



MARITIME SKILLS
COMMISSION

SEAFARER CADET TRAINING GROUP REPORT & RECOMMENDATIONS

JUNE 2021



MARITIME
UK



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Executive Summary

The Seafarer Cadet Training Review came at a request from the Maritime Minister in the Maritime Skills Commission's Tasking Letter.

A Working Group of Commissioners and Chaired by Brian Johnson, Chief Executive, Maritime and Coastguard Agency, was established because numbers of UK Merchant Navy officers being trained employed has seen a steady decline over several decades. Although the training offered in the UK is seen as good by the rest of the world, it is becoming out-dated and has been slow to adapt to the needs of the Maritime industry.

This report contains the recommendations of the Cadet Training Group of the Maritime Skills Commission. Implementation of these recommendations will enable a growing gap between the international shipping sector's skills requirements for new officers and the training and education received by cadets to be closed.

Technology change in shipping, driven by decarbonisation and technology innovation, will increase this skills gap over the next 10-15 years. The roles in shipping will change and the nature of the interface between people and machines will evolve substantially.

The propulsion options being considered for deep sea shipping will bring a need for a step change in safety management in the sector – serious accidents resulting from poor operation of ships utilising these fuels will have immediate disastrous consequences some considerable distance from the ship. This transition to behavioural safety can only happen through skilled leadership.

Providing that the UK can now rapidly evolve how its seafaring officers are educated and trained, will provide an opportunity for the UK to supply the growing demand for officers with differentiated leadership and technical skills. This will create well paid employment with the knock-on benefits to the UK economy.

The development of a pipeline of officers with these increasingly important skills will be of importance in ensuring that the UK delivers the ambitions set out within the Maritime 2050¹ strategy in the arenas of autonomy and decarbonisation and in ensuring that the maritime services sector fulfills its future potential.

Refreshing the seafarer training system in the UK will allow the well-regarded UK maritime training sector to strengthen its position in the international education arena, pulling foreign income into the UK.

The group had input from colleges/universities, ship operators and students. It concluded that changes need to be made in the following areas:

- Recognising that the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) is a minimum acceptably international standard of education for seafarers, not a desirable standard. Setting the bar higher.
- Evolution of course content, reflecting the increasing need for greater technical agility and leadership skills, whilst recognising the importance of a solid foundation in seafaring skills.
- Whilst retaining a spectrum of qualifications, moving significantly further in the direction of honours (ie level 6) degrees.
- Overhauling the funding system. Seafaring officer training should be fully government funded and students must have choice about which college and course they attend.
- Improving the quality of the learning and experience through improved access to modern electronic equipment, simulators and blended learning tools.
- Re-thinking the traditional emphasis on "time spent" as an indicator of learning and replacing with objective measures.

- Overhauling the experience of cadets during their sea time. Making sure that shipping companies fulfill their obligations fully, that colleges continue to provide mentoring, and that experience on board ship is properly blended with simulator experience to create a rich and consistent experience base.
- Recognising that the training/education regime of UK officers has been slow to change over the years and that some hard decisions will need to be made in implementing the recommendations of this report. The final recommendation of the group was to create the necessary environment for change through improvements at the Maritime and Coastguard Agency (MCA) and Merchant Navy Training Board (MNTB).

The group concluded that the employment of UK officers was at a crossroads. Rapid change was needed in attracting students into the profession, in changing course content to align with present and future anticipated sector needs, and in providing a quality of education which the students deserved. With these changes, the UK will be producing differentiated officers at the time when the sector needs them and demand will grow. Without these changes, the employment of UK officers will continue to decline and others will fill the demand from the shipping sector.

This report therefore recommends substantial reform of the training of cadets rather than incremental change.

The training/education regime for seafaring officers has not kept pace with change over the decades and that the change proposed requires hard decisions to be taken. The group's final recommendation is to establish of a high level "task and finish" Board reporting to the Maritime Minister to oversee the delivery of the change over a 2 year timeframe.

1. Maritime 2050: navigating the future

Scope & Objectives

The Tasking Letter from the Maritime Minister to the Maritime Skills Commission sets out the following objectives for the work of the Commission.

- Understand the skills needs of the sector, including the effects of technological change, and make recommendations for action.
- Ensure that no part of the sector suffers from serious skills shortages or skills gaps.
- Ensure that the sector has the apprenticeships and qualifications it needs.
- Ensure that the sector has the training provision it needs, (including the use of technology to engage learners and keep costs down).
- Provide employers and individuals with clear information about career paths and re-training options.
- Ensuring that employers have good quality recruits for their vacancies through effective promotion of maritime careers.
- Increase exports of maritime education and training.

The Maritime Skills Commission decided to focus this seafarer training review on officer training because it was becoming increasingly clear that a growing gap is emerging between the skills needed by shipping operators and those skills that are readily available in newly qualified officers. This is something which, if not addressed, could present a threat to areas of UK maritime development. Equally, if addressed quickly, it could present a significant future employment opportunity for highly qualified UK national officers in global shipping.

The Seafarer Cadet Training Group has focussed on what the needs of the shipping sector will be in 10-15 years, reflecting the time that may be required to both fully implement change and for trained officers to emerge from the system. This timescale also reflects the point at which technological change within shipping will have substantially accelerated.

The Seafarer Cadet Training Group has also looked at the changing expectations of young learners and of those beginning their careers.

There are three national drivers for considering seafaring officer training:

1

Meeting the domestic need for skilled officers – both for roles at sea and for roles in shipping management and in the broader maritime services sector. The maritime services sector in the UK is worth £17 billion GVA to the UK economy and £47 billion in business turnover.

2

Growing the demand for and creating the supply of UK officers for the international shipping sector who differentiate themselves in a commoditised employment market through very high technical and leadership competence – skills that will be in high demand as decarbonisation drives very challenging transformation within the international shipping sector.

3

Stimulating the growth of UK maritime education exports. The sector is well regarded internationally and, with 1,000 seafaring officer students who are foreign nationals at any point in time, creates revenues of between £5 and £10m/yr.

In order to respond to the three drivers above, the seafaring officer education sector in the UK will need to adapt quickly. The Seafarer Cadet Training Group heard about a number of inhibitors which make this challenging.

Methodology

The members of the Cadet Training Group were:

Lucy Armstrong
Chair of the Port of Tyne

Mark Dickinson
General Secretary of
Nautilus International

Brian Johnson (Chair)
Chief Executive of the Maritime
and Coastguard Agency

Sam McBriar
Director of Maritime Strategy
and Marketing at Thales

Kathryn Neilson
Director of the Merchant Navy
Training Board

Karen Waltham
Independent HR Consultant

The Seafarer Cadet Training Group received a series of inputs over a 6 month period from several colleges, shipping employers and officers and cadets. The group also received input from Lloyds Register covering the likely trajectory of technology change in shipping, and had input from the Department for Transport covering the current funding mechanism for cadet training.

A survey of current cadets and recently qualified officers was carried out through Nautilus International and a workshop was held with a group of cadets and officers who responded to the survey.





What we aim to achieve

In the work that has resulted in this report, the Cadet Training Group has used the following end points to guide its thinking. These represent what success would look like.



Training experience and welfare

Students should succeed in becoming highly capable officers because of the education experience, not in spite of it. They need to be sure that someone is taking a strong interest in their development throughout their cadet experience. The learning roadmap that they are following must be clear. Sea experience should be one of the highlights of their time as a cadet, something that they see as rich in learning and not simply a rite of passage. Women doing their sea experience must be treated in a way that is compatible with today's UK standards. We should expect minimal dropout rates, signifying that the system is working well to meet the needs of students, and that it is influencing retention.



Training Content, Teaching and Tools

Course content must meet and anticipate the evolving needs across the shipping sector. Course delivery should respect the capability of students, making the most of their capacity to learn and make use of the best tools and techniques available. Teaching delivery should use a careful balance both of subject matter technical expertise and educational capability/insight.



Qualifications and Career Journey

The type of qualification earned must, of course, reflect the level and breadth of course content. For seafaring, the levels at which these qualifications are pitched depends on the needs of a wide variety of employers. The levels of qualification earned are a key determinant of the level of academic achievement amongst those attracted into the courses. Qualifications should continue to have currency as officers' careers develop.



Incentives and Mechanisms

The structures, incentives and frameworks that exist around seafarer training must support forward-thinking evolution of seafarer training in the future to anticipate and meet the accelerating change in the needs of the shipping sector.



Tradition and Culture

Tradition can be positive and should be respected. It should not, however, be a barrier to necessary change.





The Current System

The International Maritime Organization (IMO) is a United Nations agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships. The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) was adopted by the IMO in 1978. It sets minimum qualification standards for masters, officers and watchkeeping personnel on seagoing ships and large commercial yachts. It was significantly amended in 1995 and in 2010.

As a signatory of the United Nations Convention on the Law of the Sea, the UK supports the work of the IMO and has ratified IMO conventions including STCW. It is the responsibility for the maritime regulator, the Maritime and Coastguard Agency (MCA) to ensure that UK seafarer education meets the minimum requirements of STCW.

The Merchant Navy Training Board (MNTB) works closely with shipping and ship management companies, nautical educational establishments and organisations, seafarer trade unions, the Maritime and Coastguard Agency and industry organisations with an interest in seafarer education and training. The MNTB acts as a sector skills council, steering development of training for UK seafaring officers and ratings.

The table below illustrate the typical path followed by a student who is being educated to become a deck or engineering officer in the merchant navy at UK colleges or universities.

Typical Route to Gaining Certificate of Competency

Foundation Degree Programme Deck

1

College

Circa 22 weeks

Courses include: Academic and Digital Literacy, Cargo and Construction, Bridge Operations, STCW Basic Training (Basic Training for Seafarers, Efficient Deck Hand, Designated Security Duties), Enclosed Space Entry, Tanker familiarisation.

2

Sea

Circa 36 to 42 weeks

This phase focusses on: Work Based Learning, shipboard induction, familiarisation with marine operations, undertake basic training tasks within Shipboard Training Record Book.

3

College

Circa 38 weeks

Courses Include: Navigational Maths, Maritime Operations, Maritime Law and Management, Bridge Management, Stability and Engine room Operations, Ship Handling and Advanced Navigation, GMDSS (Radio equipment training), STCW Advanced training (Medical First Aid and Advanced Fire Fighting), NAEST (O) (Simulator training course), Signals, HELM (O) (Human Element at Operational Level).

4

Sea

Circa 36 to 40 weeks

This phase focusses on: Work Based Learning (Managerial level), development of shipboard operations and skills, complete programme of Shipboard Training Record Book.

5

College

Circa 12 weeks

Courses include: Maritime Management, STCW Advanced Training and Certification issue (Proficiency in Survival Craft & Rescue Boats, Efficient Deck Hand, Advanced Fire Fighting, Tanker Safety course (if required)).

In this phase cadets will also prepare for their MCA oral examination which will allow them to achieve their Officer of the Watch CoC. At this point the candidate will have completed the required underpinning knowledge and college assessment for the Management level CoCs (Chief Mate), noting that once qualified for their first CoC they would then need to complete 12 months seagoing service, additional ancillary training, written exams, and an MCA oral. Typically, a candidate would return to college for a period of exam preparation for their Chief Mate's Oral and written exams, however this is a non-mandatory requirement.

HNC-HND Programme Engineering

1

College

Circa 24 to 25 weeks

Courses include: Mathematics/ Numeracy for seafarers, Maritime sector overview, Control vessel operations, Vessel construction and stability, Marine heat engines, Marine engineering dynamics, Basic vessel engineering systems, Statics for marine engineers, Strength of materials for marine engineers, Electrical principles for marine engineers, STCW basic training (Basic Training For Seafarers and Designated Security Duties), Enclosed Space Entry, Tanker familiarisation, MNTB workshop training skills (Working safely in an engineering environment, hand fitting techniques. English developmental programme).

2

Sea

Circa 21-27 weeks

This phase focusses on: shipboard induction, familiarisation with marine operations, undertake basic training tasks within Shipboard Training Record Book.

3

College

Circa 48-49 weeks

Courses include: Engineering Mathematics 1, Auxiliary Systems, Electrotechnology, Fundamentals of Controls & Transducers, Propulsion, Mechanical Principles, Stability and Structures for Merchant Ships, Marine Legislation and Leadership, Thermodynamics, Pneumatics and Hydraulic Systems, Safety Engineering and the Environment, Graded Unit 1, Strength of Materials (HND), Engineering Mathematics 2 (HND), Project Management for IT (HND), MNTB workshop training skills (Fabrication and welding, turning operations, forming, and assembling pipework, Marine vessel plant maintenance), HELM (O) (Human Element at Operational Level), High Voltage (Operational Level).

4

Sea

Circa 37-38 weeks

This phase focusses on: development of shipboard operations and skills, complete programme of Shipboard Training Record Book.

5

College

Circa 12 weeks

STCW Advanced training (Proficiency in Survival Craft & Rescue Boats, Advanced Fire Fighting, Tanker Safety course (if required)).

In this phase cadets will also prepare for and sit their IAMI EK exams. They will also prepare for MCA oral examination which will allow them to achieve their Engineering Officer of the Watch Certificate of Competency (CoC).

6

College

Circa 31 weeks for those identified by sponsoring companies or self-funded top up to HND

Courses include: Management, Marine Heat Engine Principles, Applied Thermodynamics, Electrical Power, Process Control, Mechanics, Electrical Machines, Naval Architecture, Ship Construction and Survey, Applied Mechanics, Electrical Distribution Systems, Graded Unit 2.

At this point the candidate will have completed the required underpinning knowledge and college assessment for the Management level CoCs (Second Engineer), noting that once qualified for their first CoC they would then need to complete 12 months seagoing service, additional ancillary training, written exams and an MCA oral. Typically, a candidate would return to college for a period of exam preparation for their Second Engineer's Oral and written exams, however this is a non-mandatory requirement.

Maritime Training (SMarT) Funding

The total cost of training an officer is between £60,000 and £70,000 including the cost of college, sea-time and living expenses. UK nationals currently have 30% (£18,100) of this cost covered by the tax-payer through Support for Maritime Training (SMarT) Funding. The balance is paid for by shipping companies.

Shipping companies which elect to join the UK Tonnage Tax scheme are obliged to train one UK cadet for every 15 officers that they employ. They may also apply for SMarT funding.

They are also obliged to provide sea time experience for these cadets.

The SMarT funding system was introduced by the UK government in 1998 and is available to part fund several stages of a merchant officer's development. By far the highest proportion of the funding is spent on Cadet training that leads to an officer's initial Certificate of Competence.

SMarT was supplemented with the SMarT Plus programme in 2018 which was established to incentivise officer development beyond the initial certificate of competency and, where a company made that commitment, to increase the proportion of initial training that was Government funded.

The value for money assessment of SMarT funding published by Oxford Economics² in 2016 used Treasury Green Book methodology to model the return on investment. It showed £4.80 being generated in the UK economy for every £1 spent on SMarT.

In Scotland, cadets' tuition fees are paid by the Scottish Government under its devolved powers.

All UK national cadets must be sponsored by a shipping company. The SMarT funding is paid to the sponsoring company by the UK government who pay the colleges for tuition and give a living allowance to the students.

This complex arrangement has led to the creation of "Training Providers" which broker many of the sponsorship arrangements, place the students in colleges, administer the flow of funding to the colleges and students, and make sea time arrangements.

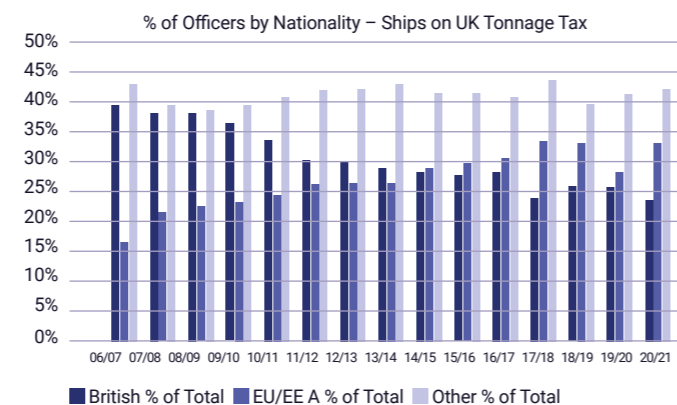
There are several colleges and universities in the UK providing education for aspiring engineering and deck officers.

UK national cadets qualifying annually

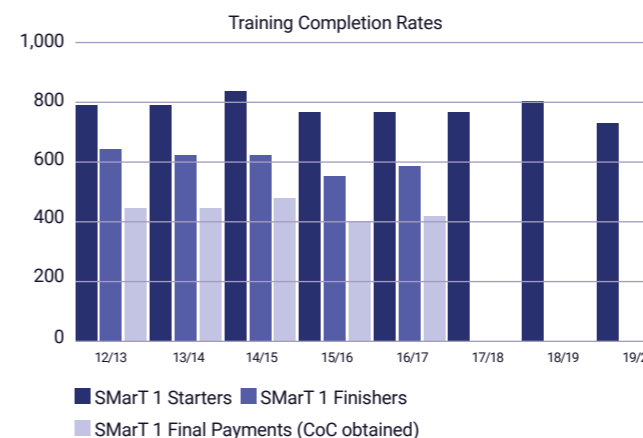
City of Glasgow	250
Fleetwood	150
Solent University	164
Plymouth University	20
South Shields College	130
Scottish Maritime Academy	9

*Colleges shown above are those from which a response to the questionnaire was received

The graph below shows how the proportion of UK officers on board ships operating under UK Tonnage Tax has dropped since 2006 (by which time, the tonnage on UK tonnage tax had stabilised).

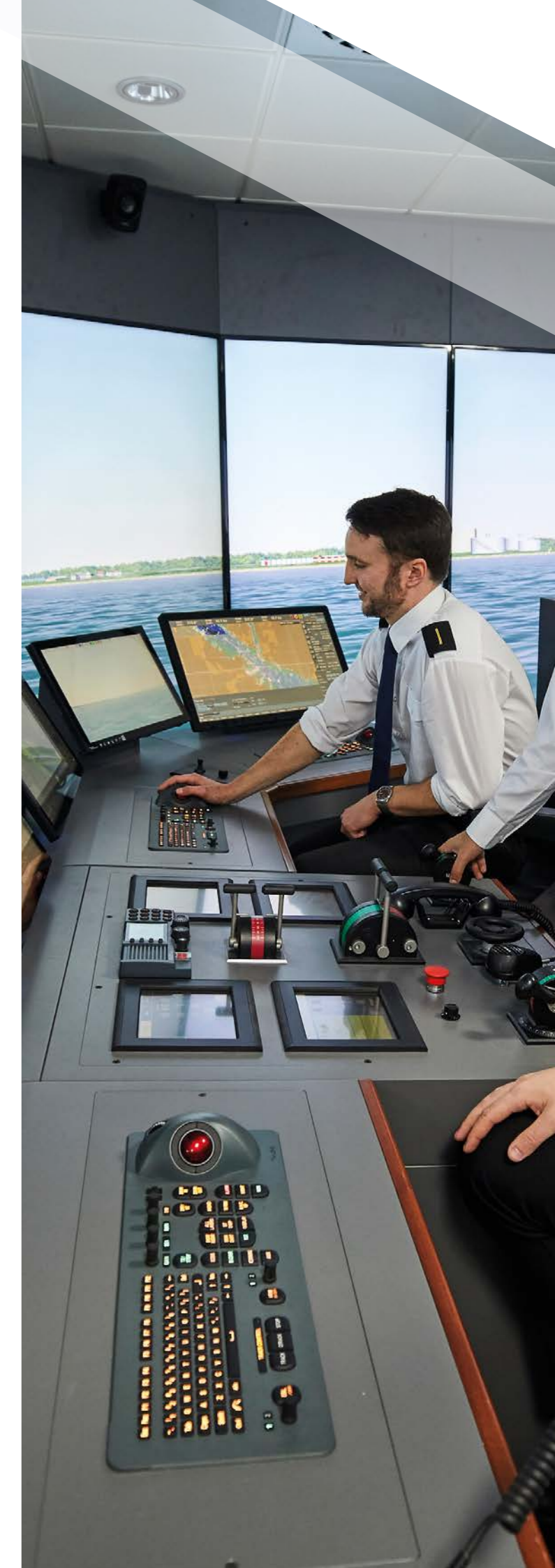


The chart below, based on SMART 1 funding claims, shows that 77% of the intake of UK nationals into colleges in any given year finish the course and that only 60% claim the final SMART payment – an indication of having gained their certificate of competency.



In conclusion, despite the value of seafaring officers to the UK economy, attraction of new talent into the sector is becoming harder and drop-out rates are high – both pointing to issues within the training and education of seafarers and/or in the downstream opportunities.

2. Oxford economics value for money assessment of SMarT Scheme December 2016





Key Future Technology Changes in Shipping

The shipping sector has historically been relatively slow to change and to adapt to new technologies.

There are however 2 changes that will shape rapid evolution in shipping over the next 2 decades:



Decarbonisation

It is broadly recognised now that the world must urgently address the growing environmental issue of climate change. The transport sector's reliance on propulsion technologies that create net positive carbon emissions needs to be very significantly reduced over a short time period.

The United Nations body for shipping, the International Maritime Organization (IMO), sets conventions by which international shipping is expected to operate. It has mandated that global shipping must halve its total CO2 emissions by 2050. With a projected doubling to trebling of annual "tonne-miles" delivered by shipping in the next 30 years. This means that ships will have to reduce carbon emissions per "tonne-mile" to 17-25% of current levels by 2050.

Whilst coastal shipping may be able to adopt battery technologies this will not be a viable option for international shipping.

It is not clear what the ultimate range of solutions to this will be, but current strong possibilities include hydrogen or ammonia. Ships are already beginning to run on liquefied natural gas (LNG) as an intermediate solution that reduces carbon emissions by a limited percentage.

Compared to the heavy fuel oil currently used to drive

ships, which is not volatile and is hard to ignite, these alternative fuels are extremely hard to handle and potentially highly hazardous. Hydrogen and liquefied natural gas are highly flammable and explosive and both need to be stored at low temperatures to keep them liquid: -252 °C for hydrogen and -162 °C for LNG. Ammonia is flammable, toxic and volatile – it is stored at -33 °C.

Engineering and operating standards on board ships across all types of ocean-going shipping will therefore go through a revolution during the course of the next 20 years as these new technologies are introduced. New fuels mean that safety on board no longer impacts just on those on the vessel, but every person within several miles of that vessel. This will be particularly acute when in and approaching ports.

In this new world in which potentially highly hazardous propulsion technologies are used, safety cultures across all shipping will need to move to transition to the very best seen within shipping today. Reliance on procedures will not be enough in future and the focus will extend to behaviours. Shipping operators and shore-based industries who have already made this transition know that the success of introduction and maintenance of these safety cultures correlates and is determined by quality of local leadership.

This demand for increasing leadership capabilities will prove to be one of the major future challenges for shipping in future years and was highlighted as a serious current issue by shipping employers who gave input to the Seafarer Cadet Training Group.

In the meantime, a plethora of other energy-saving technologies are likely to be adopted. For example: air-lubrication of hulls, speed optimisation and wind turbines.



Accelerating pace of technology

Technology in ships, as in every other area of life, is advancing at an accelerating pace. Shore-based control rooms already increasingly play a role in the operational decision-making and it seems likely that functions such as engine monitoring will be increasingly carried out remotely as it has been for some years in the aviation industry.

As use of automation in shipping accelerates, the ability of those on board to interface with the automation and to intervene in the right way when the situation demands it becomes even more critical.

Parallel industries use the term "human-machine teaming" as a way of highlighting that it is the interaction between the person and the technology that is changing.

Digital technologies, including automation, provide improved information and situational awareness with the benefit of streamlining time-consuming and/or dangerous tasks.

Advances in human-machine teaming are changing the nature of jobs by allowing people to focus on high-value tasks including safety, decision making and problem solving. This transition is evident today in a wide range of professions from doctors to airline pilots.

The nature of jobs in shipping will change with some potential re-balancing of what is done on board and what is done remotely. This process of evolution will need to be skillfully led and up-coming skills gaps identified and filled in a timely way.

The impact of the decarbonisation imperative and accelerating technology and automation on shipping will be profound over the next 10-20 years – it has been described as being comparable to the transition of shipping from sail to steam over 200 years ago.

Those onboard ships in the future will need increasingly to be technologically highly capable and agile – able to learn about and absorb new technology as it is adopted. Developing these competencies should become a key part of future seafarer education.

These changes are overlaid on a broader movement in the economic centre of gravity towards Asia and the consequent need to adapt quickly in order to stay ahead in areas where the UK holds current advantage.



Key Employment & Societal Trends

Society is changing and this is affecting the employment of officers – the shape of the role, who is attracted, how long they wish to remain at sea and what education they aspire to receive.

1

Officers generally have shorter careers at sea

Shipping companies interviewed consistently said that most officer entrants coming into their employment would decide to come ashore within 10 years as increasing family commitments became incompatible with being at sea or as they move to the next of several career moves that they might have in their working lives.

In merchant shipping companies, moving to a non-sea-going role is usually a one-way step – officers rarely go back to sea. This is not the case in the Royal Navy where it is quite normal to rotate between sea and shore based roles constantly throughout a career.

2

Crew mental health is becoming a more recognised issue on board ships

- Long crew working hours, up to 91 hours per week – the ILO Maritime Labour Convention, 2006 regulates the minimum rest hours and maximum hours of work of all seafarers³.
- Extended periods away from home. The Maritime Labour Convention provides for a maximum period on board of 11 months. For example, UK Officers working internationally are typically away from home for 2 to 4 months at a time. The COVID pandemic has brought greater global attention to the impact on crews of these extended periods away from their homes and families.

- Crews on board ships are multi-national – it is not uncommon to have 3 nationalities on board (and many times this number on cruise ships) and the language and cultural barriers often get in the way of socialising⁴. These barriers often also get in the way of effective learning on board.
- The Maritime Labour Convention recommends that reasonable access to telephone communications, email and internet should be available to crew. There are very mixed views amongst crews as to whether the internet access now available on increasing numbers of ships has been positive in terms of socialising and its knock-on impact on mental health⁵.

The leadership role of ships officers⁶ in supporting their crews is becoming more challenging in this changing environment.

3

The demand for officers who are more skilled than the minimum STCW requirement will rise

Shipping is a global industry with a spectrum of actual operating and safety standards. IMO conventions, class society codes and national flag codes set a minimum permissible level.

It is not uncommon for shipping operators to seek to just to achieve these minimum standards and, in line with this thinking, to have officers who only meet the IMO's STCW standards – which sets a global minimum standard of education and capability.

There has been a tendency in much of global shipping for ships officers to become commoditised – employability being judged purely on employment costs and whether they meet this minimum STCW standard.

Advancing automation technologies and increasing remote operational decision making, support and monitoring is likely to result in a need for smaller crews with higher skill levels in the future.

4

Further/higher education aspirations in the UK have changed in the last 20 years

In 2018/19⁷, 348,000 UK-resident students received honours degrees (level 6 qualifications) – a trend indicating that over 40% of young people follow this route⁸. Despite this, the overwhelming majority of course places offered for seafaring officer training are not for honours degrees. A survey conducted by Nautilus International in 2020⁹ revealed that only 13% of entrants undertook an honours degree, 42% undertook a foundation degree and remaining entrants a HNC or HND.

3. Also relevant, IMO STCW Regulation VIII/1 Fitness for Duty Provisions for watchkeeper personnel
4. ISWAN Social Interaction Matters December 2020
5. ISWAN Social Interaction Matters December 2020
6. ISWAN Social Interaction Matters December 2020
7. Higher Education Student Statistics 2018/19
8. ONS statistics 18-24 year old population www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/timeseries/jn5q/lms
9. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021

The Importance of Training

The training of merchant shipping officers is important for the UK economy for 4 reasons:

1

To supply officers for domestic shipping – ferries, tugs, coastal vessels, fishing vessels and the expanding offshore renewables sector.

2

To supply UK officers into international shipping. Although UK officers have been valued in the past as being of a high calibre, officers on board ships have become increasingly commoditised and the proportion of UK officers on board ships has declined as increasing numbers from the Indian subcontinent and Eastern Europe are employed in the sector.

The cruise sector continues to value UK officers particularly highly because of their customers’ preferences as well as the officers’ high level of competence.

With the transformational and accelerating technology change that international shipping will adopt in the next 20 years, a new generation of officers will be required who can both manage the technological change and provide the high standards of onboard leadership required to change the methods of operation. By creating a supply of outstanding officers capable of leading these changes, the UK can benefit from this demand and reverse the current decline in UK officers in world shipping.

Work carried out by Oxford Economics¹⁰ in July 2016 calculated that every seafaring officer contributes £1.1m more to the UK economy than the average worker.

3

The UK has a vibrant maritime services economy supplying, for example, shipping finance, legal services, brokerage and insurance. There is constant demand within these services for high calibre people with experience at sea. The current gross value added (GVA) of this sector is £17bn/yr.

In 2019, the UK Government launched the Maritime 2050¹¹ strategy setting out ambitious aims for the maritime sector in the UK.

The Maritime Minister announced at the UK Chamber of Shipping conference in February 2020 that the UK was considering positive changes to the tonnage tax regime to stimulate more shipping into the UK. It is likely therefore that the UK Maritime Services sector will grow and demand will increase.

Shipping operators within the UK also seek high quality of people for their shore-based operations and would prefer these to be ex mariners¹². The UK administration has been told by several operators that, when they look at talent on board their ships, there is a serious shortage of officers at sea with the potential for moving to senior management roles.

4

The colleges providing officer training in the UK are well regarded internationally and bring in annual revenues of between £9m through the education of foreign nationals. The seafarer education sector forms a part of the broader UK education exports. If it is to retain and grow this leading position, UK seafaring officer training needs to adapt quickly to meet the rapidly approaching new requirements of the shipping sector.

10. Oxford economics value for money assessment of SMarT Scheme Dec 2016

11. Maritime 2050 – navigating the future

12. The UK's maritime sector and MET has been mapped as part of study by Solent University commissioned by ECSA and ETF and funded by the EU Commission available at www.ecsa.eu/images/files/downloads_publications/054.pdf





Meeting the Needs of Shipping Employers

The Seafarer Cadet Training Group received input from several shipping operators. All were clear about the rapid pace and fundamental nature of change in the sector over the next 10-20 years, driven by decarbonisation and automation. They were also clear that there were already substantial gaps in the education of new officers and that these would widen at an accelerating pace in the coming years unless change happened quickly.

The messages about their future requirements for ships officers were surprisingly and absolutely consistent:

1

The shipping employers already find that newly qualified officers are largely unprepared for the major leadership challenges that they will face in the role. They see behavioural, people and leadership skills as vital today and becoming increasingly important for officers as decarbonisation and automation technologies are implemented and require a step change in operating standards/cultures with crew sizes potentially reducing. They want to see much more emphasis on developing leadership and personal skills of officers during their initial education. These skills are also fundamental in making the transition to shore-based roles.

2

They need their officers to be increasingly technologically able and agile. They want to see the best Science, Technology, Engineering, Maths (STEM) students attracted into the sector to drive what is going to be a highly challenging technical change agenda.

3

Their officers usually spend 10 or fewer years at sea before family commitments draw them towards jobs

ashore. They want their officers to be able to move to these shore based roles with the potential to progress towards senior company management. They would like their officers to be better educated in preparation for a career in the maritime sector, with greater appreciation of how businesses operate and some aspiration that, if they so choose, their time at sea could lead to this progression.

4

The shipping employers who spoke to the Seafarer Cadet Training Group saw STCW as a minimum legal standard for seafarer education, not a desirable standard and wanted that reflected now in how cadets are educated.

5

There was frustration from those that we spoke to about the slow pace of evolution of seafaring officer training in the UK. There was a clear message that, whilst the international STCW requirements are outdated, and have not kept pace with technological advances, there was a great deal more that the UK could do now to improve the scope of courses and the methodology of delivery with a view to attracting the very best students into the sector and preparing them to lead the huge changes that are coming to shipping in the next 10-20 years. There is a need for a sector that is, in its nature, able and eager to quickly adapt to future requirements.

Shipping employers talked about developing areas of broad competency in their officers in addition to the technical skills. One such list was as follows: **Healthy Hierarchies, Team Skills, Path to Performance, Feedback Coaching, 1:1 Team Coaching, Situational Awareness, Facilitation, Decision Making, Assertive Environments, Assessment, Consolidation.**

Inputs made by those leading shipping operators which underscored these conclusions included:

“Seafaring capability must be at the core.”

“Greater emphasis needed in STEM (science, technology, engineering, maths) subjects.”

“Recognising good wellbeing in both physical and mental health. Greater leadership understanding of mental health issues and how to tackle them.”

“The real change and need for the future is the culture a leader brings to the role”

“Encouragement through leadership of a “speak up” culture on board.”

“There are already gaps between current educational content and the technology facing both the operational and technical seafarer.”

“The big future step change for our assets will come in the form of technologies to achieve decarbonisation.... Which will mean our technical staff will need a broader skill set to keep pace.”

“Considering both the soft and technical skills linked to the pace of change, we will need to address how to attract the best STEM students.”

“The seafaring environment is challenged in meeting such demands and needs to overcome this... by positioning the industry as an attractive career with opportunities beyond being a seafarer. The number of people who see seafaring as a long-term career is declining.”

“Almost every young person today exists in an environment where they are socially connected to virtually every aspect of day-to-day life.”

“The number of jobs predicted in the lifetime of future generations is going to be very different from the people we have today who retire from our ships with over 40 great years of service in one company – how can we make education and time at sea more of a stepping-stone in an overall career in the maritime industry?”

“The 4 driving forces for change in shipping are:

- 1. Path towards decarbonisation of shipping**
- 2. Ongoing development of artificial intelligence**
- 3. Digitalisation**
- 4. The importance of social connectivity”**

“...the decarbonisation agenda will result in the adoption of different fuel solutions... what is different to the transition from sail to steam is that there is a strong possibility that there may be a multitude of solutions... our crews will need to understand the technologies and be able to manage them safely.”

“Flexible leadership styles required.”

“The adoption of artificial intelligence is well advanced in other sectors and it will become more widely adopted in the design and operation of vessels. This will result in the need for crews who understand how the equipment works.... and the pitfalls which exist between the machinery/human interface.”

“Digitalisation is becoming more widely adopted in the industry... with a particular focus on using data to optimise assets... currently much of the analysis is carried out in shore-based environments. This raises questions such as whether shore-based personnel involved (who are often ex seafarers) have the required skills.”

“Education in shipping has been backward looking – it is focused on skills historically required to navigate and operate as opposed to contributing in a wider sense to the success of the industry. There is a real opportunity to create an educational framework founded on forward looking requirements and based on a career in shipping rather than limiting the syllabus to ships and their immediate environment.”

“The need for onboard commercial understanding will grow – how actions translate into monetary outcomes.”



Attracting, Educating, Developing and Retaining a Diverse & Differentiated Officer Base

The Seafarer Cadet Training Group heard input from three of the large colleges/Universities offering merchant officer training. We heard that:

- Cadet recruitment is declining. Even the introduction of SMarT Plus funding in 2018 to increase the proportion of cadet funding covered by the Government does not seem to have increased numbers.

Year:	2015/16	Number:	781
	2016/17		771
	2017/18		693
	2018/19		816
	2019/20		727

- Entry-level standards are consequently reported to be sliding. This is happening at a time when the requirements for technical and leadership capability are rising and likely to accelerate further.
- 11% of cadets are women – an improvement on the past, but not enough.
- The proportion of cadets not receiving certificates of competency is high – 40%.

Two of the colleges that the Group spoke to said that they believed that a large proportion of their UK cadets came from seafaring families. Cadets and newly qualified officers told the Cadet Training Group that many of their peers took this career step simply because they could find no other routes to employment. The Nautilus survey¹³ confirmed that many students choose a cadetship because of the long term career opportunities in the industry and that the funding available through SMarT was important in them making that choice.

Seafarer education is an outlier in the UK educational environment – one contributor described it as “peculiar”. Areas highlighted included:

1

Qualifications

Senior leadership within the shipping sector consistently told the Seafarer Cadet Training Group that new officer talent is not currently meeting their rising technical and leadership needs. Despite this, for those seeking to do an honours degree (or equivalent level 6 qualification), there are currently very limited options to meet this aspiration whilst being educated as a seafarer.

Those with the highest entry level STEM qualifications will not therefore have seafaring even on their long list of education/ career options.

2

Testing of competency

Rigid application of STCW and a rather traditional teaching approach, often constrained by unimaginative application of regulation and a lack of long term perspective of the industry training board, has led to too much emphasis on time spent being educated as a measure of individual success instead of focus on competency demonstrated. This means that the pace of learning can be set to the level of the slowest learner. One impact of this is that entry to seafaring education is much less attractive for graduates than it ought to be because the conversion education courses are not fast tracked.

3

Funding

The funding system is complex and very different to other areas of education. The current SMarT (support for maritime training) funding system demands that students are sponsored by a shipping company at the point of entry and throughout their education. So-called “Training Providers”

have become established to broker these relationships (note that these Training Providers are not educational establishments in this context).

From a student perspective, the impact of the funding system is:

- A** They often have little or no choice of where they study and therefore what qualification they receive (eg HNC, HND, Foundation Degree or Honours Degree).
- B** It is unclear where the ownership for their development lies between colleges, their sponsoring company and the “Training Provider”
- C** The amount of funding that they receive for living expenses during their education is highly variable and at the discretion of the shipping sponsor and often insufficient to cover basic living expenses with many cadets reporting having to take out loans.

4

Currency of content

Course content is out-dated as are many of the teaching tools used. There is generally very strong agreement between colleges/universities and those in the most senior positions in shipping companies about what change is needed and yet “the system” around seafarer education continues to resist that change. Tradition is often a good thing, but it is clear that the system is as focused as it needs to be on the present and is certainly not focused on future needs. For example, heated debate continues about whether simulators should play an increasingly central role in teaching ship handling and incident management and how that might impact on current sea time requirements – something that the aviation and many other sectors resolved some decades ago.

5

Practices

An example of the peculiarities of tradition is that seafaring students at colleges and Universities wear uniforms during their college studies whilst mixing with peers doing other subjects. It is questionable whether this type of traditional feature really helps to attract students into this area of education.

It is recommended that:

- I** Leadership, people and self-management skills are brought more strongly into the curriculum of seafaring officer training courses and greater use is made of competency frameworks.
- II** Seafaring officer education be expanded to include a stronger appreciation of the business within which they operate and how the basic functions within these businesses function.
- III** Those things that make seafarer education so different from other areas of education are normalised wherever possible so that following this education route is more routinely considered as a long list career choice for talented students from a fully diverse set of backgrounds and characteristics.
- IV** Qualifications earned and course content, where possible, are aligned with having currency and relevance when officers move to shore-based roles.
- V** It is essential that, subject to their capability, students have a free choice of where they study, and therefore the style of education which they receive, and the qualification gained on completion. This should be written into the obligations for sponsoring companies.
- VI** Wherever possible, the MCA drops the use of time spent in training as a criterion for educational success and encourages the sector to use objective criteria as in other subjects.

Feedback from cadets and recently qualified officers

The Seafarer Cadet Training Group heard feedback from students and recently qualified officers in addition to the results of the 2020 Nautilus survey of 118 students and recently qualified officers. **Consistent themes were as follows:**

- The Cadet Training Group was told that a significant number of students attending seafaring courses had limited specific interest in the career and had chosen the option because of the funding and the prospect of a job at the end of it.
- The majority of the cadets with whom the Cadet Training Group spoke were told by their sponsoring company or Training Provider which college/course they had to attend. There was no choice.
- Teaching in colleges was often one dimensional and PowerPoint based. There was no clear road map that sets out what had to be learned by when and this meant limited opportunity to be proactive.
- The value of the sea time that they had experienced was very mixed:
 - It gave exposure to working in just one type of shipping and only allowed application of parts of the theory that they had learned. Mixed experience would be more valuable.
 - Significant time was spent on mundane manual tasks instead of learning how to undertake the role of a watchkeeping merchant navy officer.
 - Female officers and students experienced misogynistic behaviour during sea time from officers and often found themselves on ships with no other women.
 - Colleges took little or no interest in students when they were at sea. Sponsoring companies took little or no interest in the college phase.
- Access to good quality teaching on simulators and other state of the art equipment was limited. Where there was some access to these tools, the students fed back that their teachers were often not familiar enough with the equipment to teach it effectively.

- Access to on-line learning tools was very limited. Some felt that they could have used time at sea more effectively if they had had access to on-line or live stream learning tools.
- All students and recently qualified officers who gave evidence said that had no clear picture of how the training/education process fitted together and that this hampered their ability to be proactive in their learning.

Some quotes from cadets and newly qualified officers in the Nautilus International 2020 survey¹⁴ and whose sentiments were all particularly echoed by those interviewed by the Cadet Training group included:

“The entire cadetship system needs an overhaul, especially cadet sea time. Sea time is simply a gamble and only a small number of cadets actually receive valuable training at sea.”

“(should be) more focused on management and organisation skills.”

“Update the training requirements to the 21st century. Remove the training for outdated and obsolete technologies – celestial navigation, paper charts, outdated ship designs, training rowing boats. This takes up a lot of time. Instead focus on modern requirements like ECDIS, navigation position systems, integrated bridge systems and the modern ship types that cadets are likely to encounter.”

“Provide more opportunities on simulators to trial emergency procedures.”

“More experienced lecturers and more opportunity for cadets to feed back to MNTB and MCA.”

“More simulator time and more time spent on each piece of equipment.”

“MCA examinations should be more relevant to modern shipping.”

“The standard of teaching was poor and the reality at sea was very different to that portrayed at college.”

“Refresh the content to reflect the modern role... with more focus on culture and expectations, not just textbook delivery.”

“(Need) more opportunities to complete simulator time before going on your first ship.”
“The training syllabus is behind reality, by years.”

“Colleges are very disorganised and just do the minimum to churn cadets through.”
“Sponsoring company... took little or no interest in teaching.”

“The opportunities are amazing, but the training is shocking. Onboard and at college, it always seemed to be someone else’s job to do it.”

It is recommended that the MCA considers the use of student feedback surveys in addition to the college audits as one of the criteria for re-approval of courses at UK colleges and other maritime training institutions. This feedback would include the degree to which colleges continue to mentor students through their development during their sea experience.

It is recommended that the Universities and Colleges publish on-line by the end of 2021 a guide, aimed at students who are considering following a seafaring officer training route that shows clearly the steps which lead to academic qualifications and certification.

Sea time

As highlighted earlier in this report, students spend no less than twelve months at sea (depending on whether they are deck, engineering or ETO officers) as part of a structured training route.

Practical experience is extremely important in merchant navy officers’ roles. In addition to the practical, technical skills such as navigation, engine maintenance, watch keeping etc, an officer is on board for months at a time dealing with the management of the ship as a whole and the welfare of the crew. In this, it is quite different to the role of, for example, an airline pilot.

Sea time is provided by shipping companies. Any shipping company that has chosen to join the UK tonnage tax scheme is required to sponsor one UK cadet for every 15 officers that they employ. This means funding the part of their education which is not government funded including living expenses.

Some companies not within UK tonnage tax also sponsor UK students to help them to meet their demand for officers. Available sea time and subsequent employment prospects for cadets with their sponsoring companies is a bottleneck that practically constrains the number of new UK resident officers passing through the system. A recent survey¹⁶ indicated that 53% of those surveyed were offered a role by their sponsoring company on completion of training.

The experience and educational value of the sea time received by students is very mixed. In the most recent Nautilus International survey¹⁷ of officers (94% of whom qualified in the last 10 years or were still training):

- Only 50% of those surveyed said that their sea experience had been good in covering the ground that it was expected to.
- Less than 33% of those who responded said that their sea phases of training had been good in terms of leadership and management training.

It is self-evident that a cadet whose sea experience is on a ferry will have a very different experience to one on an ocean-going container ship travelling between Europe and China. The former getting a great deal of close quarters handling experience and the latter more exposure to a different set of crewing challenges.



The Nautilus International survey¹⁸ showed that more than 70% of those who responded thought that they would have benefitted from more simulator training.

Despite the potential to offer a wide range of prescribed experiences in a short time and the intensive learning that comes with these, and the ability to experience emergency situations that would not be possible on a real ship, the use of simulators as a substitute for elements of sea time in the sector remains highly contentious.

The pace of technology change in the near future will mean that there are few ships at sea using the technology which newly qualified cadets will be expected to introduce and operate when qualified. As happens in the introduction of new aircraft or manufacturing technology, simulator use will be essential in the future to provide experience to cadets of operating with this new technology.

It is essential and urgent that the use of simulator time as an intensive learning tool is properly recognised and that the debate about substituting it for a proportion of the current sea time requirements is quickly resolved.

With three different parties with a potential interest in the development of cadets, the Nautilus International survey¹⁹ also highlighted the following when respondents were asked how much interest each of the three parties took in their development. Numbers on the table relate to responses that indicated a “good” or “strong” interest taken in their development:

Sponsoring company	
College phase 37%	Sea time phase 48%
College/university	
College phase 65%	Sea time phase 16%
Training provider	
College phase 34%	Sea time phase 34%

Given the above, it is perhaps not surprising that there is such a high dropout rate from the courses. With several third parties involved with each student, accountabilities for a cadet’s development are unclear.

It is recommended that:

- I** Where sponsoring companies benefit from UK tonnage tax, the quality of their delivery on their obligations to develop cadets is fully and thoroughly defined within tonnage tax obligations and then tested and insisted upon.
- II** Colleges and universities and other training providers are required, as a part of their course approvals, to demonstrate, through student surveys (possibly through social partners such as Nautilus International), strong ongoing commitment to and interest in the development of their students during their sea time and to demonstrate strong working relationships with shipping companies offering sea experience.
- III** Simulators should be made available to ensure consistency in competency based practical training.

Course content and qualifications

As explained at the start of this report, the STCW Convention was adopted by the IMO in 1978 and was significantly amended in 1995 and again in 2010. Because shipping is global in every sense, it has been important in setting the minimum acceptable standards for seafarer training and certification. The Cadet Training Group heard from shipping operators who were clear that cadets joining them who met those minimum requirements no longer met the requirements of the business. They confirmed that this gap was widening as technology continues to accelerate and decarbonisation starts to become a reality.

The fundamental seafaring skills are, of course, central to the training of cadets. However, employers needed in addition to that:

- Well-developed people, leadership and self-management skills
- Greater technical capability and agility.
- Greater appreciation of the broader business and preparation for a career within it.

Achieving these goals will require reform involving standards, training need definition, course design, content development, learning delivery, and assessment provision.

Highly capable STEM students need to be attracted into the sector with courses, teaching and qualifications that reflect the challenging roles to be undertaken in a career in shipping. The education must, of course, comply with STCW as a minimum standard, but simply meeting these minimum standards should not be regarded as sufficient. The needs of shipping have already out-grown this standard and are continuing to evolve quickly.

The way in which courses are taught and experience is gained needs to use the best tools and techniques available. The course content needs to be modernised to remove parts of the training/education which lack relevance in today's shipping and supplemented with courses and content that meets today's and tomorrow's needs.

The structures, incentives and frameworks that exist around seafarer training need adjustment so that they support forward-thinking evolution of seafarer training as the norm in the future.

Shipping operators were very clear in their input to the Cadet Training Group that new officers now need excellent technical capability and flexibility and that they see this requirement becoming even more challenging as the transition to new fuels accelerates and adoption of automation technology continues to accelerate. There is a growing need to recruit STEM talent into the sector.

Most courses currently provided lead to cadets receiving HNC or HND qualifications and a smaller proportion lead to foundation degrees (45% HNC/HND and 42% foundation degree according to the Nautilus survey²⁰). Forty percent of the UK's young people take university studies that lead to an honours degree (or other level 6 qualification) but this has not been widely available as a choice in seafarer education.

This means that, for a high proportion of the most gifted STEM students, this choice of career is not even on their long-list of options when they are deciding on their education/career choices.

The Cadet Training Group thought that having a range of entry routes into seafaring (including apprenticeships) and outcome qualifications from seafarer education courses was of real value and recognise that some parts of the shipping sector may not be experiencing the widening skills gap. The Cadet Training Group felt, however, that the current balance of qualifications neither reflected the desire of the sector to attract a wide range and diversity of talent, nor did it reflect the level of capability sought from a significant part of the annual qualifying cohort of young officers.

The group was particularly keen that post graduate entry routes to seafaring were widened with the potential that it created to attract more and highly capable STEM students. The Royal Fleet Auxiliary have had particular success with those who have converted to seafaring after their first further/higher education qualification.

It is therefore a key recommendation of the Cadet Training Group that the range of qualifications moves much further towards honours degrees (ie a level 6 qualification) with a significant and quickly increasing proportion of cadets achieving this qualification as courses adapt.

It is recommended that a broader range of post graduate entry options are made available – accelerated learning courses that fast-track students who have already qualified in relevant STEM disciplines.

The Cadet Training Group thought that it may be of benefit to consider apprenticeships as one available route to an honours degree.

STCW impact on the standard of education

As highlighted, STCW was most recently updated in 2010. It is already out-dated but is still some way from being amended again by the IMO. In any event STCW is intended to set a minimum standard for officers at sea and is written in a fairly prescriptive way. Many of the stakeholders interviewed thought that this had stifled development of seafarer training.

None of the stakeholders thought that STCW was currently fit for purpose. The IMO are seeking input on how it should be modified and it is anticipated that a review will soon be launched. It is, of course, essential that new officers qualified in the UK continue to meet the requirements of the rather restrictive STCW standard, but input to the Cadet Training Group was that there was a more that could be achieved within its current confines.

It is a recommendation that DfT and the MCA agree, by end 2021, the changes that should be made to STCW at the IMO. It needs to be updated and should set a global minimum quality floor but should not constrain administrations that want to go further. It must not prevent the development and evolution of training to meet accelerating changes within shipping. This should become part of the UK's negotiating position on STCW change.

The introduction of new technologies will require highly skilled officers to manage the transition process. This creates an opportunity for a highly capable cohort of UK officers to fill that demand by their differentiating their skills and thereby reverse the historical decline of UK officers in merchant shipping.

It is recommended that colleges, MNTB and MCA should

simply regard STCW as the most basic of standards, not the desirable end-point of seafarer education. They must recognise that, for many parts of the sector, a higher level and broader base of education is required as described earlier in this report.

This significant change will require pump priming and this is one reason why full Government funding of seafarer training is recommended in this report.

Adjustment of course content and quality

The Cadet Training Group had consistent input from a number of sources emphasising the broad areas of new content that was becoming increasingly essential in the training/education of seafarers. **This included:**

- Leadership and personal skills
- Digital and cyber skills
- Business management skills

Historically, it has proved hard for the sector to agree on what to eliminate from the training syllabus. It is, of course, important that basic seafaring skills are not compromised. The Cadet Training Group, however, heard consistent input that there remained significant parts of the syllabus which, although of great historical significance, lacked relevance in today's shipping environment.

The same messages were heard about aspects of the sea time experience. Cadets often spend significant time carrying out repetitive routine manual tasks – it is questionable how much this adds to their education and such experiences have all but been eliminated from engineering degrees outside the maritime sector for some time. Cadets need to be treated as fast-track learners when at sea, not as general dogsbodies – this requires significant cultural change that will need careful managing.

Refreshing the syllabus, whilst fulfilling the requirements of

STCW, is urgent and essential. Making space for the new content above in courses will require:

- Removal or reduction in current content.
- Teaching at a pace that reflects the capability of intakes of students to learn and assimilate. Courses leading to higher qualifications being taught at a higher pace with consequently broader content.
- Use of a range of learning tools that can intensify learning and make it accessible to students. This must include more extensive use of simulation technology to give condensed practical experience of a broad range of situations. Guidance on simulator learning, another area being considered by the Maritime Skills Commission, would be very helpful in enabling this.
- An objective review of what is expected during sea-time so that this time is used well.

It is recommended that a small working group is formed from the MNTB, colleges/universities and MCA and that this group agrees by end December 2021:

- A personal competency framework for cadets covering leadership, technical capability/agility, business/commercial awareness.
- What content will be dropped from UK courses and what current content will be reduced. This work will need to be incisive because of the need to make space for new content.
- The minimum range of new subject matter for each of the suite of qualifications in the future. This content must take capabilities well beyond those set out by STCW and meet current and future needs of shipping companies.
- The suite of experience that should, at a minimum, be gained in future through simulator-based experiences. This work should pull in experience from other sectors, including the Royal Navy, and from employers within the sector.
- Defining the suite of experience and learning gained that would be expected both from sea time and simulator training.

It must address the leadership, technical and behavioural skills gaps identified by shipping employers and, as discussed earlier in this report, recognise and address the fact that these gaps will widen over the next 5-10 years.

There has historically been much emphasis placed on the time spent by students in learning activity. Courses should be run at a pace that recognises the student's ability to learn. That means that learning must be objectively tested in the future and any "learning time" criteria should be removed, even as guidance.

It is recommended that the MCA overhauls its suite of student assessment and course criteria by the end of 2021:

- Defining how the different technical, practical and management skills gained through experience at sea and on simulators are assessed. The "time spent" measure is no longer fully fit for purpose.
- Removing any references to time spent learning topics and replacing with objective testing of students whilst at college.
- Defining how testing/assessment of the ability and skills of students will be carried out during their simulator experiences either because simulation is the best way to meet the training objective, or because it helps to compress the training pipeline.
- Ensuring that testing carried out at UK colleges is taken account of in MCA oral examinations.

Accelerating the evolution of seafaring officer training/education

The seafarer education system in the UK has found it hard to evolve and the evidence is that it now must evolve rapidly. The Cadet Training Group are therefore making recommendations that will make the system more able to change.

The current funding system is highly complex and, whilst increasing the potential proportion of education paid by the government, SMarT Plus has made things even more complex.

Contributions are made by sponsoring employers and by the government towards the cost of education of seafarers. Tuition is paid for and students receive variable levels of funding depending on their sponsoring company.

The Cadet Training Group heard an example of three cadets on board one ship all of whom were funded in an entirely different way by their sponsoring company with one even highlighting that they were required to take out a loan.

A more transparent and simpler funding model is needed so that accountabilities for the quality of education are clearer and simplified. For potential students, it is important that they have more clarity about the level of funding that they will receive.

It is a recommendation that, in future, funding provided by the UK government should go directly to the party incurring the cost, as would happen in other areas of education.

Living expenses should be paid directly to the student and tuition costs to the college or university.

This report has highlighted that changes are necessary in the quality of course content, the access to blended and technically relevant learning, the quality of sea time experience and the level of ownership taken by sponsoring companies and by colleges. **It is the proposal of this Cadet Training Group that these changes are stimulated by a range of measures that:**

- Create free choice for students as to which college or university course they attend.
- Ensure competition between colleges and universities for the best students and for the access to the best training berths at sea.
- Ensure competition between shipping companies for their training berths to be filled with students from the highest performing colleges.

- Set clear baseline standards for sea time provided by sponsoring companies and that these standards are more rigorously insisted upon as a condition of being on UK tonnage tax.
- Set clear accountabilities for sponsoring companies and colleges/universities for the oversight of the development of students with that these standards are rigorously applied by the MCA.

The value for money assessment of SMarT funding published by Oxford Economics²¹ in 2016 used Treasury Green Book methodology to model the return on investment. It showed £4.80 being generated in the UK economy for every £1 spent on SMarT.

It is recommended that initial seafaring officer training is fully funded by the government, recognising the need to stimulate the changes and the value of seafarers to the UK economy, and the potential for this value to grow substantially as the shipping sector moves through substantial technological change in the next 10-20 years. A reduction in the amount of contribution required from shipping companies is likely to bring more shipping companies into UK tonnage tax.

It is recommended that the requirement to provide sea training remains as a condition of UK tonnage tax, but that student living expenses are government funded during this time. The scope of and support provided by the shipping company during the provision of the sea time should be defined and insisted upon by the MCA as a condition of being on UK tonnage tax.

It is recommended that DfT establishes a group to lead on designing the new funding system, to conclude in 2022.

It is recommended that any student not sponsored before attending college should be supported by their college or university during their initial terms to find training berths and sponsorship.

The organisations within the seafaring officer training system that approve courses and set the standards for seafaring officer training (including MCA and MNTB) must evolve quickly so that they become effective in enabling fast implementation of the changes consistently highlighted within this report.

The MNTB should now take a fully strategic approach to seafarer training development, identifying and quickly filling emerging gaps with a 5-10 year time horizon. In order to achieve this, it is recommended that the MNTB reforms into a less cumbersome structure in which there is a far stronger emphasis on the strategic needs of the shipping sector – creating and implementing a roadmap for training reform. It is therefore recommended that the MNTB reviews how their Board is constituted, with a focus on strategic end user representation, and expertise in educational development. The MNTB Board should also review how it operates in order to deliver change of the necessary magnitude at the required pace.

The MCA should urgently re-position its approach to seafaring officer training course certification – carefully balancing the need to meet the requirements of STCW with the need to implement the directional changes listed within this report to enhance the training of UK officers.

It is recommended that a Seafarer Education Oversight Group is established to meet 3 monthly over a 2 year period. This group would be charged with keeping oversight on the implementation of the recommendations of this report and particularly on ensuring that the enabling changes were happening at the required pace. This group would report directly to the Maritime Minister.

13. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
14. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
15. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
16. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
17. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
18. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
19. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
20. Nautilus International Survey of Recently Qualified MN Officers 2020 published 6th April 2021
21. Oxford economics value for money assessment of SMarT Scheme December 2016





What Needs to Change

1

STCW can no longer be regarded as the desirable end-point of seafaring officer education. Employers, colleges/universities, regulators and shipping industry bodies must recognise the need to set our sights much higher. If it is UK seafaring officers who will fill an emerging, growing need for more skilled officers, UK students will require a higher level and broader base of education. They will be required to manage a huge transition in shipping in the next 10-20 years.

2

Leadership, people and self-management skills must form a key part of the education of seafaring officers with greater use being made of competency frameworks.

3

Seafaring officer education should be expanded to include a stronger appreciation of the business within which they operate and how the basic functions within these businesses work. They should be educated for a career in shipping, not just a job at sea and be able to compete for the best shore-based jobs in shipping and maritime services.

4

The highest calibre of STEM students must be attracted into the sector in the future and educated to a high level. This means that the range of qualifications earned moves much further towards honours degrees (and other level 6 qualifications) with a significant and quickly increasing proportion of cadets achieving this level of qualification as courses adapt.

5

Those things that make seafarer education so different from other areas of education should be eliminated wherever possible so that it is more routinely considered as a long list career choice for talented students from a fully diverse set of backgrounds and characteristics

6

It is **essential**, subject to their capability, that students have a free choice of where they study, and therefore the style of education which they receive and the qualification gained on completion.

7

The use of time spent in training as a criterion for educational and experiential success should be eliminated and the sector strongly encouraged to use objective criteria as in other subjects.

8

A broader range of post graduate entry options should be made available – accelerated learning courses that fast-track students who have already qualified in relevant STEM disciplines.

9

It is essential and urgent that the use of simulator time as an intensive learning tool is properly recognised and for the debate about substituting it for a proportion of the current sea time requirements to be resolved quickly. This recognises the value of simulators to train and test students in a wide, sometimes extreme, and consistent set of situations many of which they will hopefully not experience in their time at sea.

10

Where sponsoring companies benefit from UK tonnage tax or other government support, the quality of their delivery on their obligations to develop cadets should be more thoroughly tested and insisted upon.

11

Colleges and universities should be required, as a part of their course approvals, to demonstrate strong ongoing commitment to and interest in the development of their students during their sea time through the appointment of a mentor for each student.

12

The current complex funding system should be re-structured to stimulate this change. Funding provided by the UK government should go directly to the party incurring the cost, as would happen in other areas of education. Living expenses should be paid directly to the student and tuition fees to the college or university.

13

Initial seafaring officer training should be fully funded by the government, recognising the need to stimulate the changes and the value of seafarers to the UK economy, and the potential for this value to grow substantially as the shipping sector moves through substantial technological change in the next 10-20 years. A reduction in the amount of contribution required from shipping companies is very likely to bring more shipping companies into UK tonnage tax. The government should consider its approach to support of ongoing seafarer officer development.

14

The requirement to provide training and sea experience should remain as a condition of UK tonnage tax. The scope of and support provided by the sponsoring company during the provision of the sea time should be defined and insisted upon by the MCA as a condition of being on UK tonnage tax.

15

Any students not sponsored before attending college should be supported by their college or university during their initial terms to find sea and training berths and sponsorship.

Specific Task Recommendations

16

DfT and the MCA should agree, by end 2021, what changes the IMO should make to STCW in order to bring it up to date and to ensure that, in the future, it sets a quality floor without constraining, as it has done, the development and evolution of training to meet accelerating changes within shipping. This should form part of the UJK's negotiating position on STCW reform with the IMO.

A A small, focused working group should be formed from the MNTB, colleges and MCA to agree by end December 2021.

B A personal competency framework for cadets covering leadership, technical capability/agility, business/commercial awareness.

C What content will be dropped from UK courses and what current content will be reduced. This work will need to be incisive because of the need to make space for new content.

D The minimum range of new subject matter for each of the suite of qualifications in the future. This content must take capabilities well beyond those set out by STCW and meet current and future needs of shipping companies.

E What suite of experience should, at a minimum, be gained in future through simulator-based experiences.

F Defining the suite of experience and learning gained that would be expected from sea time and simulator training.

G This group must address the leadership, technical and behavioural skills gaps identified by shipping employers and discussed earlier in this report, recognising and addressing the fact that these gaps will widen over the next 5-10 years.

17

The MCA should overhaul its requirements of shipping companies providing sea experience for students as a part of their UK tonnage tax obligations with a view to ensuring that these standards are rigorously adhered to.

A All colleges should overhaul the measures that they will take to support the continued development of students during their sea experience.

B The MCA should overhaul its suite of student assessment and course criteria by the end of 2021.

C Removing any references to time spent learning topics and replacing with objective testing of students whilst at college.

D Defining how testing/assessment of the ability and skills of students will be carried out during their simulator experiences.

E Ensuring that testing carried out at UK colleges is taken account of in MCA oral examinations.

F Re-defining how the different technical, practical and management skills gained through experience at sea and on simulators are assessed. The “time spent” measure is no longer fully fit for purpose.

18

DfT should establish a group to lead on designing the new funding system, to conclude in 2022.

19

The MNTB should reform into a less cumbersome structure with clear formal governance in which there is a far stronger emphasis on the strategic needs of the shipping sector – creating and implementing a roadmap for training reform. It is recommended that the MNTB reviews how their Board is constituted, with greater strategic end user representation, in order to achieve this and that the MNTB Board reviews how it operates in order to deliver change of the necessary magnitude at the required pace.

20

The MCA should urgently re-position its approach to and means of seafaring officer training course certification – carefully balancing the need to meet the requirements of STCW with the need to implement the directional changes listed within this report. This approach should be defined by the end 2021 and the necessary capabilities established and functioning by mid 2022.

21

A Seafarer Education Reform Oversight Group should be established to meet 3 monthly over a 2 year period. This group would be charged with keeping oversight on the implementation of the recommendations of this report and particularly on ensuring that the enabling changes were happening at the required pace. This group would report directly to the Maritime Minister.

22

The MCA should consider the use of student feedback surveys in addition to the college audits as one of the criteria for re-approval of courses at UK colleges and maritime training institutions. This feedback would include the degree to which colleges continue to mentor students through their development during their sea time.

23

Universities and colleges should publish an on-line guide by the end of 2021, aimed at students who are considering following a seafaring officer training route that shows clearly the steps which lead to academic qualifications and certification.





**MARITIME SKILLS
COMMISSION**

30 Park Street

London

SE1 9EQ

020 7417 2837

info@maritimeuk.org



[@MaritimeUK](https://twitter.com/MaritimeUK)



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