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Article

Sustainable Shipping Required Sustainable Education and Training

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Abstract: The Blue Economy is a multi-layered economy in its content, although it only reflects the relation between sea and business. Shipping is an essential part of it and with the largest market share. Sustainable shipping, however, requires the sustainability of a number of components that make it up. One of them, and perhaps the most important, is the training of marine personnel and in particular ship's crew. Education is a key process that does not complete with graduation in the educational institution, as the foundations of professional training are laid there. An increasingly common practice by shipping companies is postgraduate training as ship officer seminars and refresher courses. This article investigates the results of surveys and interviews with officers and engineers from various shipping companies regarding the effectiveness of this type of training. A detailed analysis of strengths and weaknesses in the context of the principles of andragogy science and the Lifelong Learning strategy is in order. The article summarizes author's experience from their sea practice as officers of the watch and Masters on board of merchant vessels and participants in postgraduate education and training as well.

Keywords: lifelong learning; maritime specialized training; seafarer education; adult learning

1. Introduction

Education and training of seafarers is subject to the requirements of the International Convention on Standards of Training, Certification and Watchkeeping of 1978 [1]. The Convention sets the rules for providing initial maritime education and subsequent postgraduate training. The International Maritime Organization (IMO) gives rights to national maritime administrations to organize qualification activities according to local conditions and necessities. These activities also follow international standards, which have become them "Lifelong Learning."

Another feature of the post-academic training of seafarers is the high professional and practical orientated training. This factor in the organization of the qualification activity confronts teachers and instructors with the serious test of being adequately prepared according to the level of the audience.

Introduced in the late 1990s, the International Safety Management Code obliges shipowners to take care to maintain the knowledge and skills of their personnel at a high professional level. Specific paragraphs of the code, paragraph 6.4 and paragraph 6.5, require the shipping company - the owner of the ship - to establish and maintain procedures to ensure that training is provided to personnel in the interests of the safe operation of ships [2]. It is precisely in accordance with this requirement of the Code that shipping companies have made it a practice to organize annual seminars with their deck and engine officers lasting two to three days. The task of these seminars is to present to the participants up-to-date information related to the safe work of shore personnel and ship's crew.

The maritime industry, as a segment of the global economy, is a constantly shifting and evolving sector. Such fluidity makes the knowledge and skills of maritime personnel critically important for the industry's progress. The contemporary conditions for career progression of seafarers demand continuous learning to keep their knowledge and skills aligned with the frequently changing and escalating requirements of the IMO. Based on this, Angelica Sogor evaluates the modern conditions for the career advancement of ship officers as dynamic and unpredictable [3].

Consequently, the role of the company to which they are formally affiliated takes on new importance. It becomes essential for applying the principles of the "Lifelong Learning" strategy to achieve strategic economic goals. The benefits for the trainees in this process include broadening their knowledge spectrum. It also boosts their competence in direct work responsibilities, improves the quality of their labor, and supports their career advancement. These objectives align with the European Commission's 2000 Memorandum [4]. They are later reflected in the European Parliament and Council of Europe's 2006 decision on the "Action program in the field of lifelong learning" [5].

Some authors draw connections between education and the physical and mental health of individuals. Hoggan-Kloubert et al. and Walters explore the role of educated individuals within the state's social system. According to them, continuous human development through education acts as a shield against social exclusion [6,7].

Researchers, as well as the trainees themselves, emphasize a crucial factor for success—the level of competence of the instructors, their personal and professional qualities, and their ability to captivate the audience. In their article "Maritime and Other Key Transport Issues for the Future – Education and Training in the Context of Lifelong Learning," Jeannette Edlera and Virginia Infanteb present their research in the field of maritime education [8]. The authors highlight that the personality of the trainer or instructor is a factor that affects the basic perceptions of learners of all ages. These conclusions remain relevant over time and are universally applicable.

In the context of a series of projects led by the European Commission under the "Blue Economy" initiative, the Directorate-General for Maritime Affairs and Fisheries (DG-MARE) formed a team of experts. They were tasked with outlining the training framework for the initiative. As a result of their work and as a summary of the projects realized under the "Blue Economy," a book was published. It showcases best practices and insightful stories from the training and qualification of maritime specialists [9]. The book emphasizes positive practices in adult education within the maritime sector, clearly underscoring the importance of continuing post-academic learning.

Similarly, Mohović's reflections take a comparable direction, though he focuses on a crucial issue for shipping—the study, interpretation, and application of the rules for ship collisions [10]. The author elevates this issue as a priority and argues for its significance for all ship officers, regardless of their practical experience. According to Mohović, solving the problem of improper rule application relies on continuous education. This should employ modern methods and tools, incorporating real-life scenarios. The author believes that remote learning for experienced professionals in the form of qualification activities is feasible. This support for distance learning for adults is echoed by Pavic et al. and A. Tsekhovoy [11,12], although their research focuses on academic education. In his publication, A. Tsekhovoy presents a theory and practice of knowledge management, clearly distinguishing between the categories of "data," "information," "knowledge," and "wisdom." He thus outlines the long journey a person must take through the awareness of each category, which, in practice, is achieved through continuous learning and improvement.

The maritime industry relies on well-trained officers and engineers, prepared to work in high-pressure environments and capable of handling complex, high-tech equipment. Training in the form of qualification activities is a voluntary act, yet it is clear to everyone that maintaining and updating one's knowledge allows every crew member to stay aligned with the trends that impact their career [13]. The practice, adopted by nearly all shipping companies, of organizing overview training seminars for their officers is a typical form of applying the "lifelong learning" strategy. Unfortunately, this activity is not a standardized training event under STCW-78, and the available statistics regarding its implementation are quite scarce. Information can only be found on the companies' websites, usually in the form of brief summary reports [14–16]. The Nautical Institute in London also periodically publishes short announcements about seminars that have already taken place, but they contain nothing more than organizational details (2012). The companies' considerations likely relate to the confidentiality of operational information. However, a global view of the maritime industry shows that, when it comes to education and qualification, the objectives are shared.

The goal of the present study is to analyze the organizational structure of post-academic training in the seminars conducted by shipping companies for ship officers, the content of the material

presented, the method of its delivery, the preparation of the lecturers, and their skills in pedagogical communication with the audience. Based on the study, the strengths and weaknesses of the "ship officer seminar" event are highlighted from the perspective of educational methodology.

Achieving the set objective requires solving the following tasks:

- Developing an appropriate toolkit for gathering empirical information;
- Finding a suitable sample of seminars and participants to be studied;
- Collecting empirical data;
- Processing and analyzing the empirical information;
- Extracting applied perspectives for the purpose of fostering training collaboration between shipping companies and maritime educational institutions.

2. Materials and Methods

The article presents results from seminars for ship officers from the fleet of the German company Ahrenkiel Shipmanagement GmbH & Co.KG, the Bulgarian offshore company Bon Marine International, and the shipping companies Bernhard Schulte Shipmanagement and K-Line, held between 2014 and 2023. The results of seminars conducted in Bulgaria, Romania, and the Philippines were analyzed. The study examined the organization, the way the seminars were conducted, the topics presented, the conclusions made, and the results achieved from four seminars in Varna, one in Constanta, and one in Manila. Each of the above seminars included between 25 and 40 participants. The seminars in Varna were organized only for Bulgarian officers and engineers, in Constanta for Romanian, Croatian, and Bulgarian participants, and in Manila for Filipino participants. The topics discussed were usually similar and depended on the current legislative activity of the IMO or were based on pressing issues within each company. The seminars in Varna focused on the effects of implementing the Electronic Chart Display and Information System (ECDIS) in shipping, cases of incidents or near-misses in companies with similar ships, the introduction of the Ballast Water Management Convention, the implementation of emission control areas, and remainders for proper maintenance of the equipment. The seminar in Constanta was titled "Lessons to Be Learned" and covered issues such as the analysis of accidents and incidents involving ships from the fleet of Bernhard Schulte Shipmanagement. The seminar in Manila focused on ship security and teamwork. Usually, the organization of such a multinational event also seeks to achieve an economic benefit—the ship-owning company selects the seminar location near its crew recruitment offices to minimize costs. As face to face meetings were not an option during the years of the pandemic, all conducted seminars were held in meeting platforms such as Microsoft Teams and Skype.

For gathering empirical data in this study, the interview method was used. Out of a total of 215 participants across the six seminars, 198 were interviewed. Some of the questions that structured the analysis included:

- When did you receive information from the company about the seminar?
- Did you have prior knowledge of the seminar's content?
- Were the issues discussed during the seminar relevant to your shipboard practice?
- Did you have the opportunity to suggest additional topics for the seminar?
- How would you rate the instructors' presentation skills?
- Rate the usefulness of the seminar for your future work on a scale of 1 to 6.
- What would you improve in the organization and topics of the next seminar for company officers?

The method of comparative analysis was used to process the collected information. Data from previous seminars, stored in the safety management departments of each of the companies mentioned above, were used as the basis for analysis. The results were summarized using a comprehensive approach.

3. Results and Discussion

In modern shipping, the employment of multinational crews has become a widespread practice. The introduction of the ISM Code also aims at another goal—to create an environment where people

of different nationalities follow a unified standard for safe operations in a critical environment. When applying the code, the management of each shipping company, through seminars for their ship officers, strives to use these events to achieve several goals:

- reinforce company policies and standards;
- reintroduce forgotten good practices;
- announce impactful news and changes.

For many years, these seminars have been organized and conducted following a similar model. The company announces the time and schedule for the presentations. The organization considers the capacity and logistical capabilities of the shipowner's representative or the recruitment office in the respective country. If the recruitment center lacks capacity, an external conference hall is booked. All seafarers who are on shore leave are informed by phone and email one month prior about the details of the event and are asked to confirm their attendance.

Seminars typically last two or three days. The agenda topics usually summarize the company's activities and maritime practices or are aimed at activities to be introduced in the near future. The most commonly discussed topics include:

- Issues related to quality, safety of work at sea, security, and environmental protection;
- Current changes in international maritime conventions and codes;
- Technical matters, with a special focus on the technical implementation of international conventions;
- Leadership issues;
- Ship security;
- Cases of violations of international maritime rules, as well as breaches of the company's rules and policies;
- Equipment breakdown due to poor maintenance.

In the conducted interviews, participants highlighted two major problems in the organization of officer seminars—the selection of topics for discussion and the choice and preparedness of the speakers.

Regarding the topics selected for the agenda of the seminars studied, the interviewed participants highlighted the following weaknesses:

- The seminars are not planned well in advance, which is sometimes evident from the rushed organization.
- The process of selecting topics for the seminars often lacks proper planning. On one occasion despite meeting throughout the year, the quality committee in charge of organizing one event struggled to finalize a topic until the last minute. During the seminar, the company explained that they had aimed to find a fresh topic that had not been covered in previous events. This indecision led to a rushed selection process, highlighting an element of disorganization that delayed more practical preparations.
- Seminar participants are not given the opportunity to propose topics that they find relevant or important to the company's operations. Some interviewees suggested that organizers could conduct a preliminary survey to gather input from participants when creating the agenda. Others mentioned that while their company does ask for topic suggestions well in advance, the proposed topics are not always included in the final seminar program.

The analysis of the interviews reveals that participants were more critical of the preparedness of the speakers. Typically, employees from the company's departments are selected to present at the seminars. While these employees are often specialists in their respective fields, they are not always seamen and may lack practical experience at sea or service as officers. As a result, their presentations are shaped by their technical understanding of the subject but may not effectively communicate with a non-specialist audience, such as mariners, who require a different approach to grasp the material.

The following weaknesses were identified:

- Some presentations are prepared by employees who are not from the department that selected the topic, and it's often clear when the material has been created by someone without a maritime background, as the lack of practical, seafaring experience is evident in the content and presentation style.

- The same presentation is used in several consecutive seminars, which is a clear sign of a lack of preparation by the speaker.
- Certain speakers deliver their presentations in a monotonous manner, which affects the audience's ability to pay attention and be engaged over extended periods.
- Some speakers show a lack of experience in instructional roles and do not have the skills to effectively engage participants. This observation aligns with the proverb that a proficient captain or engineer does not automatically translate into an effective educator. Thus, the expertise and pedagogical skills of university lecturers could potentially address the instructional needs within shipping companies.
- Some presentations are not prepared by the presenting speaker. As a result, the speaker improvises and is forced to read from the slides or other available notes during the presentation. This in turn leaves a poor impression on the participants.
- During discussions, the speaker may neglect addressing specific participants to answer a posed question or, conversely, may overwhelm the audience by asking too many questions, forcing participants to respond in order to proceed with the presentation.
- Some presentations contain information that is unrelated to the main topic. In such instances, the speaker often lacks preparation to properly address this additional information, which becomes apparent to the participants.
- Some speakers speak very quietly and with unclear pronunciation, making it difficult for participants sitting in the back rows to understand them.
- There are cases where speakers present at a high academic level, which is appropriate for students but not for professional adults.
- Some presentations contain small fonts, which are not suitable for reading, especially by participants sitting in the back rows of the hall.
- During discussions, the speakers engage with only a small portion of the seminar participants, leaving others feeling isolated.
- When discussing a specific case from practice, the speakers sometimes fail to include quotations from international documents, resolutions, or IMO requirements to provide context for their explanation.
- The speakers do not clearly explain the participants' roles during the case discussions and what is expected from them.
- The prepared and presented cases are too lengthy. The speakers do not analyze the outcomes of the discussions held.
- Occasionally, speakers from the company take the opportunity to criticize participants for the overall subpar performance of the fleet. Meanwhile there is a notable absence of acknowledgment or commendation for the efforts exerted by the participants.
- Following the conclusion of the seminar, a summary of the presentations is not sent to individuals who were unable to attend.

While there are notable weaknesses in the training of ship officers during seminars, it is equally important to acknowledge the positive practices that exist and could be successfully implemented in other business sectors. These positive aspects are often viewed merely as supplementary elements within the event's agenda. However, they deserve to be emphasized as essential details that can enhance the overall effectiveness of training initiatives.

The following positives were identified:

- Seminars are structured to include scheduled break periods, during which refreshments and snacks are provided. These intervals serve to refresh participants and also to facilitate informal discussions and knowledge exchange among seafarers.
- On the closing night of the seminar, certain companies host events, such as cocktail parties or dinner gatherings, to which all participants and their families are invited. These occasions serve to develop a sense of community among attendees, with the idea to strengthen interpersonal connections. These events also acknowledge the importance of family support in the lives of seafarers. Such gatherings address the need for individuals to feel integrated and valued within a larger community. These social interactions can increase the overall morale and cohesion of the participants, thus enhancing their engagement with the organization.

- Presenters typically focus on topics that are highly relevant to the company's fleet operations, ensuring that the content is directly applicable to the professional responsibilities of the participants. Discussions involving vessels outside the company's fleet are avoided to maintain specificity and relevance.
- Participants from different departments, such as Navigation, Engineering, and Catering, are separated for discussions focused on topics relevant to their respective departments.

In order to build upon these positive practices, it is also necessary to ensure that the logistical arrangements and communication methods during the seminars align with the high standards expected within the maritime industry. By addressing the physical environment and maintaining a structured agenda, the overall experience for participants can be significantly enhanced.

The hall selected for the event must be suitably equipped to accommodate all participants, irrespective of their total number. To facilitate optimal engagement and comprehension, it may be necessary to employ supplementary equipment, such as audiovisual systems or projectors, ensuring that participants can clearly view the presentation slides and effectively hear the speakers' explanations.

It is crucial to strictly follow the schedule of the announced agenda. This will help maintain a high level of discipline that aligns with the discipline expected at sea. This structure provides a sense of order and predictability for participants. Moreover, it ensures that seafarers do not feel their rest time is being wasted. By respecting their time, the organization demonstrates its commitment to the well-being of its personnel.

To cultivate a sense of company spirit, speakers should communicate with seminar participants using a standardized language that is in line with the organization's regulations and requirements. This approach establishes clarity and consistency throughout the seminar. A primary objective of the seminar is to develop and cultivate a culture of safety within the work process.

Preliminary preparation is important and mandatory for both sides—speakers and participants. It is recommended that the speakers do not limit themselves to the material in the presentation but expand on the topic with examples from their own experience if such is available. This would elevate their professional authority among the participants. Establishing good communication between the speaker and the participants is beneficial, as it encourages the latter to actively participate in discussions. The speakers should strictly follow the schedule and make efficient use of the time allotted to them. A key condition in adult learning techniques is to provide participants with the opportunity to share their experiences during the presentation. Additionally, all participants should be supplied with additional paper or digital materials for the seminar.

Building on the significance of preparation and effective communication in enhancing seminar quality, it is essential to recognize the evolving landscape of maritime education. The integration of experienced maritime professionals into academic settings not only enriches the learning environment but also aligns practical expertise with pedagogical development. This shift signifies a broader commitment to improving the training and readiness of ship crews, thereby reinforcing the foundational principles established in effective seminar practices.

In the past fifteen years, maritime educational institutions have increasingly adopted the practice of involving ship captains and engineers who are willing to share their experience and begin an academic career. After a certain period of development, these educators also gain academic expertise, which, combined with their professional maritime qualifications, provides the best solution to the aforementioned issues. Close collaboration between maritime practice and education is a step in the right direction for reinforcing the strategy of "Lifelong Learning" as essential to addressing the readiness challenges of ship crews. A good option in this regard is the possibility of initiating joint projects within the framework of the Erasmus+ program, under the Executive Agency for Education, Audiovisual and Culture of the European Commission [17].

A notable example of successful lifelong learning implementation is the Naval Academy in Varna, where former ship captains have entered academia by obtaining PhDs and taking on teaching roles. These educators participate in the development of company-specific courses designed for small groups of participants, ensuring that the content is highly relevant to their needs. The lecturers' dual expertise—rooted in their maritime experience and pedagogical training—contributes to the

effectiveness of the courses, facilitating a deeper understanding and practical application of the subject matter. This synergy between professional experience and educational proficiency outlines the potential of lifelong learning initiatives in enhancing maritime training outcomes.

4. Conclusions

The article showcases the importance of lifelong learning in the sector of maritime education and training. Seminars for ship officers, are not formally standardized under STCW-78 but are integral for improving the knowledge and skills of the crews along with the industry's demands.

The need for collaboration between shipping companies and maritime educational institutions is emphasized. The integration of practical maritime expertise with academic methodologies can make training more relevant and effective.

The article highlights shortcomings in the way seminars are conducted, particularly - the selection and preparedness of the speakers. There is a disconnect when specialists without experience at sea present, which leads to disengagement with the participants. The article suggests that university lecturers and professional educators may provide a more structured and relevant training experience.

The seminars reflect key elements of the "Lifelong Learning" strategy and expose significant shortcomings in their organization. Effective training always relies on the relevance of topics and on the preparedness and pedagogical skills of the lecturers. Collaboration between shipping companies and maritime educational institutions is highly important as integrating practical maritime expertise with educational methodologies can enhance maritime trainings.

In this context, the "Lifelong Learning" strategy aims to ensure that trainees' knowledge and skills remain up to date through the use of various educational formats. Seminars can be evaluated from pedagogical, organizational, and technical perspectives. While the organizational and technical aspects are mainly the company's responsibility, the pedagogical dimension offers the opportunity for collaboration with educational institutions such as maritime academies. Employing the andragogical model of education, characterized by learner engagement and the application of experiential learning methods, can further improve training initiatives. Overall, encouraging participant involvement as well as implementing feedback mechanisms, and maintaining structured seminar planning will align training practices with the modern needs of the maritime sector. This model is characterized by:

- the leading role of the learners, with the educator encouraging independent actions;
- the primary methods in the training include experiments, discussions, situational methods based on the learners' personal experience;
- the readiness for learning is driven by internal needs rather than obligation;
- selectivity, individualization of training, and pragmatism;
- dominant independence and self-management of the learner;
- strong motivation and high success rates [18].

It is essential to maintain ongoing personal cooperation between company management and instructors from the training institutions. An important requirement for lifelong learning is that the results of the joint efforts of both sides should be systematized for further use in the form of a network of collaborative educational events. The stakeholders in this cooperation are many and diverse: cadets-in-training, newly recruited officers, and staff from shipping companies.

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References

1. IMO. Standard of Training, Certification and Watchkeeping – 1978, Consolidated edition. IMO, London, 2017.
2. IMO. International Safety Management Code, 2018 Edition. IMO, London, 2018.
3. Sogor, A. Lifelong learning: the 21st century skill to guide maritime training and development. Proceedings of the International Maritime Lecturers' Association (IMLA) 2021 Joint Conference with IMEC32, ICERS15 and INSLC21, 08 – 10 September 2021, World Maritime University, Malmö, Sweden.
4. Report on the Commission Memorandum on Lifelong Learning (SEC(2000)1832) – C5-0192/2001 – 2001/2088(COS)). Brussel.
5. Decision No 1720/2006/EC of the European Parliament and of the Council of 15 November 2006 establishing an action programme in the field of lifelong learning, 2006, Brussel.
6. Hoggan-Kloubert, T., Brandi, U., Hodge, S., Milana, M., Howard Morris, T. Social movements and lifelong learning – learning for change or learning for democracy? *International Journal of Lifelong Education*, 2024 43(5), p.p. 467–472.
7. Walters, S. Transformative sustainability education: reimagining our future: By Lange, Elizabeth, A. London and New York, Routledge, *International Journal of Lifelong Education*, 2023 42(5), p.p. 522–525.
8. Edler, J., Infante, V. Maritime and Other Key Transport Issues for the Future – Education and Training in the Context of Lifelong Learning. *Transaction of Maritime Science*, 2019 09, p.p. 84-98.
9. Bori, P. Collection of Best Practices and User Stories in Business and Education Cooperation in the Blue Economy. DGMARE, European Commission. Brussel, 2018.
10. Mohovic, D., Mohovic, R., Baric, M. Deficiencies in Learning COLREGs and New Teaching Methodology for Nautical Engineering Students and Seafarers in Lifelong Learning Programs. *The Journal of Navigation*, 2016 69, p.p. 765 – 776.
11. Pavić, V., Tominac Coslovich, S., Kostović N., Mišlov, I. Current Challenges in Professional Education and Training of Seafarers at Management Levels on Oil Tankers. *The International Journal on Marine Navigation and Safety of Sea Transportation*, 2023 vol. 17, 3, September, p.p. 695 – 700.
12. Tsekhovoy, A., Zholtayeva, A., Stepanov, A. The role of knowledge management in organizational development. *Revista ESPACIOS*, 2019 vol. 40, 25.
13. Toriia, T., Epikhin, A., Panchenko, S., Modina, M. Modern educational trends in the maritime industry. *SHS Web of Conferences* 164, 00060, Volgograd, Russia, December 19-21, 2022.
14. Tamar Fleet officer's Seminar. Available online: <https://tamarshipman.com/tamar-fleet-officers-seminar/> (accessed on 03 October 2024).
15. Small steps lead to great heights! Available online: https://www.klsmindia.com/KLSM_19A_Seminar_held_in_Mumbai_on_9_10_July_2019.html (accessed on 03 October 2024).
16. Schulte, A. First Senior Fleet Officer Meeting in Hamburg, The Crow's Nest, July 2007. Available online: [https://www.tsm-shipmanagement.com/pdf/2.the_crows_nest_issue_0707 .pdf](https://www.tsm-shipmanagement.com/pdf/2.the_crows_nest_issue_0707.pdf). (accessed on 03 October 2024).
17. Education, Audiovisual and Culture Executive Agency, (2024). Erasmus+ URL: https://www.eacea.ec.europa.eu/grants/2021-2027_en, (accessed on 10.10.2024).
18. Loeng, S., Omwami, E. Various ways of understanding the concept of andragogy. *Cogent Education*, 2018 5(1). <https://doi.org/10.1080/2331186X.2018.1496643>, (accessed on 10.10.2024).

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