Standardization of maritime education as aim, result and means of its quality improvement

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Abstract. Standardization of maritime education is considered by all the parties concerned as a way of search for a workable mechanism of educational activities aimed at training of highly skilled maritime professionals who meet the national and the Conventional requirements and comply with the requirements of the maritime industry.

The paper shows the contradiction between the need for standardization of maritime education and the tendency of transition to the formal procedure for evaluation of education results. The paper describes the development of mechanisms for comparing the expected results with the real ones, which in turn, allow to assess the quality and effectiveness of the learning process, and everything that is used in a process of sea specialist training.

The issues related to the technological process of the maritime education standardization are considered, and methods for determining the necessary and sufficient actions for their decision are offered. It is proved that a change in standards of the maritime education is determined by both external and internal factors and their role is shown.

On the basis of the philosophical and educational concepts four components of marine education are considered: the value, the system, the process and the result. It is proved that it is impossible to consider the issue of standardization of maritime education only as the achieved level of knowledge and skills. It is substantiated that the outlook of a person defines the further vector of its development and therefore to its formation and development adequate attention should be given.

It is concluded that standardization of maritime education must be tough on the one hand, to ensure compliance with the requirements of the International Convention STCW 1978/95 and amendments adopted at the Manila Conference, 2010 [2], and flexible enough, on the other, to enable the creation and contribute to the search for new forms, methods and means of training and education of future marine specialists.

Keywords: standardization, maritime education, Conventional requirements, learning process, quality.

1. Introduction

Different researchers considering the issues of vocational education quality, determine in diverse ways the criteria, fit to evaluate this objectively. At the same time almost all the participants of Maritime education consider standardization as a means of finding workable mechanism of educational activities. The main goal of this mechanism is to prepare highly qualified marine specialist meeting the national [3] and conventional requirements [2] and corresponding to up-to-date level of the Maritime industry development.

The analysis of current practice of standardization of Maritime education allowed to highlight the contradiction between the need of standardization of Maritime education and the tendency to mechanical, formal assessment of its results. The resolution of this contradiction will contribute to improving the quality of marine specialist’s training.
When speaking about the standard, quality is always meant. From a philosophical point of view quality is the category, showing a substantial certainty of things and phenomena of the real world. Quality is usually understood as the objective characteristics of the objects that appear in the aggregate of their properties. Under the “2010 Manila Amendments” to the Standards of Training, Certification and Watchkeeping for Seafarers (STCW) Convention and Code, Quality Standard System (QSS) requirements require “in accordance with the provisions of section A-I/8 of the STCW Code, all training, assessment of competence, certification, including medical certification, endorsement and revalidation activities carried out by non-governmental agencies or entities under its authority are continuously monitored through a quality standards system to ensure achievement of defined objectives, including those concerning the qualifications and experience of instructors and assessors [2].

It is common understanding, that the quality of education of specialists is determined by the quality of educational programs and content; quality of potential of teaching personnel; quality of potential of the applicants; quality of educational technologies; quality of resource provision (information, educational and logistical, etc.).

The logic of the proposed paper is constructed on the basis of a philosophical and educational concept according to which four aspects of the standardization of maritime education are considered: aim, system, process and result.

2. Standardization of maritime education as an aim

We believe it is necessary to note that we are talking primarily about the educational space. This space is the aggregate of the conditions ensuring the existence of education. The educational environment produces nothing, because it is not a mechanism, it provides the conditions for the functioning of the mechanism of education [7]. One of these conditions is to standardize the quality of education.

Standardization means the process of implementing and developing standards. Standardization of education, including the marine one, involves the implementation of procedures for the general standardization and dictates the definition of objectives, competencies, learning outcomes, programs, materials, assessments at the input, while process and on results of learning. Also requirements for the level of training of the teaching staff and the conditions of the educational process should be defined.

The standardization of Maritime education first of all is determined by the STCW Code “Each Party shall ensure that the education and training objectives and related standards of competence to be achieved are clearly defined and that the levels of knowledge, understanding and skills appropriate to the examinations and assessments required under the Convention are identified. The objectives and related quality standards may be specified separately for different courses and training programs and shall cover the administration of the certification system”. Further it stipulates that this evaluation shall include all changes to national regulations and procedures in compliance with the amendments to the Convention and STCW Code…” [2]. We fully agree with this statement but we believe it is also important to emphasize that any standard, even the highest one, shouldn’t be considered as final one. Society in general and maritime industry in particular, is in constant development. And the emergence of new technologies dictates the need for standards review. The way out from this situation we see in advanced training. The most important, in our opinion, is the training of specialist, having competences according to the requirements, and at the same time ready to continuingself-development. It is the trait of a personality of a specialist which will help him to remain in demand on labour market under any circumstances. The aim of standardization of Maritime education is primarily the creation of a unified educational space and the continuity of basic educational programs at all levels of education: elementary, secondary, higher and postgraduate professional education.

3. Standardization of maritime education as a system
Certainly, the standardization is systemic phenomenon, and like any system its content presumes presence of many components and links, both direct and reverse, ensuring the functioning of this system. This system is influenced by both external and internal factors.

External factors cannot be controlled and the institution is unable to change them, but considering of trends and risk assessment, as a rule, brings positive results. These factors include: socio-demographic; geopolitical, scientific and technical; economic; infrastructure development of the industry and of labour market, requirements of STCW, IMO, ITF and etc.

As to internal factors, usually they are controlled by management of institutions. These include: personality of the heads of an institution; the institution’s affiliates network; financial management system; the level of training of professor and lecturers staff; specially and education; pricing policies; availability and completenes of usage of information resources; participation of employers in educational process (e.g. Board of Trustees), the material-technical base; stimulators, base of practices, etc.

External factors contribute to the emergence and development of the system, the internal reflecting nature of a particular educational institution and Merchant industry are generated by separate elements constituting the system, inherent only to certain industry, in our case, the industry of merchant shipping. Their influence on the standardization as the system causes its operation and effectiveness.

The development of the standardization as a system is determined by the purpose and information resources. While attaining the aim the system accepts any useful input information, which effects the internal structure of the system of Maritime education, its quality and provides the opportunity to initiate and support the best path of its development. Properties of openness, flexibility and mobility of standardization as the system is ensured with:

- structure and content of professional training, allowing the possibility of changes in the composition and content of education;
- continuous modernization of means and technologies of training;
- openness of professionally oriented educational environment, ensuring formation of positive motivation and development of cognitive activity of trainees.

On the one hand, this system is conservative and inert, as it is built on traditions, and on the other it needs to be optimized, i.e., tuned on the development and changes taking place in the constantly evolving Maritime industry. The design and control leads the system to a stable, ordered state, and innovation, educational experiments suggest the presence of instability, i.e., the state preceding the transition to a qualitatively new level. The innovation factor (creativity etc.) is significant fluctuation in the process of development of the system [5].

The system of education, as well as the culture, is significantly influenced by the context in which it arises and develops. Russian education came from the Soviet Union, when the social circle was limited to the socialist countries, and in fact by borders of the USSR. Apparently, this condition should first be taken into account while considering the Russian education.

A distinctive feature of the Soviet, and subsequently the Russian higher education is the presence in all educational programs of an essential component of fundamental knowledge, which do not exist in European education, and in education in majority of other countries of the world. This fact shouldn’t be considered as an advantage or a disadvantage.

Just this should be stated and borne in mind when analyzing the structure of the curriculum. However, it should be noted that despite the above essential difference, the Soviet experts, were highly valued on the world labor market, both in technical and in humanitarian areas, and most probably for this certain reason. It is clear that including additional subjects in educational process, for strengthening the fundamental component, could not fail to influence the duration of training. If one compares the same
educational program, in Russia the duration of training is 1-2 years longer. The same thing takes place in the training of sea transport specialists: navigators, engineers and electricians.

The curricula of educational programs of marine specialists training must meet both the requirements of national standards and international (STCW 78/95 with amendments 2010). Often there is a discrepancy in the titles of disciplines and in hours. As a rule, the national standard covers the international on hours. Duration of training of marine specialists with higher education is at least 5 years.

In Russian Maritime universities there is secondary vocational education, the duration of which is 2 years and 10 months, on completing which a young specialist can also take a position of the 3rd assistant or mechanics, but for a career and the appointment for a position of a Chief Engineer, Mate or Master, he will have to go back to maritime institution and complete the educational process to the level of a specialist (2.5 years more). Therefore, requirements to the structure of basic educational programs, conditions of realization of basic educational programs and the results of their development are the important issues of the standardization as the system.

We consider standardization of the quality of Maritime education on three levels. The first is the level of the educational institution. The ongoing transformations in the maritime education involve the entire range of activities of any educational institution: organizational, managerial, economic, legal, technological and content aspects. In this context, the need for improving the quality of Maritime education, in particular, by creating optimal conditions providing a set of purposefully created learning opportunities to meet the educational needs of students is actualized.

The task of improving the quality of education is becoming a priority. Assessment of the quality of Maritime education in connection with standards is an integral part of the work of educational institutions in the field of quality management. And that is why, the criteria chosen by a specific educational institution, will depend on the system of work of the institution based on its mission, goals and objectives. As standards Conventional and national (Federal state educational standards) requirements to the quality of education are considered [2; 3].

The importance of the following fact is evident. The quality assurance activities of an educational institution largely depend on the level of quality management, which refers not only to a system of targeted management actions to create optimal conditions for the functioning of the organization, but also the image of the organization, which is based not only on the quality of services rendered, but as well as the reputation of the University in the scientific world.

While understanding the importance of the issues mentioned above, as an example we are considering issues, connected with sailing practice. They are:

- logistical issues with sending and arrival of the cadets;
- the reluctance of many companies to take 1-2 people (because of a mismatch in the industrial task with the schedule of educational process);
- lack of places for the cadets sailing practice;
- the reluctance of companies to take students of first/second-year (2-3), etc.

These and other issues in organizing sailing practices significantly affect the organization of training cadets on the shore, which, in turn, affects changes to the schedule of the educational process.

The best solution to all these problems is the presence at the University its ownbase for sailing practice in the form of training vessel. However, solving problems of practice the University takes on new challenges with the maintenance and operation of the vessel.

The second level of standardization of the quality of Maritime education is the level of participants of the educational space, i.e. teachers, students, employers, parents, etc. The educational space of the second level of educational institution is formed on such characteristics as maintenance of knowledge, skills development processes, ability to act and ensure the presentation of content, methods of action, means of action, ensuring the formation and development of the whole composition of features of an
object of education and application of this composition of conditions for accomplishing educational activities. As criteria of quality assessment of participants the following can be distinguished: the motivation of people both in the choice of educational institution, and in the process of study, and their (students) social activity.

Development of the educational space involves improvement of conditions for teaching, training of future specialists to perform professional activities, i.e. improvement of the content of education, its forms, methods, technologies, relations with industrial enterprises, financing, welfare, health, conditions for the selection of applicants, etc. By changing these conditions, society changes educational space [7]. The role of standardization is difficult to overestimate. Namely, standardization helps to coordinate actions for the development of educational space, to define the vector of its development, which meets the requirements of education and industry, and society as a whole.

Ensuring the presentation of content, methods of action and means of actions, ensuring the formation and development of the qualities of a student, requires attention to all components of content of the education. As an example, we consider foreign language training of future marine specialists.

This issue is a constant object of attention of all Russian universities, preparing marine specialists. In a great measure — it is an internal problem of the University, which can be solved by "immersing" a student in the language environment. And the opportunities provided by the national educational standard are sufficient for the successful solution of this matter, in which, the potential employers are interested in. It should be noted that there are companies that take specific actions, including additional funding for the successful solution of this question. But it often turns out that the level of English language skills as learning outcome is less than desirable.

For many years there have been numerous efforts undertaken to standardize the language used for communication at sea between ships in different situations, between ships and VTS shore stations or between ships and helicopters in case of rescue operations. In this connection, under the IMO Maritime Safety Committee’s decision, the Standard Marine Navigational Vocabulary was developed. It was adopted in 1977 and after being used in nautical colleges and maritime universities it was revised and amended for several times. Some years later the Standard Marine Navigational Vocabulary was updated and in result, the Standard Marine Communication Phrases (SMCP) appeared, which were adopted in 2001, and published in 2002, and its inclusion in STCW makes it a mandatory part of the MET curriculum in all of the current 156 ratifying States. The renewed version is widely used both in maritime education and training institutions ashore and on board ships. Moreover, in recent years several Model Courses were developed and approved by IMO and already implemented in curricula of different Maritime institutions. The Model Course 3.17 for Maritime English assists the Maritime English teachers and lecturers in organizing and introducing new training courses or enhancing, updating or supplementing the existing training materials and fulfills the competence regarding Maritime English contained in STCW 1995 [10]. But teachers of English Department (not English speaking countries), who teach Maritime English continue to encounter some difficulties in the process of teaching and learning Maritime English. And it isn’t connected with teachers’ skill, which is usually quite high, but other different factors impact on the learning outcome. It isn’t a problem of one maritime institute. The great contribution in solving this problem belongs to international projects, which are developed and implemented. Majority of them aims at promoting the Maritime English competence of the people working in various maritime professions in different parts of the world so the intended users include those actually working at sea as well as those studying and working in a wide range of sea-related areas.

Another important suggestion, often neglected, is that the experience of Maritime English teachers should be updated. It is essential for the Maritime English teachers to have on board training to provide the students good knowledge of maritime education. It is also essential to have enough teaching periods for Maritime English to obtain more competence in Maritime English in the long term [4; 6; 11].

The next important point to be recommended is that it is necessary to exchange Maritime English teachers between countries to share their ideas and experiences of teaching Maritime English to each
other. In this connection AUMSU offered Innovative Project on lecturers exchange in frame of BSAMI (Black Sea Association of Maritime Institutions). This Project has already been implemented and has good results, but its extension could considerably enrich opportunities we have now [8; 9; 11].

Prospective seafarers entering the Merchant Marine or the Navy are highly motivated to communicate across language and cultural borders and several of the partner institutions have already found that interest in language training is spontaneous. Seafarers are, of course, required to conduct their professional tasks in English, the lingua franca of the sea. The acquisition of Maritime English is thus of key importance in MET and naval academies and those cadets who hope to succeed at high level (officers, captains, commanders) must master English in the context of their duties. For many seafarers learning English to the high level demanded by the Merchant Marine and Navy can be a daunting task. In addition, today’s multi-ethnic, multilingual crews provoke cultural and linguistic barriers, complicating and hindering communication. In both a professional and social context on board the seafarer needs to be able to display strong linguistic skills [6; 9; 11].

The third level of standardization of quality is the level of external assessment (IMO, State, society, employers). The Russian standards specify the requirements to graduate as a result of education, but also to the quality of education and to the educational process itself.

At this level, the criteria can be:

- the demand for young specialists in internal and external labour market;
- conformity of material-technical base with licensing requirements of Ministry of education, Ministry of Transport, the International Maritime organization;
- the degree of access of all participants to use information resources of the University.

4. Standardization of maritime education as a process

When considering the standardization of the quality of Maritime education as a process, we rely primarily on the understanding the essence of the concept of "process", i.e. natural, consecutive change of phenomena. And in this case the result of the standardization process depends largely on the target and conditions in which it occurs. The need for elaborating mechanism of comparing expected results with real ones, is obvious. The creation of such mechanism will allow judge the quality and effectiveness of the educational process, and all that is used in the process of training marine specialists.

Standardization presumes performance of necessary comparisons of a specific model with a standard by means of various measurements, assessments, and adjustments. The standard in this case acts as the model. The standard establishes a set of rules, regulations, requirements to object of standardization, and should be approved by the competent authorities.

The standardization process also presumes the monitoring and measuring of actions, based on international and national standards, including a number of standards: objectives, competencies, outcomes, level of teacher skills and learning environment etc.

Also there many issues associated with the technology of the process of standardization of Maritime education. These include problems relating to:

- manageability of the educational process;
- ability to change due to the constantly increasing demands from industry and educational standards;
- inclusion of employers in the process and standards development, and in educational process;
- readiness and ability to innovate;
- the need to continuous update of the material and technical base;
- the opportunity of free access to information to all participants concerned in a result of the process of education, etc.
5. Standardization of maritime education as result and means

Relevant and not solved yet is the problem of the use of quality assessment techniques, including Maritime education. Mastering of different competences becomes the aim, and the result of the learning process, managing achievement of which in the educational process determines its effectiveness, i.e. its quality. At the same time, we would like to note that it is impossible to reduce the problem of standardization of the Maritime education only to the level of knowledge, abilities and skills, formed at graduates.

It is the worldview of an individual that determines the further vector of his development and so questions of its formation and development should be given enough attention. In this regard, we should agree with standards of learning outcome. They include:

a) personal (attitude to knowledge) – determines the social and cultural identification of the young specialist personality, his vital meanings, worldview and abilities to further self-development;

b) interdisciplinary (knowledge obtaining) – relates to self-regulation and self-control in academic and professional activities, social, communicative skills and cognitive abilities;

c) subject (possession of knowledge) – belongs to the social (social and cultural, cross-cultural) professional skills, and also communicative competences.

Criteria of the result quality evaluation can be the following:

- the stability of results over time;
- the degree of conformity of educational services to consumers’ inquiry;
- educational achievement of students;
- high demand for graduates by employers etc.

All of the proposed criteria of evaluation, goals, process and result, from our point of view are very easy to handle, that allow significantly reduce the time spent on quality assessment. Such information is always generated in any educational institution in the framework of the reporting in the process of interim and final assessment, i.e. it is the typical and makes the process of data collection not difficult and at the same time the most accurate.

6. Conclusion

It is well-known that standardization allows to create a unified educational space and to provide a uniform level of education to students in different countries and universities.

The International Convention STCW 1978/95 and amendments adopted at the Manila Conference, 2010 provided guidelines on what the seafarer student should know and demonstrate before being awarded with the Certificate of Competence which is considered as the basis for their recruitments and promotions. At the same time Maritime Universities must meet National Standards of Education, which differ in some positions from the Conventional ones (e.g. period of training, assessment process, etc.). In spite of the fact that National Maritime Regulators interpret the STCW Code requirements and develop the seafarer training curriculum to assure that students can demonstrate the attainment of the minimum standards of competence, there is often a risk of individual interpretation which can result in lack of coincidence with the Conventional requirements.

The problems of standardization of professional Maritime education and evaluation of its quality do not have a unique solution. Usually, different approaches to the choice of criteria for assessing the quality of any educational system, marine, in particular, rely on different understanding of the quality of education – from traditional interpretations of it as educational or as a result of the quality of the educational process conditions to the quality of control processes. In order to achieve aimed results all developers of standards should correlate their criteria both with the STCW Code requirements and National Standards (which are certainly tough) and the dynamics of industry development.
At the same time current focus should be also made on issue of teaching, learning and assessment process which is widely vary on a global level. Criteria chosen for assessment these activities should be flexible enough that will allow creativity and will contribute to the search for new forms, methods and means of training and education of future seafarers.

References

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