

# THE EXPLORATION OF HIGH-QUALITY, INTERNATIONALIZED AND SUSTAINABLE MARITIME EDUCATION AND TRAINING

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**Abstract** The relevant analysis from BIMCO, IMO and other authorities in recent years have indicated increasing difficulties in recruiting high quality seafarers, especially senior officers. In fact, the number may be less than the statistics already obtained, due to the rapid development of maritime technologies, faster vessels, higher safety standards and pollution prevention requirements, and tighter supervision network based on Port State Control and Flag State Control mechanisms. Some evidence show that the quantity of qualified seafarers may further decrease.

So it is really a contemporary urgent task for maritime universities and institutes to educate and train seafarers with integrative knowledge and master the mature know-how and skills to fulfil the industrial requirements. The paper introduces practices at Shanghai Maritime University on her way toward higher quality, internationalized and sustainable MET on the basis of the importance of seafarers and their contributions, the trends of the maritime industry, and the features of Chinese MET.

**Keywords** seafarer; shipping industry; quality seafarer; Maritime Education and Training(MET); Shanghai Maritime University (SMU) ; sustainable MET

## 1 The seafarers and their contributions

### 1.1 Seafarers' contributions to maritime safety, pollution prevention and maritime economy

High quality seafarers mean safer shipping, cleaner oceans and fewer economic risks. Many maritime accidents such as "ESTONIA" in 1994, and maritime pollution accidents such as the oil spill by M/V *valdiz* in 1989 indicate that human errors are the key factors leading to loss of lives and maritime pollution. M/V *valdiz* caused an expenditure of over 8 billions USD on oil pollution compensation and oil clearance, and the "Eric" accident in the coast of France cost a compensation of 0.168 billion English pounds. Those tragedies caused social panic as well.

Recently, the Philippine’s worst and largest ever oil spill was also shocked by the maritime world, which about 50,000 gallons of oil have already leaked from the Solar I tanker, carried about 500,000 gallons of bunker oil and sank on August 11,2006 off the central island province of Guimaras. More than 20,000 people, or about 15 percent of the population of Guimaras, and many marine species have been affected by the oil slick. The serious accident was caused by the captain of the tanker who was not properly trained to handle the ship.

Furthermore, seafarers contribute also to maritime economy. Their negligence, omissions and defaults in cargo-caring and operations, in performing maritime contracts on the owners’ behalf, in executing the orders of ship-owners and observing laws and regulations of a port of the flag state may result in huge economic losses, which in the shipowners’ point of view are equivalent to the damages or losses arising out of physical damages of their vessels.

### 1.2 Seafarers’ as an important human resource in the maritime industry

Against the background of economic globalization, intermodal transportation and integrated logistics, the maritime industry now involves more branches and components (see Table-1), which make it more influential to the whole economy than ever before. However, such a role relies greatly on maritime human recourses, particularly in high-level maritime activities such as maritime consultancy and maritime insurance. Ideally, those jobs should be assumed by maritime professionals, i.e., those who possessed navigation knowledge and skills, and have sailing experience. The seafarers as important human resources are not only directly involved in maritime transportation because of their personal maritime services onboard, but also are making contributions to the maritime economy ashore through their employment ashore, which could be very important for some shipping countries since they have stronger shipping industries ashore. With the involvement of seafarers, the potential of the shipping industry could be further explored.

Table 1 The composition of modern maritime services

	Types	Domains
maritime services	shipping transaction services	maritime financing
		maritime insurance
		maritime arbitration
		maritime average adjustment
		shipping trading
		maritime consultancy
		notary public
		shipping organizing
		professional maritime organizations
		ship management
	maritime services	cruiser economy
		cargo transportation
		chartering
		towing services
	port services	wharf services
		container yard services
		warehousing

		shipping agency
		cargo forwarding
		port formalities
		cargo-tallying
		inland transportation
		ship victualling
		crew-manning

Source: www.istis.sh.cn

### 1.3 The contributions to society and economy

The crew-manning economy is one of the highlights in the national economy. In China, the manning services support the national policy of “developing western China”, creating more job opportunities, and educating the citizens. The maritime administrative organizations of China know the significance and roles of such crew-manning services, and are now implementing a series of plans and steps to make the Chinese crew-manning business serve the international maritime industry better. China, with a huge population, good basic education, rich maritime tradition, believes in her capability of achieving this goal.

## 2 “High quality”, “internationalization” and “sustainable development”

These are the key concepts of the paper and should be the trends of the future world MET. First of all, the “competency” presented by STCW is a basic requirement for quality seafarers, which is essential for “high quality”. Further understanding of “high quality” must be achieved amid the latest development of the maritime industry and maritime profession. Today, the general trends of the industry are that ships are becoming larger and faster, using more automatic apparatuses, and having more values, and that navigation is becoming a much more professional and specialized career. Therefore, modern seafarers should master the traditional and modern seamanship and safety management as well as the skills of operating computers. Seafarers should have a good command of English, strong ability for leadership and decision-making and good capability of handling interpersonal relationship in their management onboard. In terms of professional requirement, seafarers should have extended experiences on board, good professional ethics, devotion to the maritime career. Lastly, from the point of view of shipowners, particularly those ambitious and competitive companies, additional individualized and dynamic requirements should be formulated for seafarers working for their fleets, which shall be reviewed by the MET system from time to time.

To sum up, “high quality “ in this article means a person with rich experience on board as well as his abilities and quality in various aspects such as seamanship, computer, English, shipping management, interpersonal communication, leadership, professional ethics and devotion to the maritime career.

In the Chinese system of maritime education and training, “Internationalized MET” is not a completely new concept. It usually means that some international aspects and features are introduced into the MET system. For instance, an MET institution uses international maritime textbooks and learning materials. However, although Chinese MET institutions and universities

have launched many international cooperative projects, their work has achieved only a low level of internationalization. The paper will extend the understanding of “internationalized MET” to such aspects as the involvement of international MET students and the international financing of MET.

“Sustainable development” means that MET systems continuously provide sufficient high-quality seafarers to the industry. Nowadays, many traditional shipping countries are abandoning the crew-manning business due to their rapid and successful economic development, which, from the maritime industry’s point of view, may harm the normal operations of the maritime industry. This should be remedied by proper MET systems.

The above three concepts are closely linked with each other. “High quality” makes it possible to make MET more international, and international MET activities, in turn, improve the quality of MET. Also, “high quality” and “internationalized” MET are fundamental for “sustainable MET”.

### 3 The strategies and goals of Shanghai Maritime University

#### 3.1 The strategies

The above concepts are important since they can guide an institution in MET activities. SMU reviews from time to time the role, functions and requirements set up for seafarers in the modern maritime industry. SMU clearly understands the strategies and policies of Chinese MET, and actually participated in their formulation. The university developed some concepts and practices of her own during the aforesaid process. They could be summarized as emphasizing maritime features, constantly seeking high quality, being devoted to internationalized MET, ensuring sustainable development of MET, balancing different types of MET, encouraging “systematic MET”, and closely following the development of the world maritime industry.

The university intends to participate more in international MET and international maritime industry since Shanghai is striving to construct an international shipping center and the world economy requires a more capable shipping industry.

#### 3.2 The goals

Here are SMU’s tasks for the 11th five-year plan (2006-2010):

By 2010 it will basically grow into a teaching-research university featuring maritime and promoting growth of various disciplines. By 2020 it will become a world-level maritime university. In those five years, SMU will improve its teaching and research simultaneously. While its main task is undergraduate education, it will also enlarge its postgraduate education. The disciplinary development will focus on maritime technology, economics and management. Meanwhile, attention is paid to interdisciplinary development to ensure balanced growth of such disciplines as engineering, management science, economics, law and liberal arts. Thus, SMU will be able to produce senior applied shipping specialists who are strong in shipping, relying on Shanghai, serving the whole country, and having a global vision.

## 4 SMU's practices

### 4.1 Promoting its maritime features

SMU survives and becomes competitive due to her maritime and shipping features. So it gives priority to enhancement of those features. This is evidenced in every aspect of MET activities such as maritime discipline development, maritime research, and course designing. Currently, the university offers 35 bachelor degree programs, 12 associate degree programs, 30 master degree programs, and 5 doctor's degree programs. Most of those programs are related to the maritime or shipping industries business.

### 4.2 Sticking to the "high quality MET" policy

The university attaches great importance to MET activities and reviews from time to time different factors affecting the quality of MET by constantly following the philosophy and mechanism of the Quality Assurance System. In the eleventh five-year plan (2006-2010) of Shanghai Maritime University, the quality of MET is to be guaranteed. The university has obtained some exciting results and experiences in this respect. For instance, SMU students ranked first in the competency certificate examination organized by the Chinese MSA in the past five successive years.

### 4.3 Encouraging "systematic MET"

SMU continuously raises the quality of education, develops various disciplines, improves the teaching staff, and betters the overall quality of the students. It takes the teaching quality as its lifeblood, and raises the teaching and academic level through disciplinary and research development. Now SMU' is authorized to award the PhD degree in electronics and electric drive and in carrying vehicles. Moreover, the discipline of port machinery and electronic engineering, logistic management and engineering, carrying vehicle engineering, and maritime law have been cited as Shanghai's unique disciplines for further development.

The importance of "systematic MET" lies in the cross-reference or utilization of multidisciplinary knowledge. Then new maritime knowledge and new applications may arise. Therefore, the students can be offered more systematic maritime knowledge. For example, students can be given combined knowledge of navigation, logistics, and maritime laws. Hence the university will make more contributions to the development of MET and become more competitive.

### 4.4 Devotion to internationalized MET

In its eleventh five-year plan, SMU set up an aim towards internationalized MET. Some measures are to be taken for this purpose.

Establishing the guest professor system: maritime experts from abroad and shipping enterprises are invited to provide their expertise;

Encouraging more use of international maritime textbooks and other learning materials such as IMO model courses;

Building up an accurate maritime English evaluation system, which is more suitable for Chinese seafarers.

Seeking international partners in MET activities and researches;

Other ways helpful for internationalized MET.

#### **4.5 Improving MET hardware**

On the basis of its current MET infrastructure, SMU will enlarge and improve the infrastructures in the course of the construction of the Shanghai international shipping center and the new SMU campus. The new campus, which covers an area of 133 hectares on the coast, is capable of accommodating 20, 000 students. It is scheduled to be ready in 2007. Meanwhile, the university decides to construct an international seafarer training center with more than 6, 000 square meters in the new campus for the purpose of raising SMU's MET activities to the international level. Those places and facilities will enable SMU to meet the quality and quantity requirements.

#### **4.6 Balancing different types of MET**

The university knows the importance of providing a full range of MET services, that is, developing a comprehensive and systematic MET framework. Currently the university provides the following for MET: seafarers' on-the-job training, sino-foreign jointly-run associate-degree classes, and bachelor degree programs. The on-the-job training is heavily influenced by the market, but could be the type of MET most closely linked to the latest development of maritime science and practices. For example, there is an MET program for 9,600-TEU containerships and for seafarers involving in chemical carriers. SMU knows MET is a way to follow the trend of the industry. The jointly-run classes and the bachelor degree programs are mainly under the control of the university, which can formulate its quality requirements.

**Jointly-run classes** SMU and NYK worked together in October, 2005 to launch a joint class. A feature of this cooperative project is that the owners (future principals), manning agents and SMU cooperate closely. They jointly select new students, formulate the curriculum and teaching contents, arranging visiting professors, developing the corporate culture, etc.. Meanwhile, based on the STCW Conventions, the program pay more attention to the owners' requirements. This type of MET has attracted more and more large companies such as COSCO, V-SHIP, SNC and SINOCHEM in addition to NYK.

It is helpful to have a stable supply of quality seafarers who are loyal to the company. In addition, it contributes to the improvement of Chinese MET and the professionalism of seafaring in China, because the program aims to develop students' commitment to their careers, professional ethics and devotion to the maritime career.

Thanks to the above MET philosophy and practices, the students of this program have had a high passing rate in the MSA examination, and are good at maritime English. Currently, the program runs smoothly, and the university will gradually increase the enrolment of this program.

**The bachelor degree program** The four-year undergraduate students majoring in navigation are educated according to the requirements of the bachelor degree program. They have good knowledge of the basic subjects, especially mathematics and physics. They are proficient in theories, sophisticate knowledge, and comprehensive knowledge in shipping management. They also have professional certificates for their future employment onboard.

The features and advantages of such a program are that the students usually have systematic knowledge in the maritime industry and shipping. It is highly possible that they will work in the maritime industry ashore such as the pilot stations, MSA, maritime research institutes, cargo agencies, maritime courts, VTS management, and shipping companies after they have served onboard for 5 to 10 years. The maritime industry ashore needs them in the aforementioned maritime operations.

#### **4.7 Closely following the advance of the world maritime industry**

Maritime technologies, legislation and practices are changing, so MET institutions and universities have to follow up closely. MET has to do this to stay competitive. SMU is taking substantial measures to get involved in maritime affairs. It has participated in international organizations, attended international shipping conferences, invited maritime experts and professionals to introduce the latest maritime technologies and management, etc.,

## **5 Conclusion**

The above-mentioned experiences and practices are just for your reference due to our limited practice. However, the university is always ready to learn from others' success and experience.

Meanwhile, many difficulties and challenges will undoubtedly arise on our way forward. For instance, large, high-value and specialized vessels and ocean engineering installations such as VLCC, chemical vessels, LPG and LNG vessels, large ro-ro vessels, reefer cargo vessels, ferries and oil drilling vessels will be popular in the market in near future. Many new technologies are applied on vessels with the intelligent diesel engine, automatic navigation system, automatic engine-room, and automatic cargo-handling system. Those advanced ships and equipment call for high-quality crew with specialized knowledge and skills, which in turn place a high requirement on the university's teaching staff, training, labs and teaching materials.

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