**LEADERSHIP STUDIES ON BRIDGE TEAM MANAGEMENT**

**USING THE SIMULATORS**

**Saulius Lileikis, Vytautas Dubra**

*Lithuanian Maritime Academy*

**Introduction**

Learning in various and unusual ways has always been the key to the person’s success and the promotion of his interest. “It is quality rather than the quantity that matters” as for the famous Roman philosopher Lucius Annaeus Seneca quote.

But is it true that the fact you know that all the possible tools and potential are used helps us in developing the skills and becoming the professional in the field of the interest?

We do think so, that examples from the Lithuanian Maritime Academy gives some explanations to the research. There are marine navigation students amongst them that must obtain sufficient knowledges and experience to manage different seagoing ships safely and effectively [6].

It is extremely important that their ship handling practice starts on the navigational simulators that enable to re-create the handling of ships in different situations while applying all the necessary procedures and using appropriate equipment because of the recent enormous technological progress [7].

Marine navigation program students do have the opportunity to perform various simulated tasks, participate in different situations, communicate and ensure safe navigation from point A to point "B" in the modern twelve bridge common network class training simulator while studying on the fourth, third and even lower courses [3].

Despite the fact, that worldwide used TRANSAS software package with the latest update called *Navi - Trainer Professional 5000* is used, it does not always come liked and useful for the students and experienced navigators that have both positive and negative feedback [16, 17]. That’s why though students are taught by highly experienced instructors they do perceive the information in different ways [9]. Besides this there are no precise and defined methods for learning, what to begin with and whether the actions performed are useful and are not subjective instructions from one or more lecturers, provided.

**The object of the research** consists of the maritime leadership phenomenon.

**The aim of the research** is to discuss a strategic line of the maritime leadership by analysing revevance of the maritime leadership in educational prospect, based on students opinion about the effectiveness of the navigational simulator studies.

Research methodology: analysis of the documents (International Standards of Training, Certification and Watchkeeping for Seafarers (STCW Convention) with Manila amendments), required for the leadership training and applying in the ship-crew and students survey.

It is worth mentioning that the researches of similar nature are quite uncommon in the overall necessity to result ratio context while assessing the student's practical training on the simulator [12 ,13]. Analysis of references resulted to some preliminary conclusion stating that usually papers or online comments give the opinion of professional scientists and researchers studies [1, 2, 4, 5, 10; 11]. The present paper is issued in order to give some position of students and very young professionals regarding simulation training within Marine Navigation studies. This idea is partly touched in some researches [14, 15].

This research will encourage taking thought on changing the whole learning process, so as to increase the efficiency and let students spend sufficient time on the simulators rationally and develop the appropriate skills before the big seas.

The students survey was provided by students of Lithuanian Maritime Academy – O. Sveistrys and P. Fiodorov.

**1. The maritime leadership as a challenge to science and practice: management psychology strategic prospect**

The maritime leadership partially became a new challenge of the shipping practice and maritime science. The philosophy of the maritime leadership is understood from the political point of view. However, opportunities of its implementation are and must be scientifically investigated under various relevant psychosocial and technological aspects. It is appropriate to investigate the strategic line of the maritime leadership in regard to the mention argumentation and to big variety of scientific ideas, conceptions and positions.

Shipping safety relates to applying the maritime leadership. This kind of leadership is based on the selfleadership development and expression, and is characterized by the positive worldview, creativity, wide intellectual horizon, perception of psychological defense mechanisms and its partial management, and collaborative culture in the ship-crew. The paradigm of universal upbringing orients to develop all powers of the personality at horizontal and vertical levels of human existence according to biologic, psychological and spiritual needs and its satisfaction [18].

The integral development of the personality’s self-leadership competence is universally based on the paradigm from the psychological point of view. The type of the research is theoretically descriptive and qualitative. Methods such as retrospective analysis of the scientific literature, meta-analysis, comparison, heuristic method and synthesis were used in the research.

The maritime leadership, based on the moral and special authority, has been traditionally and indirectly developed in Eastern Europe in the educational prospect of the maritime leadership. It has been oriented to the combining of personal, social and technologic competences by noting an academic symbiosis of the maritime leaders and scientists in seafarers’ preparation.

An active prosocial tendency, from the point of view of the results, characterizes the principal moments of the leadership [20]:

* Anti-leadership is characterized by ignoring of rules of the organizational coexistence.
* Leadership, that promotes the working-awareness of the crew members, is relevant to working at the sea in extreme conditions.
* The self-leadership is an orientation to oneself, to the consciousness of own personality and to the conscious selfexpression at the work in the prospect of the personal integrality. The so called life leadership is characterized by the enrichment of the personality developing his or her internal-external culture.
* The supporting leadership orients to an encouragement of subordinates by the boss as the authority at the level of their self-confidence.

Psychological defense mechanisms are natural. It helps or doesn’t help personality save himself or herself and his or her reputation temporarily and destructively (at the mutual level) and almost unconsciously (at the individual level). It is appropriate to integrally apply the self-leadership competence working on board in order to prevent a socio-emotional seafarer’s expression from the full overwhelm by defense mechanisms.

**2. An educational perspective on maritime leadership**

In popular and scientific management, leadership is often reduced to a certain combination of special and personal qualities. Long-term research by the author of the article at the level of the maritime sector confirms this position. The tendency of the statements of the studying seafarers that the leader on the ship is "a human leader and an excellent specialist" [19, p. 21] has been established. This description of a naval leader usually describes his moral and business authority over the crew.

Manifestations of leadership relevant to shipping, manifested in a sustainable relationship with the ship's crew, the leader's moral and subject authority (to educate the crew and organize teamwork on the ship), professional altruism among crew members, and the practice of mutual support and support in the crew can be found throughout the history of seafaring [20].

Eastern European countries are traditionally more involved in combining the technological training of seafarers and the development of a seafarer's personality, which is relevant for maritime leadership. In this sense, maritime leadership is not a new phenomenon.

Psychosocial aspects of maritime leadership, especially since the 20th century, are of wide interest of maritime science researchers, and in maritime academies or universities, the moral authority of the seafarers and them education as an aspiration were naturally reflected in maritime education.

In addition, in Eastern Europe, higher education and higher positions on the ship were more connected than in the West, although the conventions of the International Maritime Organization do not require seafarers in the commanding chain of the ship to graduate from higher maritime education, which usually allows the seafarer's personality to develop more universally, i.e. in the totality of anthropologically based axiological and psychological issues of maritime leadership.

A particularly relevant opportunity and a timely solution for combining personal and technological training of seafarers are internationally licensed, practice-oriented and researcher-supervised (in the context of the Bologna process) higher education non-university maritime studies. This is a politically and empirically based assumption for future seafarers to mature professionally by developing the necessary seafaring technological and personal leadership competencies.

The highest coherence of maritime leadership education is achieved in symbiosis, when maritime academies are taught by profound personalities – professional practitioners and researchers. The natural noble daily communication of sea leaders with seafaring students and colleagues has a positive effect on future seafarers, their professional and personal maturity, the power of an inspiring example.

**3. Students survey methodology**

The methodology of students survey is the assessment and interpretation of the various course students’ presumptions on certain suggested topics. For this purpose, in order to find out the students' opinions on the use of a navigational simulator, a total of fifteen different questions covering various aspects of the use of the navigational simulator were raised and formed the basis of the questionnaire.

There were two ways of providing the answers suggested, the first one allowed to choose from the four options where it was possible to fully or partly agree or not, and the second way let the respondents leave their own comment.

Due to the fact that the researches of similar nature are quite uncommon in the overall necessity to result ratio context, in order to create the widest possible range of divergent views, it was decided to interview not only the students of different courses but also those who graduated from the LMA not long ago and successfully work according to their education as the watchkeeping officers on the ships of different types and characteristics.

Thus, the study auditory was divided into four groups and for each of them a minimum criterion or a research sample size of at least 15 respondents was established. Most of the respondents were suggested to fill the anonymous questionnaire and for some others there was provided a possibility to fill up created with the help of “Google Forms” online questionnaire, due to the fact that some students and graduates were at sea at the moment of the responses’ collection. In general, 124 respondents were interviewed within the period of 1 month. This amount included 30 2nd course students, 30 3rd course students that had already had their first sea practice, and it is worth mentioning that they presented the largest group of the respondents due to the fact they were completing some courses programs. Also 24 students of the 4th course that are graduating from the LMA this year were interviewed, and the last part of the respondents’ amount was formed by 40 LMA graduates of recent years that successfully work in different shipping companies as the watchkeeping officers.

It should be noted that the significant numbers of respondents in different groups depended on the diversity of circumstances and the peculiarities of marine navigation studies, that is why this research should be perceived as a pilot version. But this should not affect its significance, but conversely determine the relevance of the problem and create the necessity for a more serious research work.

**4. Analysis of the benefits and efficiency of the use of navigational simulators in marine navigation studies based on students survey**

Young, energetic, and hard-working students are always thinking of the greater number of practical classes they are dreaming about. This position gets distinctly expressed at the moment the first sea practice approaches.

As soon as the 2nd course of studies begins students have to meet subjects dealing mostly with navigation and ship handling, what creates inevitability of use of navigational simulator in the process of studies. The use of navigational simulator provides the 2nd course students the possibility to estimate, and preliminary calculate the principals for handling of different ships using chart plotting method on the paper charts, what takes place during the navigation lectures.

In this context actually students are familiarized with the navigational simulator, and the fact that the training is carried out in accordance with the currently existing provided training program should be emphasized. But as for the opinion of the students such a beginning of the learning path is not enough clear, and they express the need for knowledge and confidence growth in the provided to the following question answers.

Fig. 1. Question and opinion of 2nd course students (LMA)

The groups of studying marine navigation students are often presented with a great number of students, and the organization process that is carried out for practical classes, should be smooth, fast and even requiring students’ concentration and self-consciousness. This is to say that they do not always work by one and are the only responsible for their simulated bridge. Usually there is workplace provided for a pair of students.

The first idea of this fact may seem quite simple – the lack of workplaces and time throughout the learning system. However, far more meaningful goals are being solved this way – navigators are taught to be both individual and working in team professionals, so they must learn to solve complicated tasks cooperating their colleagues.

Besides this, it is quite difficult to perform a simulated task and control the ship’s route by chart plotting for one person, as this would be non-qualitative, hurrying and someway dangerous handling of the ship, as even proper look-out wouldn’t be ensured.

This kind of experience is achieved by the mentioned already 2nd course students, even they are not properly prepared for such way of performing tasks, they do manage to work in pair so, as to control each other and successfully complete the task (Fig. 1, 2). The answers variation reflecting such a tendency for the discussed question are provided below.

Fig. 2. Question and opinion of 2nd course students (LMA)

It is worth mentioning that the general level of skills and knowledges of the 3rd course students that have already had their first sea practice is a bit wider (Fig. 3). They must safely and effectively handle different ships through various complicated routes with the help of the navigational simulators during the navigation lectures while achieving the necessary skills for the rank of the watchkeeping officer.

Fig. 3. Question and opinion of 3rd course students (LMA)

The third group of the respondents is presented with students of the 4th course that are graduating from the LMA this year, and their answers are also important in the context of their highest level of experience and longest amount of time spent working with the navigational simulators, and the 4th course doesn’t become an exclusion as Bridge Resource Management courses is to be done this year (Fig. 4).

Fig. 4. Question and opinion of 4th course students (LMA)

The main aspects attention was paid to are the benefits of these skills applying (Fig. 5). The respondents were asked in the following question if the use of navigational simulator is useful, and almost all the respondents find the use of simulators useful, some of them even noted in the comments graph that such an experience helps forming the self-confidence.

Fig. 5. Question and opinion of graduates (LMA)

At the same moment the lectures of navigation are provided as to prepare for the state qualification exam. The fact they have spent quite a lot of time on the navigational simulators makes them suitable for defining the competent opinion on the partners’ exchange during the teamwork practices and the ability to get used to working in cooperation with any person.

It should be mentioned that this opinion expresses students’ wish to be well-qualified specialists and awareness of the fact that you should be able to work and reach a compromise that will lead to a safe passage in any situation and with any person.

The last group of respondents is presented with graduates that have recently finished their studies in LMA and successfully work in different shipping companies in the rank of watchkeeping officers. They have already had a chance to compare the experience they gained during the process of studies to the real work and various navigational tasks completion.

**3. The model of simulators’ training within the marine navigations studies**

The program for their studies is provided by the International Maritime Organisation participants created and ratified STCW (International Convention on Standards of Training, Certification and Watchkeeping for Seafarers) [6], which requires students to complete the following courses programs: *Radar navigation, radar plotting and use of ARPA, radar at operational level* [7] and *Operational use of Electronic Chart Display and Information Systems* [8], and the achieved skills and knowledges are being practiced on the navigational simulators performing suggested tasks.

The principle model of simulators’ exercises distribution within the marine navigations study program given in Fig. 6.

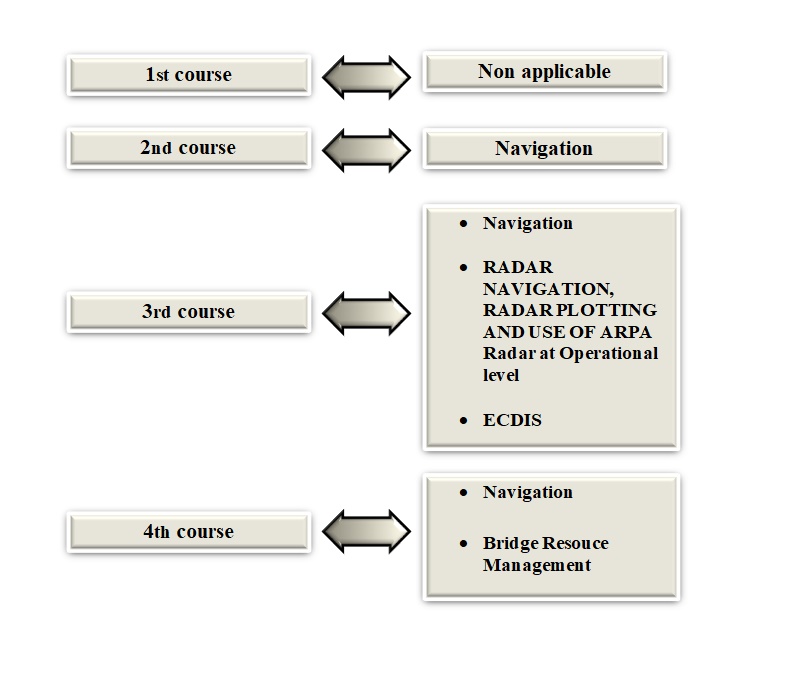


Fig. 6. The principle model of simulators’ exercises distribution

within the marine navigations studies

Besides this, students continue studying navigation subject, and in general try out much more of the navigational simulators functions and explore some new both positive and negative aspects. But as far as so serious and necessary subjects are discussed it is naturally that students start thinking of spending as much time on the navigational simulators early as possible. Though this may appear quite strange, but it is possible only during the courses or lectures that do have pretty complicated and overloaded programs, and there is no possibility for additional „on your own“ practices provided.

Moreover, the additional refresh courses for side people that are organised and held in the same auditoria do reduce the amount time that may be used for the purposes of students’ practicing. It is obvious that in order to fulfil all the needs great financial and material resources are required, but all the respondents and especially the 3rd course students are assured that additional (free) hours for the practicing are really necessary.

**Conclusions**

Maritime students, studying management psychology and other study subjects at the Lithuanian Maritime Academy and performing professional activities at sea, get to know the basics and issues of maritime leadership. Those studying seafarers point out that it is impossible to develop a maritime leader in the absence of an obvious application of leadership principles in seafarer training institutions. Noticeably, the aforementioned problem has been closely related to the motivation of students to choose and especially to stay in studying maritime business sciences in the last decade.

In general, currently, the preparation of personality for work at sea in terms of self-realization and more universal development of creative potential is already partial offset by the political integration of maritime leadership into shipping and compulsory training of seafarers to facilitate the solution of complex socio-technological problems on board.

Despite the fact the majority of studying marine navigation students are mostly satisfied with their educational process they do still find some imperfections in the current navigational simulators usage methods. They do think that students must get acquainted with the basic ship handling functions presented in the conning console and general interface of the simulators while completing the tasks like maintaining a proper watchkeeping, learning the helmsman’s duties, chart plotting, etc. as early as it is possible.

Besides this, the program of the ship handling technical issues subject strongly requires some practical classes on the simulators, as this would allow students to try out all the functions, deal with all the necessary settings and don’t waste the time provided for practical passing of various routes during the navigation lectures for long preparations when students are first time trying out any technical issue and finding out how to set it up so as it works correctly.

When at the same moment most of the respondents are assured that there isn’t enough time provided for these practical classes, and sometimes only one lecture is provided for performing a passage of any route during navigation lectures.

Almost all the respondent’s do support the idea of providing more lectures for these practices and also recommend combining a minimum of two lectures in a row so as to have enough time not only to prepare and perform the passage but also to discuss it after.

A great part of the respondents even declared a wish to attend additional classes of the facultative format (if only such an exist) as the benefits of the use of the navigational simulators are obvious, are regarded quite positively and even the simulators in general do intrigue the 1st course students.

**References**

1. Baldauf M, Schröder-Hinrichs JU, Benedict K, Tuschling G. 2014. Simulation-based team training for maritime safety and security. J Mar Res9 (3): 3–10;
2. Benedict K, Kirchhoff M, Gluch M, Fischer S, Baldauf M. 2009. Manoeuvring simulation on the bridge for predicting motion of real ships and as training tool in ship handling simulators. TransNav: Int J Mar Navig Saf Sea Transp3 (1): 25–30;
3. Castells Sanabra M, Ordás Jiménez S, Barahona Fuentes C, Moncunill Marimon J, Muyskens C, Hofman W, Skorokhodov S. 2015. Model course to revalidate deck officers’ competences using simulators. WMU J Marit Aff:*1*–23;
4. Hanzu-Pazara R, Barsan E, Arsenie P, Chiotoroiu L, Raicu G. 2008. Reducing of maritime accidents caused by human factors using simulators in training process*.*Journal of Maritime Research 5(1): 3–18;
5. Hontvedt M, Arnseth H.C. 2013. On the bridge to learn: analysing the social organization of nautical instruction in a ship simulator. Int J Comput-Support Collab Learn8 (1): 89–112;
6. International Maritime Organization (IMO). 2017. International Convention on Standards of Training, Certification and Watchkeeping for Seafarers STCW including 2010 Manila Amendments, 2017 Edition ID938E. ISBN: 978-92-801-1635-9;
7. International Maritime Organization (IMO). 2017. Model Course 1.07. Radar navigation at operational level. Radar navigation, radar plotting and use of ARPA. ISBN: 978-92-801-1648-9;
8. International Maritime Organization (IMO). 2012. Model course 1.27. ECDIS Operational use of Electronic Chart Display and Information Systems (ECDIS). ISBN 978-92-801-6112-1;
9. International Maritime Organization (IMO). 2017. Model Course 6.09. Training Course for Instructors. Course. ISBN 978-92-801-1678-6;
10. Kobayashi H. 2005. Use of simulators in assessment, learning and teaching of mariners. WMU J Marit Aff 4 (1): 57–75;
11. Mohović R, Rudan I, Mohović D. 2012. Problems during simulator training in ship handling education. Pomorstvo: Sci J Marit Res 26 (1): 191–199;
12. Pelletier S. 2006. The role of navigation simulator technology in marine pilotage training / International Maritime Pilots Association 18th Congress., 1 – 4. Havana, Cuba;
13. Stan LC, Buzbuchi N. 2012. Considerations on maritime watch keeping officers’ vocational training. TransNav: Int J Marine Navig Saf Sea Transp6 (4): 533–536;
14. Salman, Al-Kabie Mazin Da Wood. 2013. The importance of using ship bridge simulation training to enhance the competency of masters and watch-officers : a case study of the Iraqi dredging fleet (2013). World Maritime University Dissertations. 82. [online cit. 2018-03-22]. Available from: <http://commons.wmu.se/all_dissertations/82>;
15. Tomczak A., Zalewski P. 2007. Analysis of navigational safety by means of simulation studies in the Marine Traffic Engineering Centre in Szczecin. MTE Conference Swinoujscie, 2007;
16. TRANSAS Marine Ltd. Training to STCW and Beyond. [online cit. 2018-03-18]. Available from: [http://www.transas.com/products/simulation/ navigational-simulators/NTPROSTCW#description](http://www.transas.com/products/simulation/%20navigational-simulators/NTPROSTCW#description);
17. TRANSAS Marine Ltd. 2018. Transas Navigational Simulators brochure.
18. Jovaiša L. 2001. Ugdymo mokslas ir praktika. Vilnius: Agora.
19. Lileikis S. 2014. Supporting maritime leadership in regard to moral authority on board and pre-self-development of seafarers as psycho-educational factors improving their selfconfidence at work. Maritime Transport and Engineering. 3 (1), 16–23.
20. Lileikis S. 2014. Jūrų lyderystė – iššūkis mokslui ir praktikai: valdymo psichologijos strateginė perspektyva. Journal of Management, 2 (25), 43-49.