

## **Trends in the Training of Maritime Personnel - Professional vs. Academic Education**

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The dynamic socio-economic development has a clear impact on maritime education. The progress of technologies, the growing level of automation, and the globalization of markets are some of the factors that define new requirements for the training and education of maritime personnel. Meanwhile, a standardization process of the maritime education and qualification was completed. Obviously, there is a need to broaden the training programs and increase the educational requirements for maritime specialists.

A parallel tendency towards more in-depth professional expertise of the personnel has emerged. In this context some discrepancies arise. On one hand, technological development requires broader interdisciplinary approaches and strengthening the academic character of education. On the other hand, the process automatization and standardization require more professional training. The question of the balance between the academic and professional education is currently on the agenda of maritime universities.

This paper analyzes the current trends in the maritime education and proposes a possible new approach for managing the discrepancies. The conclusions and the recommendations are based on conducted survey among the „users” of maritime personnel, the academic society and experts from different maritime institutions. Proposed is a general model for multi-level system of maritime education and qualification.

**Keywords:** simulators, vocational training, academic education, trends in maritime education

### **1. Introduction**

There is high complexity in the perception of highly dynamic and difficult-to-predict area of maritime activities. The longstanding perception of seas and oceans as specific environment for transport, fishing and recently – for extraction and transportation of energy resources – has significantly changed. The globalization processes and the economic growth led to new activities by their nature as well as to a spread of the maritime influence on the „deep” land.

The result was new and partially contradictory tendencies: narrow specialization of the activities and global management of branches; multi-institutional approach for the process management and need for standardization procedures; high economic independence and unified system for process regulation, especially in the maritime safety and security domain and in the area of maritime personnel training. Examples for such regulation are the IMO publications [1].

The abovementioned tendencies are typical not only for maritime activities, but their current dimensions fragmentize the maritime area, and have strong interaction between the components and as a whole – loss of the integrated character of the existing systems in the maritime environment. In such conditions the question about adapting the maritime education to the current tendencies in the maritime profession becomes evident.

### **2. Current tendencies in the maritime activities and challenges for the maritime education**

For the sake of the analysis it is very important to outline the tendencies in the maritime meta-system. In 2012, following the institutional accreditation of the Nikola Vaptsarov Naval Academy a profound research to outline the tendencies in the maritime sphere was initiated. The research included several

categories of maritime personnel: the users of maritime personnel (shipping companies, maritime logistics enterprises), civil and public servants and employees (experts in the Maritime Administration Executive Agency and State Enterprise Port Infrastructure), lecturers (professors in universities and training centers) and employees, practicing the maritime profession. Analyzed were the processes in the area of maritime activities and the maritime personnel training. Special interest was put on the “global” dimension of the processes so they could be assumed globally valid. The research focused on the actualization of the national training system for maritime specialists but the described processes and tendencies can be assumed as valid in a more global context.

One of the most common aspects is the growing automatization and the **global tendency for “professionalization” of different activities**. Such combination of specialization and automatization inevitably leads to the following opportunities:

- "Fragmentation” of the personnel and differentiation of narrow carrier fields;
- Setting a management staff, whose current hierarchical development can no longer be completed in traditional manner (For a long period of time managers of maritime companies in Bulgaria have been accustomed to the system of gradual promotion from watchkeeping officer (engineer) to the higher positions. Now this practice is significantly changed and there are experts on managing positions without profound experience in the hierarchical positions order. Moreover – in some cases the experts do not have maritime education.);
- Exporting a bigger part of the activities, especially management and maintenance “onshore”;
- Broadening the range of experts, necessary for the functioning of each component of the maritime meta-system;
- Eminent need for equal understanding of the maritime activities problems and unified technological procedures.

The “professionalization” of maritime activities originates from the changes in the maritime meta-system so the next global tendency can be viewed as their result, namely **formation of inter-institutional environment of maritime activities**. In such an environment every function or task is a combination of the interests and the competencies of different components. This tendency means shared responsibilities as well as competition. In both directions arises the need for process regulation, common rules or common value system.

**The third global tendency** in the area of maritime activities is classically connected to **its broadening in geographical terms**. The broadening characterizes by integration of the maritime systems of different countries as well as interrelation of what was before considered “purely maritime” and “purely onshore” activities. It is to be noted that this tendency contributes to the establishment of narrow carrier fields, establishing a management staff, exporting a large part of the activities onshore and the broadening of the experts range, necessary for the normal functioning of every component of the maritime meta-system. From the research stand-point it is essentially interesting that such processes of re-influencing of traditionally “purely maritime” with “purely onshore” activities will inevitably lead to some kind of a contradictions, on one hand between the ordered onshore relations between the subjects and the sovereigns and on the other between the traditional independence of the maritime thinking with the ex-territoriality of activities.

Obviously there is an important challenge for the integrity of the maritime meta-system. Its most significant area will be the sensitive maritime safety and security domain. **The fourth global tendency** will be defined in this context: **formation of common system for maritime safety and security**. It is not to be understood fragmented as establishment of unified safety procedures and unified manual for the security systems [2]. It is to be transferred to the traditional maritime “transnational” perception of security problems, which results in the understanding that the national engagement in “hot points” like the Gulf of Aden thousands miles away is not only a problem of financial resources but a question of national confidence evolving from the vastness of world maritime society. In other words, the tendency of globalization of the maritime security and safety

system is a serious challenge for resolving the contradictions between the maritime “global” thinking and the existing national political framework.

In the context of the maritime transportation system globalization is the **fifth general tendency- the implementation of common standards for training of maritime personnel**. With the adoption of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers [3], a unique global process was initiated. In addition to cultural differences, the variety of the models in a particular area exist and the economic freedom is a paradigm necessary to adhere to very strict and detailed standard for personnel training. It is clear that the process of fragmentation of the standard will continue and its scope will broaden in functional and geographical aspect.

The above analyzed tendencies generate **specific challenges for the maritime educational system**. Within the conducted research the challenges were summarized by phrasing. Those formulations should be synthesized. They are connected with the necessity of:

1. High personalized specialization.
2. Integrating the practice in the educational process.
3. Succession in the training on different educational levels.
4. Educational insurance of the strategic management levels of the companies.
5. Improving the training on maritime safety and security.
6. Adapting the training of the non-maritime experts who work in the maritime domain.
7. Broadening the scope of competencies of the maritime personnel.
8. Implementing common international standards in the maritime education.
9. Unified national regulation of the maritime specialties education.
10. Hetero-archic system [6] for control and regulation of maritime education.

The most serious challenge for the academic society is the necessity to integrate the practice in the educational process. There are several different dimensions of the problem. On one hand, the question of broadening the academic education, where new disciplines have to be implemented. On the other, the question of increased requirements for practicing the profession. Considering also the pressure of the short educational periods, the traditional four years model of education becomes insufficient if one year internship should be completed [3]. Under the pressure of the market the academic part of the education shrinks in order to open opportunity for practice. A paradox appears – in a high technology century the academic training for a profession that is highly computerized turns out limited.

In the conducted research this paradox gets an interesting dimension. The users of maritime personnel unanimously support the necessity of practical training but at the same time the nostalgia for the broad training programs for maritime personnel which influenced their professional way up is still present.

### **3. Model for overcoming the challenges for maritime education (The Bulgarian Standpoint)**

According to the abovementioned challenges for the maritime education an expert team from Nikola Vaptsarov Naval Academy engaged with the task to draft a strategy for development of the maritime education in the Republic of Bulgaria. As far as this strategy is an accumulation of models and specific activities, this part of the paper presents the models and activities in the context of the particular challenge which they address.

The first priority is the necessity for **high specialization of personnel**. Actually the approach for this challenge is based on the national model for developing a high education system, which is realized according to the National Qualification Framework of Republic of Bulgaria [5]. The adoption of

National Qualification Framework of Republic of Bulgaria is pursuant to the Bulgarian responsibilities according to the Recommendation of the European Parliament and the Council for establishment of an European Qualification Framework (EQF) for lifelong learning [4]. EQF is a common European reference framework, aimed to create a common European base (starting point) for comparing the different qualification levels of the national qualification systems. The National Qualification Framework of Republic of Bulgaria includes the whole educational system and all its qualifications. It has the following idea to be implemented: **broader profiled Bachelor education and high specialized training for the Masters degree**. According to this principle there is an opportunity to address the higher specialization of the personnel through variety of master programs. In Nikola Vaptsarov Naval Academy this model is already implemented. The two key majors are "Navigation" and "Ship Power Plant", they are the fundamental undergraduate majors, upgraded with profiled postgraduate study programs. Currently, there are postgraduate programs in Navigation that are under preparation or initiated, which prepare specialists for management positions, as well as programs in maritime safety and security, maritime administration, ship brokerage, water transport management, logistics.

In the same fashion, the undergraduate program in "Ship Power Plants" continues into the postgraduate level of ship power plant (which train for manager positions in maritime engineering), ocean engineering (profiled for positions in the maritime industry), ship building and ship repair, maritime administration.

The same principle is used for the ship electro engineering and radio engineering specialties.

The next step is to address the main challenge for the maritime education – **the integration of practices in personnel training**. There are many activities in that respect. It is very important to **adapt the training programs to the requirements of the *International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 as amended in 2010 /3/***. In 2013 in reply of the Manila amendments of the *STCW Convention* the training programs were revised. The programs were re-drafted according to the functions of the Convention, and their content was fully completed with tables comparing on one hand the required competencies according to the Convention, and on the other – the topics of the lectures of the disciplines. The requirements of the model courses according to the Convention were integrated in the training programs. Based on that the training and practice model were further developed and currently it looks as follows:

- Four years undergraduate academic education in eight semesters;
- One month basic practice after the first academic year (after the second semester);
- Three months for technological and maritime practice after the second educational year;
- Six months practice at sea after the third educational year;
- Six months practice (cadets practice) after passing the state exams according to the functions of the Convention (after the eight semester), concluding with state practice exam.

The postgraduate training is integrated with the practice as well. In this case a model with an entry level is implemented. For admission it is necessary to have a bachelor degree and to practice. In order to practice the profession, this education is planned as extramural. It is planned to implement an admission requirement for having a particular certificate for professional competence with the appropriate practice time period.

For the sake of integrating the practice in the education it is extremely important **to include the shipping companies in the process of practicing**. Currently this is fulfilled by appointing a board of trustees for the specializations and their engagement with the training programs drafting, and through implementing the *Training Record Book*. Additionally the content and the terms of the practice are coordinated with the companies. The **Career Center for coordinating the company activities and the training system** is responsible for this task.

The challenge with the practice has an additional aspect- **the practice of the lecturer staff**. This aspect is addressed by attracting maritime experts for the teaching staff. Currently the teaching staff according to the functions of the Convention fully consists of practicing maritime specialists.

The next challenge for the maritime education is the need for **continuity in the training on all educational levels**. This is already present with respect to the continuity between the bachelor level of maritime personnel training (for specialists on operational positions) and the master training level (for experts on management positions). It is supported by the Common national requirements for the different professions [7]. According to them it is **absolutely compulsory to have a Bachelor degree before admission to a Master studies**.

Very serious challenge is the continuity between secondary and higher education. To meet this requirement Nikola Vaptsarov Naval Academy signed an **agreement for association of the Maritime Secondary School in Varna to the Academy** in 2014. According to the agreement the training programs of both educational institutions will be harmonized in order to achieve the same logic in the education on different educational levels and categories of maritime expertise.

The Career Center of the Naval Academy will get additional mission. It is the formation of so called **“career paths”**. The idea is to give the students the opportunity to choose a profession at the beginning of their studies and to get a package of educational services (secondary school, high school and the appropriate qualification courses), for full training on the chosen profession.

The next challenge is the **educational maintenance of the strategic management levels of companies**. This is possible to combine with the necessity for **adapting the training of non-maritime experts occupied in the maritime economy**. In both cases it can be approached by **new majors** which cover the required competencies. Such new specialties are "Maritime Transport Management" and "Information technologies in the maritime transport". The majors are implemented for Bachelor and for Master degree as well. From this year on the Naval Academy initiates new majors on business administration and accounting. The main point is to include some disciplines for concrete competencies which cover specific activities in the maritime economy sector.

The challenge of adapting the training of non-maritime experts to the specifics of the maritime industry has another aspect – the necessity to broaden the range of competencies of the maritime personnel. It can be approached by upgrading of training through the abovementioned Master degrees. Other approaches are to attract experts from different professional domains (management, accounting, business administration, informatics etc.) in cooperation with other universities. The Nikola Vaptsarov Naval Academy uses three forms of such partnership – joint specialties, franchising and establishing of alliances. Some activities should be mentioned. First, the established Alliance with the Varna Free University which allowed the realization of a master program on ship brokerage with maritime experts from the Naval Academy and management experts from Varna Free University. Secondly, the franchising agreements between the Naval Academy and the Cyprus Institute of Marketing. The agreement allows educational exchange of students and professors from both institutions on Shipping Administration.

Not least important is the joint university education. This relates to joint Master program on maritime safety and security between the Naval Academy and the Maritime University in Constanta (The initiative for establishing a joint master program on maritime safety and security between Nikola Vaptsarov Naval Academy and the Maritime University in Constance is funded by the Nippon Foundation through the realization of two research IAMU projects – MAREM и MARSA). The Master program is the best example of cooperation between foreign universities and concerns the challenge on **improving the training on maritime safety and security**.

The development of partnership between the maritime universities has high importance for the next challenge – **implementing common international standards in the maritime education**. In this context private initiatives should be also considered, f.ex. implementing a state regulation for the maritime professions and Unified national requirements for education and practicing.

### 3. Conclusions

Despite the fact that the described tendencies and challenges in the maritime area are analyzed in national context the suggested models do not represent “a national patent”, but an international tendency. In conclusion, the main point is to overcome the contradictions between the academic and professional education. Choosing the right approach is crucial for developing a common plan of the maritime academic institutions in a more global context and concerns all other challenges for the maritime education.

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