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EDUCATION AND TRAINING OR TRAINING CONTRA EDUCATION?

The rapid growth of world merchant fleet as well as of ships’ size and speed, especially through second half of last century, brought together the higher demands on maritime safety and urgent necessity to take to utilization a number of up-to-date navigation aids and technical means.

In this connection the work conditions of seafarers have undergone the significant changes. On the one hand there are a lot of modern and complicated devices, appliances and apparatus in ship bridge and engine room. On the other hand these aids are relatively easy in exploitation and user-friendly as a rule. The role of ship officer in charge is changed nowadays significantly and now it is rather the role of observer, surveyor and person responsible for end-result than the role of active and direct actor.

But the notion that life of navigators has become much easier and more peaceful during last decades is the wrong one. The ship officers, especially those on management level, are constantly under high stress and psychological pressure caused with huge responsibility for human lives and material values. So to be successful they have to have something more than good professional knowledge and skills only.

What does show the statistics in field of marine accidents? Taking into consideration the technical achievements and using of modern technological solutions in field of shipbuilding and navigation, especially in providing of marine safety, one can suppose that the accident rate in shipping must has been decreased rapidly in course of last decades but actually this is not so.

Firstly, marine accident rate didn’t have a tendency to decrease through second half of the last century but at least remains on the same level. Secondly, there is not the tendency for consequences of marine accidents to become easier or less tragic in spite of the technical progress, saying about both human life losses and environmental damages.

How it can be explained? Why the situation is not becoming better in spite of the number of great technical and organizing solutions? Answer is that the problem is in the main link of chain and unfortunately in the same time in the weakest one – in people and in the personal characteristics of people. People, psychological core of who actually keep unchanged during not decades but centuries, people with all their own weaknesses and deficiencies.

As it was noted earlier, the huge technical progress through last century has brought quite additional stresses and intensities to ship officers, especially for those on management level. The statistics data show that share of accidents caused by so-called human factor was growing constantly during last decades. It may be several reasons for it.

Firstly, it takes place the constantly improving reliability and quality of the ship materials and constructions as well as the navigation aids and devices. Ships are becoming more weather-insensitive and number of accidents caused by bad weather conditions is decreased.

Secondly, the number of great and reliable technical solutions in shipbuilding in whole and for engine room equipment particularly led to decreasing of accidents caused directly by technical problems. Taking into account that the common proportion of
marine accidents is the same through the last few decades we can see that share of accidents caused by human factor increased constantly and reaches up to more than 60 (by European Maritime Safety Agency up to 80) per cent of all accidental events.

In general we can say that despite the fact that the work of navigators has apparently become more convenience and easier, in real life this doesn’t means that they cope with their obligations better and better and have no problems. The navigator is being human who is not so strong and perfectly designed as all great aids and devices, which people invented actually for assistance of themselves.

By the way, the fact that the ship navigation process has become much more convenience and less laborious is not positive only but it has its negative aspect. Because the computer systems and other appliances have taken the significant part of navigator job in bridge he trusts these technical assistants too much and can lose the watchfulness. In certain circumstances (e.g. unexpected and hidden technical or navigation problems) it may pay him back cruelly.

Naturally, it was always clear that ship officers, both the navigators and the engineers are the key ‘safety holders’ on board of ship and safety of vessel, people and environment may be provided only by high level professional knowledge and skills, good experience and great personality of them. All the very smart and good systems and appliances on board of nowadays vessels might be useless without ship officers who are able to operate them optimally and in the best way, especially in the critical situations.

In the same time as known the common international rules for training and certification of seafarers didn’t exist until late 70th of last century. Certainly, there were the appropriate regulations in several countries before that but such national rules were not unified and were very different. Mostly these regulations made a demand on the professional competence of seafarers, more or less strong in different countries, and regulations of some governments envisaged the requirements to educational level as well (e.g. provision of graduating on higher professional education level for ship officers on management level in the former Soviet Union and in the some East-European countries).

It seems to be in every respect right and opportune to adopt in 1978 the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW 1978 Convention), which entered into force in 1984 and major revision of that was made by 1995 Amendments. Because the main reason for the most part of marine accidents is the human factor and share of such episodes kept high and even was growing during last century, it is hard to overestimate the importance of such international regulation for marine safety matters. Suffice it to say that by December 2000, the STCW Convention had 135 Parties, representing 97, 53 percent of world shipping tonnage.

No having as aim in any way the thorough legal or substantial analysis of convention let’s look at one aspect of matter, namely what principles and approaches are taken as a basis of requirements to seafarers in respect of their professional competence and training? Question is: are all important factors that exercise significant influence on readiness and ability of ship officer to respond and act in critical situation quickly and in only right way taken into consideration by Convention, particularly by STCW Code?

Author's opinion is that STCW Convention and STCW Code consequently is one-sided to certain extent. In Code tables there is quite detailed describing of content and character of professional knowledge and skills that must be obtained by trainees for achieving of necessary level of competence but it doesn't exist some points of view or
recommendations on by what kind of teaching process or on what education level could be such knowledge and skills obtained. This circumstance may seem to be insignificant if we accept the saying: any way is good if it leads to right goal. But in this case my thesis is: moving by wrong way leads to wrong point of destination. In other words, for achieving of necessary competences it is very important not only content of knowledge and skills obtained but also the methods and environment of teaching process as well. Author tries to show that very important and inseparable parts of professional competence of ship officers are the personal characteristics of them, not only professional knowledge and skills.

The stress of the STCW Convention and STCW Code now is rather on fulfilling of formal so-called minimum requirements by obtaining of certain capacity of theoretical knowledge and practical skills than on complex qualitative development of high educated and capable of original thinking decision-makers. Actually, all the knowledge and skills envisaged by Code may be obtained by 'do like me' method. The overregulation of training process with too detailed procedures and teaching materials in model courses leads to stamping of good actors in standard situations thanking to big capacity of standard knowledge and skills taken into their heads.

It is supposed that the national authorities have to decide what education level must be for ship officers both on operation and management level and by what way it may be achieved the wide-ranging development of them. In principle, this point of view is not wrong. Problem is that not exist the clear official point of view of IMO about great importance of so-called 'human characteristics' of ship officers despite the fact that big share of 'human factor' in marine accidents seems to be widely known and indisputable. As result, we often have the situation on national level when the private maritime schools and training organizations try to drag in government and parliament the legal acts with minimum requirements regarding to duration, capacity and content of training process. Because the high level of formalism and orientation on the quantitative results it is not difficulty to fulfill formally all the requirements of Convention paying no attention to personal quality of graduates.

In author's opinion, the first weak point of Convention is that the competence is the sum of the so-called professional knowledge and skills only. Believing to this position may be actually dangerous because it leaves out the other side of question: is the ship officer always able to apply obtained knowledge and skills in right time and in only right way? And more important question: is he able to do it in only right way in hard critical situation? Whether he is able to find the non-standard solution in non-standard situation? And finally, if the only right solution is to give up the rules that are taken into head by 'do like me' method does have the ship officer enough thinking and decision-making ability to do it?

Author believes that professional competence of ship officer is not only the sum of certain knowledge and skills irrespective of that how detailed and by assistance of what up-to-date simulators and other devices these knowledge and skills are obtained. Undoubtedly, they are absolutely necessary for developing of high level professional but it is not less important the ability and to certain extent the courage to apply them in right time and in right way or if it necessary withdraw them in favour of absolutely new and in dangerous situations only possible solution. It is very important part of competence of responsible person because quite often the lot of human lives and/or future of huge material values depend on discretion and decision-making ability of captain or other ship officers.
The second weak point of STCW Convention is the excessive formalism and overregulation regarding to training content and control. Offering in STCW Code very detailed and concrete descriptions of scope of knowledge and skills required and full and complete teaching materials in so-called model courses it stands the illusory impression that the implementation of a lot of formal requirements and following the rules envisaged provide by all means the highest level of competence and the certificated ship officer has ability to keep on the top of any critical situation.

Undoubtedly, the playing through a lot of definite situations on simulators and in course of on-board training is one of the best ways for obtaining of professional knowledge and skills and to the certain extent of seafaring experience without risk to damage ship or cargo but there is there the dangerous to be too satisfied by results of training. The graduates may obtain misleading belief that after receiving of certificate of competence they will have full set of ready right solutions for any situations and that they are always able to act correctly.

Actually the system of training and certification quality providing envisaged by STCW Convention is perfect and achieves its aim very good regarding to day-to-day routine on board of vessels where ship life in principle is overregulated by different regulations, guidelines and management systems and doesn't stay in general the space for non-standard or unregulated activity. All the more, training by principle 'do like me' and by playing through the large amount of standard exercises and previously constructed possible critical situations on simulators is high effective so long as navigator has to deal with so-called 'anticipated problems'.

According to Patrick M. Alderton there are two extreme types of accidents. First of them is the anticipated problem, e.g. the possible going aground in shallow water. In this case the experience, training and up-to-date technology play very important role for prevention of incident as well as for providing of minimal damages and cost if the accident is inescapable. The second type of accident is the unexpected or very rare catastrophe. Such catastrophes occur not very often but aftermaths of them are in general very serious and affect considerably developments in field of international law regulations and applying of safety measures. [Patrick M. Alderton Sea Transport, Operation and Economics, Thomas Reed Publications, Fourth Edition – 1995].

In latter case the key persons of accident face almost always completely new and unprecedented situation. Question is: to what extent can anyone be professionally prepared to such situation and to take precautions against such possibilities? Very probably the ship's crew including officers will have no experience in this novel situation and any realistic pre-training. Most likely it is impossible in principle to organize such realistic pre-training and simulation because for such catastrophes as rule it takes place a lot of at first sight absolutely impossible coincidences. So, there are not pre-prepared and pre-trained standard decisions for such non-standard and unexpected situation however it is vitally important to act quickly and resolutely. It remains in this situation to rely upon captain and other persons in charge personal characteristics and experience thanking to which they are able to find the only true solutions and to reduce the possible negative after-effects to a minimum.

Following the standard rules and pre-prepared decisions cast them doubt that they are effective in standard and pre-simulated situations. Non-standard and novel situation calls for non-standard decisions, so intellectual power and discretion of responsible persons are vitally important. It's true, that very probably such high extreme situation may occur only one time during professional life of ship officer and fortunately the most part of them will not have such hard experience not at all but all the same it can
occur with each one. This high extreme situation actually tests all those professional and first at all personal qualities and it is never possible to say beforehand what teaching subjects and other things, which seemed useless in studying years, will turn out as the most important ones for successful non-standard decisions making and realization ability.

What is the solution of problem? How must be organized the training of ship officers, especially those on management level, the result of what would be not only perfect occupational knowledge and skills but advanced personal characteristics what is very important from point of view of providing of high level of safety at sea? These essential personal characteristics are self-determined intellectual power, presence of mind and courage to take upon responsibility in critical situation or to hand it out to other persons if needed.

In opinion of author, it is time now to give up the viewpoint that obtaining of occupational knowledge and practical skills in ship officers' training are very important and needed only and to recognize the fact that ability to apply these knowledge and skills in only right way in each possible situations or actually to find out non-standard and unprecedented solutions if needed has at least the same big importance. It arises from STCW Convention and other IMO official documents now that for getting the Certificate of Competence both on operational and management level it is enough to obtain only all very concrete knowledge and skills that envisaged by corresponding Code and Model Courses in detail. The structure of study process and procedure of assessment of knowledge and skills bases rather on quantitative than qualitative indications and it orientates rather to hard-working executor than to creative person mentality.

Undoubtedly, the modern bridge, engine room and other simulators are the great and very effective tools for obtaining of practical skills and experience or for several so-called real life situations playing through. But the simulators themselves do not provide the development of the necessary personal characteristics and ability to operate in adequate manner in the all extraordinary situations. There are two big imperfections in using of simulators and probably they will not stop existing in the future, too.

The first of them is that it is practically impossible to simulate and to play through all the possible situations that can arise with different ships in different regions and circumstances, not to mention the different reactions of different persons. As abovementioned, the serious catastrophes are rare and they are as rule the result of big amount of unbelievable and unexpected circumstances. So they are always unique ones.

The second but not less important matter is that the simulators are not capable to model the psychological reality of situations. The visual picture created by simulators may be perfect and it is may be accompanied by great sound, vibration and other effects but all the participants know from beginning to end of simulation that it is the game only and in any case it is actually happens nothing. So the collisions modelled by simulator and accompanied by the very natural visual and sound effects arouse no emotions of participants except laugh.

The make a big thing of simulators has once more hidden risk. This is the redundant confidence to modern technologies and odds of them. The simulators create an impression that absolutely all situations are possible to play thorough and in this way to prevent them. I think, some of us remember the situation from not distant past where the bridge team of fast ferry trusting the navigating of vessel to automatic systems was to such extent concentrated on football in TV that allowed the vessel crash to rocks. Certainly, the problem wasn't the bad occupational training of these guys but rather the
personal immaturity of them and inadequate estimation of situation what actually refers to shortcoming of self-determined intellectual power and irresponsibility of these officers.

Author of this presentation is convinced that for the forming of the responsible person characteristics in the course of training is not so much important what and with assistance of what means training is conducted but the most important matter is how it has been done. The latter depends on who are teachers and instructors and how is built up the teaching process in training institution. In other words we have deal with educational environment. Than more creativeness and freedom are in school atmosphere than more possibilities are given for forming and defense of students’ own opinions, than better it is possible to develop the self-determined and creative thinking of students and in this way to form liable and decision-making able persons.

In general, there is the point of view that so-called academic education is oriented to develop creativeness and self-determined thinking ability in people. The professional or vocational education is oriented to occupational knowledge and practical skill obtaining. It is broadly spread the opinion that for training of professional knowledge and skills the best pedagogical method is “do like me” or, in other words, “do always according to learned”.

Unfortunately, such approach does not promote the development of self-determined thinking and decision-making ability, sooner constrict them. Number of people thinks that such pedagogical approach is only right for professional education and according to spread opinion it is intended to prepare rather the good executors than creatively thinking persons. For some strange reason there is a practice to contrast the university education with professional one and what’s more the representatives of both camps look down on opponents.

By author’s opinion this line-up is pointless one. The optimal pedagogical solution is in successful combination of two paradigms. Coming back to training of ship officers author has the courage to affirm that the specificity of this occupation necessitates both approaches, namely the obtaining of professional knowledge and skills in the creativeness and self-determined intellectual power developing way.

In general, it means that for ship officers on management level (captain, chief mate, chief engineer and second engineer) have to be imposed the higher professional education requirement. Though maritime administration of each country can stand in national legislation the higher requirements to competence as well as the requirements to education level of ship officers it may be difficult sometime without clear accept of viewpoint on international level. Problem is that some groups of people may be interested in minimization of educational costs and the IMO regulations give them such possibility now on account of quality of training. One of result of them is the growing share of marine accidents caused by human error.

Why the request to give to ship administration the higher education is so important? There is more than one reason for them.

Firstly, the higher education curricula include the block of so-called general or fundamental teaching subjects. In principle, the main aim of these subjects is to develop the person generally. It’s true that learning of these subjects seems to be at first sight not directly connected to obtaining of professional knowledge and skills but anyway just these subjects have the great importance for development of personal features of students if these subjects are taught in the open and creative mind atmosphere. In course of general studies there are the great possibilities for students to form their private opinions, to present them to other students and lecturers and to defend them.
Secondly, the teaching process in higher school bases on research activity. The participating of teachers in research work together with students gives the good possibility to develop the thinking ability in them.

The professional higher educational institutions in different countries and regions have the different names. For instance, in Estonia these are the professional higher schools, in some Europe countries are the universities of applied sciences, in others the non-university type higher schools. For maritime educational institution is usual in many countries to be named as maritime academies (so is in Estonia, too) but not always one can find in such academies the higher education in classic sense of this wording. In some maritime academies in Europe and Asia we can find rather vocational education programs than higher education curricula. The same we can say about some maritime colleges in several countries.

The oldest and most famous maritime academies around world excel with their long-time made traditions and high quality of academic climate (undoubtedly, one of them is the Admiral Makarov State Maritime Academy). Principally, it is not matter what name has the training institution, much more important the atmosphere of teaching process, which favours the development of self-thinking and decision-making able persons.

Although nearly 30 years ago adopted by IMO the STCW Convention that had as its aim the unification and world-wide application of requirements to training and competence of seafarers is difficult to overestimate and the results achieved during relatively short time are very impressive, it seems to author that actually we have a deal with very first stage of some long way. The main stress on this first stage was pointed to ordering of landscape of training and certification of seafarers and to enforcement of general regulations.

The STCW Code and other regulations are very detailed and let not more free space for creative activity. This circumstance has plusses and minuses. One of plusses is that everything is under control, at least visibly but minus is that this control takes place with help of quantitative indications and so it seems to be too formal.

Of course, one can say that these regulations to the some extent are the result of compromise because it was absolutely necessary to find out the solutions, which could be acceptable at least for majority of maritime countries. It seems that sometimes it is gone by way of the simplistic and using of easy accountable and assessable criteria, e.g. by making a big deal of quantitative indications in estimating of training results and competencies.

As result, in spite of the overregulation by guiding documents we have in reality different levels of training and competence of ship officers and, what is very important as well, very different level of adequacy of personal characteristics of them to profession. In many cases the reason of it is the formal approach to criteria of training and assessment. Assess of quality means to the great extent the formal assessment of existing and good maintenance of quality assurance documentation. Are there always the real quality of training processes and results of them behind this documentation?

The second reason is that the requirements of STCW Convention and other regulations are named as the minimum requirements. On the one hand it is positive because it gives to maritime administrations of the several countries the possibility to make the requirements of national regulations harder but on the other hand such definition allows making a conclusion that discharge of minimum requirements provides in any case the necessary competence of seafarers what is not always truth. Because there are not now in Convention the requirements to education level or to
comprehensiveness and real quality of teaching process some training institutions operate successful with so-called simplistic variants, especially if the providing of maritime education in country is mainly managed by private business and training companies are enforced to take into account the hard competitiveness' situation in training market.

The firm opinion of author is that in situation of continued growing of importance of human factor at sea it is time to begin the discussion about full readiness of ship officers, especially those on management level, for extraordinary situations and about possible correction of criteria of assessment of this readiness taking into account not only formal and quantitative requirements but the inside quality of training process, above all the education and personal development level.

Author thinks that it would be very interesting to make the analysis of last decades' statistics with purpose to find out the correlation between nature and aftermath of marine accidents and education and progress level of main actors of such accidents, especially for those on management level.