

Highlights of MATES Pilot Experiences

Green Move

Layman Report

February 2021



About this Report

This document was developed through the EC-funded Erasmus+ project **MATES: Maritime Alliance for fostering the European Blue Economy through a Marine Technology Skilling Strategy**.

The objective of the MATES project is to develop a skills strategy that addresses the main drivers of change in the maritime industries, in particular shipbuilding and offshore renewable energy. Both sectors are strongly linked and require new capacities to succeed in an increasingly digital, green and knowledge- driven economy.

Duration: January 2018 – April 2022 (52 months)

More information on the project is available at www.projectmates.eu

Document information	
Short description	Summary of the results of the Pilot Experience Green Move, including the successful extension of its impact to other regional, national and international interested bodies. The main achievements and European added value are clearly outlined to promote further implementation among interested experts and stakeholders.
Next steps	These results present a solid foundation for the Maritime Technologies Skills Strategy and the long-term Action Plan and sustainability.
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1. Context

MATES: Maritime Alliance for fostering the European Blue Economy through a Marine Technology Skilling Strategy is an EC-funded, ERASMUS+ project whose objective is to develop a skills strategy that addresses the main drivers of change in the maritime industries, in particular shipbuilding and offshore renewable energy.

The MATES Pilot Experiences are vital components of the strategic design of the project. They consist of a series of activities that fall in line with the priority areas needed to support training and development of the shipbuilding and offshore renewable energy industries. This report summarises the outcomes and learning elements from one of these Pilot Experiences: *Green Move*.

The outcomes of the Pilot Experiences provide indispensable knowhow for bridging the maritime skills gap and increasing both sectors' overall competitiveness and attractiveness. The insights gained from these activities feed directly into the long-term MATES Action Plan, which contains policy recommendations and best practices.

Target beneficiaries include students and teachers from both Vocational Education and Training and University, and workers from companies addressing shipbuilding or offshore renewable energies.

Results from these Pilot Experiences are particularly relevant for the following stakeholder groups:

- **Local Government in charge of education**
- **Industry (technical staff from companies, experts from sectorial networks, entrepreneurs)**
- **Research and Development Centres/Universities Centres (researchers, students & teachers)**
- **Vocational and Educational Training (VET) Centres (students and teachers)**
- **Life-Long Learning providers**
- **Trade Unions**

Mobility of workers and trainees is a crucial factor for Europe's welfare and economy. Learning mobility advances the personal and professional development of students and workers enhancing their employability through the acquisition of new skills and competences. Knowledge, language, intercultural dialogue and a better understanding of other educational systems were also important elements of the '*European Credit System for Vocational Education and Training*' (ECVET)¹, which underpinned the importance of supporting mobility in two binding documents for the partners on the sending and hosting sides as well as for the learners – the Memorandum of Understanding (MoU) and the Learning Agreement (LA).

¹ <http://eu-mobility.eu/documents/>

2. Overview of the Pilot Experience

The aim of the Green Move Experience is **to promote the mobility** (including exchanges and technical visits) of students and workers in an attempt to enable the use green technologies, whether developed locally, nationally or transnationally. The purpose **was to find green solutions for the main Lines of Actions identified for the shipbuilding and offshore renewable energy industries by means of the interaction** of theoretically-based experts (designers, engineers) with more manually skilled groups (blue collar workers, VET & LLL students, etc.).

This Pilot Experience also focused on transversal skills that are commonly acquired in day-to-day activities.

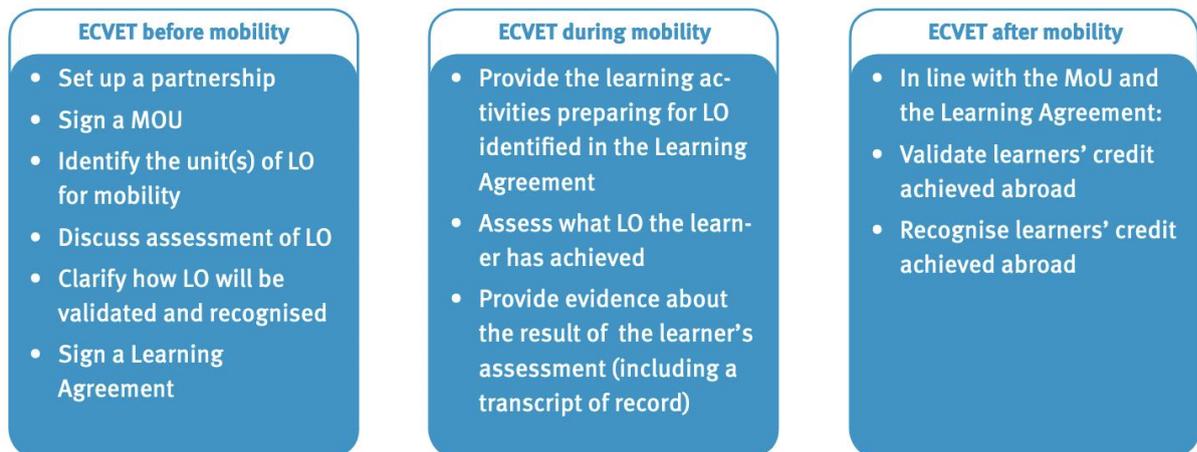
The main objective of the Green Move was therefore to **develop recommendations as to how to carry out mobility programmes focusing on the vision of the centre/company undertaking this activity.**

Specific objectives of Green Move were to:

- **Introduce marine industries and related employment opportunities to teenagers.**
- **Provide short courses on maritime technologies to students, while encouraging industry involvement in the training programmes.**
- **Promote careers for women in STEAM (Science, Technology Engineering, Arts and Maths).**

This report outlines the approach taken in each case study and summarises the Learning Outcomes that can be applied to other contexts such as different settings and geographic locations.

The type of mobility chosen was inspired by and closely followed the successful aspects of ECVET methodology, based on the ECVET Memorandum of Understanding and the Learning Agreement (Figure 1). These, used as a means of promoting green technologies in the maritime sector, are suitable instruments to meet the needs of those organizations with the flexibility to organize the funding for the type of mobility most appropriate to the specific green Line of Action.



Legend: LO: Learning Outcomes; MoU: Memorandum of Understanding

Figure 1: Key issues to be taken into account before, during and after mobility for ECVET, which inspired the Green move in Maritime Technologies.

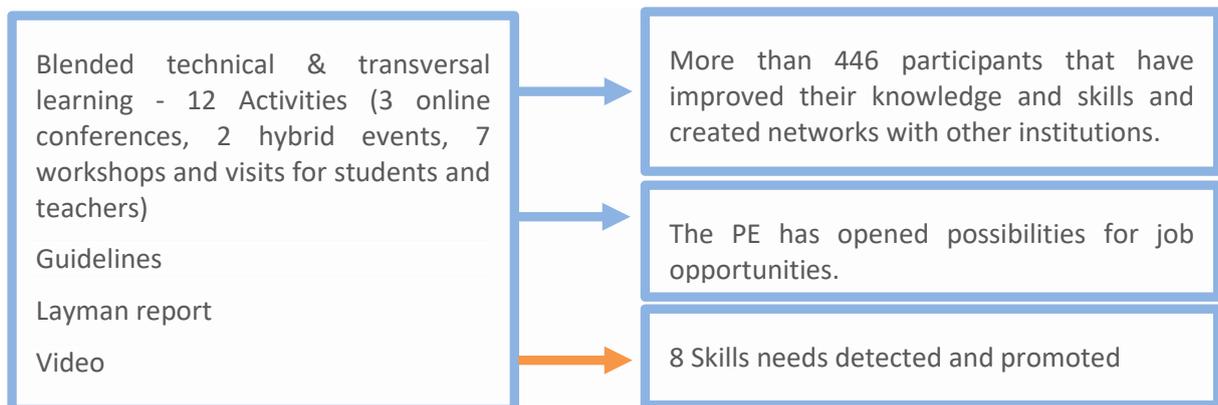
The **innovative aspects** chosen to address the supply and demand of skills and training in this PE therefore focus on following the specific Lines of Action identified for the ORE and SB sectors to orientate the mobility.

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The analysis and evaluation of the performance of the mobility experiences will also provide an innovative aspect, as they include the lessons learnt and the feedback of the participants in the design of future mobility activities and in the improvement of the centres in which they are working/studying/teaching.

The approach that the Green Move has taken focuses on the concept “learning by doing”, with the main aim of promoting new ways of collaboration between the education community and the industry.

This PE brings together different education levels (University, VET, etc.) and profiles (blue and white collars), and in this way not only fosters innovation in the industry but also a better matching of trainings to current needs. This, a test case for work-based learning, makes a major contribution to the MATES sectors, giving an integrated vision between all the occupational profiles and stakeholders within the value chain.



The Green Move Experience provides different types of adaptable and flexible mobilities to a wide range of participants from education centres and companies, bringing together different education levels and profiles. Sound information and knowledge have been exchanged as to which technologies are available in order to reduce the environmental impact of the shipbuilding industry, maritime transport and offshore operations. The PE activities were prepared taking into account the Lines of Action which had been identified for both industries and the medium-term strategy of the organisations involved.

Because this PE was initially planned as a mobility programme covering 14 different activities, visits and trips, we started off by analysing both the needs as well as the barriers to mobility, and developing the protocols required to select the participants and mobility cases. Just as we were about to start the exchanges, most of these planned as in-person, the Covid-19 crisis hit Europe. Since all movement was either banned or restricted, we had to develop more virtual mobility exchanges to overcome this new challenge.

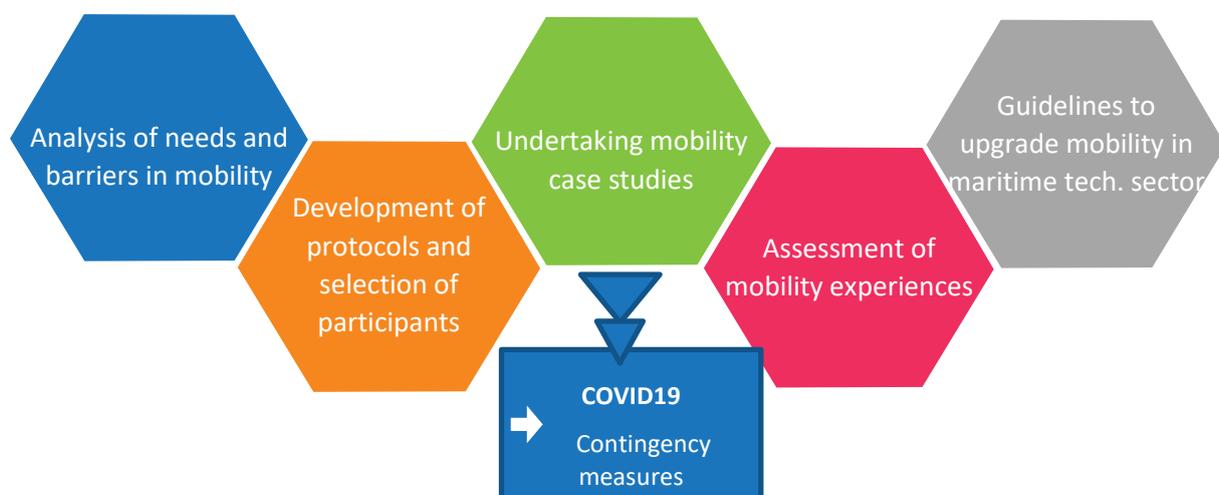


Figure 2. General methodological steps for Green move in Maritime Technologies

OUTCOMES

- The main results of this Pilot Experience are a [Guideline for mobilities](#) addressed to the maritime sector and the compilation of the 12 exchanges as practical examples. The aim of this Pilot Experience is to provide policy makers with guidelines to upgrade mobility experiences and make them more effective for the development of the sectoral skills in demand.
- Positive evaluation from participants, though there is room for improvement with existing tools for virtual visits and mentoring.
- Lessons learnt from this Pilot Experience have contributed to the recommendations for the Maritime Technologies Skills Strategy, to better design future mobility activities as well as to improve green practices of the training and working centres.
- Networking was definitely promoted between Education centres and Industry, students, teachers and workers.

Summary of the Green Move

	Location	Galicia & Basque Country (Spain), Orkney (UK), France, The Netherlands, Denmark
	Number of activities	12 (3 online, 2 hybrid, 7 in-presence)
	Participants	More than 446 (teachers, students and staff from companies)
	Number of institutions reached	More than 30 Education Centres and 16 companies

There was a clear common goal through all activities undertaken within this Pilot Experience, which was to enhance a more environmentally friendly growth for the shipbuilding and ORE sectors. Therefore, providing answers for promoting a greener growth was the point around which all exchanges and visits revolved.

2. Achievements

The Green Move Pilot Experience created a framework enabling many groups in different geographic locations and from different backgrounds to exchange knowledge and relevant information.

3.1. Results

This Pilot Experience produced valuable information to facilitate and promote the replication of similar activities in other contexts such as:

The Green Move Guidelines

Activities to transfer the results and disseminate [the Guidelines](#) (Dissemination at PE workshops, internal meetings in the education centres and companies, streaming activities, mailing...) maximised the opportunities to continue funding these programmes that have always been of interest for participants, either students, teachers or companies.

A compilation of 12 activities developed during the COVID-19 pandemic

The potential for sectoral growth with respect to the environment was presented in the online workshops and the discussions of the in-presence visits. The challenge to this green growth was also the focus, and solving this challenge was key to the discussion sessions and visits, as can be observed below.

N	Title	Participants 446
1	Round table to organize internships and mobilities in European Masters in Naval and Ocean Engineering - Galicia - Spain	118
2	Workshop in Sustainable ship and shipping 4.0 - Galicia - Spain	10
3	Virtual Exchange to reduce environmental impact of marine renewable energy entitled "De-risking consenting of tidal energy arrays" - Scotland - UK	70
4	Education visit to learn and evaluate techniques and methodologies in construction, rebuilding, refurbishment and recycling of sustainable wooden boats - Basque Country - Spain	9
5	Future prospects for offshore wind energy. Manufacturing processes related to offshore	19
6	Conference on Eco-painting - Basque Country - Spain	1
7	Workshop Robotic applications - Galicia - Spain	1
8	Educational visit to an international fair and relevant coastal structures (Husum- Germany & the Delta Plan in Holland)	3
9	Conference on Creation and Sustainability - Galicia - Spain	138
10	Hybrid seminar on Shipbuilding: innovation and sustainability - Galicia - Spain	58
11	Educational visit to Offshore wind production facilities and education centres - France	5
12	Workshop on digitalisation and BIM (Building Information Modelling) - Galicia - Spain	14

LEARNING OUTCOMES

- **Understand** the environmental impact of the Shipbuilding (SB) and the Offshore Renewable Energies (ORE) sectors
- **Develop** transversal skills through mobility actions
- **Identify** techniques and technologies to reduce the environmental impact of SB and ORE
- **Define** recommendations for blended mobilities in green technologies for SB and ORE, both for education centres and companies.

Key achievements

4 major needs covered	<p>Enhancement of the participants technical and transversal skills;</p> <p>Flexibility in the application of funds to fulfil the strategic goals of the involved institutions;</p> <p>Organisation of mobilities with different profiles: teachers, students and blue, white and pink collar workers.</p> <p>Promotion of the study and learning of environmental solutions for the SB and ORE sectors through different kinds of events and mobilities</p>
Technical knowledge acquired	<p>1) Sustainable ship and shipping; 2) Offshore structures Manufacturing; 3) Automation and Robotics; 4) Environmental impact and solutions for the tidal energy sector; 5) Eco-painting; 6) Future prospects for offshore wind energy; 7) Sustainable wooden boats; 8) Innovation and sustainability in the shipbuilding sector; 9) Renewable energy generation</p>
Transversal skills reinforced: 9 Skills needs detected and promoted	<p>1) Competence in science and technology / Environmental Literacy; 2) Social and Cross-Cultural Skills; 3) Curiosity and Interaction in Heterogeneous Groups</p> <p>4) Digital Communication and Collaboration skills; 5) Adaptation to new technologies / changes in the technologies</p> <p>6) Using critical thinking skills and problem-solving; 7) Understanding human, cultural, and societal issues related to technology and practising legal and ethical behaviour; 8) Understanding of technology concepts, systems, and operations; Transferring current knowledge applied to new technologies; 9) Teamwork</p>
Innovative contents were created and used	<p>In presentations and visits (not only because of the new technologies but by addressing the potential environmental impacts and how they are managed within the regulatory and policy regime). Cutting-edge online materials, formats and platforms were used: e.g. break-out rooms, whiteboard tool Jam board (it allows online workshops to flow better within discussion groups).</p>
<p>These brief exchanges have been useful to consolidate CL2 Intermediate and CL3 Advanced levels of competence for students, teachers and experts who already had knowledge of the matter.</p>	
<p>Evaluation surveys' results show:</p> <p>A) Positive feedback from students despite the difficulties of organising mobility activities because of the COVID-19 travelling restrictions.</p> <p>B) Participating companies demonstrated satisfaction and willingness to continue their collaboration on mobility programmes</p>	

3.2. Impact

Gaps/Barriers:

Travelling restrictions as a consequence of the CoVid-19 pandemic have modified the mobility paradigms, especially technical school visits and internships. In 2020 all vocational knowledge exchange took place online. Remote activities are valued less than face-to-face ones, since its official recognition is difficult. In addition, short-time exchange events are not usually officially recognised.

Solutions:

Blended mobility programmes with more flexible allocation of funds can significantly expand the scope of the activities both in time and distance and allow exchanges with a greater number of students and workers. Additionally the model of blended mobility proposed is easily transferred.

Certificates should always be provided in any kind of educational event. In fact, the new EUROPASS facilitates the recognition of these kinds of activities.

The mobility guidelines have been **transferred to the BRIDGE-BS² H2020 project in the Black Sea, resulting in an adapted guide for blue mobility** entitled “Good Practices on Blue Move Activity”. This guide promotes mobility and knowledge transfer to bring together students with the scientific community and industry to better match current training and skills’ needs with the labour-market demands in the Blue Economy context of the Black Sea.

As a result of collaborative transfer between education institutes and stakeholders, the Sustainable Ship and Shipping 4.0 Master Degree (SEAS 4.0) has integrated the green move methodology to address transversal skills through mobility actions.

In addition, all the project partners involved in the Green Move found the guidelines useful, i.e. the VET providers CIFP Someso, Ferrolterra and CIFP Universidade Laboral; Aquatera Ltd., a UK company leader in providing environmental services related with the MRE sector and University of A Coruña University (Spain).

The products, tools and services developed throughout this PE, on a pilot scale, should contribute to the Circular economy and Green Deal objectives since the participants received and exchanged meaningful knowledge about green technologies and sustainable processes. The great advantage of the exchanges was that a network was established between the project partners and those stakeholders involved in the visits and this can develop future collaboration.

Through this Pilot Experience the environmental impact of tidal energy technologies was discussed. This is an emergent sector, which is directly linked with the promotion of the Blue economy. Additionally new/innovative technologies in the SB and ORE sector in general have been tackled in most of the exchanges.

Mobility programmes are key for knowledge exchange. Some of the Pilot Experiences’ results have been transferred within the visits organized in the framework of the Green Move; e.g. the Airless VR tool developed by CIFP Someso for painting an offshore wind jacket, will be used by an educational centre in France.

² bridgeblacksea.org/

4. European Added Value

Green Move specifically focuses on innovative mobility in green maritime technologies, in agreement with the vision of the European cooperation in Education and training 2020 (ET 2020). Mobility procedures follow the Council Recommendations on promoting common values, inclusive education, and the European dimension of teaching, and the principles of the European Pillar of Social Rights.

This Pilot Experience is oriented towards finding solutions to contribute to the ship recycling Regulation (EU) 1257/2013 and is in line with the main policies of the maritime sector such as the Integrated Maritime Policy, the long-term strategy of Blue Growth, Guidelines on state aid for environmental protection and energy 2014-2020, the European Commission's Energy Roadmap 2050, the Circular Economy Action Plan and the 7th Environmental Action Plan, among others.

Green Move Experiences aimed to adapt mobility programmes to the needs of educational centres and their associated industry. The purpose is to break down barriers to allow different profiles to work together for the development of clear products resulting from the mobility programmes. Therefore, all visits, conferences and workshops topics were selected for a more efficient and lower CO₂ emission in the shipbuilding and ORE industries, tackling climate change impact in agreement with the Green New Deal for Europe.

The results demonstrated the added value of both enhancing relationships between industry and education, and also developing interpersonal and transversal skills. Teachers from the secondary schools involved in this Pilot Experience stressed the benefits of the interaction between industry and education centres and among education centres.

This Pilot Experience is aligned with CEDEFOP's continuing efforts³ to develop appropriate tools and instruments for the validation of non-formal and informal learning, i.e., the European database, a pilot data visualisation project, connecting the European Guidelines⁴ with the European inventory⁵, leading up to the Commission's most recent recommendations (10 December 2021) regarding Microcredentials⁶ and Individual Learning Accounts. The European Forum of Technical and Vocational Education and Training summarises the added value of blended mobility initiatives [here](#)⁷.

For those interested in replicating these activities in a different context, it is recommended to take the following key learning elements into consideration:

1. **Engage with stakeholders:** establishing bridges for knowledge exchange and mobility agreements for short visits or/and longer internships (between the education community and the industry, and also between the different educational levels and profile).
2. **Work with industry collaborators:** focusing on cutting-edge technologies to learn about them and find relevant solutions to industry and better matching of trainings to current needs.
3. **Take a flexible approach:** the undoubted success of these 12 mobilities during the COVID-19 pandemic clearly shows that the objectives can be reached with clear orientations and flexibility.
4. **Innovate in the analysis and evaluation of the performance** of the mobilities, in order to include the learning and feedback of the participants in the design of future mobility activities and in the improvement of the centres in which they are working/studying/teaching. Communication of the lessons learned at the workplace is necessary (including innovation in the communication tool/format/management).

³ <https://www.cedefop.europa.eu/en/tools/european-database-on-validation-of-non-formal-and-informal-learning>

⁴ <https://www.cedefop.europa.eu/en/publications/3073>

⁵ https://cumulus.cedefop.europa.eu/files/vetelib/2019/european_inventory_validation_2018_synthesis.pdf

⁶ <https://ec.europa.eu/social/BlobServlet?docId=24995&langId=en>

⁷ https://www.efvet.org/wp-content/uploads/2020/11/EfVET-2020-WS2_Blended-Mobility-Roadmap.pdf

Maritime technologies skills strategy recommendations linked to the green move

Increasing mobility and dual technical programmes:

- Support apprenticeships and dual study programmes, which combine VET education and internships within a company
- Facilitate frameworks to organise and incentivise them to increase their numbers.
- Involve workers, students and teachers to build capacity and boost the adoption of cutting-edge technologies.

Using blended learning options in mobility and event-planning

- Organise blended activities, in-presence and on-line, to facilitate participation, promoting inclusiveness and possibilities for interaction.
- Avoid treating virtual participants as secondary participants.
- Adapt activities to mobility restrictions if requested (as occurred during the COVID19 pandemic). When organising online meetings, bear in mind that they are useful for transmitting information but the learning curve is slower and they might be limited in their ability to create and stimulate collaboration networks.
- Consider using integration tools or combining fully virtual and face-to-face meetings, at different times.

Underpinning skills transferability & recognition between maritime sectors.

- Underpin the creation of synergies among maritime sectors by identifying common skills needs, promoting staff mobility, and providing crash courses.
- Facilitate the identification of career opportunities and training paths by developing guidelines and promotional material.
- These actions will promote skills transferability in the maritime technologies and provide a basis for the recognition of qualifications from other sectors. Special attention should be paid to emerging sectors, such as Offshore Renewables (ORE).

Contributing to the specialisation of temporary employees:

- Develop training materials and tools (such as short and self-tuition courses, mobilities, and guidelines) to promote the specialisation of temporary employees.
- Explore better options to contribute to increase the levels of experience and specialisation of the workforce in contexts of continuous adjustments of the staff, as short-term industrial contracts that lead to temporary employment.
- These investments will contribute to the availability of a prepared workforce for periods of higher demand.

Recognition of effort towards bridging Academia-Industry:

- Develop protocols (for individuals and also organizations) to recognise and reward the efforts dedicated to creating collaborations between academia, industry and policy makers. Offer solutions such as Open Badges as digital credentials** (connected to the EUROPASS CV).

Enhancing education-industry cooperation.

- Promote cooperation of industry and social partners for maritime skills monitoring, syllabus design and teaching activities.
- Setting up mechanisms capable of taking on the task of creating long-term collaborations, essential if the sustainability of these multi-stakeholder communities is to be secured.

Improving knowledge-transfer among senior and junior employees:

- Improve the knowledge-transfer mechanisms within companies to accelerate the learning curve of new professionals, who would then be able to get a good grasp of the experience and lessons that older employees have gained over the years.

Promoting active involvement of learners.-

- Promote a new education model based on the active involvement of learners at all EQF levels.
- Boost the use of work-based learning, project-based activities and involve the student community in purposeful learning.
- Create synergies among groups of active learning experts, innovative pedagogy and maritime technology training providers in order to feed this process.

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Providing short trainings and supporting modularity in educational offer.

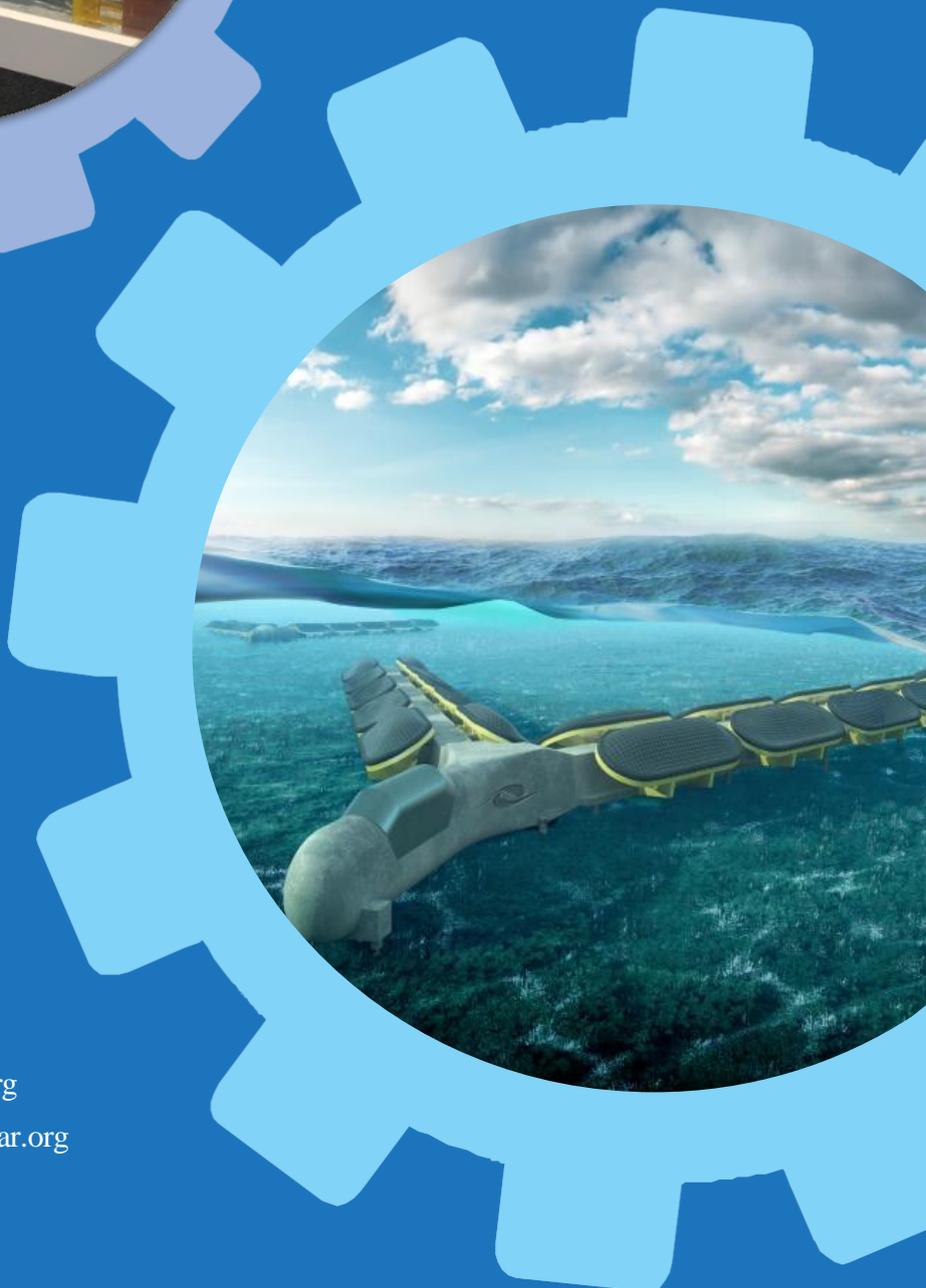
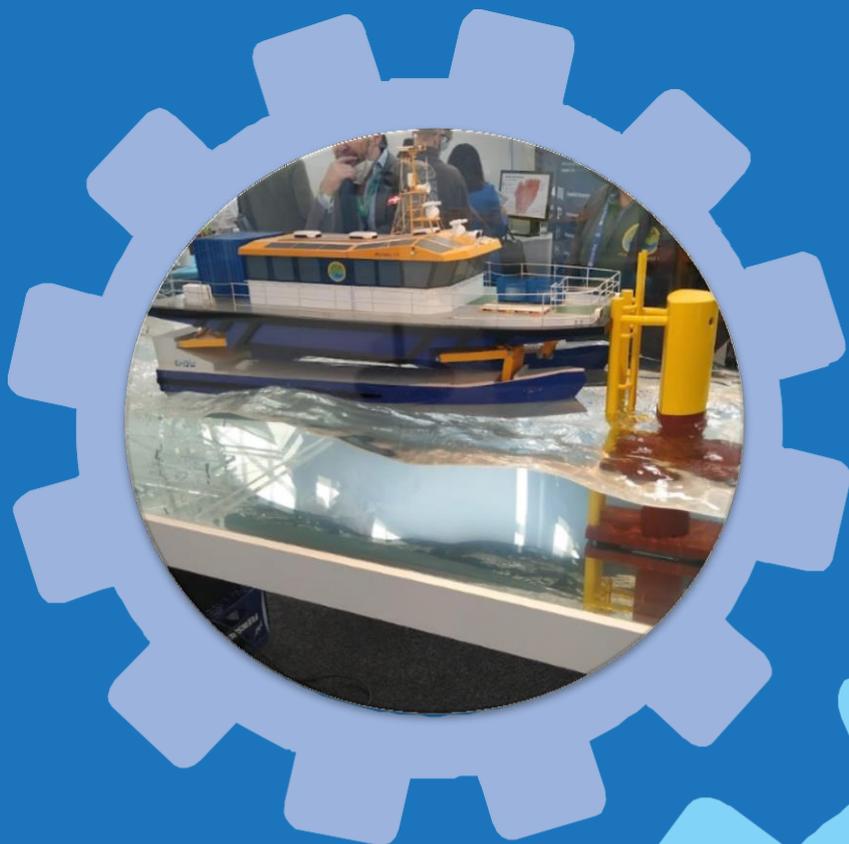
- Provide short trainings and support modularity in educational offer to boost life-long learning and upskilling processes.
- -Tailor robust curricula for the specific training needs of the maritime technologies sectors and the continuous update of trainers, promoting the knowledge progression along the career path of jobholders.

MATES Layman Report – Green move

All layman reports and education and training materials from all the MATES Pilot Experiences are available on the MATES website and include:

ED2MIT: Education and Training for Data Driven Maritime Industry projectmates.eu/pilotexperience/ed2mit
MOOCs on Industry 4.0 and the naval sector projectmates.eu/pilotexperience/mooc-training-course
Freeboard projectmates.eu/pilotexperience/freeboard
The Magnus Effect projectmates.eu/pilotexperience/the-magnus-effect
Innovation Manager in Shipbuilding Course projectmates.eu/pilotexperience/innovation-manager-course
Additive Manufacturing and Risk Management in the Shipbuilding and Ship Repairs Sectors projectmates.eu/pilotexperience/training-seminar
MOL² Maritime on the Loop of Ocean Literacy projectmates.eu/pilotexperience/mol2
Offshore Renewable Energy Courses projectmates.eu/pilotexperience/renewable-energies-crash-courses
Ocean Pro.Tec Lab projectmates.eu/pilotexperience/ocean-pro-tec-lab
Green Move projectmates.eu/pilotexperience/green-move
Definition of New Occupational Profiles projectmates.eu/pilotexperience/dop-definition-of-new-occupational-profiles





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