Network of European Blue Schools

A wave of EUROPEAN BLUE SCHOOLS

Handbook for teachers

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REFERENCE

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More information on the Network of European Blue Schools at eu-oceanliteracy.eu

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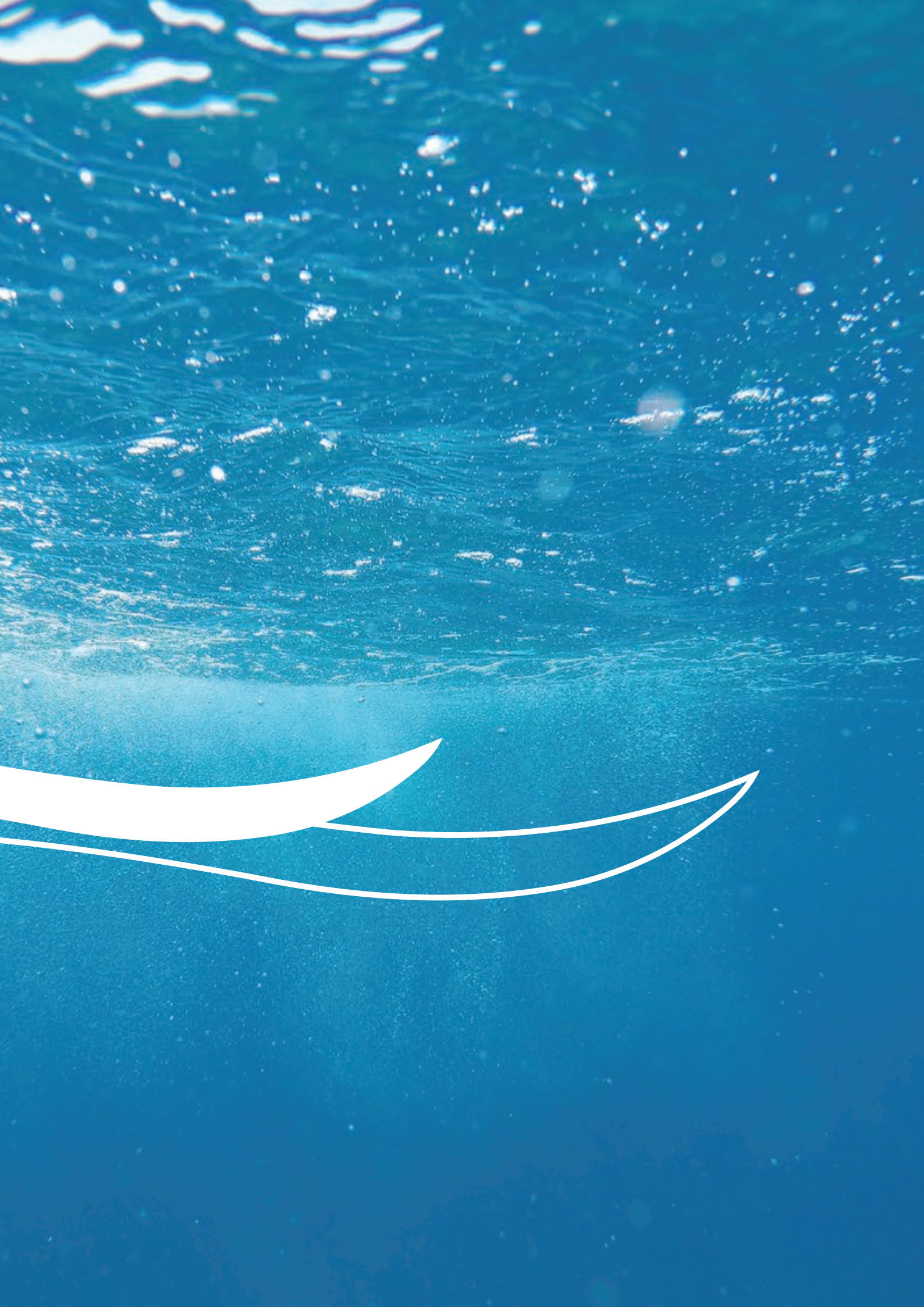


PREFACE

We live on a blue planet. Our planet has one ocean, without which, life as we know it would simply not exist.

Despite sharing a vast coastline and maritime history, many European citizens are not aware of the importance of the ocean and the opportunities it offers us – how it regulates the climate, how it produces much of the oxygen we breathe and the food we eat, and supports human livelihoods and wellbeing.

A paradigm shift is needed to reorient society towards valuing the riches of the ocean, so that it can continue sustaining life. Education is a key agent in this transformation, by equipping citizens with knowledge, skills, and competencies to secure a vibrant European Blue Economy and a healthy ocean for us all.

The EU4Ocean Coalition, with the support of DG MARE, brings together organisations, projects and individuals committed to promoting ocean literacy across Europe. The DG MARE recognises that the role of teachers is essential to the mission of the EU4Ocean Coalition. To support teachers, a Network of European Blue Schools is being established.

The concept of a European Blue School evolved from the marine education expertise gathered from consultations with teachers and educators across Europe. It acknowledges the variety of cultures and school communities from the 27 EU Member States and champions the concept of open schooling[1] – encouraging the development of local partnerships to make the learning context relevant. The challenges that the work of teachers faces are many, but through the Network of European Blue Schools, you will not be working alone.

All teachers are invited to join this effort to promote ocean literacy by taking the ocean into their classroom, helping to make it everyone's concern, no matter where you are. Teachers are mentors and inspirational figures for students and the subjects they chose at school, as well as their future career choices and attitudes towards the environment.

To get started, this Handbook is designed to meet you where you are on your ocean journey. It includes a wealth of useful resources and best practice to inspire you to find what connects you and your school to the ocean. It has built in flexibility to encourage and support teachers across all disciplines to bring the ocean to their classrooms, whether through biology, physics, chemistry, technology, mathematics, history, literature, or the arts.

By becoming a European Blue School you will:

- be able to work collaboratively with a growing network of European colleagues;
- be supported at every step by the Handbook and Coalition;
- have access to teacher development opportunities in different languages organized by EU4Ocean Coalition members and other European institutions and projects;
- have your efforts recognised through award of a certification by DG MARE;
- be in line with international initiatives including the UN's Decade of Ocean Science for Sustainable Development.

Every student has the right to an education that nurtures understanding of the complex biosphere they inhabit. The ocean touches all aspects of society, so it is time for us to assume our collective responsibility, as citizens of the Earth, and guide our lives knowing that the ocean matters.

Thank you for considering taking this journey of discovery with your students; championing ocean change within your community and leading the way towards fostering a generation of European Blue Citizens.

[1] http://ec.europa.eu/research/swafs/pdf/pub_science_education/KI-NA-26-893-EN-N.pdf

1

WHAT IS THE NETWORK OF EUROPEAN BLUE SCHOOLS?

1

WHAT IS THE NETWORK OF EUROPEAN BLUE SCHOOLS?

1.1 Embark on a journey to Ocean Literacy

All people on Earth are directly and indirectly connected to the ocean in a variety of ways: from what they eat, drink, breath and use to how they relax and enjoy the life… The ocean is our planet's life support system and it is thus a priority to protect it.

While the ocean and seas are suffering under increasing human pressure, educators and public authorities have empowered citizens in Europe through projects and initiatives to increase their knowledge on the ocean, and take more responsible decisions towards protecting the health of the ocean, which is a prerequisite to our future health.

The EU4Ocean Coalition, supported by the European Commission – DG Mare, now invites teachers (from kindergarten, primary school, middle school, junior high school, senior high school or vocational schools, from the coast to landlocked countries) to bring the ocean on a more long term basis into the classrooms all over Europe by taking up the *Find the Blue* challenge, and becoming part of the Network of European Blue Schools.

1.2 Find the Blue Challenge

The challenge is to **identify an ocean topic**, such as a good or a service that the ocean provides for our daily life, or a human activity that affects the ocean, **develop a school project** from it, together with a **local partner** (see 3. how to) and **communicate** about your project. The ocean is a fascinating world to discover, especially for young people. Together with students and the local or wider ocean community, teachers will embark on a journey to help students become responsible citizens who care for the ocean and have the capacity to act on real-life issues. Through the *Find the Blue* challenge, students build a stronger connection to the ocean, the seas and other aquatic ecosystems.

People who live far from the sea may fail to see the effects of pollution, beach litter, and climate change on the ocean, but this does not mean that they cannot have a positive effect on the ocean. It does not matter where you live, you can always protect the ocean by keeping rivers clean, by disposing your trash, not putting chemicals in the drain, cutting down on pesticides in your garden, eating sustainable fish or taking a train or bike for travelling. Whether a school is located by the sea or hundreds of kilometers inland, teachers can always *Find the Blue*, find a connection to the ocean or the sea. The ocean is everywhere in our life. It is simply a matter of acknowledging it.

The *Find the Blue* challenge is designed to increase the understanding of the ocean and the issues it is facing, and to develop a sense of responsibility to take action to protect it.

Through the *Find the Blue* challenge, students explore how they are connected to the ocean or the sea, whether they live close by or far away.

1.3

Take part in the Network of European Blue Schools

European Blue Schools are new school ecosystems that foster the acquisition of the ocean knowledge, skills and competencies. Marine education will allow students to address local to global challenges and will enable them to become independent while able to perform active, critical and responsible teamwork.

In a **European Blue School**, teachers actively engage students to bring the ocean into the classroom through project-based learning. Teachers from European Blue Schools are waves of change and inspiration to their students, contributing to a new generation of ocean literate, active and responsible citizens, by making the ocean a relevant part of the school curricula. In a European Blue School, teachers and students become agents for change and sustainability of the ocean and seas.

The **Network of European Blue Schools** will bring teachers together to:
(1) share their project with other schools; (2) find inspiration on how to address ocean topics that are relevant to the curricula, the school and the local community; and (3) receive the European Blue School certification recognising the value of the project developed. In addition, (4) participating teachers will gain access to specific training, resources and assistance by other members of the EU4Ocean Coalition.

The Network of European Blue Schools invites teachers to be the rudder of this wave of change!

2

WHY BECOME A EUROPEAN BLUE SCHOOL?

2

WHY BECOME A EUROPEAN BLUE SCHOOL?

A European Blue School recognizes the importance of the ocean in its education activities by taking up the *Find the Blue* challenge. By bringing real-life marine and maritime contexts to the classroom, students are encouraged to become responsible and engaged ocean literate citizens.

To teach about the ocean is to teach about the world. The ocean is a motivating learning context that contributes to the development of a wider and active European citizenship, aware of socio--economic issues and sustainable development challenges, and supporting democratic values.

Accepting the *Find the Blue* challenge allows students to develop a wide combination of skills, attitudes and values that are relevant to their future adult life and essential to compete in the global 21st century society, such as collaborating, problem solving, creating, synthesizing information, creative thinking, project managing and utilizing high tech tools.

2.1 Building a European Blue School Framework

Setting up a pan-European school certification with a relevant pedagogy can not be done overnight. For many years now, several initiatives, programmes, policies and frameworks have greatly contributed to the promotion of sustainable education and ocean literacy, which has given life to the idea of having a European network to further develop the concept of a European eco-citizenship of the ocean.

The concept of a European Blue School originated from the European project **'Sea Change'** in 2017. With its development in 2020 by the **EU4Ocean** coalition, it has built extensively on the experiences of well-established school and marine education programmes (see 2.2).

SEA CHANGE
OUR OCEAN | OUR HEALTH

https://www.seachangeproject.eu/

Network of European Blue Schools

https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1482

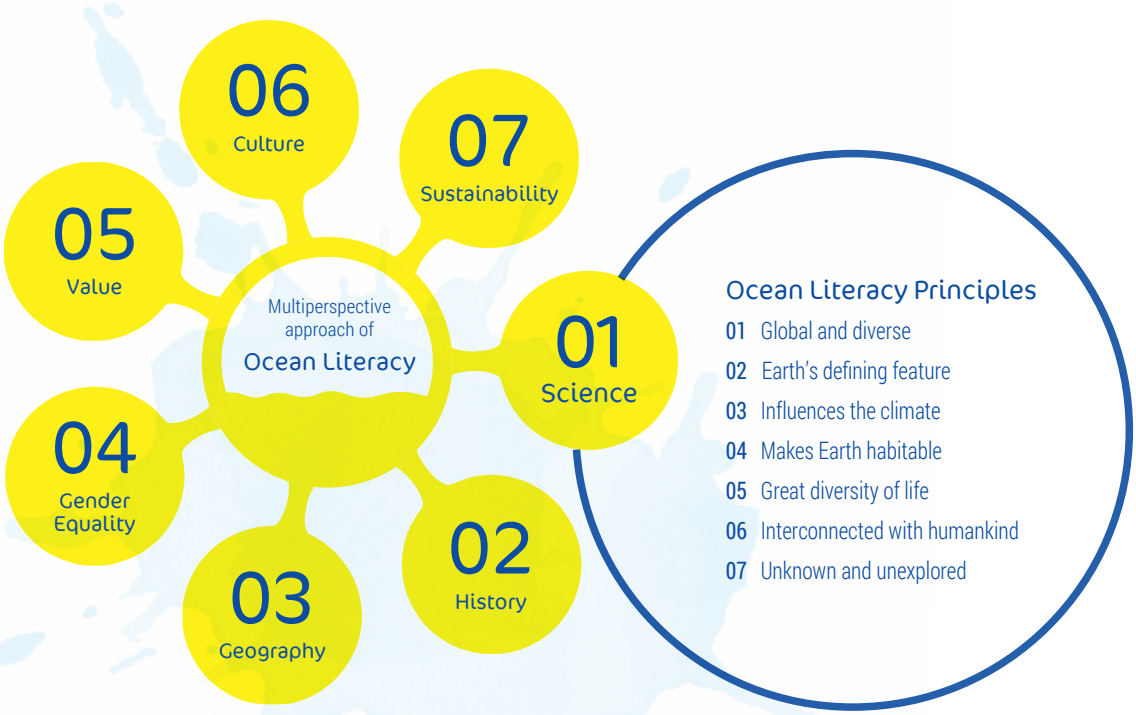
// Ocean Literacy movement

The term Ocean Literacy was defined in the early 2000s [2] as an understanding of the ocean's influence on us — and our influence on the ocean. The idea was born in the USA [3], where the knowledge required to be considered ocean literate was outlined into a comprehensive framework. After the concept was introduced in Europe and **adapted by Portugal** [4], two European Horizon 2020-funded projects on ocean literacy were set up to improve ocean literacy in Europe. Researchers from the projects **Sea Change** and **ResponSEAble** [5] set the stage for a more wider and action-oriented definition of ocean literacy where citizens from all sectors do not only have the knowledge **but feel empowered and responsible to take care of marine environments, individually or collectively**.

Ocean Literacy is defined by IOC-UNESCO [6] as a mean to:

- Learn about ocean issues from a multiplicity of knowledge areas;
- Identify and understand personal and global perspectives;
- Apply decision-making processes to complex issues that affect individual, community or global well-being.

RESPONSEABLE



IOC-UNESCO approach of Ocean Literacy [7]

[2] https://www.tandfonline.com/doi/full/10.1080/13504622.2018.1440381
[3] http://oceanliteracy.wp2.coexploration.org/
[4] https://www.cienciaviva.pt/oceano/home/
[5] http://www.responseable.eu/
[6] Santoro, F., Santin, S., Scowcroft, G., Fauville, G., and Tuddenham, P. (2017). Ocean Literacy for All: A Toolkit. Paris: UNESCO. ISBN:978-92-3-100249-6. 136 pp
[7] Costa, R. L.; Mata, B.; Silva, F.; Conceição, P. and Guimarães, L. (in press). Fostering ocean literate generations: The Portuguese Blue School. In K. C. Koutsopoulos, J. Stel (Eds), Ocean Literacy - Understanding the Ocean. Springer.

// Active European Citizenship

To equip young people for their future as European citizens, we need to stimulate them to engage more in society and feel concerned by local issues and the wider European processes. In a European Blue School, students explore Active European Citizenship through ocean subjects. Teachers support their students to carry out activities directed towards the common good for the seas and ocean. They have the important role of empowering their students to take part in the democratic process and give them a confident voice.

// Blue Economy and skills training

With Europe investing in the Blue Economy, maritime professions are likely to be the careers of the future. They are diverse but not well known. Schools can take advantage of the *Find the Blue* challenge to explore ocean careers and maybe give rise to vocations. The EU Blue Economy Report provides and overview of the performance of the EU economic sectors related to the ocean and the coastal environment [8].

// Education for Sustainable Development (ESD)

ESD empowers people to change the way they think and take action responsibly, based on the understanding that what we do today can have further implications in people's lives and in the future of our planet. ESD aims to empower learners to transform themselves and the society they live in. Working on sustainable development issues such as climate change and biodiversity are at the heart of Europe's Blue Schools.

// Outdoor learning

In the European Blue Schools we encourage students to learn outside the classroom walls on real-life topics related to the ocean, to let children and students experience the world actively and develop a wide range of secondary skills (social skills, solution-oriented thinking, creative thinking.) on top of the classic school skills.

// Project-based learning

This student-centered pedagogy involves a dynamic classroom approach in which students learn about a subject by investigating it for an extended period of time. This style of active and inquiry-based learning contrasts with paper-based or teacher-led instruction. Here, students create knowledge by posing questions or actively exploring a question, challenge, or problem, thus acquiring a deeper knowledge of it.

[8] EU Blue Economy report 2020: https://blueindicators.ec.europa.eu/

// Sustainable Development Goals (SDGs)

SDG14 Life Below Water [9], one of the seventeen SDGs created by the United Nations as a roadmap to transform our world, is entirely focused on the ocean. Restoring the ocean is vital for reducing climate change, providing food, economic development, and improving our well being and health around the world. Targets in conserving the ocean thus also contribute to the other SDGs. Ocean Literacy will be a key pillar of the upcoming **United Nations Decade of Ocean Science for Sustainable Development (2021–2030).**
To embrace the Sustainable Development Agenda, schools can show their students how their own actions can help achive the SDGs by making ocean-friendly choices on a school level.

[9] https://sdgs.un.org/goals/goal14

2.2 Complementing with environmental school labels: an umbrella initiative

The European Blue School certification aims to be an umbrella initiative specific for ocean topics to complement with existing national and international ocean literacy initiatives and increase the impact of local school projects. It is a complementary European acknowledgement to those schools that already work on ocean literacy and environmental sustainable management with their students.

For those schools and teachers that are already in the field, it is important to highlight that the *Find the Blue* challenge can complement and/or go hand-in-hand with other school labels and projects.

Accepting the *Find the Blue* challenge with students should not necessarily mean additional work for the teachers or a duplication of certifications for the school. Schools can apply with an existing environmental school project where the school attained a label and choose to join the Network of European Blue Schools to:

- Share experiences and discuss with other teachers at the European scale;
- Collaborate with a school in another country;
- Promote a European eco-citizenship of the ocean.

The main initiatives and labels on the European territory are the following:

// Escola Azul [10] *(Portugal)*

Escola Azul is an educational programme of the Portuguese Ministry of the Sea, developed by the Directorate-General for Maritime Policy. Its main goal is to improve the level of Ocean Literacy in Portugal via formal education. This programme intends to distinguish and guide the schools that work on ocean literacy, creating an ocean literacy community that brings together schools, the sea sector, municipalities and other entities with an active role in marine education.

Escola Azul encourages schools to explore ocean issues through structured and interdisciplinary strategies, aiming for a social impact both with the participation of different partners and through the involvement of local communities. Escola Azul also relies on partnerships with a variety of entities connected to the sea, who provide multidisciplinary marine education actions directed at Blue Schools.

[10] https://escolaazul.pt/

// Les Aires Marine Éducatives [11] *(France)*

An "Educational Managed Marine Area" (EMMA) is a small coastal area, managed in a participatory way by primary or secondary school pupils, in accordance with principles defined in a charter. It is an educational and eco-friendly programme to help young people better understand and protect the marine environment. The students become part of a local project that draws on the expertise of the school and local municipality, along with user associations and environmental protection groups. The concept of EMMA is based on three pillars: knowing, experiencing and sharing.

Each school needs to implement a programme of actions: conducting an ecological survey in the chosen area involving the students alongside scientific teams; establishing a student's sea council to discuss the actions to be implemented; investing in educational activities within the areas so that the students can develop new understanding in a real-life situation; and developing relationships with decision makers, professionals and academics in order to link up different generations.

Biosphärenschule

Biosphärengebiet Schwäbische Alb

// Biosphärenschule – Biosphere School Wadden Sea [12] *(Germany)*

Schools distinguished as "Biosphere schools" feel closely connected to the Wadden Sea region and are partners of the national park administration. Through formal anchoring in curricula, practical lessons, interdisciplinary projects and extracurricular partners, they integrate the topics and goals of the protected area and sustainable development of the region into their everyday school life. In this way, they stimulate both discussion and identification of students with their region and motivate them to actively participate in the conservation of the area.

Mutual support and networking with other partner schools, national park institutions, partners of the national park administration and other extracurricular learning locations are essential elements of the concept. Admission to the international "Wadden Sea Network" offers schools new opportunities for cooperation and increasing their appeal to the region.

[11] http://www.aires-marines.fr/Proteger/Sensibiliser-le-public/Les-aires-marines-educatives
[12] https://www.nationalpark-partner-wattenmeer-nds.de/partner/biosphaerenschulen

// Blue Flag [13] *(International)*

A world-renowned eco-label trusted by millions around the globe, the Blue Flag programme is operated under the auspices of the Foundation for Environmental Education (FEE).
In order to qualify for this prestigious award, a series of stringent environmental, educational, safety-related and access-related criteria must be met, and maintained.

Through close collaboration with the members on all issues they may have, FEE works tirelessly to ensure the programme's expansion, and that the unrivalled standards of the Blue Flag are maintained internationally.

// Eco-school [14] *(International)*

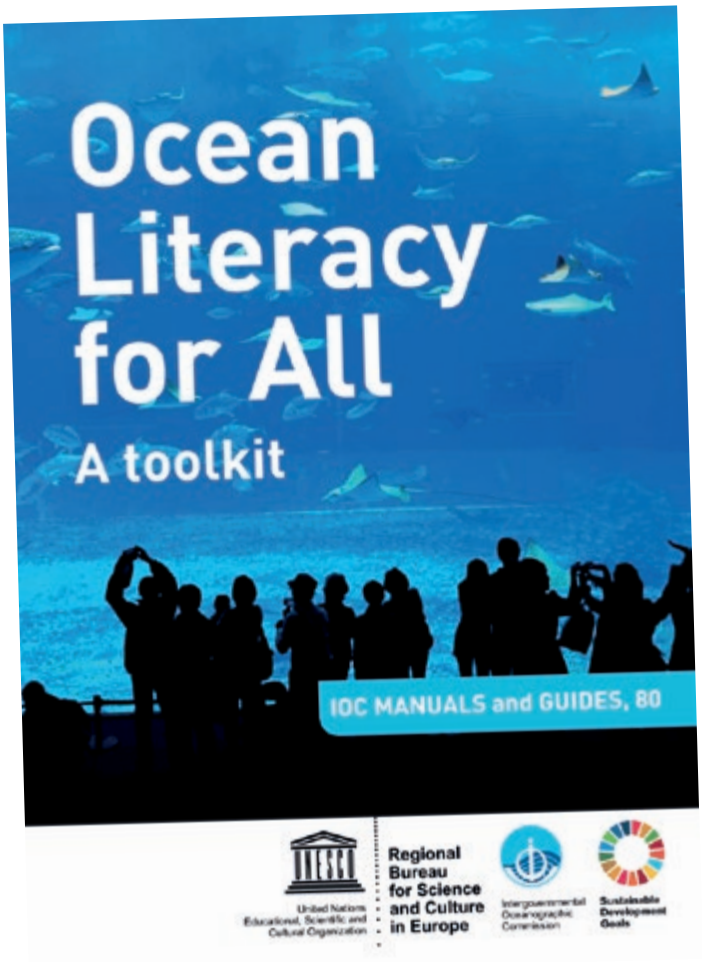
The Eco-Schools programme is a growing phenomenon that encourages young people to engage in their environment by allowing them the opportunity to actively protect it. It starts in the classroom, it expands to the school, and eventually fosters change in the community at large. Through this programme, young people experience a sense of achievement at being able to have a say in the environmental management policies of their schools, ultimately steering them towards certification and the prestige, which comes with being awarded a Green Flag. The Eco-Schools programme is an ideal way for schools to embark on a meaningful path towards improving the environment in both the school and the local community while at the same time having a life-long positive impact on the lives of young people, their families, school staff and local authorities.
Eco-schools offers the topic “Marine and Coast” in which children learn about local and/or global coastal and marine habitats, how people are affecting these habitats and what we can do to protect them.

[13] https://www.blueflag.global
[14] https://www.ecoschools.global/

// Ocean Literacy for All [15] *(International)*

The Ocean Literacy for All initiative of UNESCO aims to raise awareness on conservation, restoration and sustainable use of our ocean and its resources and to build an improved public knowledge base across the worlds population regarding our global ocean.

As a way to contribute to SDGs 4 - Quality Education and 14 - Life Below Water, UNESCO has a global Ocean Literacy programme with an Ocean Literacy Toolkit that is used in schools belonging to the UNESCO of ASPNnet worldwide. The initiative is an active contributor to the United Nations Decade of Ocean Science for Sustainable Development (2021-2030).



[15] https://oceanliteracy.unesco.org/

3

HOW TO REGISTER TO BECOME A EUROPEAN BLUE SCHOOL?

3

HOW TO REGISTER TO BECOME A EUROPEAN BLUE SCHOOL?

3.1 Apply for the European Blue School certification

3

HOW TO REGISTER TO BECOME A EUROPEAN BLUE SCHOOL?

1.
Create an EU-login
https://webgate.ec.europa.eu/cas/login?

2.
Request access to the community of European Blue Schools
https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1485

3.
Fill in the online application form before you start the project. Provide us with information on the project to be developed by your students.

4.
Review of your application by the coordinating team of the Network of European Blue Schools.

5.
Alter the project so it matches the minimum requirements (see 3.1).

6.
If the project matches the minimum requirements you will receive the European Blue School certification that is granted for the entire school year.

7.
With the provided information, a webpage of the project is automatically generated on the Maritime Forum.

8.
After the approval of the project you will have access to all projects, resources, fora and trainings.

9.
To maintain the certification you have to update periodically the project webpage during the project and update the project webpage after finalising it.

3.2
Taking part in the EU4Ocean Ocean Literacy Community?

Would you like to become a member of the online community? You can find a user guide with detailed explanations of the technical functionalities of the website. The manual covers the following functions:

- How to create an EU Login and login to the Maritime Forum website;
- How to request membership to an EU4Ocean online community;
- How to create an article on the website (for community members, with public and members-only functionality);
- How to use the discussion forum (for approved members of EU4Ocean Platform, Youth4Ocean Forum or Network of European Blue Schools).


4
HOW TO
DEVELOP
A PROJECT ?
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4

HOW TO DEVELOP A PROJECT?

3.1

Follow ten keys to success: criteria to become a European Blue School

The educational model of a European Blue School is based on ten key-points. These can be considered both as guidelines to develop a project, and as criteria to self-evaluate your application to become a European Blue School. The first five criteria are compulsory, every project needs to address these criteria to obtain the European Blue Schools Certfication. Remaining criteria are optional.

Every project needs to address compulsory criteria to obtain the European Blue School Certfication and to be part of the Network.

BECOME A EUROPEAN BLUE SCHOOL

DEVELOP A PROJECT

COMPULSORY // ADDRESS THESE CRITERIA TO OBTAIN EUROPEAN BLUE SCHOOL CERTIFICATION

- Develop a project with interlinked activities
- Produce a clear output
- Involve all students
- Collaborate with a local partner
- Communicate project results

OPTIONAL

- Provide authentic learning experiences
- Work multi - or interdisciplinary
- Mobilise beyond the classroom
- Foster a land-sea interaction
- Bring in a European dimension

Develop a project with interlinked activities

Finding the time

How much time is spent to *Find the Blue* is entirely up to the teachers as it depends on the topic, the age of the students and of the workload. A project can have a duration from 1 week to a semester, up to 2 years.

Adding a new project to a teachers' tight shedule is a challenge. Therefore we encourage teachers to find as many synergies as possible with the curriculum (see 4), and looking for inspiring projects or ongoing projects that are anchored in the school planning. Informing your colleagues and the school director about your intentions and the process is therefore a necessary step to take.

The ocean can be addressed in most schools subjects and can be used to work multidisciplinary or to tackle cross-curricular and alternative skills. If the school is planning a (multiday) school trip or thematic week, these are opportunities to link the activities with the project.

Find the Blue

Identifying a relevant ocean topic to work on is a creative and democratic process where the teacher facilitates and provides assistance.

Teachers can advise students to *Find the Blue* by:

- Investigating the personal existing links between them, their families, the school and the sea or ocean;
- Looking at the specific geographical or ecological context that they experience, such as living by the coast or near a river, how the community depends on marine resources (food, raw materials, energy, leisure and professional activities, communication route, etc.);
- Sharing their concerns or questions on a provided marine topic (which is linked to the curriculum topic the teacher wishes to address);

There is always a "blue spot" nearby connecting us to the ocean

Both coastal and landlocked communities are linked to the ocean through goods and services, economic activities, cables and pipelines, and geographic features such as rivers, or even the atmosphere. The ocean is crucial to humankind as a source of oxygen, water, food, energy and resources, communication route, influence on weather, and as a place for sports and leisure activities.

Challenge the students to find a topic that connects them to the ocean and to act actively on their sustainable conservation.

Young children can be given a short list of possible topics to choose from, presented by a visual or a description

Possible ocean topics to start investigating

Food from the ocean

- Fisheries
- Algae
- Aquaculture

→ *Sustainable consumption*
Promote the use of sustainable seafood at schools, restaurants and hotels in the school area

Climate and ocean

- Ocean acidification
- Sea level rise
- Coastal erosion
- Storms / floods
- Carbon cycle
- Migrating species
- Ocean warming

→ *Working to protect our coast, beach and dunes*
Campaign on promoting public transportation, biking, or sharing rides

Healthy and clean ocean

Water quality
- Industries
- Swimming
- Wastewater

→ *Investigating what goes in the drain and rivers, goes into the ocean*

Marine litter
- Single-use products
- Microbeads

→ *Tackle the litter problem in the school environment*
Take action against the overuse of plastic in school and at home

Produce a clear output

Choose the project outcome

The outcome describes specific changes in the knowledge, attitudes, skills, and behaviors a teacher expects to occur in the students as a result of this project. The outcome is important to set up the different activities, outputs and collaborations in the project.

The outcomes are preferably linked to the curriclum. There can be more then one outcome and it can of course evolve along the way.

Think carefully about what the students can realistically accomplish with the project.

Good outcome statements are specific, measurable and realistic.

- What do you as the teacher want your students to achieve at the end of the project?
- What do your students want to achieve with this project?
- Is the outcome relevant for the school, the community and the ocean?

Select the activities

Now that you have your *Find the Blue* topic and know the outcome, you can move on to planning your work and activities with the students. Your students will accomplish a full range of activities to explore their topic, gain knowledge and skills, and increase ocean awareness.

Possible classroom activities

- Literature research
- Developing a poster
- Presenting
- Lab experiments
- STEAM activities
- Use of ocean-related data (e.g. sea surface temperature satellite data) and maps, like the European Atlas of the Seas
- Working with films and documentaries
- Inviting a speaker (in person or online) to the classroom

Possible outdoor learning

- Fieldwork
- Outdoor sports
- Participating in a citizen science project
- Visit to science centre, a museum or an aquarium
- Visit to company or government agency
- For many more examples, we refer to chapter 4. Inspiring projects.

4

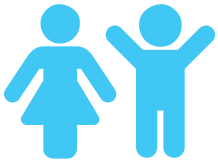
HOW TO DEVELOP A PROJECT?

The project outcome activities and the output(s) are closely linked to each other. The projects' activities should lead to the creation of a product linked to the *Find the Blue* challenge.

Students can produce:

- Communication products:
  website, Instagram account, booklet, poster, leaflet, environmental statement
- Art or literature product:
  song, graphic novel, film, poems, pledges
- Manufactured product:
  a straw made of pasta, glue from shell fish

Let students identify their main end products of the project



Involve all students

Find the Blue projects are ideally student-based and promote co-creation. Students engaged from the first steps in project design show greater enthusiasm and concentration on assigned tasks. They take ownership of the project, which encourages them to engage more deeply in the research and learning activities.
By getting students involved, learning becomes all about team work as teachers and students become partners reaching for the same learning goals. When students are actively engaged in a project with their community, there is a good chance that they will be doing something similar in their future adult life.

Using the students' interests and fascinations is a simple strategy to make them more involved. Find out what your students are passionate about and then use those interests as natural motivators to increase engagement. Younger students can bring their favorite toys, books or objects to the classroom that are relevant to the project. More mature students can bring in hobbies, talents and unique skills and experiences into the project.
The result? Happier and more motivated students.

Engagement increases whenever students are empowered to make their own choices. Instead of having all students participating in every aspect of the project, teachers can let students choose in which part of the project management they can be succesfull or can grow. Giving roles to students can help them to succeed.

Breaking the class up in smaller teams increases the likelihood that everyone will contribute to the class discussion and problem solving during the project development.

A great way to achieve involvement is by creating an assesment process such as a growth portfolio in which students know exactly what is expected from them and see when they are succesfull or what needs to be fixed. This way students will start to understand how to achieve success on their own as the project moves forward. By teaching students how to self-access, their focus stays on learning. They create a life long learning attitude where they have self mastery over their learning.

Involve your students
in all parts of the project
development and management

Collaborate with a local partner

Project partners are crucial for the success of the *Find the Blue* project. These experts will share their skills, knowledge, and provide resources to students, helping them to: generate ideas and materialize them, obtain funds, engage with the local community, and disseminate project results.

Some partners will help students to *Find the Blue*; others will help to design engagement activities; some will be able to share their skills and knowledge to ensure the success of their projects and others may be prepared to put resources into the activity. Partners can also help students to disseminate the main results of their projects to different audiences. Working together with the local community is key to scale-up projects and to ensure their long-term sustainability. Community engagement will add value to the project activities, events and results.

A teacher can help his/her students to identify relevant partner(s). The students can present an outline of their project to several stakeholders in order to receive support. Teachers and students can reach out and collaborate easily with the members of the EU4Ocean Platform[17]. These organizations, initiatives and people all contribute to ocean literacy and the sustainable management of the ocean. They include local and national organisations to regional sea and European initiatives, spanning the areas of marine research, science-policy, blue economy, maritime industry and the private sector, civil society, arts, education, youth and media. At the core of the platform is the exchange of expertise, knowledge, resources and best practices in ocean literacy.

Finding resources in your own language can be a challenge. Contact an aquarium, marine researcher or visitor center to help you

Find European ocean literacy partners in the EU4Ocean Coalition founding members platform [16]

[16] http://eu-oceanliteracy.eu

[17] https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1483

There is no need to look too far to find relevant partnerships

Have you considered one of the following potential partners yet?

- Local councils
- Local community organisations
- NGO, volunteering teams
- Public transportation
- Schools and libraries
- Aquaria, coastal visitor centers
- Art galleries, museums and science centres
- Marketing and commercial companies
- Maritime sector workers: fishermen, fish farmers, boating company, dredging engineer, offshore wind engineer, port authorities, water sports schools, coastguards, tour operators, diving clubs
- Manager of a river, lake, or other water body
- For many more examples we refer to chapter 4. Inspiring projects

There are free-access online platforms, where schools will be able to connect to a diversity of stakeholders that are key to the sustainable management of the ocean, finding inspiration and support to address ocean topics. Consult some of those networks (see chapter 6), look carefully to the field of activity of each stakeholder and help your students to find the partners that best fit the goal of their project.

Fundraising

It is possible to set up a project without funding. Funding can however become a necessity when teachers take students to the sea, especially for inland schools, or when teachers need extra time to coordinate a large project.

The funds needed for each project and the way they can be achieved will depend on the nature of the projects developed by students, the partners engaged to it, the local context, and the impacts of these projects to the community.

Raising money to finance project activities can be an exciting challenge. Make your students become managers of their *Find the Blue* project and let them organise a fundraising activity or find sponsors. Students' first steps must include a list of the resources needed for the project and set a clear goal of how much money they need to raise. Then, they should draw inspiration from existing ideas and brainstorm some original ones. Afterwards, students pick the best idea(s). There are many great ways to collect funding, but some of the best ways are the unique ideas that pop-up on student's mind.

There are several stakeholders available to fund school projects with impact on the local community, universities looking for local collaborative projects or national of European funding calls to you can apply with the projects. Pay attention to the opportunities that best fit the purpose of your students and motivate them to take the lead of their project, taking it to a step further, as real project managers.

Erasmus+

GET INSPIRED!

Find the Blue with Erasmus+ funding

Thanks to the Treaty of Rome, we now have a Europe without borders, where everyone can go abroad to travel, work or study without hindrance. In 1987, Erasmus started as a student exchange program. Today the European Commission offers via Erasmus+ funding for students to go abroad as part of a class exchange, a project meeting or individual learning mobility. Schools from different countries can form partnerships of 1 to 3 years. These Strategic Partnerships include simple, small collaborations to exchange good practices and large-scale projects to develop and disseminate innovative resources.

Contact your Erasmus+ National Agency to find out the different opportunities to develop a Blue Project together with schools from a different country.

Browse the Erasmus+ Project Results Platform[18] to find other success stories and good practice examples or to search for projects near you.

In this handbook, you can find great examples of projects where schools have collaborated on ocean topics via Erasmus+.

Your teaching tool!

[18] http://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details-page/?nodeRef=workspace://SpacesStore/e10bcccd-c7fd-47e7-900f-ff214ce3b01c

Communicate project results

Share the project by communicating about the project locally, nationally and at the European scale!

Students can start to disseminate their acquired experience locally with their school, family, the schools's community, the local municipality and the project partner(s).

Then the project results, best practices, main problems, and the solutions, can be shared with students, teachers, schools from other European Blue Schools (both national and interntional). Several strategies and tools can be used to give projects the most visibility possible:

- Public events (exhibition, activities, campaigns, school festivities)
- Project, school or partners webpage
- School and municipality journals and newsletters
- Local/regional media (newspaper, radio, TV)
- Social networks
- For many more examples we refer to chapter 4 - Inspiring projects.

Provide authentic learning experiences

Ready with a *Find the Blue* project to address and explore, students can develop both academic and 21st Century skills in a context that is more relevant to the learner.

Authentic learning is by nature both student-driven and applicable to the real world. It can take different forms in a project such as participating in a research or citizen science project or communicating with the local municipality on a local issue.

A popular form of authentic learning is taking students out on a field trip. The most direct way to build a relationship with the ocean or seas is having regular visits to the coast over an extended period of time, rather than a one-off visit. Students can then observe, explore and experience the natural marine environment and create a physical and personal relationship with it. But even without leaving the classroom a teacher can provide the students with authentic learning experiences. Why not let students explore the ocean via products from the supermarket or recipes? This will help students to be aware of the strong connection we as consumers have to the seas and ocean.

Extracurricular activities contribute to the personal training of a students' active behavior, becoming deeply involved with their communities. And even more important, students will have the opportunity to develop their talents and passions.

After-school science or water sports clubs, project teams, awareness campaigns, community activism, volunteering activities and field trips are, therefore, examples of some extra-curricular activities that can promote ocean literacy in students.

As part of your project students might undertake extra curricular activities

Work multi -
- or interdisciplinary

Oceanography is an inherently multidisciplinary field. One needs to understand how the water moves and flows to understand the patterns you see in chemistry and biology. It's like a giant puzzle where physics, biology, geology, chemistry, technology and human activities affect each other. The ocean role in the Earth's climate's system, in providing resources and in the global economy requires a lot of interaction between the different fields.

To improve students' understanding of real-life topics and make the learning process more productive and enjoyable, they can study the topic from a point of view of different disciplines and experience the connection between distinct subjects of the school curricula. For example, studying pollution on a beach can be achieved by investigating the effects of microplastics in organisms (biology) or by calculating how many microplastics are in seawater (maths).

Another approach is to work interdisciplinary where the design of a solution for beach litter might require engineering skills as well as the knowledge on wind and sand transport, tourism and psychology.

Projects that join different skills, knowledge, and ways of thinking, challenge the compartimentalized knowledge of several school subjects. This multi-or interdisciplinary approach allows students to contextualize their learning with their daily lives.

Multidisciplinary projects are meaningful for students' learning

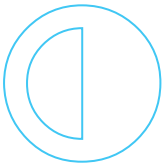
Exploring complex topics such as climate change and ocean health in a multidisciplinary way is a perfect approach to start creating an ocean literate generation

Mobilise beyond the classroom

Having more then one class or even the entire school involved in the project will no doubt increase its impact.

To get more people on board you could:

- Accept the *Find the Blue* challenge together with another class.
- Collaborate with teachers from different subjects to add new dimensions to the project.
- Organise a thematic week in the school where more classes take part.
- Tackle issues that appeal to the entire school such as litter or the school menu.
- Establish a working group composed of the school management staff, teachers and students from different classes.
- Select ambassadors in the school to gain more awareness for your project.



Foster a land-sea interaction

While the coast is the ideal environment to *Find the Blue*, many other sites situated inland such as a river, a scientific lab, a natural history museum, a fish restaurant or an aquaculture facility are able to support a good project.

What happens inland does impact the ocean. From the pollution that is added to streets, rivers and air to the excess of carbon dioxide, it all affects water quality and the health of marine ecosystems. How we live affects the ocean. Our energy use, our diets, and so much more, all connects to the health of the ocean and seas. By being consious about the origin of the fish and seafood you eat, the energy you use and the single-use items you buy, you as an individual can influence markets and political decisions. The ocean belongs to us all and it is up to us to protect it. You do not have to live close to the sea to know or protect it.

A land-sea connection can also be established by uniting an inland school and a coastal school through a *Find the Blue* project. The students can share results of field work, compare the different aspects of their regions or spread more awareness at the coast and inland communities.

Bring in a European dimension

Taking part in the online community of the Network of European Blue Schools supports the intercultural exchange and global dialogue between its teachers and students, and provides opportunities to develop a European eco-citizenship of the ocean. The *Find the Blue* challenge is not only embedded on a local level, but has both a regional (e.g. regional seas) and a European dimension. We encourage teachers and students to explore how the local reality is connected to that wider European scale.

The Network of European Blue Schools promotes the use of eTwinning to collaborate with other teachers and the European Atlas of the Seas as a useful education tool to enhance your marine knowledge and understanding of the local and wider contexts.

GET INSPIRED!

European Atlas of the Seas

The European Atlas of the Seas[19] is an interactive and educational mapping application on seas and coastal regions, provided by the European Commission Directorate-General for Maritime Affairs and Fisheries.

The Atlas is a leading tool for ocean literacy and education, used by schools, aquaria, NGOs and anyone interested in learning more about the sea. It contains reliable, high quality and up-to-date information on topics such as tourism, security, energy, transport, fishing stocks and quotas, aquaculture and much more!

With the Atlas, your students can easily:

- Search for map layers in their language
- Create their own map in combining layers of interest
- Click on the map to find more information and statistics
- Zoom in on a particular area
- Measure distances
- Print a map in different sizes
- Share it on social media
- Embed it on a webpage
- Insert it in documents and presentations

Your teaching tool!

[19] https://europa.eu/!QK93nF

eTwinning [20] is a free and safe platform for schools and teachers in Europe, where they can do transnational online projects with their classes, take part to a variety of Professional Development activities, and exchange ideas with their peers in groups or forums.

To join a group, you need to first register in eTwinning. Once you receive the confirmation that your application has been accepted, you can create or access "eTwinning live", the space reserved for members only; and there, you can access to one of the European Blue Schools Groups, as well as all the activities and initiatives available to eTwinners.

Join the European Blue School eTwinning Groups to share experiences with teachers from your or other countries

[20] https://www.etwinning.net/en/pub/index.htm

3.2

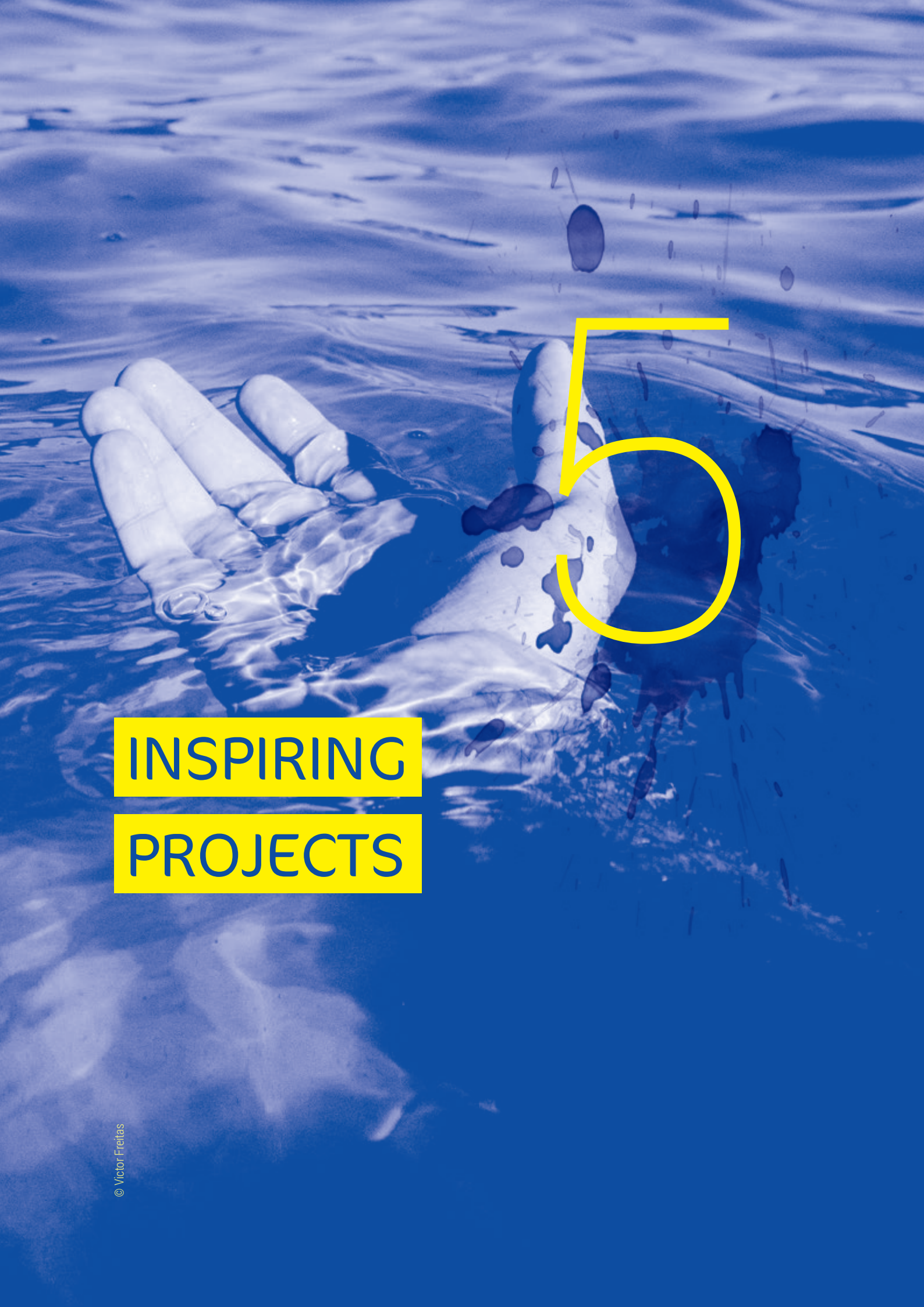
Blue Curriculum (Blue Entry Points)

Ocean literacy is not – yet – an integral part of the school curricula. Ocean topics are at best scattered across science curricula with different subjects organized in separate disciplines. Teaching and learning about an inherent multidisciplinary and authentic topic such as the sea is quite challenging and relies on the incredible resources created by individual teachers or marine education organisations. To help teachers find a link with the curriculum or undertake multidisciplinary projects, European Schoolnet identified a number of Blue Entry Points in a selection of curricula.

Current ocean issues such as climate change and ocean health can be easily linked to different subjects in European curricula. In science courses, languages, sports and art, some topics can also be 'marinated' into a more ocean relevant content.

The blue entry points identified will help teachers to make ocean literacy a part of their classes.

Please check the website for a full report from European Schoolnet (2020) on the Analysis of Blue Entry Points in each of the school curricula of Belgium, Croatia, Finland, France, Germany, Greece, Portugal, Romania and United Kingdom.



5 INSPIRING PROJECTS

5

INSPIRING PROJECTS

Teachers have created remarkable projects on ocean topics over the past years all over Europe. Some of the projects originated from a personal passion of the teachers or an interest of the school community, while others were set up by or with the help of scientists or marine education organistions. These projects will no doubt provide teachers with a lot of inspiration to find their blue challenge in their community.

This is only the beginning, more projects will come and updates will be made regularly

TABLE OF CONTENTS

Food from the ocean

Farmed fish and seafood are an important part of the diet of millions of citizens across the globe. Use the European Atlas of the Seas to know which types of fish or shellfish are farmed in your country.

https://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bkgd=5;theme=208:0.75,242:0.75,717:0.75;c=1004375.7572647273,7111583.735211002;z=5

European Atlas of the Seas · Aquaculture

Shellfish farms

- Clams
- Mixed (other)
- Mussels
- Mussels-Oysters
- N/A
- Oysters
- Specialized (other)

Seawater finfish farms

- Diversed farm
- Flatfish
- N/A
- Other specialized farm
- Salmon
- Salmon-Trout
- Seabass-Seabream
- Trout
- Tuna

Freshwater finfish farms

Fishing with a future

Food from the ocean

Country
The Netherlands/Belgium

Goal
Educate young fishermen to continue operating successfully in a changing world.

School + City
Maritiem Instituut Mercator, Ostend

Age
Junior High School (12 - 15 years old)
Senior High School (16 - 18 years old)

Inland/Coastal
Coastal

School subjects
Multidisciplinary; Maritime Education

Fisheries students explore and build the profession of a fisherman.

My project
Fishing profession has changed considerably over the years. In this project (which is a multiple day training), fishery students acquire new knowledge and skills to practice their profession in a sustainable manner and deal with:

- What is sustainability in fishing (People, Planet, Profit)?
- Environmental challenges, such as waste and air emissions;
- New activities at sea: wind energy, aquaculture and protected areas;
- Critical consumers and social organizations, quality marks and quality requirements from the trade;
- Other parties, such as researchers and policymakers, to get a better picture of the fish stock research and management.

ProSea has been conducting these trainings since 2004 within all Dutch fisheries schools and adapted them in 2018 to the Flemish local fisheries context, in collaboration with the Belgian Federal Public Service Environment and other local parties. Recently, ProSea started the ambitious Catching the Potential Project (www.catchingthepotential.eu) together with partners from nine European member states. Goal: develop, based on pilots in nine European member states, an international/EU sustainable fisheries training standard and to get it implemented as widely and mandatorily as possible within the project. The pilot of 2018 in Belgium ran for one full week. The 31 students between 14 and 23 years old were divided into five different age groups with each a teacher who supervised the group process. The programme consisted of daily lectures, guest presentations, group workshops (such as on how to communicate) and short excursions. During the final assignment, the students, who are not used to presentations, had to give one about a chosen topic.

Boulogne et la mer

Food from the ocean

Boulogne and the Sea

Country
France

Coordinator
Maggy Sinnaeve

Goal
Creating awareness on the economic and professional challenges of fishing in Boulogne sur Mér in the context of globalization. Create an organic glue.

School + City
Collège Navarin, Boulogne sur Mèr

Age
Junior and Senior High School (12-18 years old)

Inland/Coastal
Coastal

School subjects
English; Maths; Technology; Geography; French

Creating an innovative product from fish waste can be done by students

My project
In this 3 years project, students learned about the economic, social and professional aspects of fishing in Boulogne sur Mer in the context of globalization together with fish processing companies, NAUSICAA, the Fondation de la mer and the Development Agency of the City of Boulogne sur mer. Starting from the photographs of fishermen taken from Frédéric Briois' book “Vagues à larmes”, we discovered what the pupils know about the world of fishing.

During a "fishing week", an official from the Development Agency of the City of Boulogne sur mer visited the school to present the local fishing industry. Then the education department of Nausicaa made the students aware of the Mr Goodfish program (a campaign for the sustainable consumption of seafood products). Later, company visits took place.

The teachers involved (mathematics, geography, technology, French, ...) then set up a part of their lesson program in connection with these visits. Thanks to their discoveries, students became aware of the existing issues and decided to use fishery co-products to create a glue based on fish waste. Approximately half of the fish caught today makes it to the dining table. The rest is processed into animal feed or gets disposed of.
The biological potential of fish is however too big to let it go to waste. New products can be developed by recycling fish waste.

This is the starting point of a project supported by Nausicaa and the local stakeholders to move from the idea to the concrete realization of the product (with the creation of slogan, logo, presentation and advertising videos, prototype of the product, the manufacturing in 3D printing, Story-Boards). The students won the “E.P.I seas and oceans" 2018 competition (a practical and interdisciplinary teaching competition). The Fondation de la Mer awards the first prize to them, in partnership with Nausicaa and the National Education.

Seaweeds in the feed

Food from the ocean

Country
Portugal

Goal
Raising students awareness to the importance of healthy eating, looking at seaweed as an important complement to vegetarian and other diets.

School + City
Agrupamento de Escolas de Padre Bartolomeu de Gusmão - Escola Josefa de Óbidos - Lisboa

Age
Junior and Senior High School (12-18 years old)

Inland/Coastal
Coastal

School subjects
Physics-Chemistry; Biology-Geology

My project
The project aims to raise students' awareness of the importance of preserving marine ecosystems for the health and well-being of the planet, looking at seaweeds as the main producers of oxygen/consumers of carbon dioxide, capable of mitigating climate change.

The existence of hydrocolloids makes seaweeds an important source of soluble fibers while the richness in different chemical elements makes them an important food supplement and a source of nutraceuticals.

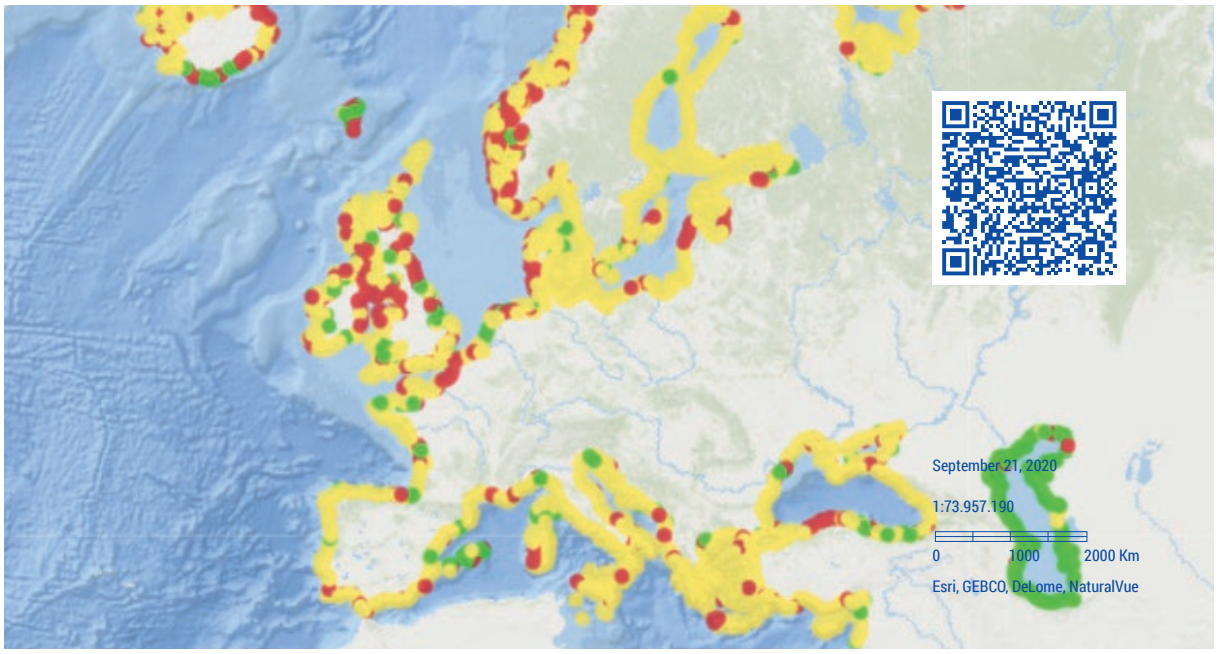
The preservation of ecosystems forces us to look at multitrophic aquaculture as an opportunity for local development and the creation of highly qualified jobs linked to the sea.

This project aims to raise students' awareness of the importance of knowledge to the valorization of natural resources and to the creation of a value chain that preserves the environment, according to the principles of the circular economy.

Valorization of seaweeds and its use as a complement to healthy diets

Climate and ocean

Global warming has alarming impacts on our coasts.
Use the European Atlas of the Seas to describe the state of the coastline in your country.



https://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bkgd=5;theme=195:0.75;c=1488680.7684794758,6372896.293863254;z=3

European Atlas of the Seas · Coastline changes

Coastline changes based on satellite data (2019)

- Erosion (castline retrogradation)
- Stable (imperceptible change)
- Accretion (coastline progradation)

The ocean in the carbon cycle

Climate and ocean

http://6dimalex.mysch.gr/

Country
Greece

Coordinator
Fotios Charitakis

Goal
Acquire scientific knowledge concerning ocean acidification issues through a teaching-learning sequence.

School + City
6th Primary School of Alexandroupolis

Age
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
Science

My project
During the past two school years, we implemented a Teaching – Learning Sequence to a group of 6th graders in our school, taking into account the Ocean Literacy Guide, especially the fundamental concepts which concern the role of the ocean on the carbon cycle and the balance of pH, as well as the Ocean Literacy Scope and Sequence.

This Teaching-Learning Sequence was comprised of 3-weeks inquiry--based and knowledge-integration activities, particularly experiments, concept maps, virtual laboratories, and interactive online activities, concerning photosynthesis, respiration, web chain, carbon cycle, pH and ocean acidification. In these activities, students were asked to present their knowledge concerning the carbon cycle, emphasizing the effects of CO_2 increase on ocean acidification.

In this specific project, 3 different approaches for evaluating knowledge gains of the students were applied prior and after the extended didactical intervention, namely a structured questionnaire, a concept inventory, and the so-called "rich pictures", a free form of chart or image used to help illustrate complex issues, found mainly in science.

For the successful implementation of this project a close collaboration, between our school teachers and marine educators from the Department of Primary Education, Democritus University of Thrace, has taken place.

Ocean acidification and the carbon cycle in primary education

STEM4Sea

Climate and ocean

Country
Belgium

Coordinator
Annika Devos

Goal
Developing a school's STEM curriculum with activities related to the sea

School + City
Sint-Lodewijkscollege SLOS4, Brugge

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
STEM

Using the sea as a source of inspiration for STEM activities

My project
The project started with a co-creation process were pupils, parents and teachers choose the topics from a short list provided by the scientists. Around the 3 most wanted topics we created STEM activities in the first year of the project:

1) topic: Voyage around the world – activity:
Building a boat that can carry containers – age: for 1st grade;
2) topic: the sea came through the mailbox – activity:
Building a coastal protection against flooding, age: for 2nd grade, and
3) topic: Jonas and the sea – activity:
Building a submarine that sinks and floats, age: for 3rd grade.

In all activites children used recycled materials and LEGO (TM), they worked in pairs and did not get any guidelines on how to do the construction. The activities were also tested by different teachers in the school. All activities were hands-on and followed an enquiry based approach where the children seek solutions for problems. In the second year of the projects, the activities are embedded in the schools STEM curriculum and the lesson plans are shared via workshops with other schools and several education centers on the coast. The project was initiated by the board of parents at our school and researchers from the Flanders Marine Institute. We found funding at the local municipality to hire a STEM teacher that can lead this project.

GET INSPIRED!

EDUCATIONAL PASSAGES

MINIBOAT PROGRAM

Educational Passages' Miniboat Program[21] connects people around the world to the ocean and each other, creating citizen scientists and global ocean stewards. Students work together to prepare, deploy, and track their miniboat while learning about ocean currents, weather, technology, etc. Each 1.5m long unmanned boat has a satellite transmitter and can be followed online as it sails. Students develop important Science, Technology, Engineering, Art, and Math (STEAM) skills and confidence while learning about maritime careers. With help from fisherman, research vessels, and other mariners, 145 boats have crossed the world's ocean, bringing together thousands of students, teachers, and communities around fascinating learning opportunities. Boats often land in Europe after sailing along the Gulf Stream from the USA, which provides a unique opportunity to learn about different cultures while making lasting friendships.

Partners like the Portuguese Escola Azul help to re-launch them: WEST, for instance, which had stops in Portugal, Scotland, and the Azores, travelling over 20,000 km over four voyages. In 2019, the Spirit of Ashley Hall connected students from the South Carolina (USA) to the Isles of Scilly (UK) after crossing in 118 days. Boat tracks, stories, and data are all available online.

[21] http://educationalpassages.org/start

One of seven Portuguese sailboats being launched into the sea under the "Educational Passages PT" project: Take Portugal to the World (Leva Portugal ao Mundo), Escola Azul (Portugal)

Adopt a Float

Climate and ocean

www.adoptafloat.com

Country
France

Goal
With a specific and participatory approach, the Adopt a Float project aims at bringing marine sciences into the classrooms.

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland/Coastal

School subjects
STEM

My project
The concept of the project is based on the idea that a class could adopt an underwater robot of the "profiling float"-type and follow it during its scientific voyage. With the float, the learners "travel" into an oceanic zone (e.g. the Mediterranean or the North Atlantic).

In real-time, they participate in the observations collected by the float as well as to the sciences that are associated. The learners are accompanied by scientists and work on a specific project.

At the end of the school year, they present their work to the Adopt a Float team and, if possible to a wider public. Trainings for educators on scientific topics are proposed. Scientists at different career levels are implicated and trained on science-based outreach issues.

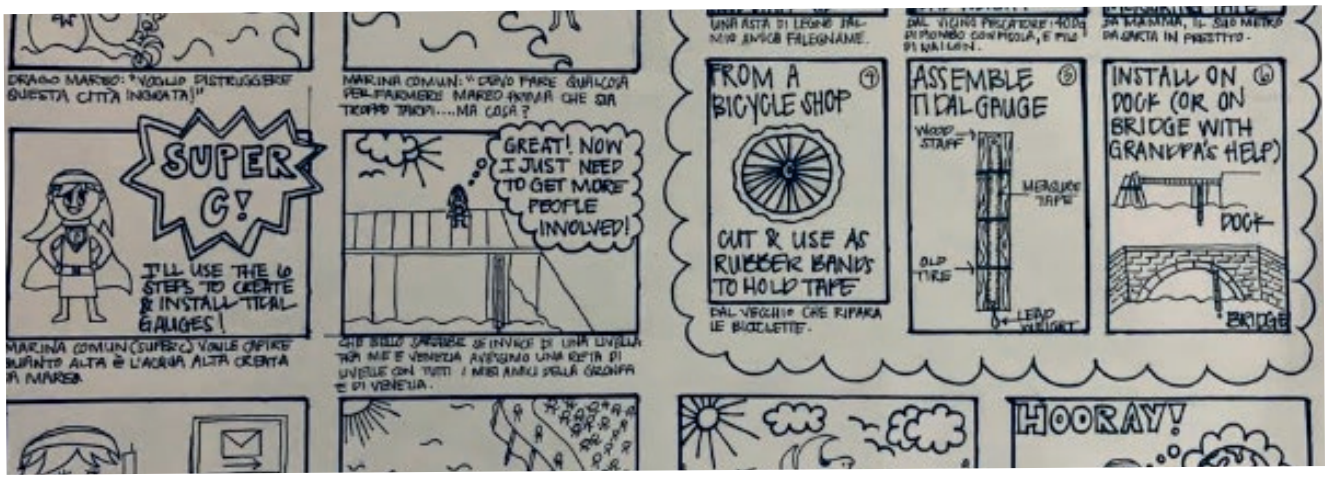
The project is tightly linked to the international global ocean observation program: BGC-Argo (https://biogeochemical-argo.org/).

Follow an underwater robot and work with the real-time ocean observation data during its voyage.

Discovering High Waters

Climate and ocean

www.venicelab.eu



Country
Italy

Coordinator
Giovanni Cecconi

Goal
Raise awareness of the risk of sea level rise in the Venice lagoon.

School + City
Schools from the Venice Municipality Itinerari Educativi

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Hydraulics; Natural science; Geography; Physics

My project
Students contributed to the work of scientists struggling with the problems of climate change and subsidence in Venice lagoon. They actively contributed to the understanding of high water by measuring:

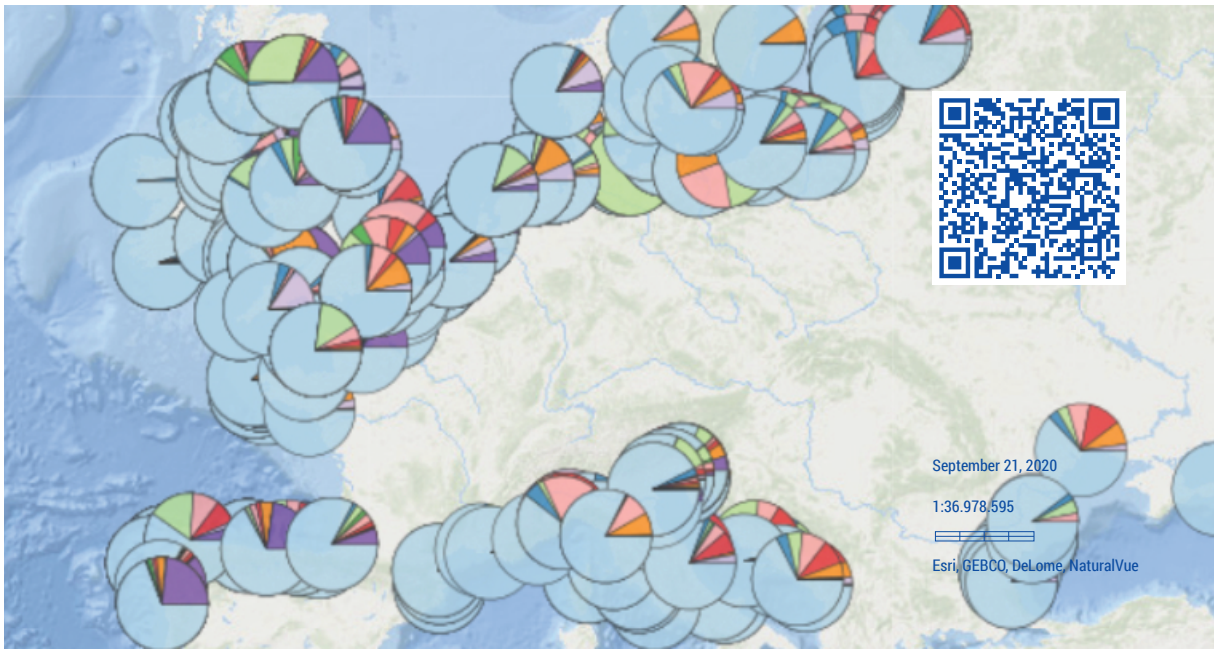
1. the delay of the tide from Venice to their school/territory;
2. the effect of the wind on the high water;
3. the local baseline for local soil settling and sea level rise.

Their measurements were added to the official mathematical models of Punta della Salute to monitor the delay of the tide and the growth over the years of the sea level and the effects of the wind on the high waters that threaten the Venice lagoon territories. The project started with a 2 hour introduction and 2 hour installation of the equipment in the field. In the following weeks during normal or stormy weather, the students carried out a dozen readings, mainly out of school hours, accompanied by a family member or the teacher. The work was presented at the annual Earth book Forum. The activities were shared with eTwinning schools of the major coastal cities of the world threatened by the growth of sea level starting with Croatian and Slovenian schools of Upper Adriatic.

Measuring the tides
in the Venice lagoon

Healthy and clean ocean

Every year, millions of tonnes of litter make their way to our beaches and seas, causing a major hazard for marine life. Use the European Atlas of the Seas to describe the most common types of litter you can find on the nearest beach



https://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bkgd=5;theme=562:0.8;c=-8261.993457008619,5668452.641187269;z=5

European Atlas of the Seas · Beach Litter

Beach Litter – Composition of litter according to materail categories

- Artificial polymer materials (%)
- Cloth/Textile (%)
- Glass/Ceramics (%)
- Medical litter (%)
- Metal (%)
- Paper and cardboard (%)
- Pollutants (%)
- Processed/Worked wood (%)
- Rubber (%)
- Sanity litter (%)
- Other (%)

Clean Sea

Healthy and clean ocean

Microproject Interreg

https://www.projectendatabank.be/nl/projecten/clean-sea-microproject-1278/

Country
Belgium/France

Goal
To raise awareness among coastal children about the origin of marine waste, the consequences for sea life and the daily actions that lead to waste reduction.

School + City
· Ecole Kleber (Dunkerque - FR)
· School De Vlieger (Ostende - BE)
· Ecole municipale d'Arts Plastiques de Dunkerque (FR)

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
Visual Arts; Art History; Written Expression; Modern Languages (French/Flemish)

My project
We started the project with creating awareness on marine pollution in both schools separately by class activities on the origins, impact and solutions to marine pollution and a sensory discovery of the beach and its natural and unnatural elements.

The pupils then created a work of art (artistic expression) and a plea (written expression). They also prepared a presentation for the schools of the neighboring country which can be understood by children from another language.

When the approximately 100 students from each side of the border met, we engaged them in children games on the sea and on waste, experimented with other mode of expression, allowing children to understand each other despite the difference in language.

Finally the students had to vote for the output of the project out of 12 works of their art. And they decided to create an album that can then be used to support future writing workshops without any text. The schools were supported by Horizon Educatief (Oostende, BE) en CPIE Flandre Maritime (Zuydcoote, FR) in the process.

A cross-border project between
3 coastal schools on beach pollution

Plastic ALARM! Müll im Meer

Healthy and clean ocean

Garbage in the Sea

https://www.oldenburger-kunstschule.de/projektarchiv/plastik-alarm-2019/

Country
Germany

Coordinator
Annekathrin Schuldt

Goal
To use artistic engagement to teach about the impact of plastic pollution on the marine environment.

School + City
Grundschule Dietrichsfeld, Grundschule Heiligengeisttor, OBS Ofenerdiek, OBS Osternburg, OBS Alexanderstrasse

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland/Coastal

School subjects
Arts

My project
The project focused on the artistic interpretation of the immense pollution of the environment by plastics, especially the ocean, and how the resulting destruction of the habitats of animals, can impact the rest of the Earth and inhabitants.

The school and local community together with 17 artists, explored the ghost nets of the seas, learning about the huge, deep-sea plastic landscapes, travelled with cruise ships in the plastic sea or investigated fish stomachs. The sea sculpture was explored, experienced and designed using artistic-aesthetic methods. Seventeen professional artists from Bremen and Leipzig worked on plastic pollution in 2019 over 5 weeks with over 220 students from 5 schools in the studios and workshops of the Oldenburg Art School.

During the final exhibition, there was an extensive supporting program with actions and lectures in cooperation with the Museum Natur und Mensch and the Institute for Chemistry and Biology of the Sea (ICBM) at the University of Oldenburg.

Working with professional artists to create art works for a public exhibition

Develop a project with interlinked activities
Produce a clear output
Involve all students
Collaborate with a local partner
Communicate project results
Provide authentic learning experiences
Work multi or interdisciplinary
Mobilise beyond the classroom
Foster a land-sea interaction
Bring in a European dimension

The Garbage Pirates

Healthy and clean ocean

https://www.grundschule-neuhaus.de/umwelt-bne/

Country
Germany

Coordinator
Doris Henningson

Goal
To arouse positive emotions on ocean pollution and to convey a message with joy, great commitment and sustainability.

School + City
Grundschule Neuhaus an der Oste, Neuhaus

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Inland/Coastal

School subjects
Arts; Music; Technology; Drama

My project
The pupils participated in a musical on garbage pirates. In this imaginative forum we created a pirate ship using emotive and musical performance techniques, drawing attention to consequences of pollution of the seas, the careless use of the environment, and the thoughtless consumption of resources and resulting waste.

This became a continually running project as part of school curriculum on education about sustainable development, the preparation specifically for the musical lasted six months.

The main point was to involve everyone in the school in the project in a positive way, with roles to fit everyone and ensure the whole community and student body were included including technical aspects, lights, decoration, catering, cleaning, and performing.

The combination of music as a motivational and creative aspect and the existential topic of marine litter allowed the topic to be incorporated in a creative and inspiring manner. The garbage pirate ship that was build did not wear out after the musical, but now serves its purpose as an environmental center for recycling in our school.

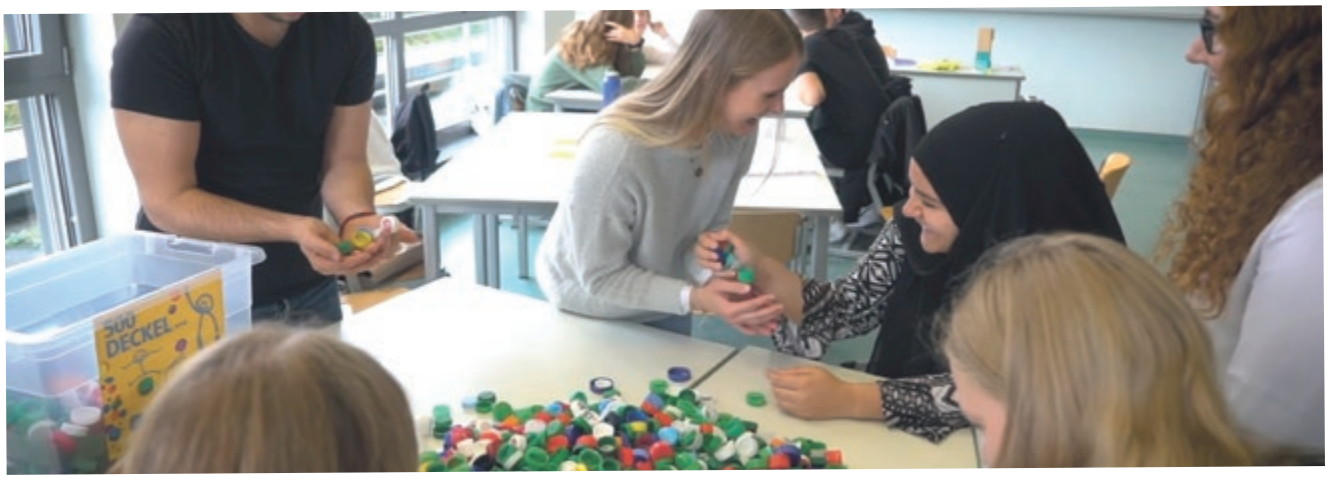
Creating awareness on litter by involving the whole school in a musical

Let's make a move!

Healthy and clean ocean

European citizens fighting the ocean plastic soup

https://www.kmk-pad.org/praxis/beispiele-guter-praxis/berufsbildende-schule/etwinning-projekt-ocean-plastic-soup.html



Country
Germany

Coordinator
Melanie Bolks

Goal
To inform on the topic of plastic waste in the ocean, become aware of consumer behaviour and jointly develop strategies to raise awareness of the threat to the seas in their schools.

School + City
Adam-Josef-Cüppers-Berufskolleg, Ratingen

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland/Coastal

School subjects
Arts; Informatics; Technological Education; Foreign Language

My project
Four European partner schools in Germany, France and the Netherlands spent six months reflecting on a current topic of high social relevance: pollution of the ocean by plastic waste.

The students informed themselves about the topic of plastic waste in the ocean, became aware of their own consumption behavior and jointly developed strategies to raise awareness of the threat to the ocean in their schools.

International collaboration over the Internet is a new experience for the students. They get to know each other via the eTwinning platform and work together in cross-border groups to approach the topic. Together they have developed an exhibition to raise awareness of the garbage problem in the ocean at their schools and to sensitize classmates to the possibilities of avoiding garbage.

Students from 4 schools cooperate via eTwinning to raise awareness on plastic pollution

Kids save Ocean

Healthy and clean ocean

www.kidssaveocean.com

Country
Austria

Coordinator
Peder Hill

Goal
Give students a voice to change environmental policy

School + City
Draschestrasse Grg 23 Vienna
Bilingual School, Vienna

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland

School subjects
Art; Biology

Giving students a voice to change environmental policy

My project
Kids Save Ocean started in 2017 when the teacher introduced 12-year-old art students to plastic ocean pollution and suggested to build something highlighting the problem. Horrified, they rose screaming "YES"!

Six months later their plastic whale sculpture was finished. Dissatisfied with its impact, the teacher and the students approached the United Nations (UN) proposing a Children's Clean Ocean Summit, where kids would teach each other about causes and solutions to plastic ocean pollution and share their vision with the world. The UN embraced it, and on June 22nd 2018 with over 300 participants from 6 schools, the kids brilliantly ran the entire show.

During the summit each child voted on which solutions they thought most important, and their prioritized list along with the Children's Clean Ocean Declaration they wrote was sent to every world leader. Over 20 personally responded: kings, presidents, prime ministers, a queen, even a knight (Attenborough). Their whale sculpture exhibited on World Ocean Day at the UN, in the Austrian Academy of Sciences, and will exhibit at Austria's Haus des Meeres aquarium for 2 years starting in Fall.

With volunteers, and the co-design with children, the students also built the FateChanger app, designed to give children everywhere a voice about our planet's environment.

Plastic Pirates – Go Europe![22] is a joint citizen science project that promotes knowledge and research on the distribution and abundance of plastic waste in European freshwater ecosystems.

Initiated by the German Federal Ministry of Education and Research (BMBF) in 2016, it has recently evolved into a joint campaign in collaboration with the Portuguese Ministry of Science, Technology and Higher Education and the Slovenian Ministry of Education, Science and Sport.

Plastic Pirates – Go Europe! is taking place in Germany, Portugal and Slovenia from the second half of 2020 and throughout the year 2021, as part of the trio presidency of the European Council.

In this project, young people from 10 to 16 years old have the opportunity to team up with researchers and identify sources of pollution in rivers and estuaries and contribute to a better understanding of environmental problems.

Students are made aware of the problem of pollution, actively contributing to scientific research, through participation in sampling campaigns to identify and categorize waste. Data are aggregated on an online platform and later analyzed by the different research groups involved in the project.

GET INSPIRED!

[22] www.plastic-pirates.eu/en

Bonus MICROPOLL

Healthy and clean ocean

Https://www.io-warnemuende.de/micropoll-home.html

Country
Poland

Goal
To make primary school students aware of microplastics and the threats they pose to the natural environment.

School + City
Primary School no. 8 Gdynia, Gdynia

Age
Middle School (10 - 11 years old)
Junior High School (12 - 15 years old)

Inland/Coastal
Coastal

School subjects
Science; Biology; Geography

Assessing pollution in the Baltic Sea coast together with scientists

My project
The project was designed and conducted by scientists from The National Marine Fisheries Research Institute in Poland, as a community outreach activity of the BONUS MICROPOLL research project focused on multilevel assessment of microplastics and associated pollutants in the Baltic Sea.

Students, aged 13-14 from Primary School no. 8 in Gdynia took part in the project that took place in June 2019. The project was designed in a way that gave the participants an idea of how to conduct true scientific research. Initially researchers visited the school to give a presentation on the problem of microplastics in the natural environment. The content and language of the presentation was adjusted to students' abilities. Discussion and interaction between scientists and students helped the students develop an emotional involvement with the problem.

During the second phase of the project, students were invited for a field trip to a local beach. Divided into groups and supervised by the scientists, the students collected samples of sand to evaluate plastic pollution on the beach. The sample collection was complemented by other activities including lessons on nautical knots and a tug of war competition between the groups. Students were then invited to the Gdynia Aquarium where they could use microscopes to analyze and measure microplastics content in the collected sand samples.

The project was wrapped up with another talk and discussion with the scientists. Project participants were also invited to visit the exhibit of the Gdynia Aquarium.

https://www.youtube.com/watch?v=MUZYBTUjghMText

SPlasH!

Healthy and clean ocean

Stop at plastic in H2O!

http://interreg-maritime.eu/fr/web/splash/projet

Country
Italy

Goal
Discover how the sea is interlinked to our life.

School + City
23 schools from Liguria and Sardinia regions.

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Science; Maths; Civics; Critical Thinking; Current Events

Students participated in a Citizen Science experience, contributing to data collection on plastic amount on the seashore

My project
The schools participated in the INTERREG SPlasH! PROJECT, which aims at studying the dynamics and characterization of microplastics in three ports of Mediterranean Sea (Genoa, Olbia and Toulon).

From February 2019 to May 2019, the activity consisted in a first interactive lesson in the classroom and a second practical class on the seashore, several days later. Before starting the activities, a questionnaire titled “What do you know about plastic?” was submitted to all the students aged 7 and over (Geyer et al., 2017; The New Plastics Economy).

Activities in the classroom aimed to raise awareness about plastic pollution, understanding the influence of the ocean on us and our influence on the ocean, through videos, photos, slides, explanations and games. The practical activity on the beach was designed with the approach: ‘learn to look and look to learn’, in order to become aware of the amount of plastic (not only macro, but also micro) in the environment.

During practical sessions with some groups of students sheets were filled out to list the macro litter recovered on the beach.

A serious game developed in Italian, French and English is available at the following link:
www.europeanresearchinstitute.eu/splashseriousgame

Sea of Encounters

Healthy and clean ocean

https://academia.cienciaviva.pt/1471/mar-de-encontros

Country
Portugal

Coordinator
Cátia Liliana Lopes Santos

Goal
To raise environmental awareness among students and the local population as well as to monitor the amount of waste on the coast.

School + City
CED Nossa Senhora da Conceição - Casa Pia de Lisboa, Lisboa

Age
Primary School (6 - 9 years old)

Inland/Coastal
Coastal

School subjects
Arts; Geography; Informatics; Literature; Maths; Natural Sciences; Technology

My project
Does the ocean need to be protected? This was the question posed to students during their introductory study visit "Mar Profundo Português", promoted by the Portuguese Institute of the Sea and the Atmosphere, partner of Escola Azul program. The students debated on the state of conservation of the beaches and understood their importance through practical activities.

They were trained in a simulation of a beach clean up, during which they analysed collected litter and made a to 10 frequent litter items. Then it was time for the real work, monitoring the beach of Segundo Torrão, Trafaria. They carried out a statistical study of the garbage collected and analyzed the microplastics in the sand that they collected. With the garbage they built an art installation which represented the world where you can see the plastic islands.

Understanding that this plastic circulates in our ocean, and inspired by the stories in the book *Plasticus Maritimus*, by Ana Pêgo, they created children's stories to tell the little ones. Thus, with a single theme, they were able to develop, in a practical way, contents from various disciplines and raise awareness to the entire school community for the preservation of the ocean.

Using a beach litter monitoring as an inspiration to create an artwork and tell stories to small children

Waste in Water hurts our health Danube Delta

Teens research their environment • 2006 - 2007

https://www.env-health.org/IMG/pdf/HEAL_on_youth_participation_2_.pdf

Country
Romania

Coordinator
Adnana Mihaela Patrascoiu

Goal
To find out how waste in the water influences the quality of drinking water and thus people's health and give young people a voice.

School + City
Școala Gimnazială Sfântul Gheorghe, Craiova

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Arts; Biology; Chemistry; Foreigner Language; Geography; Informatics; Maths; Native Language; Natural Sciences

My project
Students analyzed water from the Black Sea, the Danube River, the channels surrounding the village and tap water to evaluate its cleanliness and resultant impacts on human health. Students communicated with researchers to find out the extent of the dumping of waste in the water systems. The project made young people aware of how environmental problems affect their own well-being, encouraging them to become active in improving the living conditions in their communities.

This project gave students a voice within their communities and in the European public making them aware that they form part of the European Community, of parallels and differences in living conditions of young people throughout Europe and of the possibilities of networking at a European level.

The project involved research activities on how waste in the water influences the quality of drinking water and thus the healthiness, students took measurements of the quality of the water and soil through collaboration with the Danube Delta Biosphere Reserve Authority (DDBRA) representatives.

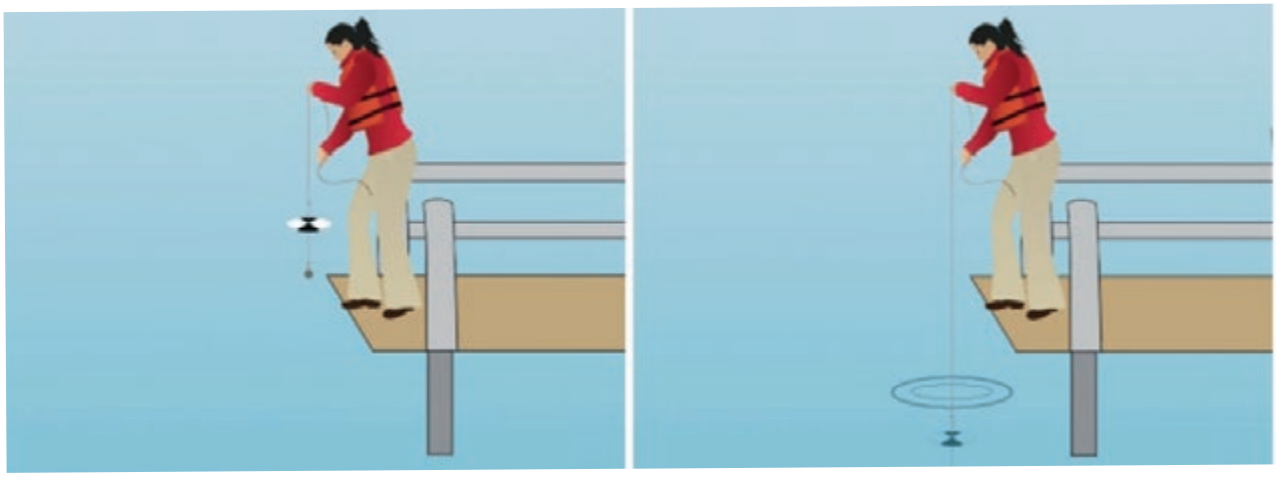
Interviews with the employees of the meteorological station and the doctor in the village gathered local professional qualitative knowledge. The project won one of the Best Practice Awards of the Childrens Environment and Health Action Plan for Europe (CEHAPE). The video of the project was presented in communities of the Danube Delta and at a video festival in Slovenia on 2-6 July 2008.

Students investigate and communicate on the water pollution problems in the Danube Delta

Building your own turbidimeter

Healthy and clean ocean

http://www.sciencemakers.se/turbiditetsmatare/



Country
Sweden

Coordinator
Malin Rosengren

Goal
To develop environmental awareness a mong students and the local population as well as to monitor the water quality.

School + City
Gullmarsgymnasiet, Lysekil.

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Biology; Chemistry; Geography; Informatics; STEM; Maths; Natural Sciences; Physics; Technological Education

My project
The project focused on ecology and the environmental impact of the coastal communities using a project-based approach. It aimed to find out a range of environmental influencing factors around the Swedish coast, including influences of filter feeders on water purity, effects of boating and leisure activities on turbidity of waterways, and discovering which animals and seagrasses are affected differently by the turbidity of the waterways.

Students were actively involved in all parts of the project: by building their own equipment to measure turbidity, performing follow-up measurements and creating their own hypothesis.

Depending on the design and questions asked during the follow-up projects, scientists and/or science centers, municipalities, boat clubs, and the community could all be involved.

Building the turbidimeter and the actual LEGO (TM) design and then connecting all the cords to the Arduino takes about three 80-minute lessons if the students have knowledge of how to read wiring diagrams. Designing and performing follow up experiments can take anything from 2 lessons to 2 weeks or more depending on the ambition of the project.

https://github.com/sciencemakersSE/Turbiditetsmatare

Analysing the water quality can be done with Arduino programmed equipment

Aire marine éducative de Port-Vendres

Healthy and clean ocean

https://ofb.gouv.fr/aires-educatives

Country
France

Goal
Protection and management of a coastal area close to the school by students. Developping knowledge on the ocean and ecocitizenship. Main outcomes: Marine litter workshops on the beach during summer; Zero waste project for the school; Make the beach accessible (down to the sea) for the disabled to be able to swim.

School + City
210 schools involved in France and oversees areas

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
Interdisciplinary

Partners
Gulf of Lion natural marine Park; Terre Marine NGO; Natural marine reserve Cerbère-Banyuls.

Participatory project where children become environmental managers of a coastal area

My project
As an ecological marine managed area (EMMA), this project is based on three pillars: “knowing, experiencing and sharing”. The school needs to implement a programme of actions: conducting an ecological survey in the chosen area involving the children alongside scientific teams; establishing a children’s sea council to discuss the actions to be implemented; investing in educational activities within the areas so that the students can develop new nderstanding in a real-life situation; and developing relationships with decision makers, professionals and academics in order to link up different generations. In the Port-Vendres primary schools, pupils from 3 classes worked together and defined the following actions to implement throughout the year:

Communication
1. MEA presentation panel
2. Marine pollution sign (garbage/marine animals in danger/stop garbage please)
3. Educational workshops in the summer for people on the beach

Waste reduction
4. Pick up garbage on the beach more often and clean the seabed
5. Implementing "zero waste" in schools
6. Add green garbage cans and sorting garbage cans on the beach
7. Prohibit smoking
8. Prohibit pets

Others
9. Make the beach accessible for the disabled to the sea for swimming
10. Set up a first-aid station

Students also participated in activities to better understand marine ecosystems (boat trip, discussion on the impacts of human activities on the marine environment) and performed role play games to find out difference between marine protected areas and educational managed areas. During their project, the pupils also planned some exchanges with another EMMA based in Sète.

Develop a project with interlinked activities
Produce a clear output
Involve all students
Collaborate with a local partner
Communicate project results
Provide authentic learning experiences
Work multi or interdisciplinary
Mobilise beyond the classroom
Foster a land-sea interaction
Bring in a European dimension

Biodiesel from algae

Healthy and clean ocean

http://liceulovidius.ro/extracurriculare/biodiesel/html/conclusions.html

Country
Romania

Coordinator
Carmen Bucovala

Goal
Find a solution to a local problem, by investigating the causes and validating a proper scientific solution for it.

School + City
Ovidius" High, Constanta

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Biology; Chemistry

My project
This project started with the observations made by students regarding the local algae species on the Romanian shore.

Huge quantities of algae cover the beaches every year generating a decomposing biomass. By producing biodiesel out of this biomass, students could solve two problems – not only to find a way to dispose of the algae on the beach, but also to reduce the emissions from the fossil fuels.

Learning outcomes:
1. Comparing different methods in the biodiesel technology
2. Identifying a method for producing biodiesel from algae
3. Promoting to the public and companies the advantages of replacing the diesel from fossil fuels with biodiesel

The project involved analysis of the existing biodiesel production methods (out of biomass such as rapeseed oil), collecting the algae and evaluating the quantity and potential for combining these methods.

Students explored ideas for developing a method for the algal biodiesel. Validation of the method was done with the help of experts. Valorization of the method developed by presenting the project at several national and international project contests.

Too many algae on the beach?
A team of students found a solution.

Biodiversity

Stretching over 18% of the EU's land area and more than 8% of its marine territory, Natura 2000 is the largest coordinated network of protected areas in the world. It offers a haven to Europe's most valuable and threatened species and habitats. Use the European Atlas of the Seas to discover the protected areas in your neighbourhood.

https://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bkgd=1;theme=14:0.75;c=617910.1422549915,6651738.573047511;z=4

European Atlas of the Seas · Marine Natura 2000 sites

Marine Natura 2000 sites

- Special Protection Area (SPA)
- Special Conservation Interest (SCI)
- Both SPA and SCI
- Not available

Aranguez tastes like sea

Biodiversity

www.facebook.com/pages/category/School/Aranguez-Sabe-a-Mar-projeto-da-Escola-Azul-23-de-Aranguez-107173627530427/

Country
Portugal

Goal
To promote ocean literacy, contributing to a participatory "Blue Society".

School + City
Escola Básica 2/3 de Aranguez, Agrupamento de Escolas Sebastião da Gama - Setúbal

Age
Primary School (6 - 9 years old)

Inland/Coastal
Coastal

School subjects
Natural Sciences; Math; Portugal History and Geography; Languages (Portuguese/English); Visual Education; Technology Education; Sports and journey through the world of knowledge (school offer)

A cross-border project based on the outcomes produced by students and involving a network of 6 partners (education, municipality, national authorities and ocean literacy institutions)

My project
This project arose from the will of a multidisciplinary team of 8 teachers aiming to develop the skills of their students, preparing them as future citizens aware of the importance of the Planet's sustainability and the paramount role of the ocean.

Art was the main communication way used to spread the word through school and local communities. The urban street artist Smile visited the school and created a mural painting based on the projects and studies carried out by students. The mural – painted with the collaboration of the students – stresses the importance of preserving the marine prairies and results from an in-depth preparation and scientific research of both students and teachers with the collaboration of several partners. Preparation and research activities included student field trips and workshops and training sessions for teachers. Additionally, the issue of pollution and species preservation was explored on Portuguese subject classes through the analysis of work of the writer and poet José Fanha, who visit the school.

Some of the strategies and activities of the project were adapted to the "new reality" of the COVID-19 pandemic and the subproject "Our home tastes like sea" was born. At home, students could continue to develop their project using waste materials easily available.

The initiative and the outcomes of the project were publicize in the project website and by the city council on its social networks.

What is the Sea?

Biodiversity

http://liceulovidius.ro/extracurriculare/biodiesel/html/conclusions.html

Country
Croatia

Coordinator
Korina Lukašić

Goal
To increase native speech and recollection of long-forgotten words, connect with the local community, particularly the elderly population

School + City
Osnovna škola Marčana, Marčana

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)

Inland/Coastal
Coastal

School subjects
Arts; Biology; History; Literature; Music; Native language

My project
The project aimed at raising awareness about the importance and uniqueness of the sea and wild life within it, using the native language, which is slowly fading and disappearing over the years. The project was brought closer to the students and the local community through various activities.

The implementation of the project began with a visit to the Aquarium Pula, where students learnt about plant and animal inhabitants of the Adriatic Sea. This was followed by a lecture by the research associate of the Ručer Bošković Institute, Prof. Andrej Jaklin on marine organisms. We learnt about their habitats, behaviours, and how they feed and reproduce.

With the help of the internet and the locals, students learnt several legends and colloquial sayings that came from marine organisms, and life by the sea which contributed to the picture book's 10 stories in the native language translated into the Croatian standard language.

The students designed the visual identity of the project, they created artwork from various picture books to mobile phones and other installations from sea debris. In the music culture class, a fourth grader rehearsed a song on the sea being thin and thick. For the native language of Marčana and its surroundings to be heard more widely, students enclosed a CD with sound recordings of stories along with the picture book, and with the help of a computer science teacher, the CD was enriched with games.

In ten sea stories children learn on marine biodiversity and get to know their native language

Once upon a time... the sea

Biodiversity

(Erasmus+ project 2018-1-RO01-KA229-049131 - 2018-2021)

http://www.onceuponatime-thesea.ro/

Country
Romania

Coordinator
Emilia Ciocan (Project Coordinator),
Adriana Constantinescu (Project team member)

Goal
The exchange of good practices in environmental education. The project united students, parents and teachers from local communities across Europe, who all wish to learn about the risks of pollution of the marine environment, all of which are located in the neighbourhood of 3 seas and Atlantic Ocean.

School + City
Scoala Gimnaziala Lucian Grigorescu, Medgidia (RO),
ICS Francesco Riso, Isola delle Femmine, Palermo (IT),
Escola Gabriel Castella I Raich, Igualada (ES),
Agrupamento de Escolas de Vale de Ovil, Baião (PT)

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland/Coastal

School subjects
Arts; Biology; Chemistry; Foreign language; Geography; Informatics; Literature; Maths; Music; Natural Sciences; Technology

My project
The project involved students in research activities that contributed to develop ecological and civic behavior and stimulated the motivation to explore the natural values of the sea from an artistic perspective, encouraging both students and teachers to learn English. Students approached the problems of the marine ecosystem through interdisciplinary lessons.
The project developed new teaching and learning methods to make studying the sea more attractive. The success of the project was due to the involvement of participants from coastal countries with the purpose to share their experience, also taking into consideration the local community vision.
Through collaborative work between all partners a audio (mini) dictionary and an (audio) mini atlas with information on marine flora and fauna was created.
The talented students in literary creation composed sea-themed poems and signed up to the literary contest judged by the teachers.
The best poems were awarded prizes. The poems awarded with the 1st prize in each partner schools were translated into English, and collected in a brochure "Sea Poems" and an e-book. The Romanian students have created a coloring book for their younger colleagues. The "Black Sea: from legend to stories" is a brochure that contains the literary creations of Romanian students. A literary contest included a large number of students with imagination and creativity who wrote a few wonderful stories and legends about the sea. The best creations were edited in English as an e-book entitled "The Sea" in stories and legends. The teachers from the partner schools collaborated and created a teaching guide that includes didactic scenarios regarding the biodiversity of the marine environment. Students and teachers also created educational games, a theatre play, and a brochure entitled "Taste of the Sea" that contains culinary recipes based on fish or seafood. Communication events and exhibitions took place in public spaces. Each time the local media was present to promote the activities and results of the project, making them known to the general public. All this has contributed to increasing the European dimension at the level of partner schools and their communities.
At the level of the partner schools, a procedure for selecting students as members of the project team was performed. Thus, the selected students actively participated in the organization and development of all activities.
Signing a partnership with the NGO Mare Nostrum made it possible to carry out some activities. At the same time, a project with the same title was carried out in the eTwinning platform, bringing together students and teachers also from European countries, other than those from the Erasmus project. (https://twinspace.etwinning.net/71077/home).
Details about all activities unrolled can be found on the project website.

Presenting literary works, games and other resources on the sea to students from other countries

Develop a project with interlinked activities
Produce a clear output
Involve all students
Collaborate with a local partner
Communicate project results
Provide authentic learning experiences
Work multi or interdisciplinary
Mobilise beyond the classroom
Foster a land-sea interaction
Bring in a European dimension

SEND us to the sea

Biodiversity

Country
United Kingdom

Coordinator
Karen Wilcocks

Goal
To increase the emotional wellbeing of the pupils from local special schools through experiences with the Ocean

School + City
Mount Tamar School, Plymouth
Longcause Community Special School, Plymouth

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Science; Citizenship; Personal Education; Social Education; Maths; English; Art.

My project
Delivery of the project started in 2018, with a pilot project running from January to August. Initially funded by the city council, the project is now funded by the participating schools. The students involved benefitted from 4 different aspects of the programme as follows:

1. Scheduled, curriculum linked sessions – The delivery and scheduling of the workshop sessions varied between the two schools to suit the recognised learning needs of the respective student cohorts. Students from Mount Tamar attended two consecutive sessions each throughout the school year. To provide an extended experience, Longcause selected three middle school classes who each attended 6 two-hour sessions each across a single term.

2. Work experience opportunities – students were given the opportunity to join the staff team at the aquarium, experiencing work in a variety of departments across the building, including catering, hospitality, education and retail. In each area students were trained work alongside full time employees.

3. Special events – As part of their engagement with the programme students got special access to events at the Aquarium, including careers and science fairs where they met and talked with professionals from across the city.

4. Unlimited access to the Aquarium exhibits during term time.

Using the marine topic to increase confidence around personal / life skills, career aspirations and personal wellbeing

Develop a project with interlinked activities
Produce a clear output
Involve all students
Collaborate with a local partner
Communicate project results
Provide authentic learning experiences
Work multi or interdisciplinary
Mobilise beyond the classroom
Foster a land-sea interaction
Bring in a European dimension

The Kingdom of Photophilous Algae: a fairy tale

Biodiversity

http://www.imbbc.hcmr.gr/content/kingdom-photophilous-algae-tale-created-pupils-second-grade-elementary-school-crete-greece

Country
Greece

Coordinator
Irini Skoula

Goal
Acquire scientific knowledge concerning algae and their importance in the marine ecosystem

School + City
Elementary School of Gournes Pediados, Heraklion, Crete

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
Interdisciplinary

My project
Students collaborated with the marine scientists of the Hellenic Centre for Marine Research (HCMR), creating a tale based on a current scientific problem: the introduction of marine species in the Mediterranean Sea through the Suez Canal (Lessepsian immigration), by investigating possible impacts on the Mediterranean ecosystem and seeking management interventions.

Marine scientists shared relevant scientific materials such as presentations, experimental aquaria with Lessepsian species and informational videos.

The pupils undertook supervised fieldwork, collected biological samples and analysed them in the HCMR laboratories. Furthermore, they worked on thematic activity worksheets and created, wrote and digitized their authentic fairy tale story.

An enquiry-based learning methodology was followed, as well as experiential learning, group-working, field work, and development of a knowledge-based dramatic output. The project won the first prize at the Pan-Hellenic Educational Conference on Algae held in the Cretaquarium, 2015.

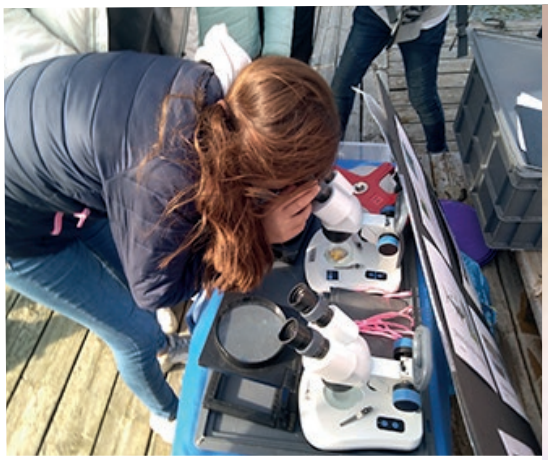
Children investigate local marine species and develop a book

Nya arter

Biodiversity

New species

https://www.nyaarter.se/projektloggbok



Country
Sweden

Coordinator
Björn Källström (Project Manager)
Tina Johansen Lilja (coordinator Blue School Sweden)

Goal
To help teachers fulfil the curriculum requirements and allow school children meet and work with real marine scientists in the field while generating data through the citizen science project.

School + City
Stenungskolan; Ekenäs, Jörlanda and Stora Höga from Stenungsund. Ängås, Varekil and Henån from Orust, Ytterbyskolan, Marstrand, Diseröd and Kärna schools from Kungälv, Kållekärr's school and Rönnängs school at Tjörn and Uddevalla upper secondary school.

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Biology; Chemistry; Geography; Maths; Natural Sciences; Physics; STEM

My project
The project started in 2017 with the aim of educating teachers and students in primary and secondary schools about the problem of alien and invasive species in the sea.

The students worked together with researchers who study alien species. The researchers participating in the project were helped by students and teachers to discover early on whether new species were emerging along the west coast.

The students were actively involved through classroom activities before and after the field trip, and, maybe even more importantly, through real field investigations together with the marine scientists.

Nyaarter.se is the project's website and is primarily adapted for use on mobile phones to serve as a first reporting function when children carry out their field surveys.

Studying marine invasive species together with scientists

Marine Wildlife Champions

Biodiversity

http://www.knowle-plymouth.co.uk/marine-wildlife-champions/

Country
United Kingdom

Goal
To engage pupils and staff with the natural world, finding fun and innovative ways to help young people learn about their local marine environment and ultimately be inspired to take practical action to promote and protect Plymouth and Devon's marine wildlife and habitats.

School + City
Multiple schools in the locality

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Citizenship; Science; Geography; Technology

Discovering how our actions can have an impact on the sea and ocean

My project
The project aimed to increase knowledge and understanding of the marine environment and the challenges it faces allowing students to take the lead in affecting behavioural change in their community; to champion the cause of marine wildlife.

Led by Davon Wildlife Trust (DWT), the project allowed for students to work as a team and present their ideas and their findings to a wider audience. At the start of the project, DWT's Marine Education Officer visited each of the schools and presented the marine champions with five different challenges relating to marine life: terrestrial pollution; plastic waste; climate change/ocean acidification; overfishing; and the protection of the sea.

The students were then challenged to develop a project within the school, at home or in the local community which will have measurable outcomes for the good of marine life. Each school nominated at least 10 Marine Wildlife Champions, who will take the lead in developing this project within the school community or beyond.

Over the course of the project, the pupils taking part came to realise that their actions, negative and positive, can have a real impact on the ocean and its marine wildlife.

The Marine Wildlife Champions Project has been running since 2017, thanks to funding from the National Marine Aquarium in Plymouth.

VIRTUE-s

Biodiversity

https://virtue-s.eu/

Country
Sweden

Coordinator
Malin Rosengren

Goal
To develop environmental awareness among students and the local population as well as to monitor the amount of waste on the coast.

School + City
Brattebergsskolan, Öckerö

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Science; Citizenship; Biology; Chemistry; Technology

My project
In the school project VIRTUE students measure biodiversity of water environments through the accumulation of organisms on CD-shaped discs (biofouling). The CD-shaped plastic discs were mounted on a rack and placed in different underwater environments during different seasons. When the discs were retrieved, the organisms that settled on them were examined, identified, counted and observed. Thus, different aspects of aquatic biology were studied and used as an interdisciplinary approach in biology, mathematics, environmental science, physics and arts.

This project can be applied in freshwater and marine environments and the discs can also be pre-treated before deployment to test hypothesis on anti-fouling paint or effects of different nutrient solutions. The materials are cheap and easy to acquire, and all participants can openly use the website with instructions and teaching material and then share their results using the VIRTUE database and map function.

The main objectives were to learn about and measure biodiversity in aquatic environments, explore different hypothesis and questions concerning effects of environmental differences, physical gradients, and environmental pollution, and increase ocean literacy. A key part of this involved putting real-life context to the curriculum through a Project-Based Learning approach helping to spark curiosity and get students excited to solve problems and ask questions.

The value of the project can be vast; students are involved in the building and planning process, deciding which questions are asked, the level of interdisciplinarity, how many times the pupils return to study the same disks. Minimum time is needed for observing the growth and organisms on the plates for identification and quantification is approximately 2-3 hours, this can then be repeated on one occasion, every other month going, over a semester or over several years. The information retrieved when studying the disks can then be used in math, biology, arts, writing reports etc.

The exposure time of plastic discs is a minimum of 1-6 months (depending on season, region and geographical place) but they can also be left in the water for several years. Teachers from 29 countries are represented in VIRTUE. The project offers online courses for educators and an online classroom. VIRTUE also has an Erasmus+ project to train teachers in using relevant ICT tools.

Study marine or freshwater biodiversity with CD-shaped plastic discs

Science@Sea

Biodiversity

Country
Belgium

Coordinator
Maaike Steyaert

Goal
Discovering the North Sea.

School + City
Sint Franciscus, Evergem

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland

School subjects
Biology; STEM

My project
Since 2014 a full semester of ocean science topics was incorporated in biology classes. The students come from different class groups and have chosen to work together on this project for 2 hours a week.

The series of marine biology lessons started with discovering where the ocean is in people's lives. Students went to the supermarket and looked at the marine components in daily products. This was followed by a field trip to the coast to discover the coastal habitat, followed by different lab exercises and activities in the classroom to learn about biodiversity and relationships between organisms. We look at the threats to biodiversity and some of the technology to study marine life together with scientists.

The project ended with a presentation and reception at the school where the students presented different snacks made from algae.

Students sign up for a scientific discovery of what lives in the North Sea

Spot the Jellyfish, Spot the Alien Fish

Biodiversity

www.aliensmalta.eu

Country
Malta

Coordinator
Alain Deidon and Maaike Steyaert

Goal
To train students as citizen scientists in recording sightings of jellyfish and marine alien species within Maltese coastal waters

School + City
15-20 schools in Malta and Gozo
(Maltese archipelago)

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Science; Environmental science; Biology; STEM

My project
Since June 2009, Maltese schoolchildren have been engaged directly, through a combination of formal (held within school premises) and informal (held outside school premises, such as the Malta National Aquarium or on the beach) within three different marine-themed citizen science campaigns (Spot the Jellyfish, Spot the Alien Fish and Spot the Alien) operated on a national basis.

The three campaigns, which are managed by the Department of Geosciences within the University of Malta and which are funded by the International Ocean Institute (IOI) and the Malta Tourism Authority (MTA), have managed to engage thousands of Maltese students through ad hoc lectures, hands-on activities and even documentary screenings within cinemas.

A considerable number of citizen science sightings of jellyfish and marine alien species were submitted by the students themselves, especially of beaches specimens and of specimens sighted in shallow waters.

Becoming ocean literate and a trained citizen scientist by becoming familiar with local marine biodiversity

The Seahorse

Biodiversity

The seahorse, an indicator species of the Ria Formosa lagoon seagrass prairies and other ecosystems good condition

Country
Portugal

Goal
Aware students and the surrounding community to the importance of preserving the seagrass prairies, using the seahorse, a threatened and iconic species, as an "anchor".

School + City
Agrupamento de Escolas João da Rosa - Olhão

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
All subjects (multidisciplinary approach) with special focus on Natural sciences, environmental study and citizenship

Local community (parents and community) engagement into the project.

My project
The Blue School project is a crucial part of the everyday activities of the schools, deeply involving students, teachers and the rest of the community.

The main objective of this project – to increase children's ocean literacy – was achieved. Our students are more aware of the importance of the oceans in their lives, are aware of the threats that exist and begin to work actively to reduce the negative impacts of human beings in the oceans, particularly in Ria Formosa. All the campaigns to reduce the use of plastics and to preserve the seahorse are having an effect in the daily lives of our students and in the community.

The choice of the theme that our group embraced was a success. The protection of the Ria Formosa lagoon seahorse has been widely present in the media, and the work of our students and their teachers was important in what is now almost a national goal. We are forming a new generation of citizens more aware of the important role that seagrass play in our well-being, and knowing that conserving a species means preserving the entire ecosystem in which it lives.

The current Blue School project has a slightly different scope. Our school was one of five invited to participate in the CleanAtlantic project, developed by the Science and Technology Faculty of the University Nova de Lisboa and by the General Directorate of Sea Resources. It is a project that involves Docapesca, the fishermen and secondary classes, in order to make people aware of the problem of marine litter, and take concrete actions to reduce it. This project is complemented with others, developed at the initiative of teachers, students and the school community, from the various teaching classes. The objective remains the same: that João da Rosa Schools continue to train students who are more aware of what the Ocean represents for humanity.

Maritime Culture

At the European Maritime Day, maritime professionals, entrepreneurs and ocean leaders come together to discuss and celebrate the blue economy. The European Atlas of the Seas lets you find which events are happening around Europe, mobilising citizens and young people around the theme of responsible and sustainable use of the oceans.

https://ec.europa.eu/maritimeaffairs/atlas/maritime_atlas/#lang=EN;p=w;bkgd=5;theme=789:0.9;c=588558.323393492,6407140.082535014;z=4

European Atlas of the Seas · European Maritime Day

European Maritime Day in my country (2019)

From the river to the sea

Maritime Culture

www.abeiradouro.net

Country
Portugal

Goal
Engage students and teachers, from different disciplines, in the nautical world in its most diverse aspects through the practice of water sports (sailing, canoeing, rowing, stand-up-paddle). This playful approach allows to explore diverse subjects in an experienced way and also to develop parallel projects in the domain of curricular articulation.

School + City
Escola Básica e Secundária À Beira Douro, Agrupamento de Escolas À Beira Douro – Medas (Gondomar)

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland (river side)

School subjects
All subjects (multidisciplinary approach).

Providing all students
the practice of various water sports
that are difficult to access

My project
The Blue School "À Beira Douro" – "From Rio to the Sea" was started in January 2019 and is a project that involves several schools and kindergartens with the purpose of increasing Ocean Literacy and bringing young people closer to the sea.

The trip around the nautical world began in 1995 with the Expo'98 Schools Network. The school was one of 10 in the country using material and human resources for the development of sailing in a school environment. Since then, school never stopped taking the "river boys" to know more about the different water plans and it was assumed ourselves from the beginning as a Center for Sport Training in Nautical School Sports. Hosting students from all over the country, we increased our sports offer and encouraged the use of these resources, for the learning of transversal and specific contents and competences of the different disciplines.

Since water is not the natural environment of people, all aspects of knowledge were explored to provide students with transversal and specific skills and competences from different areas of knowledge that allow them to know how to be in the water.

Anyway, we only love what we know and if the Ocean is learned in an experienced way in an apparently informal and fun environment, children and young people can feel motivated to look at the Ocean and understand what unites us with it as well. This can be a new direction, a future full of opportunities.

Atlantic Youth

Maritime Culture

https://www.facebook.com/AtlanticYouthErasmus/

Country
Spain (Portugal/Ireland/France/UK)

Goal
Make more young people aware of the marine environment as a resource to protect and enjoy, and as an exciting career path.

School + City
IES Guadiana, Ayamonte
IES González de Aguilar, Ayamonte

Age
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland/Coastal

School subjects
Foreign languages; STEM; History; PE; Arts...

Students from different countries explore the maritime cultures through watersport activities

My project
The objective is the development of the maritime culture among the youth, specially through watersports and maritime education in schools and clubs in the 5 participating countries. It is also to make Atlantic Area a pole of excellence for the maritime culture of the youth.

Activities include watersports, coastal cleaning, birdwatching in the marshes, visiting different types of ports, tidal mills, shipyard, fish market, etc.

The project also includes the creation of pedagogical tools for maritime inclusive education of young people at school (2 videos and 2 guides), 3 transnational maritime education events for the students, and a conference about maritime education.

The project runs from 2017 – 2021. It includes:
• Baseline assessment of current situation regarding access of the young people to watersports;
• Education and training modules: collaboration between public authorities, schools, and watersports clubs;
• Action plan – with pilot actions in schools (purchasing of equipments, training and remuneration of the instructors, implementation of the modules);
• Participation of school teams representing the partner cities and areas in the Atlantic Games that will be organized each year in a different country: https://www.atlanticgames.eu/.

Wattenmeerprojekt

Maritime Culture

https://www.gs-rhein-whv.de/wordpress/category/allgemein/wattenmeerhaus/

Country
Germany

Coordinator
Andrea Oltmans

Goal
To educate the children on the local Wadden Sea mud flats, part of a UNESCO world heritage site.

School + City
Grundschule Rheinstrasse, Wilhelmshaven

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
Biology; Geography; Geology; Natural Sciences

My project
In this project children discovered and explored the Wadden Sea through a wide range of activities throughout the year: from the mud flats, the tides, the seals, the construction of dykes, bird migration routes (migratory birds), coastal protection and flooding. The children also reflected on the lack of sustainability in one's own behaviour.

Students worked together with the visitor center UNESCO--Weltnaturerbe Wattenmeer in Wilhelmshaven, which is located close to the school and which has an aquarium with marine mammals and the Küstenmuseum. Apart from the fieldtrips and different learning activities the center provided, students created movies on distinct topics.

The project has now taken place 7 years in a row and the activites are financed mainly by donations. The children receive badges every time they end a part of the project. Children who showed a lot of interest had the opportunity to become a junior ranger during the course of the project.

Children explore all facets of the Wadden Sea and produce short movies

Develop a project with interlinked activities
Produce a clear output
Involve all students
Collaborate with a local partner
Communicate project results
Provide authentic learning experiences
Work multi or interdisciplinary
Mobilise beyond the classroom
Foster a land-sea interaction
Bring in a European dimension

Our Ocean

Maritime Culture

Marine Legends, Fairy Tales and Folklore in Ireland

https://oar.marine.ie/handle/10793/1396

Country
Ireland

Goal
Promote ocean awareness and engagement amongst primary school children and their wider community, in line with the Ocean Literacy Principle 6 - the Ocean and Humans are inextricably inter-connected; as well as the Global Sustainability Development Goal 14 - Life below the water.

School + City
St. Michael's National School, Kerry
Glasheen Girls Primary School, Cork
Glasheen Boys National School, Cork
Liscannor National School, Clare
Cork Educate Together National School, Cork
Scoil Rois Primary School, Galway
Bayside Senior National School, Dublin
Kilbarron National School, Donegal
Saint Aidan's National School, Sligo

Age
Middle School (10 - 11 years old)

Inland/Coastal
Coastal

School subjects
English; Music; Art; History; Information and Communications Technology (ICT); Science and Geography

My project
The Explorers Education Programme outreach team carried out a project called "Our Ocean – Marine Legends, Fairy Tales and Folklore in Ireland", with up to 300 primary school children and their teachers around the coastal counties of Ireland.

The project aimed to promote ocean literacy through storytelling and the arts, with a particular focus on how the ocean and humans are inextricably inter-connected. By reflecting on Ireland's marine and maritime heritage, the children engaged in learning about a selection of Ireland's well-loved Irish marine legends, fairy tales and folklore from each of their counties.

Inspired by the stories, the children worked together creating their own original pieces of artwork, poems, songs and short films. Promoting further learning and engagement, the children's work was published in a book and launched at Seafest, 2019.

During Ireland's national maritime festival the children's art work was showcased at an exhibition reaching over 100,000 people. Copies of the book were presented to the children who took part in the project, as well as to national and international delegates at Ireland's Our Ocean Wealth Summit.

The project was been further promoted through media and social media promoting Ireland's marine heritage. As part of the evaluation of the project, the children's ocean literacy knowledge and engagement was assessed pre (57%) and post (75%).

The Explorers Education Programme is supported by the Marine Institute of Ireland, the state agency for marine research and development.

Children find inspiration in the Irish maritime heritage stories to create and display works of art

GET INSPIRED!

TBA21 – Academy

An initiative of the Thyssen-Bornemisza Art Contemporary Foundation

TBA21–Academy[23] leads artists, scientists, and thought-leaders on expeditions of collaborative discovery, dedicated to fostering a deeper understanding of the ocean through the lens of art and to engendering creative solutions to its most pressing issues. TBA21–Academy commissions interdisciplinary research that catalyzes engagement, stimulates new knowledge, and inspires artistic production. Established in 2011, the non-profit's program is informed by a belief in the power of exchange between disciplines and in the ability of the arts to serve as a vessel for communication, change, and action.

The "Ocean Space" [24] was created by TBA21–Academy and is located in the Church of San Lorenzo, in Venice. It is a new collaborative platform for ocean imagination and ocean action, by catalyzing ocean literacy, research and advocacy through the arts.

"Ocean Space" offers targeted educational paths towards sustainability, through pragmatic activities and the promotion of best practices, encouraging collective reflection, critical thinking and conscious action in the name of the environment. "Ocean Space" intends to start a permanent educational program that allows everyone to feel like an active participant, and offer a solid contribution to the protection of our planet.

A collaborative platform
for Ocean Imagination
and Ocean Action

[23] https://www.tba21.org
[24] https:// ocean-space.org

Classes Glénan

Maritime Culture

www.glenans.asso.fr

Country
France

Coordinator
Christian Berthelot, Clémence Chapoutot

Goal
Preservation of maritime space, awareness of the marine environment, together with the ocean.

School + City
Collège - lycée Externat des Enfants Nantais, Nantes

Age
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Mathematics; English; Technology; Geography; Music; Arts; French; SVT

Linking the marine environment and nautical activities into a multidisciplinary project

My project
This interdisciplinary project brought together three sixth grade classes around marine environment and nautical activities. During the school year, each teacher brought up different marine themes: diversity and relationships within the marine ecosystem, ocean vulnerability, landscape evolution (SVT), ecological impact of coastal and seaside tourism on the seascape (Geography), Homer's *Odyssey* and the Maritime Adventure (French), sailor and polyphonic songs (Music), logotype on the sail and the sea to adorn the Classes Glénan T-shirt (Arts), seamanship, inspired dance, wind, waves and sails (EPS), expressing oneself on the marine environment and interacting with a navigator (English), nautical charts, tides, wind angles (Mathematics), matter and energy at sea (Technology).

Activities included presentations related to the marine environment, filling in a logbook on the year, press articles, calligrams, letters, painting, sculpture, T-shirt logo, maritime orienteering course, dances inspired by the ocean, sea songs, conference by Jean-luc Van Den Heede, visit of the city of sailing, Operation Clean Up nature and beaches, and identification and classification of marine species.

This project ended with a stay on the island of Penfret in the Glénan archipelago in association with the Glénans sailing school.
The organization of this stay was an opportunity to go beyond just learning to sail since the students discovered the association "Les Glénans" based on "love of the sea, team spirit and solidarity". They became more and more autonomous and took responsibility and initiative through the assignment of roles like those one can adopt on a boat, where they learnt to act safely. Students also became aware of the natural environment to greater respect. In short, the pupils were confronted with a real “School of life”. Classes Glénan exists since 1999.

The Sea and Us

Maritime Culture

Country
Croatia

Coordinator
Marica KuÄan

Goal
To awaken the ecological awareness of students.

School + City
Pomorska škola Bakar, Bakar

Age
Primary School (6 - 9 years old)
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
Art; Biology; Chemistry; Foreigner language; Information Technology; Natural Sciences; Physics; STEM

Maritime students celebrate their own ocean festival with the local community

My project
Over the last 13 years students have been learning about the laws of life at sea and ways to protect the ocean. The school has its own boat, Vila Velebita Dva, which is used to take students out on the sea in order to help develop their awareness of sustainable, ocean-linked development.

Students learn to take care of the environment, applying key principles of how to protect the sea through research of microplastics in sea sediment and sea water, chemical and physical analysis of water parameters and the protection of sea turtles. Students take a proactive involvement in the removal of plastics and other waste from the ocean and have the chance to develop underwater photography skills.

Throughout their participation in the project they discover the role of *Posidonia oceanica* as the lungs of the sea and learn about the impact of carbon dioxide in sea life. In addition, a special festival is held every year – Blue Day. Blue Day is a celebration of the ocean looking at a range of topics focused on protecting sea life and connecting the community. Blue Day brings a wide range of people into the programme including scientists, fishermen, politicians, press, chefs, teachers, artists, harbor master's offices & divers.

Create your expedition

Maritime Culture

https://www.we-explore.org/.

Country
France

Goal
To discover and set up a maritime expedition.

School + City
Collège les Sables Blancs, Concarneau
Lycée Pierre Guéguin, Concarneau

Age
Middle School (10 - 11 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Coastal

School subjects
All subjects

Creating a maritime expedition and talk about it with famous sailors and explorers

My project
Students were invited to the Explore base (exploration incubator) to discover and set up a maritime expedition. This was part of the "Projet de Territoire" initiative, which aimed to raise among the students a state of mind committed to the environment, a collaborative way of being, as well as to share some know-how based on the existing maritime skills and professions.

The students choose the subject, duration and route of the expedition. They were then divided into different groups – ship, communication, subject, administrative – and simulated the expedition's set-up.
For this project the students developed a “virtual” two-year expedition around the world on a 15-metre boat to study the influence of global warming on polar bears, the bioluminescence of jellyfish and innovative water and energy management techniques.

In-situ workshops allowed them to get to know all sorts of jobs on the water, but also to discover the importance of the collaborative aspect, of team spirit. This activity was in the form of a role-playing game very participative. The richness of the hosted explorations, the presence of the members of the expeditions (face-to-face / telephone / video links) allowed the students to be in contact with "real life" and thus share experiences and build their "project".

At the end of the activity, a report in the presence of Explore staff allowed the pupils to present their expedition, their choices and their options.

The Legendary on the way

Maritime Culture

https://projetothelegendary.blogspot.com/
https://dodouroaomar.blogspot.com/
https://www.instagram.com/escola.azul.aedm/

Country
Portugal

Goal
Students and teachers engagement in a project with an international dimension. Communicate and create links with other educational communities, strengthening knowledge about other realities. Make known our community with strong connections both to the river and to the sea. Provide students with new connections to the ocean, promoting Ocean Literacy.

School + City
Escola Secundária Diogo de Macedo, Agrupamento de Escolas Diogo de Macedo - Olival (Vila Nova de Gaia)

Age
Kindergarten (3 - 5 years old)
Primary School (6 - 9 years old)
Junior and Senior High Schools (12 - 18 years old)

Inland/Coastal
Inland (river side)

School subjects
Portuguese; English; Natural Sciences; Geography; Biology and Geology; Information and Communication Technologies; Programming and Robotics and Visual Education; Canoeing Sports Training Center

My project
The Diogo de Macedo School Grouping is Portuguese Blue School (*Escola Azul*). It is located in the municipality of Vila Nova de Gaia, district of Porto (Portugal) and is part of a community with strong connections both to the river and the sea. It is on the Oporto wine production and trade route and close to the Port of Leixões. The project is part of another project with an international dimension Educational Passages. It consists of hosting the mini-sailboat that hit the shore at Praia do Baleal on October 20, 2019, from the USA, launched by the students of Webster School in New Hampshire; and prepare it for the new trip.

The projects involves the following steps:
1. Knowledge about the Educational Passages project and stories of other mini-sailboats (training);
2. Assessment of the conservation status of the sailboat and its maintenance and repair;
3. Decoration (selection of iconic elements of the community, drawing and painting);
4. Definition of: a) the symbolic place for launching the sailboat (Douro River) and checking the navigability conditions of the sailboat; and, b) the actual launch location of the sailboat (partnerships);
5. Communicate with Webster school students;
6. Production and preparation of documents and souvenirs that follow inside the sailboat on the next trip;
7. Construction of a digital "Logbook" (recording the stages of preparation and monitoring the trip to the next destination).

Students are the main actors throughout the project.
They produced a video that they sent to students at Webster's school where they answered their initial questions:
https://www.youtube.com/watch?v=4pH6jcbXhNU&feature=emb_logo

The Pilot Programme "Educar para uma Geração Azul" (Educating a Blue Generation[25]) targets children between 6 and 10 years old and was designed to facilitate the inclusion of ocean topics within the existing curriculum, during the four years of the first cycle of education of the Portuguese system.

The programme includes:

- Key partnerships with the Education ministry, regional government, local municipalities, school directors and teacher training centers;
- Teacher engagement and capacitation, through certified training, including a series of practical activities;
- Teacher handbook and supporting educational materials;
- Follow-up opportunities ensuring that teachers can clarify and share their experience and any difficulties;
- Actions with students: educational activities with Oceanário de Lisboa, and visits to the aquarium, that create an emotional connection leading to a more powerful and long-lasting interest in the ocean;
- Evaluation of impact, critical to ensure effectiveness and to inform decisions on scaling up the programme.

Content:

Questions posed by students from the target ages informed a brainstorm between educators, biologists and those working more broadly in ocean policy to design the programme's content. Through a multidisciplinary and holistic approach to our relationship with the ocean, topics include:

- Ocean geomorphology, marine ecosystems and biodiversity;
- Marine ecosystem services;
- Ocean economy;
- Law of the sea;
- Historical importance of the ocean;
- Portugal's strong relationship with the ocean;
- Main threats and opportunities to restore and conserve the ocean;
- Importance of what is still to be discovered.

These contents and activities can be explored in a flexible and adaptable way, from the 1st to 4th year, both in the classroom across all curricular disciplines, as well as in extra-curricular activities.

Scope:

- 6 municipalities in mainland Portugal + 4 islands in the Azores Region
- More than 900 teachers
- More than 15 000 students

[25] https://www.youtube.com/watch?v=U3YBXXfQjCs

6

USEFUL RESOURCES, INITIATIVES AND NETWORKS

6

USEFUL RESOURCES, INITIATIVES AND NETWORKS

6.1 Ocean Literacy networks and platforms

Blue Society campaign from the EU-funded Sea for Society project
http://www.bluesociety.org/ • http://seaforsociety.eu/np4/home.html

EU4ocean Coalition platform
https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1482

EuroGOOS Ocean Literacy Network
http://eurogoos.eu/ocean-literacy/

European Marine Science Educators Association (EMSEA)
http://www.emsea.eu/

Irish Ocean Literacy Network
https://irishoceanliteracy.ie/

Italian Ocean Literacy Network
https://oceanliteracyitalia.it/

Ocean Literacy 4 All (UNESCO) Toolkit
https://unesdoc.unesco.org/ark:/48223/pf0000260721

Ocean Literacy Poland
https://mir.gdynia.pl/

Ocean Literacy Portal UNESCO
https://oceanliteracy.unesco.org/

The Ocean Project (global)
https://en.wikipedia.org/wiki/The_Ocean_Project

United Kingdom We are Ocean Collective
https://weareocean.blue/

United Kingdom Careers at Sea Network
https://careersatsea.org/ambassadors/

World Ocean Day Schools
https://worldoceanday.school/

World Ocean Network (Réseau Océan Mondial)
https://www.worldoceannetwork.org/

6.2 Resources and tools

Encounter Edu - Teachers Resources
https://encounteredu.com/teacher-resources

European Atlas of the Seas - Teacher corner
https://webgate.ec.europa.eu/fpfis/wikis/display/AtlasOfSeas/European+Atlas+of+the+Seas+-+Teachers+Corner

International Ocean Literacy Survey (IOLS)
https://www.geraldinefauville.com/international-ocean-literacy-survey

Make a Sea Change in the bathroom, kitchen, restaurant, supermarket, office, commute
https://seachangeproject.eu/resources

Ocean Edge Directory: resources and marine citizen science programmes in Europe
https://www.seachangeproject.eu/seachange-about-4/campaign/sea-change-database

Ocean Literacy Best Practices and User Stories
https://op.europa.eu/en/publication-detail/-/publication/a97f1935-3233-11e8-b5fe-01aa75ed71a1

Ocean School French/English online classroom
https://oceanschool.nfb.ca/

Resources on education for sustainable development (UNESCO)
https://en.unesco.org/themes/education-sustainable-development/resources

Responseable Ocean Literacy Tools
https://www.responseable.eu/ocean-literacy-tools

Sea Change: Increasing Ocean Literacy (video)
https://vimeo.com/139562761

More resources,
organizations and links
can be found on the website

6.3 Publications

Current: the journal of marine education, US, open access https://www.current-journal.com/

Fauville, G., McHugh, P., Domegan, C., Mäkitalo, Å., Friis Møller, L., Papathanassiou, M., Alvarez Chicote, C., Lincoln, S., Batista, V., Copejans, E., Crouch, F., & Gotensparre, S. (2018). Using collective intelligence to identify barriers to teaching 12-19 year olds about the ocean in Europe. Marine Policy 91, 85-96.

Fauville, G., Payne, D. L., Marrero, M. E., Lantz-Anderson, A., and Crouch, F. (2018). Exemplary Practices in Marine Science Education. Cham: Springer. doi: 10.1007/978-3-319-90778-9

Mokos, M., Cheimonopoulou, M.Th, Koulouri, P., Previati, M., Realdon G., Santoro, F. , Mogias, T., Boubonari T., Gazo M., Satta, A., Ioakeimidis C., Tojeiro A., Chicote C., Papathanassiou M., Kevrekidis T. (2020) Mediterranean Sea Literacy: When Ocean Literacy becomes region- specific, Meditteranean Marine Science, https://ejournals.epublishing.ekt.gr/index.php/hcmr-med-mar-sc/article/view/23400

Santoro F., Santin S., Scowcroft G., Fauville G., Tuddenham P. (2017). Ocean literacy for all: Learning kit. Venice, Italy: UNESCO.

6.4 School labels related to the ocean

Biosphärenschulen · Germany
https://www.nationalpark-partner-wattenmeer-nds.de/partner/biosphaerenschulen

Blue Flag · International
https://www.blueflag.global/

Eco-schools · International
https://www.ecoschools.global/

Escola Azul · Portugal
https://escolaazul.pt/en

Les Aires Marine Éducatives · France
http://www.aires-marines.fr/Proteger/Sensibiliser-le-public/Les-aires-marines-educatives

Ocean Literacy for All · International
https://oceanliteracy.unesco.org/

Plastic Free Schools · United Kingdom
https://www.sas.org.uk/plastic-free-schools/

Network of European Blue Schools

A wave of EUROPEAN BLUE SCHOOLS

Handbook for teachers

Network of
European
Blue Schools