



INTELLECTUAL OUTPUT 5

**ROADMAP FOR SUPPORTING
THE UPTAKE OF THE BLUE CHALLENGE
IN THE MEDITERRANEAN SCHOOLS**

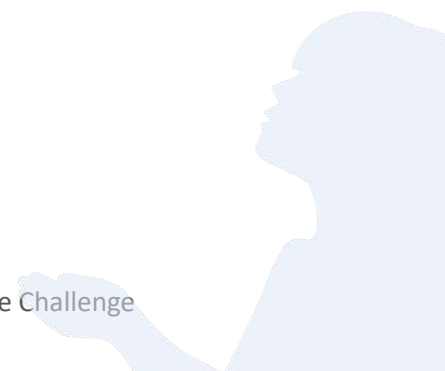
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1. INTRODUCTION

The Ocean is a defining feature of the Earth. The interconnection of five ocean basins (the Atlantic, Pacific, Indian, Arctic, and Southern) make up one unique Ocean that covers most of our planet. Moreover, the Ocean regulates the weather and the climate, absorbs vast amounts of carbon dioxide, provides most of the oxygen, and feeds much of the human population. All life, including our own, exists because of the ocean and fully depends on the health of the ocean as well. Therefore, understanding how the ocean functions and its influence on us and how our actions influence the ocean – Ocean Literacy¹ becomes crucial and finds its place in research, education and policy actions of the UN Ocean Decade.

EU4Ocean Coalition on Ocean Literacy² was established in 2020 to raise awareness about the oceans and to engage citizens in Ocean Literacy actions around Europe. EU4Ocean connects diverse organisations, projects and people that contribute to Ocean Literacy and the sustainable management of the ocean. Supported by the European Commission, this bottom-up inclusive initiative aims at uniting the voices of Europeans to make the ocean a concern for everyone.

EU4ocean comprises three communities : The EU4ocea platform, Youth4Ocean and the Network of EU Blue Schools: The latter brings the ocean into the classroom. On the journey to becoming a European Blue School, teachers and pupils improve their understanding of the ocean and develop a sense of responsibility towards our shared planet. Accordingly, the Network of European Blue Schools aims to inspire teachers, school directors or staff of education services, to challenge their students, from kindergarten, primary, lower and upper secondary, technical or vocational schools, to develop a “Find the blue” project that links them to the ocean or the sea. By successfully completing the project and sharing its results, schools receive the European Blue School Certification.

The BlueS_Med Erasmus+ project aimed at developing, testing, and evaluating innovative approaches to integrate ocean/marine issues and challenges in the curriculum and educational activities in four Mediterranean countries: France, Italy, Greece, and Malta.

The project followed four main principles: co-building, interactivity, proactiveness, inclusivity, sustainability and continuity over the years. Accordingly, the project lasted three years, starting from September 2020 and ending in August 2023³. The project was implemented in four phases:

¹An ocean literate person can understand the importance of the ocean for humankind, is able to communicate about the ocean in a meaningful way and has a more responsible and informed behaviour towards the ocean and its resources “Ocean Literacy for All – A toolkit” on: <https://unesdoc.unesco.org/ark:/48223/pf0000260721>

² www.eu-oceanliteracy.eu

³ A “Blue Challenge” is an environmental educational initiative, designed by/for pupils and teachers, with the aim to learn more about the ocean among the other fundamental elements of the Earth system at school. This initiative points to develop and implement ocean-related school projects that bring together pupils and teachers co-designing their Blue Challenges. Additionally, it aims to help pupils become informed and eco-responsible citizens who understand the ocean, and act consciously towards environmental and real-life issues on both local and global scales! The final goal is to make Ocean Literacy a significant part of the school curriculum through project-based learning.



- ▶ **Phase 1**, a conception phase, focusing on the development of the Blue Challenge framework and on the consolidation of the consortium
(Phase 1 resulted in the IO1 report - Our Mediterranean Blue Challenge Framework and Guidance)
- ▶ **Phase 2**, focusing on the development of the Blue Challenge in the thirteen schools associated with the consortium
(Phase 2 resulted in the IO2 report – Proposed Blue School Challenges)
- ▶ **Phase 3**, regarding the practical implementation of the Blue Challenge in the schools and its monitoring
(Phase 3 resulted in the IO3 report - Assessing added value and impacts).
- ▶ **Phase 4**, evaluating and disseminating the results of the project in the Mediterranean Sea basin scale,
(Phase 4 resulted in this report IO5 - Road map for supporting the uptake of the Blue Challenge in the Mediterranean Schools)

Current report presents outcomes of the findings of the last phase (IV) of the 3 years project and summarises the results and provides recommendations, assesses the pre-conditions that would support the wider uptake of Blue Schools/Blue Challenges in the different countries and at the Mediterranean scale, accounting for the differences and specificities of the education system and governance in the different countries.

This report first explains the **methodology** of the process towards designing the roadmap, presents direct findings from the conducted **surveys and SWOT analysis**, and finally lays out the different **recommendations** towards achieving a successful integration of ocean literacy in Mediterranean schools, and beyond.

A **policy brief** accompanies the report to summarize key take aways from three years on the project, building on partners/teachers/pupils' experiences, on the tested framework and monitoring methods, on the organised trainings and activities and on the final multiplier events' messages.

2. APPROACH FOR DEVELOPING THIS ROADMAP

Below are some recommendation elements emanating from individual schools, national multiplier events and regional Mediterranean event.

1. Analysis of the implementation of the Blue Challenge projects in the individual schools

In order to make a comparative analysis, evaluate impact and to draw best practices and recommendations, particular attention was given to the monitoring and evaluation of the Blue Challenge implementation developed in the different schools. The main questions were the following: *what worked well, what can be improved, what are the best practices to share with other schools??* This was carried out in line with BlueSMed framework (described in IO1) and building on the results of evaluation questionnaires (in Annex 5.2, and also IO3).

During the course of the project three transnational training activities were organized⁴. These training workshops provided an opportunity to the schools to share their experiences in developing their BlueChallenge projects, discuss challenges they face, and solutions. These trainings brought together pupil ambassadors, and gave opportunity for partners, teachers and pupils to experience countries, visit the classrooms, and engage in the training on marine subject. These trainings provided unique opportunity for exchanges, enrichment and experiences.

For comparison between the experiences gained by pupils and teachers in different schools, the changes were measured between the initial level of ocean literacy and the situation after the Blue Challenge has been implemented (mainly regarding the impacts on the pupils as it is too soon to measure the impacts on the local community). Different evaluation tools (such as combining interviews, online questionnaires, interactive sessions with pupils, role games, etc.) were used to capture these impacts in terms of understanding and knowledge, perceptions and attitudes, awareness and activism as well as emotions and potentially behaviour change of the involved pupils, teachers, school managers and others, who were involved in the design and implementation of the Blue Challenges.

2. Analysis of the recommendations extracted from national multiplier events

In the course of the project, four multiplier events were organized at national level. The aim of the multiplier workshops was to share the project results and outputs to a wider community of stakeholders both at national scale⁵. The main target audiences involved in these workshops were teachers, school managers, education services, officers of the educational community, science-education networks, ecological-schools, marine stakeholders, local authorities and relevant stakeholders from non-EU country members. As regards the lessons learnt from the multiplier events, through the various interactive working sessions held, all blue challenges activities and results were shared and later on confronted to the results of other organisations involved in similar blue projects. Furthermore, a specific questionnaire was developed and distributed to all participants during the transnational multiplier event to assess their satisfaction vis-à-vis the event itself, and their views on the results and experiences presented.

⁴ Reports are available on project's website www.blueschoolsmed.eu

⁵ Idem.

3. Analysis of recommendations from the Mediterranean multiplier event

The national recommendations will be complemented by an overarching view from the Mediterranean perspective, resulting from the Mediterranean multiplier event⁶, which was organized in Marseille – as a last event of the BlueSMed project. During its sessions the participants and speakers and pupils presented and discussed the challenges and solutions for upscaling the experience for the BlueChallenge projects in the Mediterranean (including non-EU countries).

4. Multiplex approach – SWOT analysis

In order to assess the pre-conditions that could support the wider uptake of Blue Challenges in the different countries and at the Mediterranean scale, the differences and the specificities of the educational systems and governance of the different countries were taken into account. Accordingly, a **SWOT** (Strengths, Weaknesses, Opportunities, Threats) analysis was undertaken to identify the strong and weak points **of the project** from all points of view in order to build recommendations for future initiatives. The SWOT analysis was carried out based on the collected views of partners and teachers during the last year of the project.

⁶ Report is available on project's website www.blueschoolsmed.eu

3. RECOMMENDATIONS FOR UPSCALING

Based on the previously drafted analysis, below is a multi-level distribution of the proposed recommendations :

- On a school level
- National/country level
- International/ Mediterranean

3.1. Views of individual teachers and pupils

“The project allowed our pupils, who live by the sea without really being interested in it, to see that they can participate in its protection at their level, not by unachievable projects, but by changing their behaviour and by getting the children but also the adults around them to do the same.”

From the analysis of surveys and interviews of teachers, headmasters, pupils and partners (for details please see questionnaire templates in Annex 5.2, and results in Annex 5.3) the following conclusions can be derived:

From the teachers' point of view:

- To capitalize on the strengths of the project, it is essential to always maintain a **good organization**, offering **mobility** and **continuity** to the program.
- **Emphasizing knowledge of local biodiversity, incorporating Ocean Literacy** in the school curricula, and **organising outdoor activities** (like snorkelling, sailing, beach clean-ups) can further enrich pupils' learning experience, while fostering their collaboration, motivation, and passion for marine conservation.
- Moreover, promoting a **student-centered and multi-disciplinary approach**, moving away from curriculum-centered schooling towards a more flexible and innovative approach would improve learning outcomes.
- By encouraging **common projects for different classes** and **facilitating travel opportunities**, the educational program would enhance the overall learning environment, also creating opportunities for students to meet scientists and share their work.
- To address weaknesses, allocating **sufficient time** and providing **more financial support** would ease the workload for teachers and enhance the program's effectiveness.
- **Language barriers, poor communication** among teachers and **lack of collaboration** from schools' stakeholders also pose challenges and they can hinder effective coordination and progress.
- Establishing **links between students from different schools** would promote cross-cultural exchange and diversity.



In regard to pupils' engagement, below are a few recommendations to address their roles in the project:

- Introduce a **dedicated school subject focused on ocean-related topics**.
- Organize extensive **meetings with students from other cities**, fostering knowledge exchange and presenting their findings through workshops.
- Engage in **socially useful activities** like beach cleaning to promote environmental consciousness.
- Arrange **boat trips for students**, creating memorable learning experiences through getting in direct touch with the sea/ocean.
- Conduct **lectures** about the sea, with a focus on discussing plastic pollution and its impact.
- **Integrate students' passions**, linking the project to fields like chemistry, physics, and mechanics

Other ideas:

- Raise awareness about new/rising/pressing environmental concerns (e.g. PFAS and PFOAs, Blue carbon...).
- Visit industrial facilities to understand various technical processes and environmental solutions (e.g. water treatment plant, solid waste sorting facility...).

Recommendations from partners:

- **Build on strengths:** Enhance fun and interesting **on-field activities**, involving schools of different types and levels, **fostering sea sensitivity**, and leveraging expertise in marine education and science.
- **Be innovative:** Promote innovative blue projects, encouraging the involvement of ocean literacy, and **supporting multidisciplinary approaches**.
- **Strengthen collaborations:** Facilitate exchanges and interactions between experts and non-experts, encouraging co-responsibility and inclusiveness.
- **Establish a Mediterranean network:** Further develop the beginning of a potential Mediterranean network to share diverse perspectives and knowledge.
- **Improve communication:** Address weaknesses in organization, coordination, and communication to enhance interaction and resource distribution.
- **Utilize social media:** Utilize social media platforms for advertising and visibility, connecting with public corporations and European Blue Schools.
- **Integrate Ocean Literacy:** Integrate Ocean Literacy with school curricula, expanding opportunities for culture exchanges and co-working with local schools.
- **Search for funding and support:** Apply for new Erasmus+ funding, engage marine researchers, and seek interests from EU/regional levels to secure necessary resources.
- **Address threats:** Address bureaucracy, communication difficulties, and challenges in working with Ministries of Education.
- **Adapt to circumstances:** Be flexible and learn from trial and error, adapting to challenges such as the COVID-19 pandemic and time constraints.
- **Ensure continuity:** Work towards ensuring continuity with marine science and sustainability beyond the project's end, fostering long-lasting connections between schools.

3.2. Views from the national/country levels

Four multiplier events aiming to share results of Erasmus + Blue challenge in the Mediterranean with French stakeholders and networks were organized at national levels:

Multiplier event	Date and location
Maltese Multiplier event	24/02/2023 Qawra
Greek Multiplier event	18/03/2023 Anavissos, Attica - Greece
Italian Multiplier event	05/05/2023 Forlì - Italy
French Multiplier event	10/05/2023 Marseille - France

The aim of the multiplier events was to share the project results and outputs to a wider community of stakeholders both at national scale (see the reports from National Multiplier events), and to come out with recommendations to enhance similar projects and set the stage for a roadmap towards the upscaling of Blue Schools on a national, then Mediterranean levels.

The main target audiences involved in these workshops were pupils, teachers, school managers, education services, officers of the educational community, science-education networks, ecological-schools, marine stakeholders, local authorities and relevant stakeholders from non-EU country members.

The table below presents the main outcomes concerning the recommendations for upscaling the Blue Schools at the national levels, based on the outcomes of the four multiplier events.



Table 1. Comparative analysis of recommendations across four countries

Italy	France	Greece	Malta
<ul style="list-style-type: none"> • Create networks starting from the “bottom”, meaning to start of building from the local level. • Counter school dropout: consulting the projects launched by the Italian Ministry of Education (Ministero dell'Istruzione e del Merito) and creating more local networks (e.g.: Green Community, Rete Adolescenza, Rete Generazione Blu). • Funding school training (e.g.: Association of Mayors of the Area, Educational Research Centers) and helping teachers to go through different types of training/projects. • Searching for calls for proposals: lack of a professional figure in the school to be in charge of the calls. • Important to participate in educational days and meetings as they are key moments of getting to know people and begin bottom-up construction of networks. • Listening to pupils and giving them more space to participate in different kind of scientific programs. 	<ul style="list-style-type: none"> • Involve the various hierarchical levels of the education system. They must, at the very least, be informed and preferably support the teachers to enable them to carry out the projects. Difficulties with local education authorities could happen when they are unfamiliar with the projects and can act as a brake on them. • Include this type of project as a school project so that it can continue over the long term (even if it can start small with just one class). • Promote complementary pedagogical approaches while including marine topics through different discipline of the curricula as for example an investigational and/or multidisciplinary approach in all pedagogical projects and on all school levels • Foster the participation of school classes to environmentally oriented educational projects, open-house days as-well as science fairs as these are important to network, share objectives and get in contact to potentially begin the co- construction of an action. • Anchor the projects locally and create links with the local community (e.g.: scientists, NGOs, local environmental managers, cities, protected areas managers...). For instance, in close collaboration with scientists, organize exchanges, lab visits and meaningful outdoor activities. • Provide teachers with background information and educational resources on marine topics, and especially train them to know how to link this knowledge with the main disciplines such as math, French, history and geography in order to facilitate implementation. • Actively involve pupils and give them adapted occasions to participate in different kinds of environmental programs that increase the essential soft skills (including critical-thinking, culture of dialogue, citizenship), arts and sports • Regarding communication: be clear that the aim is not to achieve figures but to have ocean projects that work, that are of high quality and that train the citizens of tomorrow. • Organise yearly face-to-face meetings, because it revitalizes things and creates peer-to-peer exchanges. 	<ul style="list-style-type: none"> • Need of the teachers for more resources on marine issues and challenges in their own language • More school and outdoor activities for pupils • Training the trainers (teachers/educators) in order to feel more confident: a) for the marine issues, especially teachers at primary schools (they do possess the pedagogical content knowledge but not the specific content knowledge as well as research and project-based approaches), and b) for the pedagogical issues, especially teachers at secondary schools who are usually biologists, physicists, chemists, geologists, etc. • Open schools to local community and more specifically engage pupils with scientists in order to foster the belief that “science is for me” • Multi-disciplinarity and inter-disciplinarity in “teaching and learning” marine issues at schools, as pupils are different from each other and should be approached through different school subjects • Foster inclusivity in terms of multicultural pupils, as well as pupils with special educational needs • Funding of schools to implement blue-project based activities • Reward and recognition of the teachers for developing and implementing blue projects • Facilitate networking between teachers • Collaboration with other local/regional/national partners and stakeholders • Facilitate travel exchanges for different cultures and views • Bureaucracy elimination and time constraints • Integration with the educational community and Ministries of Education under the umbrella of blue/green/sustainable projects (towards Sustainable Development Goals) 	<ul style="list-style-type: none"> • Increase links between participating schools and other ESD projects within schools to increase synergy. More collaboration to be sought from other national schools and with schools of other countries to foster intranational and international collaboration. • Teachers involved or interested to be involved in BluschoolsMed should have an organised programme on continuous professional development (CPD) on innovative pedagogy and introductory marine science. • Project are to have increased and meaningful links with the community utilising Local Councils as a springboard to engage community members and give meaning to students’ work. Local Councils to be contacted early in the project phase in order • Develop a sense of ownership of the project with the schools’ senior management team SMT. This contact should be established early on in order to reduce possible bureaucracy in obtaining funds and permits to travel etc. The SMT can also be fundamental in establishing a working relationship with the parents of the school – to increase project engagement and diffusion. • Envisage a bottom up approach working in synergy with a top down approach to increase project success. • An association of teachers involved in BluschoolsMed should be set up in order to have sharing of experiences and peer to peer learning. • Participating schools have to seek ways through which the digital tools being demonstrated can be mainstreamed within their premises for educational purposes in future. • Educational visits like the 24th February 2023 one should be entrenched on an annual basis within school curricula.

3.3. Upscaling across countries

Following the four national multiplier events, the Mediterranean Multiplier event was jointly organized by the Parc National des Calanques and ACTeon, with a strong support from the French partners OFB and IMEV. The two-day event took place in Marseille, on the 11th and 12th of May 2023 (see details in event report – add link).

The following important elements/conclusions resulted from this event:

1. **The added value of the BlueChallenge projects across all countries⁷:**
 - The project's added value encompasses **multiple aspects**: first of all, one of the most celebrated strengths of the project was its international dimension through transnational co-operation and sharing of experiences among countries (and acknowledging the presence of transnational problems by pupils. Landlocked countries in particular should benefit of this type of interaction to bring the ocean closer.
 - Pupils acquired essential skills in **argumentation and negotiation**, fostering a connection to citizenship and ultimately, democracy. They also developed a deeper understanding of the **linkages between different cultures and the sea**, while **strengthening bonds with their peers** through collaborative work.
 - The project's **interdisciplinary nature integrated subjects** like civic education, arts, and field work, promoting a **holistic learning experience**.
 - Moreover, it facilitated **transformation, empowerment, and critical thinking** when teachers and pupils were granted a certain level of **autonomy**. Students were actively engaged in listening, but also in conveying meaningful messages through various public speaking opportunities. With a **pupil-centered approach and applying Education for Sustainable Development (ESD)**, the project served as **an example** for other teachers, encouraging them to follow suit. The initiative's impact extended beyond pupils and teachers, as partners also gained valuable insights through the outputs and feedbacks received during activities. Most importantly, the project succeeded in captivating the interest of students who were typically less engaged in the classroom, making a significant difference in their learning journey.

2. The discussion demonstrated that the four countries had **different approaches to the inclusion of SDGs in the classrooms**. Overall, the ocean is present through scattered topics, lacking a connection between them. Incoming opportunities lie in updating the textbooks and improving the sustainability content!
 - **France** includes ocean knowledge and SDGs in its curriculum, yet teachers have some freedom in developing the methods of teaching.
 - **Italy** provides national guidelines with targeted objectives and specific competencies, offering some flexibility.
 - **Malta** aims to infuse Education for Sustainable Development (ESD) in the curriculum, granting autonomy to teachers, despite the challenges faced in changing an outdated education method.
 - **Greece** has a more specific and less flexible curriculum in secondary schools, but primary schools enjoy a bit more freedom to tackle these issues (e.g., labs for the environment).

⁷ See additional results in the IO3, and also in annex 5.3

3. Several **challenges** were revealed throughout the course of the project:
 - **Teachers** expressed insecurity and a low confidence in addressing these topics, suggesting *a strong need for support and a clear need to establish proper collaborations and offer teachers trainings, and well-designed specific educational material.*
 - A concerning issue was the **disconnection** of pupils and modern families **from nature**, with what is referred to as “nature deficit disorder”. This could lead to an indifference towards environmental issues, and thus lack of initiative. In fact, experience showed that **pupils** tend to retain more information through fieldwork activities, an example that the growing network of Educational Marine Areas in France proved successful. *The establishment of such initiatives and extracurricular activities on a national and regional scale could be facilitated by ministries, municipalities and educational institutions.*
 - Finally, **teachers seem to be undervalued** in various locations around the Mediterranean, despite the valuable knowledge they have on effective teaching methods, which should be more adequately recognized, considered and remunerated. *The role of ministries and supporting institutions is thus crucial, especially the ones that teach sustainability education to future educators (e.g., DUTH: Teaching teachers to teach sustainability in Greece; the Center for environmental education research in Malta).*

To pre-conditions of success to ensure uptake of the blue Schools/BlueChallenge projects in the Mediterranean were identified as the following:

- **Ensuring Pupil Ownership:** Ensure children are at the center of the "blue project" by beginning with their interests (e.g., digital, gaming) and empowering them to take ownership, but also giving them a stronger voice.
- **Broadening the Scope of Blue Projects:** Move beyond biodiversity to address the links between our lifestyle choices and ocean challenges, including social sciences and challenges facing the sea basin.
- **Revisiting the 7 Ocean Literacy principles** and increasing scientific familiarity.
- **Developing School-Based Projects:** Create projects that extend beyond individual classes, aligning with the school's overall pedagogical vision.
- **Sharing Experiences and Learning from Failures:** Encourage the sharing of experiences, including unsuccessful attempts, to foster learning and improvement.
- **Benchmarking Blue Education Networks:** Conduct a benchmarking exercise to understand the roles, mandates, constraints, and enablers of different blue and green education networks. But also understanding the power each network has to disseminate knowledge and engage communities.
- **Integrating Sustainable Development Goals into National Curricula:** Including its blue component but avoiding the “blue fashion” trap.
- **Focusing on Open Schooling and Critical Thinking:** Emphasize open schooling, critical thinking, and citizenship in blue education while addressing liability/responsibility concerns for teachers.
- **Including Ocean Conversations in Teacher Training:** Integrate ocean conversations and training into teacher education programs and offer regular training opportunities for teachers only.
- **Fostering Collaboration:** Encourage collaboration with other ministries, local authorities, municipalities, and international networks to enhance blue education. Utilizing ministries to put in place regional groups/clusters once the networks are growing.
- **Facilitating Knowledge Sharing:** Promote connections among students, teachers, and schools, but also including parents, young adults and the wider community, for the purpose of a wider exchange of knowledge and expertise.



3.4. Results of SWOT Analysis

Below are some key answers for the SWOT analysis of the BlueSchoolsMed project by partners.



4. CONCLUSIONS - THE WAY FORWARD

For the successful uptake of the Blue Challenge projects in the future we 'need tools, money and support and we need to work on multiple fronts!'

The outcomes of the BlueS_Med project, which include development of the framework for the BlueChallenge projects and evaluation of their impacts in 19 pilot schools in 4 countries over 3 years have allowed us to draw some important conclusions on where the opportunities and pre-conditions for success are for supporting the Blue Challenges projects in other countries in the Mediterranean and beyond.

Accounting for the differences and specificities of the education system and governance in the different countries, the conclusions and recommendations for the future project and uptake at different scales - local, national and regional.

The pre-conditions for success in upscaling and having more schools carrying out the Blue Challenge projects and joining the Network of European Blue Schools can be summarised below as following:

1. **Integrating Sustainable Development Goals into National Curricula:** including its blue component (ocean literacy), but avoiding the “blue fashion” trap from kindergarden to secondary school. So, it gains '**mandatory/ priority**' (*i.e.*, along with languages, maths etc...) thus being a part of the sustainability/environmental education. The real benefit of the Blue Challenges projects is that the pupils think together about a common cause, whatever the initial ocean-related subject (sport, art, sensitivity, science, etc, and include more topics related to social sciences).

=> If we want marine science to enter school curricula, we need to be able to find a common ground, while still being different in terms of culture, territory, methodological approaches, from different countries but all Mediterranean.

2. **Make the partnership official:** providing institutional support for adequate twinning – school collaborations, making collaboration official by signing a document in the beginning of the project ensuring commitment of teachers, and displaying what is expected from them.
3. **Clarify incentives (rewards and recognition) for teachers (and pupils!), in addition to schools** to ensure commitment - what is in it for them - not additional thing to do without time and resources...recognition by school headmaster, city, region, etc...
4. **Provide an easy access to information and existing resources.** Training teachers (training the trainers!) and creating specific materials to help them to include ocean literacy in basic disciplines such as math and language.
5. **Developing supporting ecosystem around teachers:** build a strong core group; Gathering partners (scientific, NGOs, professionals, elected representatives) into a local network that can support teachers and their projects. Communication with teachers' networks is needed to choose the «right/best» teachers to be engaged in such projects.
6. **Engaging the pupils:** using the natural interests of the pupils to build the project instead of giving new formal lecture courses. Keeping one foot in and out of school. What attracts students is that they don't feel like they're really at school when they're doing the project, even though they're working on and acquiring the skills required by the curricula. Give more floor to the pupils, make sure to involve classes and not just individuals. Format of presentation makes all the difference: fairs organised by pupils or speed meetings are much more effective and fun!

7. **Using complementary pedagogical approaches** while including marine topics through different discipline of the curricula as for example an investigational and/or multidisciplinary approach in all pedagogical projects and on all school levels
 - Anchor an intimate relationship with the local marine environment. By developing this sensitivity, pupils are keen to learn about and protect the marine environment.
 - Forge links across the local territory: between adults and pupils, parents and children, etc.
 - Generate pupils' commitment to the project, but also beyond school: it can be an introduction to eco-citizenship and a motivation to continue.
 - Give meaning to school learning, are cross-curricular and can be applied to all subjects. By going outdoors, pupils feel they are learning in a different way.
 - Change the way students and teachers behave. Pupils realize that the teacher does not know everything, but that this is normal, and that they too can pass on knowledge to adults.
 - Organize exchanges on different levels: information days, networking meetings, lab visits, etc...

8. **Specific fundings/institutional support for school projects:**
 - It is important to improve is the access to funding to be able to buy material or go on outings to conduct these projects.
 - Integration with the educational community and Ministries of Education under the umbrella of blue/green/sustainable projects (towards Sustainable Development Goals)
 - Each country, with the ministry of education, has to build its own network (separate the objectives, activities...) to support teachers and projects (keeping in mind that education is a national policy, and each country is free to define its own priority)
 - Collaboration between DG MARE/ENV/EAC
 - Working together with STEM, eco- schools, other regional networks (such as AME?)
 - Easing the administrative/bureaucratic barriers, authorisations, etc...

5. ANNEXES

5.1. List of the projects implemented by the BlueSMed schools

Detailed description of the projects can be found in the IO2

COUNTRY	CITY	SCHOOL	TITLE OF THE PROJECT
France	Villefranche-sur-Mer	École Joseph Caldéroni	Adopt a float
France	Marseille	École La Roseraie	Educational Marine Area Anse De La Fausse-Monnaie
France	Marseille	École Montée des Accoules	Educational Marine Area of St Estève
France	La Ciotat	École Louis Marin	Educational Marine Area of Grand Mugel
Greece	Alexandroupolis	6 th Elementary School of Alexandroupolis	Tracing the invasive blue crab species in North Aegean Sea
Greece	Gournes Pediados	Elementary School of Gournes Pediados	Spot the alien blue crab (<i>Portunus segnis</i>) in the Cretan Sea
Greece	Alexandroupolis	11 th Elementary School of Alexandroupolis	Getting acquainted with a typical Mediterranean estuarine system
Greece	Korydallos	8 th Junior High School of Korydallos	Robyssey
Italy	Quarto	Istituto Comprensivo Statale 3° Gadda	No man is an island
Italy	Lugo di Vicenza	Istituto Comprensivo Statale "B. Nodari"	The Mediterranean dream - A trip through the Mediterranean
Italy	Roma	ENGIM - San Paolo	Blue heart
Italy	Forlì	Istituto Tecnico Tecnologico Statale Guglielmo Marconi	W.A.T.E.R. - What a teal renewal
Italy	Alghero	Istituto Istruzione Superiore "E. Fermi"	Sea in a bottle
Italy	La Spezia	Istituto di Istruzione Superiore "G. Capellini – N. Sauro"	ML-CSA - Study the marine litter dispersion: Citizen science application case
Malta	Mellieha	Maria Regina College Mellieha Primary School	Sea life
Malta	B'Kara	St Monica School	Sea vegetable use in food preparation
Malta	B'Kara	St Aloysius' College Secondary School	Raising awareness on local fish
Malta	Mosta	Maria Regina College Mosta Secondary School	Kahooting our way through the sea
Malta	Tarxien	St Thomas More College Hal Tarxien Middle School	Fishing - A way forward

5.2. Questionnaire of SWOT analysis for partners

SWOT Analysis

Don't be too concerned about elaborating at first, just **capture the factors you believe are relevant** in each of the four areas (see questions for guidance). Try to **summarize your opinion using keywords**. Once you are finished, **reorder the items** in each category **from highest priority to lowest**.

NAME (Optional):

COUNTRY:

ROLE (Partner/Teacher/Other):

STRENGTHS (internal, positive factors)	
<ul style="list-style-type: none"> • What do we do well? What do we do best? • What's unique about our project? • What resources do we have? 	<ul style="list-style-type: none"> • Which features are performed well? • What could 3rd parties see as our strengths? • (What do you like more about our project?)
WEAKNESSES (internal, negative factors)	
<ul style="list-style-type: none"> • Which initiatives are underperformed? Why? • What can be improved? 	<ul style="list-style-type: none"> • What resources do we lack? • (What would you do differently?)



SWOT Analysis

Don't be too concerned about elaborating at first, just **capture the factors you believe are relevant** in each of the four areas (see questions for guidance). Try to **summarize your opinion using keywords**. Once you are finished, **reorder the items** in each category **from highest priority to lowest**.

OPPORTUNITIES (external, positive factors)	
<ul style="list-style-type: none">• What kind of opportunities are present?• What are our goals for the future?• How can we expand our ideas better?	<ul style="list-style-type: none">• Which new initiatives could be developed?• Which features can we take advantage of?
THREATS (external, negative factors)	
<ul style="list-style-type: none">• What kind of difficulties are causes for concern?• Which challenges do we have to face?	<ul style="list-style-type: none">• How can we deal with the different types of limits?• How to make our ideas of common interest?

5.3. Results of the questionnaires

5.3.1. Teachers's views

The survey of the BlueSMed teachers has been carried out at the end of their Blue Challenge projects to better understand **the added value and experiences as well as to derive recommendations** for the future projects. Below are some answers:

“I have gained knowledge and experiences and I have had a lot of new contacts of teachers for future collaboration.”

- ▶ “This experience was very rewarding, both from the point of view of scientific knowledge that I have gained and from the point of discovering other projects or meeting new people. It was also a strong lever of motivation in the class...”
- ▶ “This experience proved to be an enriching process, especially for the few introverted students that came on the trip abroad. The teachers noted that these students changed both mentally and emotionally, in a positive way. They could notice a difference in behaviour, particularly when opening up to their peers, as well as their teachers.”
- ▶ “After this project students became more aware and self-conscious about their natural and environmental surroundings, especially the sea.”
- ▶ “Rather than seeing it as something which needs to be done on its own, I learned to see it as a holistic approach and indirectly include it through different lessons and topics.”
- ▶ “This experience has been a great opportunity for growth from a professional and personal point of view. This experience also allowed me to understand which channels consent to access and learn about these interesting initiatives...”
- ▶ “Students were made aware of the importance of conserving marine ecosystems in the Mediterranean. The project activities involved case studies, workshops, and a communication campaign with families to achieve this objective. The students gained a deeper understanding of the issues related to marine conservation...”
- ▶ “Students worked on the theme of the sea in visual arts. The students have created seascapes using different techniques, such as painting, cutting and collage...The project encouraged the artistic expression and the discovery of the marine world, which will no longer be solely associated with science.”
- ▶ “The project allowed our pupils, who live by the sea without really being interested in it, to see that they can participate in its protection at their level, not by unachievable projects, but by changing their behaviour and by getting the children but also the adults around them to do the same.
- ▶ “Learnt to identify the different types of waste, their origin (source), their fate in nature (impact).”
- ▶ “Learnt how to adopt an eco-citizen approach, on their own scale, to limit marine pollution: cleaning actions, recycling, solutions to limit the production of waste (new lifestyle practices).”
- ▶ “Marine conservation initiatives must be supported by ongoing education to ensure the sustainability of conservation efforts. We hope that our students will continue to take an interest in ocean conservation in the long term and that they will be great little ambassadors to those around them.”



5.3.2. Partners' views

- ▶ “I believe that communication is crucial for these kinds of projects: needs to be clear and to the point for partners, attractive and really informative for schools.”
- ▶ “Positive experience, collaboration between partners, some difficulties between the various partners in terms of aims, which are too heterogeneous. I would improve the relationship between the students, avoid the involvement of adults and give them more space. I would organise more moments of confrontation and training.
- ▶ “It was a great opportunity for collaboration between partners of the marine science and education system as well as marine policy officers. It was also a great opportunity for the development of novel blue projects with teachers and pupils integrated with curricula of the elementary and high schools. There were a lot of bureaucratic constraints concerning the traveling of the pupils and teachers, not enough funds for traveling and no funds at all for the development and implementation of blue challenges. Time was also short, especially due to covid-19 limitations and no-extension of the duration of the project. Exchange between teachers and pupils of the different schools and countries was limited, probably due to language and lack of proper motivation. European Blue Schools network and Ocean Literacy were supported during the project. We need to define better criteria for choosing teachers and schools to participate in similar initiatives. The role of scientific researchers that participate in similar initiatives is not recognized by their organizations and scientific community and therefore they have no motives to work on these marine educational issues. Monitoring and evaluation of the performance of such blue projects-challenges are necessary procedures in order to investigate cons and pros of the whole procedure.”
- ▶ “As project, BlueS_MED, offered a positive and an interesting experience to teachers and to the students involved. Opportunities like this project are important as they give students a platform to learn through formal and non-formal education. Our project was about raising awareness about local fish. Students wanted to learn about the different types of local fish because at a fishmonger one can find several imported fish. They developed posters on different fish by researching online, interviewing fisherman, and also asking relatives. Through relatives they managed to find local recipes that use local fish. For example, when the students researched on octopus, they found a local recipe and wanted to try it out. We collaborated with the home economics department and used the school kitchen lab to try out this recipe. This was a very positive experience for the students. Apart from seeing the process of cooking octopus, they had the opportunity to ask teachers about the nutritional value of such species and learn different techniques. For some students this was the first time that they tasted octopus and wanted to try it out also at home with their families. Seeing the eagerness of students to learn and interested in something that is not part of their syllabus was very satisfactory and encouraged us teachers to continue this project. Through this project, students explored different ways on how to collaborate together to gather and present data. We plan to continue this project during the next scholastic years.”
- ▶ “I think such projects are essential in the development of ocean-related education in the Mediterranean Sea basin. The ocean is something that is very close to us, and we depend on it. Some people do not know the importance of having healthy oceans as we are becoming detached from nature as a society. Educating the next generation on the importance of oceans is essential for the future of the Mediterranean Sea. One day students might be in a decision-making position or work that requires knowledge of the ocean. If they were never taught or were never exposed to such issues, they would not see the importance to protect and conserve the sea as a natural resource around us.”



IO5: Road map for supporting the uptake of the Blue Challenge in the Mediterranean Schools

- ▶ “One of the factors that we would like to see it improve is the access to some funds to be able to buy material or go on outings to conduct these projects. Apart from that it would be great to have someone from the project come to school to meet the students and also meet the Senior Management Team. This would help us a lot to continue this project. Another thing that would be great for this project is to have something on a national scale where schools can meet to share their projects/experiences and also opportunities to collaborate and work together. Maybe also go to organized outings to places that are related to our projects to learn hands on. It would be a great idea to give students a personalized certificate or a type of recognition for their work. Last November as a school we received a certificate, but this was as a school. Students would love to have something that they can show their participation in such projects. This would be beneficial in the future when seeking employment or to continue studying.”
- ▶ “In my opinion, the activities developed have all been very effective and interesting, despite the problems of coordination, lack of time and resources, but it is absolutely necessary to further develop the interdisciplinary work and teaching part, involving the teaching of foreign languages, history, geography, physics, etc.”
- ▶ “Before developing something new, we should take time to see what already exists in the Med. Our project was small and not representative of the Med area of course. So, first lesson: to stay humble, open-minded. Second lesson: to listen to the teachers and give them a safe place to speak (translation, time to discuss face-to-face with other teachers without pupils...) A nice output would be a Med network of teacher sharing experiences about ocean literacy and not a new framework or label.
- ▶ “What is needed: - Solutions for language barriers!! - Solutions for better contributions from partners for input - Dedicated Communication partner/ budget - Listening more to teachers/ pupils - Better allocation of funding to trickle down to teachers - Take it to the next level and exchange with other Med countries - Include more topics related to social sciences. What is good: - Diversified expertise between partners enriched the conversation and co building process - Exchanging with teachers and pupils enriches the content and helps design better results content for everyone to share. - A lot of projects that can be used in the future - We should build on that! (Rich database of projects)”
- ▶ “Overall experience positive. The exchange of ideas is always more fruitful if we meet in person, and not on screens. Lesson learned: the different methodological approaches, from different countries but all Mediterranean, must be able to find common ground, while still being different in terms of culture, territory, etc., if we want marine science to enter school curricula. What I think has been somewhat lacking is a greater involvement of the partners in various activities and occasions. Since many of them are experts in the marine sector as well as in education, their greater involvement in the planning of activities would have been of greater benefit to the whole project.”
- ▶ “My experience in the project was marvelous, as I had the opportunity to meet and collaborate with so nice people and work together to a common scope related to ocean literacy and blue education among the Med countries. One lesson that I learnt is that if we want to engage more efficiently the educational community (teachers and students) and to create strong relations and collaboration with the scientists and the community, we have to let the schools to have and use their own budget in the project.”



IO5: Road map for supporting the uptake of the Blue Challenge in the Mediterranean Schools

It is always an enrichment to meet new people, but we don't need to reinvent the wheel every time. Several educational projects similar to this one have been already developed in the past and it crucial to take advantage of them. In general, I would have greatly appreciated the direct and widespread involvement of marine scientists in the training of teachers/pupils/educators during the project. We need to guarantee to the teachers some kind of reward to ensure the long-lasting process of including Ocean Literacy in the school curricula in the MED area. We also need to act at the EU level for this aim

- ▶ The project offered a very good initiative to work more on marine science and to gain knowledge about the sea and its importance. One of the advantages of the project is that it's a multi-disciplinary project, including different school types or levels as well as different subjects. I think the most important need is to have a common and permanent ocean-related education everywhere, in all kinds of schools, and even in countries far away from the sea. In connection with this, I think we should make more connections to build a wider (or even global) network working/teaching about Ocean Literacy. I think there should be more opportunities and funds to have many projects like the BlueS_Med project.