Deci & Ryan, 2000) - items probe the inherent enjoyment and personal

value students find in marine-related activities, reflecting SDT's emphasis on interest arising from autonomy and competence satisfaction; (b) *Self-efficacy and outcome expectations* (Bandura, 1986; Lent et al., 2002) - items gauge students' confidence in their ability to pursue blue fields and their expectations of the career's benefits, aligning with SCCT; (c) *RIASEC interest alignment* (Holland, 1997) - items touch on preferences that correspond to realistic/investigative (science, outdoor work) versus social (environmental advocacy) aspects of Blue Careers, acknowledging that different students may be drawn to different dimensions of the Blue Economy; and (d) *Identity and values* - items consider the extent to which students identify with or feel a sense of purpose related to ocean stewardship, connecting to the idea of relatedness and meaningful work.

For each statement, students indicate their level of agreement on a **5-point Likert scale: 1 - Strongly Disagree, 2 - Disagree, 3 - Neither Agree nor Disagree, 4 - Agree, 5 - Strongly Agree**. The items are phrased positively (higher agreement = higher interest/motivation) to facilitate straightforward interpretation of scores. Administration can be done via paper-pencil or digitally, and it typically takes only a few minutes to complete.

#### **The 10 items:**

1. **"I am excited to learn about marine life, ocean science, or other ocean-related topics."**

*Justification:* Measures **intrinsic interest** and curiosity about ocean content (SDT's intrinsic motivation). Also maps to *Investigative* interests in RIASEC, as it reflects enjoyment of learning and discovery in science. High agreement suggests the student naturally enjoys blue topics - a strong predictor of pursuing related activities voluntarily.

2. **"I could imagine myself working in a job that involves the ocean or marine environment."**

*Justification:* Assesses **career self-concept and identity** – the student's ability to see a future self in a Blue Career role. This ties to **outcome expectations** and personal goals (SCCT) as well as the formation of a vocational identity. It also gauges openness to person-environment fit as per Holland (whether they see an environment where their traits belong). Agreement here indicates a developed interest translating into career aspiration.

3. **"I actively seek out news or information about ocean exploration, marine animals, or maritime activities."**

*Justification:* Reflects **proactive interest** and autonomy – the student's self-driven behavior to explore the field. Theoretically, this item indicates internalization (SDT: they value it enough to spend their free time) and also correlates with **high self-efficacy**, since seeking information often occurs when one feels capable of understanding it. In SCCT terms, it's a sign of engagement in exploratory behavior fueled by interest.

4. **“Working to protect the ocean and coastal environment is important to me personally.”**

*Justification:* Captures **values and relatedness** – the personal importance placed on the mission aspect of Blue Careers. SDT suggests that when people identify with the values of an activity (here, conservation), they are more internally motivated (extrinsic motivation becoming internalized). This item also aligns with *Social* and *Artistic* Holland types who are driven by altruism or expression of values in careers (e.g., environmental advocacy, education). High scores imply the student’s interest is not just intellectual but also moral/emotional, which is a strong driver of sustained commitment.

5. **“I am confident that I have (or can develop) the skills needed for a Blue Career (for example, science, navigation, diving, or problem-solving skills).”**

*Justification:* A direct measure of **self-efficacy** related to Blue Careers (SCCT). It checks the student’s belief in their competence to succeed in relevant tasks. Drawing on W&O psychology, this is critical: if a student is interested but lacks confidence, they may not pursue the field. Agreement suggests a healthy self-belief, often resulting from mastery experiences or encouragement (possibly influenced by school interventions). It also hints at a growth mindset (“can develop skills”), which is positive for career development.

6. **“I would be interested in attending a training or university program related to the ocean (like marine biology, ocean engineering, or maritime studies).”**

*Justification:* This item connects interest with **intentions and goal setting** – a bridge from mere liking to actual planning (SCCT’s personal goals component). It assesses a forward-looking motivation: is the student inclined to invest in further education in this domain? It’s a strong indicator of the depth of interest. Theoretically, it reflects both **outcome expectation** (they perceive such education as desirable) and **goal commitment**. It’s also a proxy for *Enterprising* interest in personal development and planning a career path.

7. **“I enjoy activities where I can be near or on the ocean, like boating, fishing, snorkeling, or visiting the beach, and I’d like to incorporate that into my future job.”**

*Justification:* Targets the **Realistic and Real-world aspect of interest** – enjoyment of outdoor, hands-on activities related to the sea. In Holland’s RIASEC terms, this aligns with *Realistic* (practical, outdoors) and partly *Investigative* if it involves observing nature. It’s grounded in findings that recreational exposure to nature correlates with environmental and science career interests. A student who strongly agrees is likely to be motivated by the prospect of an active, field-based career (e.g., marine biologist doing fieldwork, ship captain, marine technician). This also touches SDT’s relatedness to nature and place – feeling “at home” by the sea can be a motivator to work with the ocean.

8. **“People who know me (teachers, family) have suggested that I might enjoy a career related to the ocean or marine industry.”**

*Justification:* This item measures **social persuasion and support** – an external factor from SCCT that can significantly impact interest development. It gauges whether the student is receiving encouraging feedback from their environment about fitting into a Blue Career (which often reinforces interest and self-efficacy: “others see this in me, so maybe I can do it”). It indirectly reflects the effectiveness of the school’s and community engagement efforts. Agreement could indicate the student has shown aptitude or interest that others noticed (a positive sign), whereas disagreement might flag a student who has interest but may lack external support or visibility, which could be an intervention point.

9. **“I think jobs in the marine or maritime field are beneficial to my community and offer a promising future.”**

*Justification:* Focuses on **outcome expectations and perceived value** of Blue Careers. It checks if the student views these jobs as worthwhile (for self and community). This ties to both SCCT (expecting positive outcomes like community benefit, personal fulfillment, stability) and to communal values often strong in Pacific and coastal cultures (where one’s career is often seen in context of giving back). If a student agrees, they likely have a positive and perhaps realistic understanding of what Blue Careers entail and their importance – an outcome of good career education. Disagreement might suggest misinformation (e.g., they think “there’s no future in it” or “it doesn’t help locally”), which signals a need for more career awareness programming. Psychologically, seeing a career as aligning with one’s prosocial or economic values increases motivation to pursue it.

10. **“I feel a sense of responsibility or duty to learn about the ocean and consider careers that help protect or utilize it sustainably.”**

*Justification:* This item captures a mature form of motivation - **identified or integrated regulation** (SDT) where the student’s interest is coupled with a sense of purpose or duty. It blends relatedness (to environment and society) with a developing professional identity. The phrasing “responsibility or duty” is deliberate to detect those students who have internalized the ethos of sustainable development and might be driven by it. Theoretical basis also comes from civic and environmental psychology, where youth who feel responsible for environmental stewardship are more likely to engage in related careers or studies. A high score suggests the student’s interest is not fleeting; it’s anchored in their value system, which is a strong predictor of perseverance (they are likely to push through challenges in pursuit of a meaningful goal).

**Scoring and interpretation:** To calculate the overall **Blue Career Interest Score**, sum the ratings of the 10 items (after ensuring any reverse-coded items are adjusted; in this scale, all items are phrased positively, so a simple sum is acceptable). The total score thus ranges from 10 to 50. Higher scores indicate a higher level of interest, motivation, and positive orientation toward Blue Careers. For ease of interpretation, one may classify scores into ranges, for example: 10-19 = low interest (student

currently shows little inclination toward Blue Careers), 20-35 = moderate interest (some positive signs, perhaps still exploratory or ambivalent), 36-50 = high interest (strong inclination and likely to pursue related opportunities). These cut-offs can be refined with more data (e.g. through pilot testing with the 200 students as planned in the project).

On a more granular level, educators can also look at patterns in responses: If items 1-3 (intrinsic interest indicators) are low but items related to values or duty are high, it may mean the student is interested more from a sense of obligation than enjoyment - an opportunity to introduce more fun, autonomy, or engaging experiences to spark joy. If self-efficacy (item 5) is low while excitement is high, the student might need confidence-building interventions (like skills workshops or mentoring). The scale is not intended to “label” students but to provide insights into where they are on their interest development journey, so that support can be personalized. In line with scientific best practices, the scale should be administered pre- and post- significant interventions (e.g., before and after a MOOC, or at the start and end of an academic year with “*Blue infusion*”) to measure changes. A significant increase in the average score would indicate the strategies are effective in boosting student interest.

Given the interdisciplinary nature of Blue Careers, the scale purposefully mixes items of different nature, but all within the umbrella of interest/motivation. We recommend gathering qualitative feedback from students after they take the survey - their explanations can further validate whether the items resonate with their experiences (for instance, a student might say “I answered strongly agree to item 7 because I love fishing with my uncle and that’s why I want to study marine biology,” confirming that the item indeed tapped a real interest driver).

Schools and project evaluators can use this scale to identify needs, track progress, and ensure that the systemic strategies employed are inspiring more youth in coastal and remote areas to set sail toward the vast opportunities of the Blue Economy.

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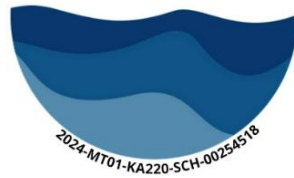
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**BLUE OCEAN**

ERASMUS+ PROJECT



# BLUE OCEAN

## CHAPTER 4

### **Leadership strategies for School Directors**

**Designed to promote interest towards blue careers, ocean preservation and pro-environmental behaviours**

Gozo College, Malta

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## Introduction

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School policy should be, tailored specifically for **remote island schools in French Polynesia, and for coastal/island education systems in Italy, Malta, and Greece**. An efficient policy should integrate **practical strategies, cultural anchoring, and logistical adaptations for island and Mediterranean contexts**.

### I. SCALE 1 – School Events as a Catalysts for Blue Careers and Ocean Stewardship in Island and Coastal School Systems

School events represent one of the most powerful and visible tools that educational institutions can deploy to inspire, motivate, and orient students toward the emerging world of blue careers and ocean stewardship. In remote island and coastal contexts—such as those of French Polynesia, Italy, Malta, and Greece—the ocean is not an abstract concept but a daily lived reality, shaping identity, economy, food systems, transport, and climate vulnerability. This proximity creates a unique pedagogical opportunity: school events can directly connect students’ lived coastal experience with structured blue economy pathways and ocean literacy.

Unlike routine classroom instruction, well-designed school events create memorable, community-facing experiences that connect students with real professionals, hands-on science, and the lived culture of the ocean economy. In island contexts, these experiences are even more powerful because students can immediately relate event content to their surrounding marine environment, fisheries, ports, tourism ecosystems, and coastal ecosystems under climate pressure.

This chapter, developed within an applied Blue Education framework, provides a comprehensive, evidence-based guide for school coordinators, teachers, and educational leaders in island and coastal systems on how to plan, implement, and evaluate school events specifically designed to promote blue careers and ocean preservation. It draws on pedagogical principles of active learning, interdisciplinarity, career awareness, and ocean literacy, and adapts them to island realities such as limited access to external experts, geographic isolation, strong local maritime traditions, and climate vulnerability.

School leaders should :

1. Define educational objectives for blue career events aligned with ocean literacy and local island/marine contexts (lagoon ecosystems, ports, fisheries, tourism).



2. Identify and engage external stakeholders, including maritime authorities, fisheries cooperatives, marine protected area managers, and tourism operators.
3. Design event formats adapted to island constraints (limited travel, small school populations, hybrid/virtual participation).
4. Coordinate logistics in geographically isolated contexts, including transport of materials, digital alternatives, and community-based participation.
5. Evaluate impact on student aspirations toward blue careers relevant to island economies (marine tourism, aquaculture, marine conservation, coastal engineering).

### A. Why School Events Matter in Island and Coastal Contexts

In island systems such as French Polynesia or coastal nations like Greece and Malta, the blue economy is not a future sector—it is a present-day structural reality. Tourism, fisheries, maritime transport, coastal engineering, and marine conservation already shape employment opportunities. However, despite this proximity, many students still lack awareness of structured career pathways beyond informal or family-based livelihoods.

School events bridge this gap by making invisible career pathways visible. They transform local marine realities into structured learning and aspiration pathways. For example:

- A fisherman becomes a **sustainable fisheries manager**
- A tourist boat operator becomes a **marine ecotourism entrepreneur**
- A coral reef becomes a **marine research laboratory**
- A port becomes a **logistics and engineering innovation hub**

#### Island-Specific Challenge: Visibility Paradox

In island regions, students often see the ocean daily but do not see the *professional systems behind it*. Events solve this paradox by translating lived environment into structured career language.

### Section 1.1 Connecting Events to Island Blue Economy Realities

In island contexts, the Blue Education framework becomes even more powerful when localized:

- **Relevance:** Lagoon ecosystems in French Polynesia, Mediterranean fisheries in Greece, port systems in Italy, and coastal tourism in Malta
- **Interdisciplinarity:** Marine science + tourism economics + climate adaptation + cultural heritage

- **Engagement:** Snorkeling-based learning, port visits, beach citizen science, local boat-based fieldwork
- **Sustainability:** Strong focus on plastic pollution, reef protection, overfishing, and coastal resilience
- **Career Orientation:** Emphasis on local employability to reduce youth outmigration from islands

## B. Types of Blue Career School Events

### 1) Island Blue Career Fairs

In small island schools, career fairs should be **community-integrated rather than large-scale exhibitions**.

#### Adaptations:

- Combine in-person + virtual professionals (e.g., marine scientists abroad)
- Invite local fisheries cooperatives, port authorities, diving centers
- Use “career storytelling stations” instead of formal booths

**Island strategy:** Turn the school courtyard into a “**mini blue economy ecosystem**” with thematic zones: reef science, fisheries, tourism, maritime safety.

### 2) Ocean Science Days in Island Ecosystems

These are particularly powerful in island settings because the environment is immediately accessible.

#### Island-specific activities:

- Lagoon biodiversity sampling (French Polynesia)
- Coastal erosion mapping (Greece)
- Marine litter audits on tourist beaches (Malta)
- Port ecosystem studies (Italy)

**Key strategy:** Every field activity must explicitly connect to a **career role on the island (marine technician, reef biologist, environmental officer)**.

### 3) Blue Speaker Series (Island Hybrid Model)

Due to geographic isolation, island schools should prioritize:

- Hybrid talks (local + global experts)

- Recorded interviews with diaspora professionals
- “Return expert weeks” (inviting island-origin scientists working abroad)

**Example:** A marine biologist from Tahiti speaking virtually to students in remote schools in French Polynesia.

#### 4) Field-Based Island Immersive Learning

Island schools have a major advantage: **the ocean is the classroom.**

Examples:

- Snorkeling biodiversity surveys (reef health monitoring)
- Harbor engineering visits
- Coastal climate adaptation mapping
- Traditional fishing knowledge integration

**Key principle:** Combine **scientific knowledge + indigenous/local ecological knowledge.**

#### 5) Competitions and Island Innovation Challenges

Focus on real island problems:

- Coral reef protection technologies
- Plastic-free tourism solutions
- Sustainable fishery innovation
- Coastal flooding adaptation designs

**Island advantage:** Students can immediately test ideas in real environments.

### C. Planning Framework (Island adaptation)

#### 3.1 Objective Setting in Island Context

Objectives should reflect:

- Local employment realities
- Climate vulnerability
- Migration pressures
- Cultural marine heritage

Example:

“Students will identify at least one blue career that exists within their island economy and one that requires mobility beyond the island.”

### **3.2 Stakeholder Ecosystem (Island-Specific)**

Key partners differ slightly:

- Local fisheries cooperatives
- Port authorities and maritime transport companies
- Tourism operators and diving centers
- Marine protected area managers
- Coastal municipalities
- Traditional ecological knowledge holders (fishers, elders)

### **3.3 Event Design in Small School Contexts**

Island schools often have small cohorts. Therefore:

- Merge age groups
- Use station rotation with mixed-age teams
- Use community-wide events (students + families together)

### **3.4 Communication Strategy (Island Focus)**

- Radio announcements (important in islands)
- Community noticeboards
- WhatsApp/local messaging networks
- Church/community gatherings (where culturally relevant)
- School as central community hub

### **3.5 Student Leadership in Island Schools**

Students should act as:

- Lagoon guides
- Reef data collectors
- Cultural heritage interpreters
- Junior “blue ambassadors” to visiting tourists or delegations

### 3.6 Evaluation and Long-Term Impact

Beyond standard surveys, include:

- Tracking youth participation in local marine internships
- Monitoring uptake of maritime vocational training
- Measuring reduction in youth outmigration intent

#### D. STEM pathways in Island Blue Economies

#### Key adaptation: “STEM must be locally meaningful”

Examples:

- Marine biology → coral reef conservation technician
- Engineering → port infrastructure maintenance
- Data science → climate and ocean monitoring systems
- Tourism → sustainable ecotourism design

#### Barrier-specific strategies:

- **Isolation barrier:** Emphasize remote careers (marine data analysis, satellite oceanography)
- **Mobility barrier:** Show scholarships and Erasmus+ mobility routes
- **Identity barrier:** Highlight that island identity is an asset, not a limitation

How can our island remain economically viable while protecting its marine ecosystems for future generations?

Include:

- One traditional knowledge element
- One scientific method
- One career pathway explanation
- One local environmental challenge solution

## E. An example of Island Career Day Event — “Blue Islands Future Day”

### Morning

- Lagoon biodiversity live demonstration (or virtual reef tour)
- Guest fisherman → sustainable fisheries transition talk

### Midday stations

- Reef science lab (portable kits)
- Tourism innovation station
- Coastal resilience mapping workshop
- Maritime careers VR experience

### Afternoon

- Island climate innovation challenge
- Community panel (elders + scientists + youth)
- Ocean pledge linked to local action (beach restoration, reef monitoring)

## II. SCALE 2 – Teacher Training and Intersectional Professional Exchange in Marine Education

No school policy for blue education can succeed without a sustained and structured investment in **teacher training and professional learning ecosystems**. In island and coastal contexts such as French Polynesia, Italy, Malta, and Greece, teachers are not only knowledge transmitters—they are often the **primary scientific mediators between global ocean science and local lived reality**.

However, many educators are trained in traditional disciplinary frameworks that do not fully reflect the interdisciplinary, applied, and rapidly evolving nature of marine science and the blue economy. This creates a structural gap that can only be addressed through **continuous professional development, collaborative learning with external experts, and shared inquiry-based teaching models**.

This section outlines a policy approach where **teachers, students, scientists, and community professionals learn together**, particularly through citizen science and outdoor education systems.

### A. From Teacher as Instructor to Teacher as Co-Researcher

A core transformation in blue education is the shift in teacher identity:

**Traditional Model:**

- Teacher as knowledge authority
- Students as recipients of fixed scientific content

**Blue Education Model:**

- Teacher as **co-learner and field researcher**
- Students as **active contributors to real scientific processes**
- Scientists and professionals as **co-educators**

In this model, teachers do not need to be marine biology experts. Instead, they become:

- Facilitators of inquiry
- Interpreters of scientific processes
- Coordinators of partnerships
- Participants in data collection and analysis

This is particularly powerful in island contexts such as French Polynesia, where marine ecosystems are complex, evolving, and often studied through ongoing monitoring rather than fixed textbook knowledge.

## **B. Teacher Training as a Continuous Field-Based Process**

Teacher training in blue education should not be limited to workshops or theoretical seminars. It must be:

- **Experiential**
- **Field-based**
- **Collaborative**
- **Long-term**

**Key Training Modalities****1. Joint Teacher–Student Fieldwork**

Teachers participate alongside students in:

- Reef biodiversity surveys
- Coastal erosion mapping
- Water quality testing
- Marine litter assessments

This creates a **shared learning environment** where hierarchy is reduced and inquiry becomes collective.

## 2. Scientist-Led Classroom Co-Teaching

Marine scientists and educators co-deliver lessons where:

- Teachers learn new scientific methods in real time
- Students observe authentic scientific reasoning
- Complex topics are translated into accessible language collaboratively

In Greece, for example, coastal marine institutes can support school-based sampling projects where teachers learn laboratory techniques directly from researchers.

## 3. “Learning by Doing” Citizen Science Integration

Citizen science projects become the **core infrastructure for teacher professional development**.

Examples include:

- Microplastics monitoring in coastal waters
- Seagrass ecosystem mapping
- Coral bleaching observation networks
- Marine biodiversity logging using digital apps

Teachers learn:

- Scientific protocols
- Data collection standards
- Field risk management
- Data interpretation techniques

Crucially, teachers learn **with students, not before them**. This equalizes the learning process and strengthens engagement.

## C. Intersectional Professional Exchanges: Breaking Disciplinary Silos

Marine education is inherently intersectional. It connects:

- Biology (marine ecosystems)
- Physics (ocean dynamics)

- Chemistry (water quality)
- Geography (coastal systems)
- Economics (blue economy sectors)
- Engineering (marine technologies)
- Social sciences (coastal communities and governance)

Yet school systems often separate these domains.

### **Policy Goal:**

Create structured **cross-professional exchange ecosystems** where educators, researchers, and practitioners jointly design learning experiences.

## **1) Multi-Actor Learning Teams**

Each blue education project should include:

- Science teachers
- Geography or environmental studies teachers
- External marine scientists
- Local maritime professionals (fishers, port staff, tourism operators)
- NGO representatives

These teams jointly:

- Design fieldwork protocols
- Define learning outcomes
- Interpret data
- Evaluate student outputs

This ensures that knowledge is **multi-perspective and applied**, not abstract.

## **2) Cross-Sector Training Residencies**

Teachers participate in short placements in:

- Marine research stations
- Ports and maritime logistics hubs
- Aquaculture facilities
- Marine conservation projects

For example:

- A teacher in Malta might spend time observing port sustainability operations.
- A teacher in Italy might work alongside coastal restoration teams.

These experiences:

- Deepen subject authenticity
- Build institutional partnerships
- Provide real-world examples for classroom teaching

### **3) Professional Learning Communities (PLCs) for Blue Education**

Schools should formalize **Blue Education PLCs**, where teachers:

- Meet regularly to reflect on field experiences
- Share data collected with students
- Co-develop interdisciplinary lesson plans
- Review scientific updates from partners

These communities can extend beyond one school:

- National networks
- Mediterranean collaboration hubs
- Island-to-island exchanges (e.g., Malta–Greece–French Polynesia virtual networks)

### **4) Outdoor Education as Shared Scientific Practice**

Outdoor education is not a supplement to marine science—it is one of its primary methodologies.

#### **Core Principle:**

The ocean is the laboratory.

In this model:

- Teachers are not supervising outdoor learning from a distance
- They are actively participating in scientific inquiry

#### **a) Shared Field Protocols**

Teachers and students jointly:

- Define research questions
- Decide sampling locations
- Collect environmental data
- Analyse findings together

This creates a **democratic science culture**, where knowledge is co-produced.

### **b) Emotional and Ethical Dimensions of Learning**

Outdoor marine education also develops:

- Environmental responsibility
- Emotional connection to ecosystems
- Ethical reflection on human impact

Teachers themselves often report:

- Increased environmental awareness
- Renewed professional motivation
- Stronger connection to local ecosystems

This emotional dimension is particularly strong in island environments like French Polynesia, where marine ecosystems are central to cultural identity.

### **c) Safety, Confidence, and Institutional Support**

For outdoor education to be sustainable, policy must ensure:

- Clear safety protocols for marine environments
- Training in risk assessment (tides, weather, marine life)
- Equipment provision (sampling kits, protective gear)
- Institutional recognition of fieldwork as valid teaching time

Without these, outdoor education remains dependent on individual teacher initiative rather than systemic practice.

## **D. Teacher Training as a Driver of Student Motivation for Blue Careers**

Teacher engagement directly influences student aspiration.

When teachers:

- Participate in field science
- Collaborate with marine professionals
- Show curiosity and uncertainty
- Learn alongside students

Students perceive:

- Science as dynamic and real
- Careers in marine fields as accessible
- Learning as a shared exploration rather than memorization

This is one of the strongest predictors of:

- Increased STEM participation
- Interest in marine careers
- Long-term environmental engagement

## **E. Policy Recommendations for School Leaders**

To institutionalize this model, school policy should include:

### **1. Mandatory Annual Teacher Field Training**

At least one coastal or marine field experience per year.

### **2. Embedded Professional Learning Communities**

Formal recognition of Blue Education PLCs in school governance.

### **3. Partnership-Based Co-Teaching Agreements**

Structured collaboration with universities and marine institutions.

### **4. Citizen Science Integration Requirement**

At least one shared student-teacher data project per academic year.

### **5. Recognition of Teacher Learning Outcomes**

Professional development credits linked to participation in field-based marine education.

### III. SCALE 3 – From local to international Cooperation for Ocean-Focused Schools

School policy is the backbone that determines whether blue education initiatives remain isolated events or evolve into long-term institutional transformation. While school events activate interest in blue careers and ocean literacy, it is school-level policy—formalized through governance, partnerships, and funding strategies—that ensures continuity, scalability, and equity.

In island and coastal education systems such as those in French Polynesia, Italy, Malta, and Greece, school policy plays an even more critical role. Geographic isolation, dependency on maritime economies, and vulnerability to climate change make structured educational partnerships not optional, but strategic.

This section provides a practical and strategic framework for school directors and education policymakers on how to design, formalize, and sustain partnerships at three interconnected levels:

1. Government and public agencies
2. Local and community-based organizations (high feasibility, fast impact)
3. International and large-scale institutions (high effort, high funding potential)

It also integrates the role of European cooperation mechanisms—especially mobility and exchange programmes—within a long-term blue education strategy.

School leaders should:

1. Design a school policy framework that integrates blue education into institutional strategy.
2. Identify and engage government agencies relevant to marine, environmental, and education sectors.
3. Develop sustainable partnerships with local organizations that support hands-on learning and employability.
4. Access and navigate international funding mechanisms and large institutional partnerships.
5. Structure European and cross-national exchange programmes that enhance blue career pathways.
6. Balance short-term local impact with long-term international strategic development.

#### A. Why School Policy Matters for Blue Education ?

Without formal school policy, blue education risks becoming:

- A series of disconnected events
- Dependent on individual teacher motivation
- Vulnerable to funding fluctuations
- Limited in reach and sustainability

With strong policy integration, blue education becomes:

- A cross-curricular institutional priority
- Embedded in curriculum planning and assessment
- Supported by multi-level partnerships
- Connected to real employment pathways in the blue economy

In island regions like Malta or French Polynesia, policy alignment ensures that education reflects real economic structures such as fisheries, tourism, port logistics, marine conservation, and climate adaptation.

## **B. Types of Government and Public Sector Partnerships (Foundational Level)**

Government agencies are the most stable and structurally aligned partners for schools. They provide legitimacy, continuity, and often access to data, infrastructure, and funding.

### **1) Key Types of Government Partners**

Depending on national context:

#### **Maritime and Fisheries Authorities**

- Fisheries monitoring agencies
- Marine resource management departments
- Coastal regulation bodies

#### **Environmental Agencies**

- Marine protected area authorities
- Climate adaptation agencies
- Pollution monitoring institutions

#### **Education Ministries**

- Curriculum integration support
- Teacher training programmes
- National STEM initiatives

### **Maritime Infrastructure Bodies**

- Port authorities
- Coast guards
- Maritime transport agencies

## **2) Policy Strategy for Schools**

School directors should formalize cooperation through:

- Memoranda of Understanding (MoUs) with agencies
- Annual joint action plans (events, fieldwork, internships)
- Data-sharing agreements for student projects
- Embedded internships for senior students

## **3) Island-Specific Advantage**

In countries such as Greece or island states like Malta, government agencies are often closely tied to daily maritime life. This makes it easier to:

- Organize port visits
- Access marine monitoring data
- Connect students with real coastal management projects

### **C. The importance of Local and Community-Based Partnerships (High Feasibility, High Impact)**

Local partnerships are the **most accessible and immediately impactful** form of collaboration. They require minimal bureaucracy and often provide direct hands-on opportunities.

#### **1) Key Local Partners**

##### **Blue Economy Actors**

- Small-scale fisheries cooperatives
- Aquaculture farms
- Marine tourism operators (diving schools, eco-cruises)
- Boat maintenance and harbor services

##### **Civil Society and NGOs**

- Coastal conservation groups
- Marine plastic reduction initiatives

- Environmental education associations

### **Local Knowledge Holders**

- Fishermen and women
- Coastal community elders
- Traditional navigation or ecological knowledge practitioners

## **2) Why Local Partnerships Matter**

Local organizations provide:

- Authentic career role models
- Immediate relevance to students' lives
- Low-cost field learning opportunities
- Strong community legitimacy for schools

In French Polynesia, for example, lagoon-based tourism operators and artisanal fishers can play a central role in education, bridging traditional knowledge and modern blue economy careers.

## **3) Policy Mechanisms for Schools**

Schools should:

- Create a “Local Blue Education Partnership Register”
- Assign a staff member as community partnership coordinator
- Integrate partners into annual curriculum planning
- Offer visibility (certificates, school events, public recognition)

### **D. International and Large-Scale Partnerships (High Effort, High Value)**

International partnerships are more complex to establish but provide:

- Funding opportunities
- Student mobility
- Access to research institutions
- Prestige and institutional visibility

## **1) European Frameworks for Cooperation**

Schools in Europe and associated territories can access:

- Erasmus+ programme (mobility and cooperation projects)
- Horizon Europe education-research links
- European Marine Observation and Data networks
- Cross-border school networks

These frameworks are particularly relevant for schools in Italy, Greece, and Malta.

## **2) Types of High-Level Partners**

### **Research Institutions**

- Marine biology institutes
- Oceanographic research centers
- Climate science laboratories

### **International NGOs**

- Marine conservation organizations
- Ocean literacy coalitions
- Climate resilience networks

### **Blue Economy Corporations**

- Offshore energy companies
- Maritime logistics corporations
- Global aquaculture enterprises

## **3) Strategy for Accessing Large Organizations**

Large organizations are harder to access but respond to:

- Clearly structured project proposals
- Alignment with sustainability goals (ESG frameworks)
- Measurable impact indicators
- Student visibility and communication outcomes

School directors should:

- Build consortia with multiple schools
- Partner through universities as intermediaries
- Align proposals with EU priorities (green transition, blue economy, youth skills)

#### **4) Risk Management**

Large partnerships require:

- Data protection compliance
- Clear safeguarding protocols
- Defined roles and responsibilities
- Long-term sustainability planning

### **E. International Exchanges and European Mobility**

International exchanges are one of the most powerful tools for transforming student aspirations in blue education.

#### **1) Why Exchanges Matter**

They:

- Expand student horizons beyond local constraints
- Show global nature of ocean challenges
- Increase motivation for STEM pathways
- Build intercultural and scientific competencies

#### **2) Types of Exchange Models**

##### **Student Mobility**

- Short-term study visits (1–2 weeks)
- Coastal field schools
- Joint marine science camps

##### **Virtual Exchanges**

- Joint data analysis projects
- Shared ocean monitoring campaigns
- Online seminars with international experts

##### **Teacher Mobility**

- Training in marine science education
- Job shadowing in research institutions

- Curriculum co-development

### 3) Island-Specific Opportunity

For remote territories such as French Polynesia, virtual exchanges are particularly powerful, reducing geographic barriers while maintaining global connectivity.

### 4) Strategic European School Networks

Schools should aim to participate in:

- Multi-country Erasmus+ school consortia
- Mediterranean blue education networks
- Atlantic and Pacific ocean literacy alliances

## F. Funding Strategy Architecture

School leaders should adopt a **three-layer funding model**:

#### Layer 1 — Local Funding (Fast, Reliable)

- Municipal support
- Local environmental grants
- Port authority sponsorships
- Tourism sector contributions

#### Layer 2 — National Programs (Medium Complexity)

- Education ministry STEM initiatives
- Climate adaptation funds
- Maritime sector workforce development programs

#### Layer 3 — International Funding (High Value, Competitive)

- Erasmus+
- European Commission initiatives
- International ocean sustainability foundations
- Corporate CSR programmes

## G. Integrated School Policy Model

A strong blue education policy should include:

### 1. Institutional Commitment

- Blue education embedded in school mission statement
- Annual strategic plan including ocean literacy goals

### 2. Partnership Structure

- Local + national + international partner tiers
- Designated partnership coordinator

### 3. Curriculum Integration

- Blue themes embedded across subjects
- Cross-disciplinary project requirements

### 4. Mobility Strategy

- Annual student exchange targets
- Virtual collaboration programmes

### 5. Evaluation Framework

- Student aspiration tracking (STEM + blue careers)
- Community engagement indicators
- Partnership impact assessments

## IV. Conclusion

In island and coastal education systems such as those of Malta, Greece, Italy, and French Polynesia, school policy is not merely administrative—it is a **strategic tool for shaping future economic resilience, environmental stewardship, and youth opportunity**.

The most effective systems are those that:

- Start locally
- Scale nationally
- Connect internationally
- And always return learning back to the ocean reality students live within every day.

In conclusion, school policy in island and coastal education systems such as those of French Polynesia, Italy, Malta, and Greece must be understood not as a set of administrative procedures, but as a long-term strategic framework for transforming the relationship between education, territory, and the sea. When carefully designed, such policy integrates practical,

context-sensitive strategies with deep cultural anchoring and logistical adaptation to island and Mediterranean realities, ensuring that learning is both locally meaningful and globally connected. At its most effective, this policy architecture brings together three mutually reinforcing scales of action: dynamic school events that make ocean careers visible and tangible, immersive teacher training systems that position educators and students as co-researchers of their marine environments, and structured multi-level partnerships that connect schools with government agencies, local communities, and international networks. Through this integrated approach, students are no longer passive recipients of abstract knowledge but active participants in the blue economy of their own territories—engaging with fisheries, tourism, maritime infrastructure, conservation, and emerging ocean technologies as lived realities rather than distant concepts. By aligning education with the socio-economic and ecological fabric of island life, such policies reduce youth disengagement, strengthen community resilience, and open sustainable pathways toward employment and innovation. Ultimately, the success of blue education policy lies in its capacity to start from the local marine environment students see every day, expand through national and European collaboration, and always return to the lived ocean context that defines identity, opportunity, and survival in island societies.

**BLUE OCEAN**

ERASMUS+ PROJECT



# BLUE OCEAN

## CHAPTER 5

### **How to Implement School Events for the Promotion of Blue Careers and Ocean Preservation**

Greece

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## Introduction

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School events represent one of the most powerful and visible tools that educational institutions can deploy to inspire, motivate, and orient students toward the emerging world of blue careers and ocean stewardship. Unlike routine classroom instruction, well-designed school events create memorable, community-facing experiences that connect students with real professionals, hands-on science, and the lived culture of the ocean economy. They also send a clear institutional signal: the school values ocean literacy, sustainability, and the blue career pathways that these fields open up.

This chapter, developed within the framework of the Erasmus+ BlueOcean KA220 project, provides a comprehensive, evidence-based guide for school coordinators, teachers, and educational leaders on how to plan, implement, and evaluate school events specifically designed to promote blue careers and ocean preservation. It draws on the pedagogical foundations established throughout the BlueOcean training module — including active learning, interdisciplinarity, career awareness, and ocean literacy — and applies them to the special context of school events.

The chapter is structured to guide practitioners through every stage of event design: from defining objectives and securing partnerships, to executing engaging event formats and measuring impact. Special attention is paid to the unique opportunity that events offer for career-to-classroom bridging — bringing marine professionals, researchers, and blue economy representatives into direct contact with students, parents, and the wider school community.

### Learning Objectives

By the end of this chapter, participants will be able to:

1. Define the specific educational objectives of blue career school events and align them with ocean literacy principles and the school's curriculum.
2. Identify and engage relevant external stakeholders — including marine professionals, research institutions, NGOs, and blue economy enterprises — as event partners and guest contributors.
3. Design a range of event formats suitable for different school contexts, age groups, and resource levels, incorporating interactive, student-centred methodologies.
4. Coordinate the logistical, curricular, and community dimensions of school events, from planning and communication to execution and follow-up.
5. Apply evaluation frameworks to measure the impact of events on student interest in blue careers, STEM university pathways, and ocean preservation attitudes.

## Section 1: Why School Events Matter for Blue Career Promotion

The gap between the growing demand for skilled blue economy professionals and the relatively low awareness among young people of these career opportunities is well-documented. The EU Blue Economy Report highlights that the sector employed approximately 3.6 million people in 2021 and is projected to expand significantly by 2030 — yet marine and maritime industries consistently struggle to attract young talent. A primary driver of this gap is not lack of opportunity, but lack of visibility: students simply do not know enough about what blue careers look like, who does them, and how to access them.

School events address this visibility deficit directly and dynamically. Unlike textbooks or online resources, events create human encounters — moments where a student can look a marine engineer in the eye, hold a coral sample, or operate a miniature ROV in a tank of water. These embodied, social experiences are qualitatively different from passive information exposure. Research in career development education consistently finds that direct contact with professionals and hands-on activity are among the most powerful drivers of vocational interest formation, particularly in science and technology fields.

Furthermore, school events serve a broader community function. When parents, local authorities, businesses, and university departments gather at a school for a blue careers fair or an ocean science exhibition, the event communicates that this is an institutional priority — one that links the school to regional economic development, environmental responsibility, and global educational trends. This legitimacy effect is crucial for gaining the sustained support that blue education initiatives need to thrive beyond individual classroom projects.

### 1.1 Connecting Events to the Blue Education Framework

Effective school events are not standalone spectacles — they are pedagogically grounded extensions of the classroom. The BlueOcean training module identifies five guiding principles for blue education: Relevance, Interdisciplinarity, Engagement, Sustainability, and Career Orientation. A well-designed blue event embodies all five simultaneously:

- **Relevance:** Events are tailored to local and national ocean contexts — coastal fisheries, port industries, marine protected areas, or climate adaptation challenges — making them personally meaningful to students and families.
- **Interdisciplinarity:** Blue events naturally pull together science, economics, art, geography, and technology, reflecting the inherently multi-domain nature of the ocean economy.
- **Engagement:** Interactive formats — debates, demonstrations, citizen science stations, design challenges — activate student curiosity and participation.

- **Sustainability:** Ocean preservation is woven into every event element, from the issues discussed to the event's own environmental footprint.
- **Career Orientation:** Guest professionals, career exploration tools, and higher education pathways information convert event excitement into actionable aspirations.

## Section 2: Types of Blue Career School Events

The term "school event" covers a wide spectrum of activities, from intimate classroom visitor sessions to large-scale multi-school festivals. Choosing the right format depends on the school's resources, the target age group, the desired learning outcomes, and the partnerships available. Below, we describe the main event types, each with specific blue career and ocean preservation applications.

### 2.1 Blue Career Fairs and Exhibitions

A Blue Career Fair is the blue education analogue of a traditional careers day. Multiple marine and maritime professionals — a marine biologist, a naval engineer, an aquaculture manager, a port logistics coordinator, a marine conservation officer, a maritime lawyer — each set up a booth or station where students circulate and engage in conversation. The multi-stakeholder format gives students a panoramic view of the sector's diversity in a single event. Exhibitions can also feature visual displays, physical artefacts (scientific equipment, safety gear, products derived from blue biotechnology), and video presentations.

Implementation tips for Blue Career Fairs:

- **Preparation:** Brief students beforehand on the professionals they will meet. Assign each student or group a professional to research and prepare three questions for. This ensures active rather than passive engagement at the fair.
- **Student roles:** Older students can serve as event ambassadors, guiding younger peers around stations and facilitating introductions — building leadership skills alongside ocean literacy.
- **Follow-up:** After the fair, have students complete a reflection card: "The blue career I found most surprising was... because... One step I could take to explore this further is..."
- **Tie to STEM pathways:** Invite representatives from university marine science, ocean engineering, or marine biology departments to present entry requirements and describe student life — making the higher education pathway concrete and accessible.

## 2.2 Ocean Science Days and Environmental Awareness Events

Ocean Science Days centre on the scientific dimensions of the ocean: its biodiversity, its role in climate regulation, the threats it faces, and the research being done to understand and protect it. These events often include hands-on science stations — water quality testing, microscopy of plankton samples, beach microplastic analysis kits, coral fragment observation — that allow students to practice the methods of marine science. Ocean Science Days are particularly well-suited to World Oceans Day (June 8th), World Earth Day, or the school's own Environment Week.

Key elements of a successful Ocean Science Day:

- **Citizen Science Integration:** Incorporate a real data collection activity — for example, students analyse microplastic samples from a local beach or river, with results logged into a shared database. This transforms the event into a contribution to actual research.
- **Guest Researchers:** Invite university or institute researchers to present ongoing projects in accessible, engaging ways. Visual-heavy "pecha kucha" style presentations (20 slides × 20 seconds each) work well with school audiences.
- **Linking Conservation to Careers:** At every station, make explicit the professional roles involved: "The people who analyse this data professionally are called marine ecologists or fisheries scientists. Here is how they train..."
- **Art and Media Integration:** Ocean photography exhibitions, marine illustration workshops, or student film screenings broaden the event beyond STEM and welcome students whose strengths lie in creative disciplines — while still building ocean awareness.

## 2.3 Blue Speaker Series and Panel Discussions

A Blue Speaker Series invites one or more blue economy professionals to address students in a structured talk followed by a Q&A session. The format can range from a single classroom talk (a researcher presenting their current project) to a school-wide assembly featuring a panel of professionals from different sectors of the blue economy. Panel discussions, in which two to five professionals respond to student-generated questions, are especially powerful: they allow students to observe how different career trajectories have unfolded and how professionals reason about the challenges of their field.

Guidance for organizing effective speaker sessions:

- **Speaker selection:** Prioritise diversity — gender, career stage (early-career professionals alongside experienced veterans), disciplinary background, and sector

(both academic and industry representatives). Seeing diverse pathways normalises blue careers for all student demographics.

- **Student-led questioning:** Have students submit questions in advance, then select a student moderator to lead the Q&A. This gives students agency and builds communication skills.
- **Virtual formats:** Remote guest speakers via video call extend the school's reach dramatically — enabling connections with, for example, a Pacific island marine conservation officer, a deep-sea research scientist on expedition, or a maritime technology CEO.
- **Recording and sharing:** With speakers' permission, record sessions and share via the school's platform. Other classes, absent students, and parents can access the content, amplifying impact.

## 2.4 Immersive and Hands-On Field Events

Field events take learning outside the classroom walls — literally. These include beach or river clean-ups combined with ecosystem monitoring, visits to aquariums, marine research stations, fish farms, ports, or offshore wind facilities, and snorkelling or kayaking experiences in coastal schools. Immersive field events are among the most transformative interventions in blue education: students who have personally collected data in a tidal pool or walked the deck of a research vessel develop a felt sense of connection to the ocean that classroom instruction cannot replicate.

Practical considerations for field events:

- **Pre-event preparation:** Brief students on what they will see and what their investigative task will be. Provide observation worksheets or data collection protocols so the visit is structured and productive.
- **Safety and inclusion:** Ensure risk assessments are completed, appropriate supervision ratios are maintained, and all students — regardless of physical ability or prior experience — can meaningfully participate in some aspect of the event.
- **Host-institution partnership:** Work with the hosting institution to co-design the experience. Marine research centres and aquariums often have education officers specifically trained for school visits; leverage their expertise.
- **Post-event output:** Require a tangible outcome — a field report, a poster, a short presentation to the class — to consolidate learning and build scientific communication skills.

## 2.5 Competitions, Challenges, and Design Events

Marine-themed design challenges, science fairs, and competitions engage students' competitive instincts and creative problem-solving capacities. Examples include: underwater ROV (Remotely Operated Vehicle) building competitions using low-cost kits; "ocean innovation challenges" where student teams design solutions to a specific marine problem (reducing ghost fishing nets, designing a biodegradable aquaculture cage, creating a citizen science app for coastal biodiversity monitoring); essay or video competitions on ocean preservation tied to World Oceans Day; and entrepreneurship events focused on blue economy startup concepts.

The competitive event format has specific advantages:

- **Deep engagement:** Teams preparing a competition entry invest sustained effort over days or weeks, far exceeding the engagement depth of a single event. The preparation process is often as educational as the competition itself.
- **Skills integration:** Design challenges necessarily integrate scientific, engineering, mathematical, and communication skills — embodying the interdisciplinary promise of blue education.
- **External recognition:** Connect school competitions to regional or national events such as the European Maritime Day youth projects, national science Olympiads with ocean themes, or the BlueOcean project's own sharing events.
- **Career inspiration through doing:** When a student successfully pilots an ROV they built, the abstract idea of a career in maritime robotics becomes vivid and achievable.

## Section 3: Planning Framework for Blue Career School Events

Successful blue events do not happen spontaneously. They require systematic planning that aligns educational objectives with logistical realities and stakeholder interests. The following planning framework adapts project management principles to the school context, providing a step-by-step roadmap from concept to completion.

### 3.1 Phase 1 — Define Objectives and Target Audience

Before any logistical planning begins, event organizers must articulate clearly what they want students to know, feel, and be able to do as a result of the event. These objectives should be specific and measurable, and should connect explicitly to:

- The ocean literacy principles targeted (e.g., "Students will understand how human activity affects marine food webs")
- The career awareness goals (e.g., "Students will be able to name at least three blue career pathways and describe the educational route to each")

- The affective or attitudinal outcomes (e.g., "Students will express increased interest in studying a STEM subject at university level related to blue careers")
- The behavioural intentions (e.g., "Students will commit to one personal action for ocean conservation")

The target audience definition shapes every subsequent decision. A Blue Careers Fair for 17-year-olds approaching university choices will look entirely different from an Ocean Science Day for 12-year-olds building foundational awareness. Age-appropriate language, activity complexity, and career horizon must all be calibrated accordingly.

### 3.2 Phase 2 — Build Stakeholder Partnerships

The richness of a blue education event depends enormously on the quality of its external partnerships. Schools should identify and cultivate relationships with:

- **Marine research institutions and universities:** Oceanography departments, marine biology faculties, and blue biotechnology labs can provide researchers as speakers, loan scientific equipment, and offer site visit opportunities.
- **Blue economy enterprises:** Aquaculture companies, offshore energy firms, shipping and port operators, marine tourism businesses, and maritime technology startups have strong incentives to engage with future talent.
- **Environmental NGOs and conservation organisations:** These organisations bring the stewardship dimension and can involve students in citizen science or conservation volunteering.
- **Government agencies:** Port authorities, fisheries management bodies, coast guards, and environmental ministries have both expertise and materials (maps, data, policy documents) to contribute.
- **Parent and alumni networks:** Parents working in marine-related fields and alumni who have pursued blue careers are often the most accessible and personally motivating speakers for current students.

Partnership formalisation does not always require a memorandum of understanding, but a written confirmation of roles, expectations, and contributions for each partner is essential to avoid misunderstandings. Assign a student or teacher coordinator as the primary contact for each partner organisation.

### 3.3 Phase 3 — Design the Event Programme

The programme design translates objectives into a timed sequence of activities. Effective blue event programmes share several structural features:



- **Opening impact:** Begin with a strong attention-capture moment — a dramatic statistic about ocean health, a compelling short video, or a provocative question posed to the full audience. The opening sets the emotional and intellectual tone.
- **Active rotation design:** For larger events, design a station-rotation model where student groups cycle through different activity points. This avoids passive whole-group sitting and ensures every student engages at every station.
- **Professional encounter moments:** Build in structured time for students to interact directly with professionals — not just as spectators of a presentation, but in dialogue, at hands-on demonstrations, or in small-group conversations.
- **Student agency elements:** Include moments where students are the producers, not just the recipients — presenting their research, demonstrating a prototype, leading a guided tour, or moderating a panel.
- **Closing synthesis and action:** End with a collective reflection or commitment moment — a pledge board, a feedback circle, a class ocean action plan — that consolidates learning and generates post-event momentum.

### 3.4 Phase 4 — Communication and Promotion

A blue event that is poorly communicated reaches only a fraction of its potential audience. Develop a multi-channel communication plan that includes:

- School-wide announcements and digital displays promoting the event well in advance
- Personalised invitations to parents, particularly those who work in relevant sectors
- Social media posts (on the school's channels) featuring profiles of guest professionals
- Local press engagement — the combination of Erasmus+ project identity and ocean stewardship is a strong local story
- Partner organisation networks — ask each partner to promote the event through their own channels, exponentially expanding reach

### 3.5 Phase 5 — Execution and Student Leadership

On the day of the event, student involvement in logistics and hosting is essential — not merely as a cost-saving measure, but as a profound learning opportunity. Students who welcome guests, explain activity stations, guide visitors, and manage transitions develop the exact professional competencies — communication, responsibility, initiative — that blue economy employers value. Designate a Student Event Committee several weeks before the event, train them in their roles, and ensure they receive visible recognition on the day.

During execution, the event coordinator should monitor the pace and energy of the programme, intervene if a session runs long or an activity loses engagement, and ensure that

every student has substantive contact with a professional or hands-on activity. Post-event logistical tasks — returning borrowed equipment, sending thank-you communications to partners, logging attendance — should be pre-assigned to avoid post-event administrative gaps.

### 3.6 Phase 6 — Evaluation and Follow-Up

Evaluation is not a bureaucratic afterthought; it is the mechanism through which events generate institutional learning and demonstrate impact to stakeholders. Immediately after the event, collect brief feedback from students, teachers, and partner professionals. The measurement tools developed within the BlueOcean WP4 framework — including the Scale of Measurement for STEM University Curricula Interest presented in the next section — should be administered before and after major events to capture attitudinal change.

Follow-up actions extend the event's impact beyond a single day:

- **In-class reflection:** Dedicate at least one lesson to processing and deepening the insights from the event — discussing what surprised students, what questions remain, and what connections they can draw to their studies.
- **Tangible outputs:** Compile student work produced during or inspired by the event into a display, publication, or digital portfolio that remains accessible as a reference and motivational resource.
- **Sustained relationships:** An event should be the beginning of a relationship with partner organisations, not a one-off encounter. Explore mentorship programmes, internship pathways, joint citizen science projects, or annual event partnerships.
- **Reporting to stakeholders:** Share evaluation results and impact evidence with school leadership, parents, and the Erasmus+ project consortium, strengthening the case for continued investment in blue education events.

## Section 4: Promoting STEM University Pathways Within Blue Events

One of the most strategically important functions of blue career school events is to bridge students' current educational experience with the university and vocational training pathways that lead to blue careers. For many students, particularly those from less affluent or less academically oriented backgrounds, the connection between secondary school subjects — biology, physics, chemistry, mathematics, geography — and the concrete world of marine professions is not self-evident. Blue events provide the experiential and human evidence needed to make this connection real.

#### 4.1 Integrating University Outreach into Event Programming

University faculties and departments offering marine-related STEM programmes have strong incentives to engage with schools: they are recruiting future students and building institutional profile. Invite admissions staff, academic staff, and current students (undergraduate or postgraduate) from marine science, ocean engineering, environmental studies, marine biology, and related programmes to participate in blue events. The peer dimension — a university student who was in the same secondary school two years earlier — is particularly powerful for demystifying the transition from school to higher education.

Specific event elements that effectively promote STEM university pathways include:

- **"Pathway Maps":** Visual displays (posters, infographics, digital presentations) showing the educational journey from secondary school subjects through university degrees to specific blue careers. These should show multiple entry points — including vocational routes, not only academic ones.
- **University lab demonstrations:** When university partners can bring simple laboratory demonstrations to the school (or host a school visit to a marine lab), students experience the reality of university-level science in an accessible, non-threatening context.
- **Scholarship and funding information:** Many students are deterred from university not by lack of interest but by financial concern. Events should include clear information on Erasmus+ scholarships, national marine science grants, and sponsored degree programmes offered by maritime industry partners.
- **"A Day in the Life" interviews:** Short video interviews with university students in blue-related programmes — recorded in advance or broadcast live — offer an honest, peer-level account of what studying marine science, ocean engineering, or maritime law is actually like.

#### 4.2 Addressing Barriers to Blue STEM Pathways

Events should proactively address the most common barriers that prevent students from pursuing STEM university curricula related to blue careers:

- **Geographic barrier:** "I don't live near the sea, so blue careers aren't for me." Explicitly demonstrate that ocean data analysts, maritime lawyers, remote ROV operators, marine policy researchers, and blue biotechnologists work in cities. Map the distribution of blue economy jobs across inland as well as coastal locations.
- **Gender barrier:** Feature equal numbers of female and male professionals, including women in engineering, maritime technology, and senior leadership roles. Challenge the persistent stereotype that maritime careers are male-dominated.
- **Academic confidence barrier:** Emphasise vocational and technical routes into blue careers alongside university pathways. A certified aquaculture technician or a



licensed marine electrician plays an equally essential role in the blue economy as a marine biologist with a PhD.

- **Relevance barrier:** Connect the specific subjects students are currently studying to the skills employers in the blue economy actually need. A chemistry teacher can point to marine water quality analysis; a mathematics teacher to ocean modelling and data science; a computer science teacher to marine robotics and AI applications in ocean monitoring.

### Section 5: Sample Event Programme — "Blue Horizons Day"

The following programme outline illustrates how the principles and formats described in this chapter can be combined into a coherent full-day school event for upper secondary students (ages 15–18). It is designed for a school of approximately 200 students, with partners from a local university marine department, two blue economy companies (an aquaculture firm and an offshore energy company), and a marine conservation NGO. The programme is adaptable to smaller or larger scales.

#### "Blue Horizons Day" — Sample Full-Day Programme

##### 08:30 — Registration and Welcome

Students and guests arrive. Student ambassadors welcome guests and guide them to their stations. Display of student ocean artwork in entrance hall.

##### 09:00 — Opening Plenary: "Our Ocean, Our Future"

School director opens the event, situating it within the Erasmus+ BlueOcean project. A 5-minute video on global ocean challenges. Brief introduction of guest organisations by student MC.

##### 09:30 — Keynote Talk: Marine Researcher

A 20-minute presentation from a university marine scientist on their current research (e.g., microplastics in Greek coastal waters, or Mediterranean biodiversity monitoring), followed by a 10-minute student Q&A facilitated by a student moderator.

##### 10:15 — Station Rotation (3 rounds × 30 minutes)

Student groups rotate through four stations:

6. Science Lab Station — Hands-on water quality analysis and plankton microscopy with university researchers.
7. Industry Station — Representatives from the aquaculture firm and offshore energy company present their operations, technology, and career opportunities.
8. Conservation Station — The marine NGO facilitates a microplastic sample analysis and discusses citizen science participation opportunities.
9. University Pathways Station — University admissions and current students present STEM degree programmes, entry requirements, and student experience.

##### 12:30 — Lunch and Informal Networking



Students mingle informally with guests. Student-made posters on ocean topics displayed. Music from the school ensemble with an ocean theme.

#### **13:15 — Blue Innovation Challenge (Group Activity)**

Mixed student-professional teams tackle a design brief: "How can our school reduce its contribution to marine plastic pollution?" Teams present their solutions in 3 minutes. Guest professionals select a winning team. Prizes are donated by partner organisations.

#### **14:15 — Panel Discussion: "Blue Careers — Is This for Me?"**

A panel of four professionals — including an early-career marine scientist, an industry engineer, a conservation project manager, and a university marine studies student — respond to questions collected from students in advance and from the floor.

#### **15:00 — Closing: Ocean Pledge and Next Steps**

Each student writes one personal commitment on a pledge card (displayed on a shared board). The school director announces follow-up initiatives. Certificates of participation distributed to guests and student leaders. Post-event measurement tool administered.

### Section 6: Discussion Prompts and Reflective Activities

#### **Discussion Prompt for Educators**

*Reflect on the last event your school organised. How was learning measured before and after the event? What evidence do you have that the event changed students' awareness, attitudes, or career aspirations? What would you add or change in light of the blue event planning framework described in this chapter? Share your reflections with a colleague.*

#### **Activity — Designing Your Own Blue Event**

Working in small groups (3–4 participants), design a blue career or ocean science event for your specific school context. Your plan should specify:

10. Learning objectives (using the ocean literacy framework as a guide)
11. Target audience (age group, number of students)
12. Event type and format (from Section 2 of this chapter)
13. Three key external partners and what they would contribute
14. One student leadership role in the event organisation
15. How you will measure the event's impact on student interest in blue STEM pathways

*Present your plan in 5 minutes to the wider group. Collect feedback and revise. By the end of this activity, each group should have a concrete event blueprint ready to share with their school leadership.*

*This chapter and was developed by the General High School of Sitia (GLS), Greece partner within the Erasmus+ BlueOcean KA220 project, in accordance with the WP4 Updated Guidelines (March 2026) and in alignment with the pedagogical framework established in WP2, Chapter 5 (Crete-Greece, Kontogiannakis et al.). The instrument is intended for use by all project partners as part of the shared 50-item Impact Measurement Tool administered to 50 students per organisation by April 16, 2026.*

*For questions about this instrument, contact the GLS partner coordinator.*

**BLUE OCEAN**

ERASMUS+ PROJECT



# BLUE OCEAN

## **CHAPTER 6**

### **INDICATOR CHECKLIST FOR THE SCHOOL**

### **PRE-REQUIREMENTS OF A BLUE EDUCATION AREA**

Greece, Italy, French Polynesia and Malta

**Isa Conti Eller Vainicher - Lipari (ITALY)**

Co-Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

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## 1. Introduction

This chapter provides a comprehensive and operational indicator checklist to assess the readiness of schools to become part of a Blue Education Area. The concept aligns with European Union priorities such as the Blue Economy, the European Green Deal, and sustainability education.

Blue Education fosters ocean literacy, environmental responsibility, and career pathways linked to marine and water-related sectors. Schools are key actors in equipping students with knowledge, skills, and attitudes necessary for emerging blue careers.

## 2. Objectives of the Indicator Framework

The framework aims to:

- Assess institutional readiness
- Support strategic planning
- Enable benchmarking across schools
- Facilitate continuous improvement
- Align education with labour market needs in the blue economy

## 3. Methodological Approach

The indicator system is based on qualitative and quantitative criteria. Each indicator is structured as:

- Indicator description
- Evidence required
- Scoring scale (0–3)

Scoring scale:

0 = Not in place

1 = Initial stage

2 = Partially implemented

3 = Fully implemented and embedded

## 4. Governance and Leadership Indicators

Key indicators include:

- Integration of Blue Education in school strategy
- Appointment of a Blue Education coordinator
- Leadership commitment to sustainability
- Policy alignment with EU frameworks

Evidence:

- Strategic plans
- Meeting minutes
- Official policy documents

## 5. Curriculum Integration Indicators

Indicators:

- Inclusion of marine and water topics

- Interdisciplinary curriculum design
- Project-based learning implementation
- STEM integration

KPIs:

- % of subjects including blue topics
- Number of interdisciplinary projects per year

## 6. Teacher Competence and Training

Indicators:

- Participation in professional development
- Knowledge of blue economy topics
- Use of innovative pedagogies

KPIs:

- Number of trained teachers
- Hours of training per year

## 7. Infrastructure and Resources

Indicators:

- Availability of laboratories or equipment
- Access to digital tools and platforms
- Teaching materials on Blue Education

KPIs:

- Resource availability index
- Student access ratio

## 8. Partnerships and Stakeholder Engagement

Indicators:

- Collaboration with universities and NGOs
- Industry partnerships
- Participation in Erasmus+ projects

KPIs:

- Number of active partnerships
- Number of joint initiatives

## 9. Student Engagement

Indicators:

- Participation in projects and competitions
- Awareness of blue careers
- Inclusion strategies

KPIs:

- Participation rates
- Student survey results

## 10. Monitoring and Evaluation

Indicators:

- Internal evaluation systems
- Feedback mechanisms
- Data collection processes

KPIs:

- Frequency of evaluations
- Improvement rate over time

## 11. Sustainability and Impact

Indicators:

- Long-term sustainability strategy
- Contribution to SDGs
- Environmental footprint reduction

KPIs:

- CO2 reduction measures
- Sustainability initiatives implemented

## 12. Digital Readiness

Indicators:

- Use of ICT tools
- Digital learning environments
- Online collaboration platforms

## 13. Inclusion and Diversity

Indicators:

- Equal access to programs
- Gender balance in STEM
- Support for disadvantaged students

## 14. Safety and Ethics

Indicators:

- Safety protocols for activities
- Ethical guidelines for research
- Data protection compliance

## 15. Financial Capacity

Indicators:

- Budget allocation for Blue Education
- Access to external funding
- Financial sustainability



## 16. Communication and Dissemination

Indicators:

- Visibility of activities
- Dissemination strategies
- Stakeholder communication

## 17. Local and Regional Alignment

Indicators:

- Alignment with regional strategies
- Contribution to local economy
- Community engagement

## 18. Innovation and Entrepreneurship

Indicators:

- Support for student innovation
- Entrepreneurship programs
- Startup incubation initiatives

## 19. Environmental Responsibility

Indicators:

- Sustainable school practices
- Waste reduction
- Energy efficiency

## 20. Blue Career Orientation

Indicators:

- Career guidance programs
- Industry exposure
- Skills mapping

## 21. Indicator Checklist Table (Example)

Indicator | Description | Evidence | Score (0-3)

Governance | Strategy integration | Official documents | \_

Curriculum | Blue topics inclusion | Curriculum plans | \_

Teachers | Training participation | Certificates | \_

Partnerships | External collaboration | Agreements | \_

## 22. Implementation Guidelines

Steps:

1. Self-assessment
2. Data collection
3. Scoring
4. Gap analysis
5. Action planning

## 23. Quality Assurance

Includes:

- External validation
- Peer review
- Continuous monitoring

## 24. Case Study (Example)

A secondary school integrates marine biology into science curriculum, partners with a local marine institute, and engages students in coastal monitoring projects.

## 25. Alignment with EU Policies

The framework supports:

- European Green Deal
- Blue Economy Strategy
- Sustainable Development Goals

## 26. Challenges and Risks

- Limited funding
- Lack of teacher expertise
- Insufficient infrastructure

## 27. Recommendations

- Invest in teacher training
- Strengthen partnerships
- Increase funding opportunities

## 28. Future Outlook

Blue Education is expected to grow significantly, creating new career opportunities and strengthening sustainability education.

## 29. Conclusion

The indicator checklist provides a robust tool for schools to transition into Blue Education Areas and contribute to sustainable development.

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