TRAINING THE TRAINER FOR CADETS' TRAINING ON BOARD SHIPS

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Abstract. The real on board life demonstrate that practical training of future maritime officers is a very important link for creating their skills and competencies and for building up their professional culture. Unfortunately, not all shipping companies are paying the necessary efforts to ensure a real training environment on board their ships. Actually the implication of the shipping companies into the on board training process must have two stages: one is onshore, with the involvement of the training manager and the second one, the most important, is on board, where the master and the designated training officer must know what and how to do for tutoring the training process of cadets. The Navigation Department of our university started a project (MARCON) that has, among other objectives, the scope to train the tutors that are directly involved in the on board training of our cadets. We will start with the training of the shore based personnel from the Training department of crewing companies. For the officers that will conduct on board ships the training, monitoring and evaluation of the cadets, we will prepare guidelines and procedures, in order to have an uniform appreciation of the work of our cadets on board different ships.

1. INTRODUCTION

When we are talking about the simulators that we are using for the training of maritime students we mention about the virtual equipment that is simulated or about the virtual interface that allows the steering of the ship or the operations of the equipments.

The progress made in the last decade on terms of new built ships, and the integrated navigation equipment mounted on these ship's bridges, revealed that the term "virtual" used for what simulators can do is not really a good one. In the real life of maritime industry, most of the modern equipments are operated only by keyboard and mouse.

In the last few years, the assault of electronics on the ships' bridge has become more intensely than ever (Raicu G., et all, [8]). Although the maritime industry has always been a place where traditions and customs are highly valued and upheld, we are witnessing extraordinary changes taking place regarding the ships and their crew's, and the maritime industry as a whole.

In this regard, we must understand that today's maritime officers no longer use a sextant to shoot at stars or at the sun, if not for share curiosity, in order to determine a fix. They are instead required to be able to tell the difference between any type of alarms coming from any on board equipment, and to react properly to it Further more they are required to be able to quickly adapt to any new equipment and information displays, and to use it efficiently If we add the loading computers and the digital displays with engine or ships manoeuvring parameters, communication consoles, than we have a better picture of the new look of a modern ship (Hu J.S. et all, [4]).

All this can provide and intimidating prospect for the persons who are more accustomed to a more hands on approach to navigation, or those that are more reluctant towards technology, and do not put too much trust on sensors but are non the less experienced officers.

2. THEORETICAL ACADEMIC BACKGROUND AS FUNDAMENT FOR THE PRACTICAL TRAINING

These changes have occurred gradually, both on the ship's bridge and in her engine compartment, and are not to be found just at container ships, or tankers, but on all ships built in the last decade. So it has become obvious that a new breed of maritime officer is needed, one that is at home between computers and computer alarms, and is able to understand and use all the information presented to him from a multitude of displays and information systems.

And so we turn our attention to the next generation of maritime officers and we ask ourselves this question: How to better prepare them for their future career?

We at Constanta Maritime University (CMU) believe that a sound theoretical knowledge, combined with rigorous simulator and onboard training experience are very important factors in education as maritime officers. According to the 724/2004/EC directive of EMSA an important characteristics of a future maritime officer is the knowledge and skill with which he operates modern electronically equipment. This level of proficiency can be achieved by our students during their training with the complex simulators. As a young generation they are already very much accustomed to using computers in almost any aspect of their life, from communication to entertainment. All that they need is to embrace the old and tried and tested traditions of the seafarers, and therefore create bondage between the new and the old.

At CMU, in their last two years of study our students are already spending more and more time using specialized training simulators. If we compare their curricula to that of the students that have graduated only 5 years ago, we will find that their simulator training time has almost quadrupled. These training sessions under the supervision of instructors will help them gain the necessary information, and will allow them to quickly adapt to the ship's equipment particularities (Bârsan E. & Muntean C., [1]). However we are very much aware that the theoretical knowledge and practical skills acquired by the students while in school must be complemented by a training period on board ships.

Until four three ago, the academic training was spread over a five year period (see Table 1). On that curriculum, we had enough time to cover all the theoretical knowledge needed for all levels of maritime officers, from OOW (deck or engine) to Master or Chief Engineer).

Starting with the academic year 2005, in Romania the academic system was harmonized with the EU. Consequently, for the engineering academic studies, the study period was reduced from 5 to 4 years.

Table 1

Structure for the five year study period

1st year of study	Basic technical engineering studies	2 semesters
2nd year of study	Specific engineering studies + basic maritime studies	2 semesters
3rd year of study	Maritime theoretical studies	2 semesters
4th year of study	Advanced Maritime theoretical studies	2 semesters
5th year of study	On board training	2 semesters

Constantza Maritime University had to adapt to these new requirements and to reorganise the training curricula on a 4 years of study bases (as shown in Table 2).

Table 2

Structure for the four year study period

1st year of study	Basic technical engineering studies	2 semesters
2nd year of study	Specific engineering studies + basic maritime studies	2 semesters
3rd year of study	Maritime theoretical studies	2 semesters
4th year of study	On board training	1st semester
5th year of study	Advanced Maritime theoretical studies	2nd semester

As we can see from Table 2, the period allotted to the on board training was reduced from 12 month to a 6 month period. There were two immediate consequences:

1) we could not anymore cover all the theoretical maritime knowledge for operational and managerial level;
2) deck maritime students could not fulfil their compulsory 12 month on board training period until the graduation.

For resolving the theoretical knowledge coverage problem, we start a professional Master Course, were we shifted most of the disciplines related to maritime knowledge at managerial level, in accordance with the STCW (Loginovsky V., [7]).

The problem that could not be solved as before is related to the number of month of on board training that can be accumulated by the deck students until their graduation. In the actual 4 years of study curriculum, they have to finish their compulsory on board training stage after they graduate the University. This is one of the reasons for which the CMU Navigation Department initiate the MARCON project: to optimize the first training on board stage and to give some "instruments" for helping deck cadets to finalise their training period after graduation of CMU.

3. MARCON APPROACH FOR ON BOARD TRAINING

3.1. Present situation

The world wide concept for cadets on board training implies that this training has to be done only on board merchant vessels. In other words, most of the maritime Authorities are not more considering any other type of practical training (ship handling simulators, engine room simulators, training ships, etc.)

Of course that here it can be some debates, mainly regarding the utility of training ships (Laczynski B., [6]). US maritime academies are still making summer training voyages with big ex-navy ships, that can accommodate hundreds of cadets. Voyages are 2 – 3 month long and are very good for navigation training and engine room procedures. But on these ships there are nothing related with cargo work, multicultural human interaction and real merchant crew team work.

Constantza Maritime University had until 2003 a merchant training ship that could carry general goods (4500 dwt) and accommodate up to 110 cadets. Even caring real cargo on a 100 % commercial base, the running costs of the ship were to high to be supported by a public institution. More than that, the Romanian Naval Authority, refused from 2002 to recognise the time spent by cadets on board the training ship as valid on board training as required by STCW 95 (Smith-Robson C., [9]). In 2003 when the ship became 25 years old, he had to sale her for scrap.

Any how, taking into account the dynamics of recruitment at CMU (see Table 3), a training ship could not more cover the on board training requirements for a such large number of students.

Table 3

Dynamics of recruitment at Constantza Maritime University

Specialization	Navigation and Maritime Transport		Marine Engineering		Electrical Engineering	
Year	Full time	Reduced frequency	Full time	Reduced frequency	Full time	Reduced frequency
2000	105	-	50	-	14	-
2001	110	-	43	-	22	-
2002	80	-	70	-	65	-
2003	74	-	72	-	39	-
2004	165	120	67	45	40	7
2005	297	324	121	147	60	22
2006	396	327	113	147	53	40
2007	399	324	75	151	47	60
2008	426	418	101	205	77	103

Since than we had to rely only on the cooperation with shipping companies and crew agencies for ensuring to our students as many as possible embarkation opportunities as cadets.

However, we have to underline the NYK Line shipping company initiative to built two container vessels with special training facilities for 15 – 20 cadets, plus instructors (Bârsan E., [2]). In the NYK Line practical training philosophy, the role of a dedicated instructor is very important. After years of experience in running their own on board training programme, for their recruited cadets, they feel the necessity to update the training vessel concept, on a top new commercial vessel and with a limited number of cadets.

These new ships left the shipyards in May/September 2008, but the starting of the collective on board training programme was postponed due to two main factors:

- in the first place was world the economical crisis, and NYK Line took measures to reduce part of the costs (Kadir C. & Er I.D., [5]);
- the second factor was the request made by the new ships' crew, to have more time to become familiar with the ships, before having onboard supplementary persons.

About the common on board training our students are having on board ships we have observed the following:

- There are great differences between the quality and complexity of the on board training programs performed on board different ships.
- The number of shipping companies that have a modern and systematic on board training system is still very low.
- In some cases the STO (Ship Training Officer) responsible for their on board training program, was not aware of the cadet's the theoretical knowledge, his training, and his level of skill with different electronically equipment.
- There are still cases where there are no cadet training programs, and our students were required to just look and try to copy the actions of the officer delegated to work with them. During their on board training period, cadets are not usually guided and monitored by a dedicated STO (Ship Training Officer). They receive guidance from any of the watch officers, including Chief Officer/First Engineer, and any available officer was allowed to undertake assessment and to sign and declare the cadet as proficient in the tasks mentioned in the training record book.
- Out of the students who were not very satisfied about their on board experience many will not embrace a sea carrier and would prefer from the start to find o job ashore instead.

3.2. Helping the on board training tutors

As a result of these findings, Constanta Maritime University proposes a new program called MARCOM that aims at improving the on board training system, where here is one, and provide guide lines for where there is not. Its objectives are to improvement quality for the on board training of our students and to try to standardize this type of training no matter the shipping companies where our cadets are undertaking their on board stages.

One of main target group for this program is the instructors meaning the Company Training Officer (CTO) and the Ship Training Officer (STO). They are the persons who have the most important influence on the on board training experience of a cadet. They will be provided with a training handbook detailing the theoretical knowledge of the cadet, his training, and his level of skill with different electronically equipment (such as Radar, ECDIS, and GPS). Also this handbook will provide them with a step by step on board training program for the cadet, with detail information of each stage, a monitoring system, and a system of evaluation of the cadet's progress (Zhukov D. & Miyusov M.V., [10]). This way every member of the instructors group will know precisely what he or she needs to do, and won't have to improvise a program of his\her own. We believe that if those stages are followed there will be no more differences between the quality and complexity of the on board training programs performed on board different ships.

We would like emphasize that this program is not limited to our students. All the materials, the curricula, the training record book, the training handbook for the Company Training Officer (CTO) and for the Ship Training Officer (STO), all the documents and manuals used for individual and group training during sea time, will be prepared in English. A standardized format will be used, in order to facilitate their use by any student of any other maritime university.

3.3. Customised training materials for cadets

The other main target group of the program is of course the students. The Navigation Department of CMU is adapting the on board training curricula for deck students and engineer students to the new technological requirements existing on board modern ships.

The on board training should be correlated with the educational program in the university and the theoretical level of knowledge of the cadets.

More than that, we are aware that on board ships, the cadets are not always permitted to make (by their own) full use of the navigation equipment existing on bridge. This is why we undergo an intense navigation/engine simulator training program in the 3rd year of the curricula. During these simulator training sessions the students are encouraged to make use of different electronically equipment, as well of different types of equipment, in order to familiarize themselves with the integrated systems that they will find on board modern ships.

All this training is as realistic as possible, in order for them to be better prepared for their on board training experience, which is also what the shipping companies have required. This is why in the recent years our university has invested a lot in purchasing state of the art simulators for liquid cargo operations, radar navigation and the use of ARPA, and electronically navigation.

Another topic that needs to be discussed about the cadets is their training record book. According to the STCW Convention, their on board training period must be documented in a Training Record Book (TRB). This is indeed a very important document. If the on board training system for cadets is lacking, or even worse is non existent, this is the only document that provides a clue to the responsible officer about what needs to be done.

However the Training Record Book provided by the Romanian Naval Authority does not satisfy the requirements of this project. Its content though in many useful does not present the tasks the logical and order established by STCW and the guidelines established by IMO and it is not up to date.

For the purposes of this program we are considering to develop a new training record book, one that not only prioritizes training stages, but also presents them in a logical chronological order, with detailed instructions. In doing so, we are studying standard TRB model published by ICS/ISF or other record books issued in accordance with the provisions of other national maritime authorities.

4. TRAIN THE TUTOR THAT HAS ON BOARD TRAINING RESPONSIBILITIES

Finally, we would like to discuss about the training courses that we are developing for the shipping companies training officers (STO) and company training officers (CTO), in order to give them a better perspective on the great importance of a professional MET process applied on board their ships.

As top management of NYK Lines already noticed, the role of the designated on board training officer (STO) is crucial. Even with a very good dedicated on board training program curricula and well established assessment of cadet progress and feedback links, the quality of the training is based and depends on the professionalism and teaching capabilities of the STO.

This aspect of pedagogic skills of the STO was generally neglected by most of the shipping companies (Doyle E., [3]). The feedback that we have from our students when are coming back from the on board training stages, reveals that the activity of the STO is almost the most important think in achieving the goals of cadets' on board training.

In our feedback questionnaire, the students must answer at two consecutive questions, directly related with their opinion on the activity of the STO and the quality of the on board training. These questions are:

- How would you appreciate the activity of the STO?
- Please give a score for the quality of the on board training period.

The answers for these two questions for the 2008 series of cadets are shown in Fig. 1 and 2.

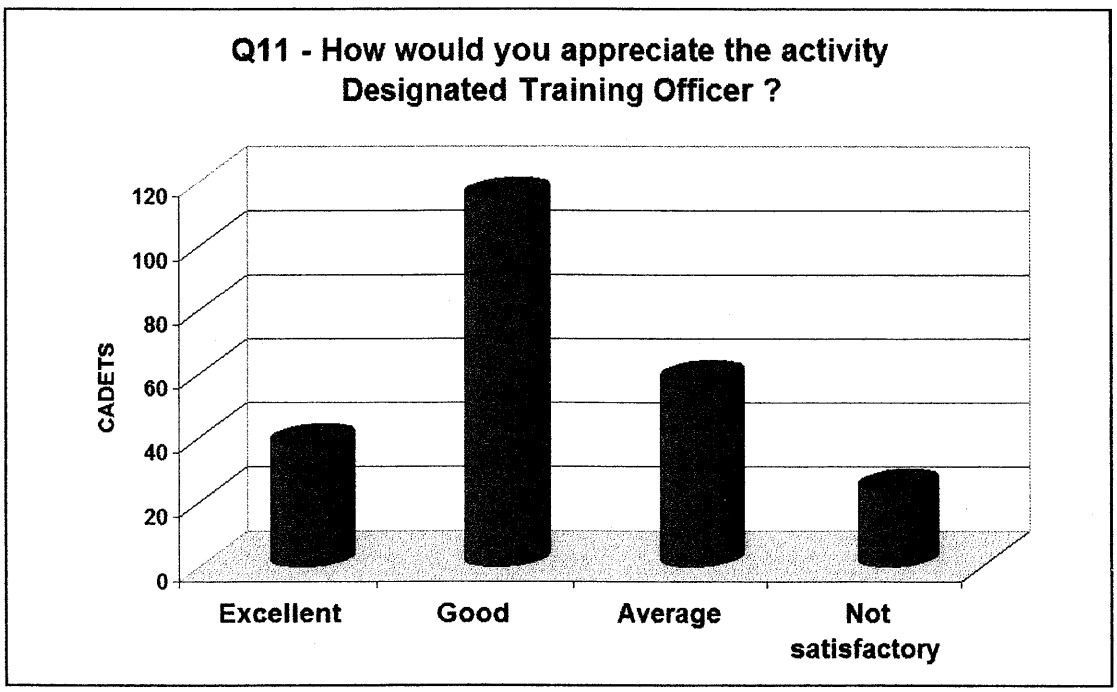

Fig. 1. Answers to the question "How would you appreciate the activity of the STO?"

If we compare the number of answers on different grades, we can see a direct similitude between the activity of the STO and the quality of training, at least from the point of view of the cadets.

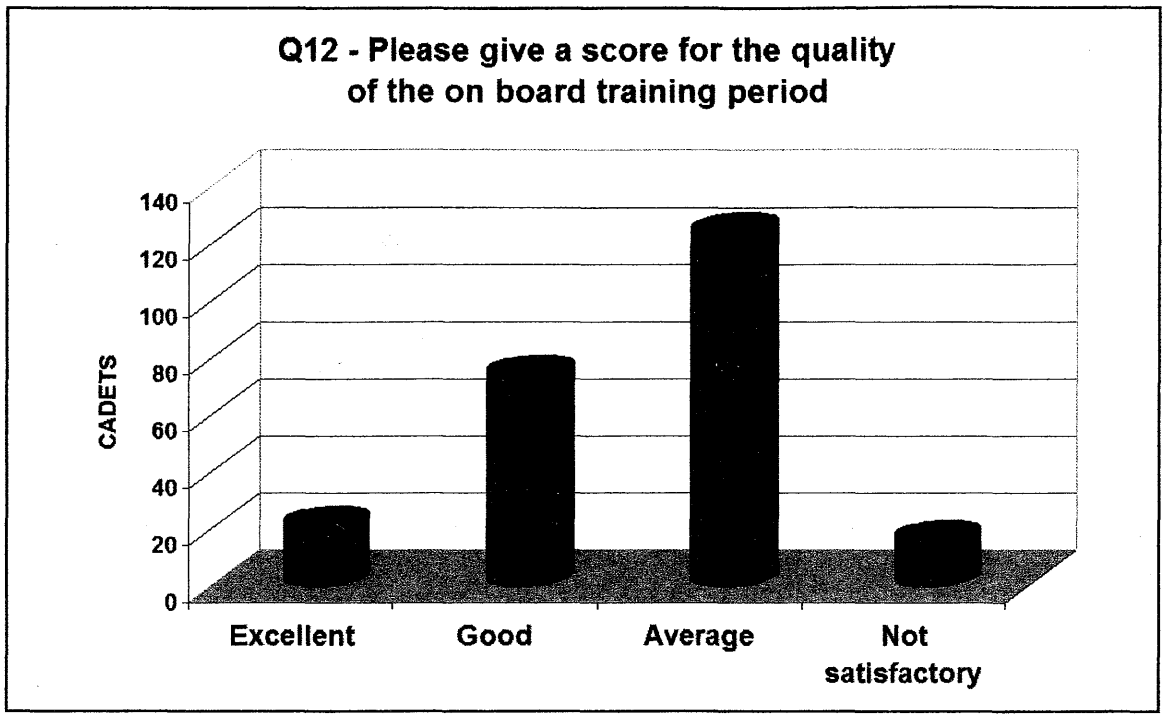

Fig. 2. Answers to the question: "Give a score for the quality of the on board training period"

Starting from these feedbacks, the Nautical Department of CMU considered, as part of the MARCON project, the necessity of making a special training course for CTOs and STOs, having as main teaching objectives the best practice and educational techniques that can be applied on board ships for tutoring, monitoring and assessing the cadets' activity. The course topics will be in conjunction with the new proposed Record Training Book that can be used for any cadet, no matter the maritime training institution.

The main problem that must be solved in order to increase the quality of the on board training process and to optimise cadets' achievements is a better correlation between the theoretical knowledge of the student and the participation to practical activities existing on board ships. The time spent on practicing one activity must also be defined, as well as the assessments standards for the most important tasks from the on board training curricula.

It is obvios that only a limited number of CTOs and STOs can directly participate to this course, so we intend to make the course materials suitable also for a self learning process.

In the first place, we will validate the course content ant teaching materials by running the course with the CTOs of the shipping companies and crewing agencies located in Constantza. Because the MARCON project is supported from EU funds, we will be able to invite to participate to this course also CTOs from the head offices of the shipping companies that had agreements signed with CMU for the training of our students.

With the help of CTOs we will be able to spread the course material on board ships, in order to be read and assumed by the STOs. In order to gain the CTOs help, we have in the first place to convince them about the benefits of the programme not only for the cadets, but mainly for the shipping companies that can have better trained officers.

Because the STOs are doing their tutoring activities without any money benefits, these teaching tasks must be imposed by the company, actually by the CTO. The number of STOs is very big, so we will be enable to undertake courses with them, so the on board implementation of the programme depends very much on the implication of CTOs and personnel managers from the shipping companies.

5. CONCLUSIONS

In order for this program to be successfully implemented the maritime university needs to very closely collaborate with the shipping companies. A dialog and a continuous feedback are imperative because they will improve the training of the cadets at school and will make the curricula more sensitive to the needs of modern maritime industry ensuring a higher quality of the training process.

This project (as part of MARCON project) is envisioned to be a modern, integrated system of training, for senior maritime students, that respects all the legal requirements and conventions recognized at European or international level. At the centre of this project lies the on board training period, with the participation of shipping companies.

The new on board training curricula is trying to match as better as possible the theoretical level of knowledge of the cadets with the practical activities that they could do on board. The training curricula is supported with a set of individual training materials dedicated to cadets, guidelines for achieving the practical training goals and competencies. More than that, the document will present also the guidelines designed for the company and ship training officer that are monitoring and evaluating the cadets, in order to create, as much as possible, an uniform training package on all the ships.

All the documents and manuals used for individual and group training during sea time and manuals, the training handbook for the Company Training Officer (CTO) and for the Ship Training Officer (STO) all will be available for use by other maritime universities.

The end result of this program is an increase in the level of training of our students. With a better on board training experience and an improved curricula and training system we are confident that they will be better motivated in continuing their careers as seafarers, and will have better chances of being employed.

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