

MORE DIGITAL, SUSTAINABLE AND SOFT SKILLS NEEDED IN MARITIME EDUCATION

SUMMARY OF THE REPORT

Maritime professionals, both at sea and working ashore, need more digital, sustainable and soft skills, a new report has concluded. The study also highlights the need for seafarers to be equipped with the key skills needed to improve the transition from work at sea to work on land. The findings are contained in a study of future trends affecting the competence needs of maritime professionals, carried out as part of the SkillSea project (co-funded by the European Union).

Written by experts at the Norwegian University of Science & Technology (NTNU) and Liverpool John Moores University in the UK, the report examines four key trends influencing future skills needs in the shipping industry - sustainable development, collaboration amongst clusters, digitalisation, and education. One of the key goals of the SkillSea project is to arrive at a blueprint for future-proof training and education, and make it available across Europe.

The study also draws from in-depth interviews with a dozen experts from across the maritime industry, including shipowner and seafarer union representatives, and classification society, finance, technology, equipment and IT, and education and training leaders.

The analysis of future skills and competence needs identifies ways in which current maritime education and training could be improved, including greater use of simulation-based learning and new training packages to smooth the path between seagoing and shore-based employment in the maritime sector.

Researchers identified the way in which sustainable development is affecting the shipping industry and, in turn, is creating new competencies and skillsets for seafarers to master. As well as working with new 'clean' fuels and zero-emission technologies and environment-friendly equipment such as scrubbers and ballast water management systems, the report explains how seafarers are also increasingly expected to ensure high levels of vessel utilisation and advanced routeing to enhance the efficiency of operations. 'The technology shifts with respect to energy systems and operational challenges are more significant than before,' the study points out. 'The gap between common practice and expected competencies is growing.'

The report assesses the way in which technology is transforming maritime operations, with a growing number of functions being transferred from ships to shore-based control centres. This will fuel demand for advanced skills in analytics and the use of data in optimising fleet operations.

Similarly, the report cautions, the continued development of autonomous and advanced support systems on board 'will cause increasingly challenging interactions between complex autonomous systems and the crew. All in all, the maritime professionals (both seagoing and shore-based) need in-depth understanding of the complex systems on board to be able to serve the needed redundancy of all systems.'

The research team highlighted the importance of strong European maritime clusters within the globalised economy. It further points out that there is 'a unique opportunity' for collaboration and cooperation between maritime education and training centres and surrounding industrial clusters of advanced companies, to foster the development of new competencies for the maritime industry's future workforce.

The report also points to the benefit for shore-based maritime personnel to develop a better understanding of the challenges and issues that seagoing maritime professionals face. 'This will both facilitate innovation and enable better sea-land collaborations,' it adds. Researchers said they had found a need for more transversal skills between maritime occupational profiles. 'When it comes to mobility (from sea to shore) in maritime education, this needs to become a reality,' the study concludes.

The report warns that ‘the future skills of maritime professionals depend on how well we are able to help them to find their own ways to co-build maritime studies in an interdisciplinary field. This is urgent and necessary’.

As a minimum, the report points out, nautical studies must be kept up to date with a rapidly changing, technology-driven maritime world. ‘Technology changes maritime education and training towards more flexible and on-demand paths. In line with the rapid technology changes, maritime education and training must seek effective training methods to meet the needs of the shipping industry. Training courses should be accessible from anywhere and at any time, wherever possible.’

‘To prepare for the future, new courses and teaching methods must be introduced, such as using simulators (including the supported tools, such as virtual reality (VR), augmented reality (AR), and the Internet of Things (IoT) to train high-risk operations and team performance, both ashore and at sea through e-learning platform,’ it states.

The research identified a need for a flexible and scalable training system, which encourages specialisation, but the report notes that the nature of International Maritime Organisation (IMO) decision-making ‘results in a cycle of adaption to current technology that lags behind maritime technology development – in some cases by decades’.

The study says that while digital skills are increasingly important for maritime professionals, finding the time to learn them during basic maritime training competes with current criteria and puts pressure on minimising STCW training, while learning them after graduation is expensive in terms of both time and money.

It calls for three core areas to be addressed:

1. Developing maritime professionals’ competence and skillsets in response to the rapid development of on board technologies such as ICT and sustainable technologies.
2. Improving seafarers’ soft skills in leadership and management with new training programmes aimed at both furthering their on board career and supporting the transition to an onshore career.
3. Establishing bridging programmes that complement the IMO certificate-based education towards occupational profiles with a wider reach in the areas of digital, sustainable, transversal and leadership skills. The aim is to help bridge the gaps between shore-based and seagoing profiles, and the report suggests these programmes can be established as module courses to attract maritime professionals for the future shipping industry.

The report also recommends that STCW training should be expanded, with digital and sustainable skills integrated within courses, along with maritime law, business finance, remote operation and other new technology-based skills.

Ultimately, the researchers argue, the development of more responsive and advanced training programmes will create an opportunity for the enhanced mobility of seafarers. ‘Their experience and competence will be carried back to technology development and innovation, both at sea and ashore,’ the report concludes. ‘Such a strategy will ensure that training, shipping industries, maritime professionals and - most importantly - technology development and innovation, will progress towards new achievements in a more structured, coordinated and collaborative manner.’

The [full report](#) is available at the SkillSea website.