

A Critical Review of “Future of maritime education and training: blending hard and soft skills” by Geada Borda de Água et al.

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Abstract:

This review evaluates an article entitled “Future of maritime education and training: blending hard and soft skills” by Pedro Manuel Geada Borda de Água, Armindo Dias da Silva Frias, Manuel de Jesus Carrasqueira and José Manuel Modas published in the Scientific Journal of Maritime Research. The original article focuses on the integration of 21st century professional skills as soft skills into maritime education and training programmes, while proposing knowledge triangle concept and double-loop learning method to overcome the future challenges of the programmes. While this article is articulated in a thorough and comprehensive review of authors’ opinions, there is not a clear categorization of “soft skills” provided, which clearly encompasses 21st century skills referred in this article. Additionally, this review discusses on some suggestions to improve the review on MHEIs, the knowledge triangle, double-loop learning methods and connection between them comprehensively. Furthermore, the proposal of authors on MET programme based on MarLEM project, which could be improved by adding more variety into the programme as proposed in this review.

Keywords: maritime education and training; soft skills; keyword three (3-7 words/phrases).

Introduction

Globalisation has affected many aspects of human life as individuals and as part of the community. To survive in the modern world, people can not survive just on the basis of their knowledge only. They must develop the 21-st century skills such as problem-solving, creativity, innovation, metacognition, and communication (Rahman, 2019). In the article “Future of maritime education and training: blending hard and soft skills,” Pedro Manuel Geada Borda de Água, Armindo Dias da Silva Frias, Manuel de Jesus Carrasqueira and José Manuel Modas Daniel tried to raise the awareness of 21-st century skills as the challenges that faced by maritime education and training field. Due to globalisation, the importance of multicultural skills and the emergence of new technologies in the maritime industry has created a massive gap with the current skills possessed by the professionals. Therefore, the authors’ primary attention is to develop the skills of the maritime industry’s professionals for the 21st-century and fill the gap.

Summary of Article

The authors present three main points regarding maritime education and training that play roles as the main focuses of the research. The first one shows the industry’s existing challenges in the 21st-century, where globalisation has reached almost the entire world. This globalisation has caused significant changes in the nature of economies and societies for many industries, including the maritime industry. The rapid



increase of interconnection between people by globalisation raises the cultural gaps in intercultural relationships, which could cause issues for professionals in the maritime industry. Consequently, the implementation of 21st-century skills as part of education and training for maritime industry professionals to assist them in fulfilling the industry's needs and overcoming these existing challenges and future ones is necessary, which is emphasised by the author as the second point of this research.

In this research, the authors concluded that three stakeholders in the maritime industry, including the industry that needs the professionals, the authorities that regulate this industry, and the academia that develops the industry's training and education. Hence, based on the concept of the Knowledge Triangle, the involvement and cooperation of these stakeholders are needed to provide the roadmap in filling the gaps in maritime education and training programmes and address the challenges in the maritime industry. The learning methods in maritime education and training programmes could also be enhanced by applying a double-loop learning process. It could provide the programmes with new and effective learning methods in transferring the social skills, not only technical skills.

In the final section of this study, based on the EU MarLEM project, the authors promote a master's degree programme in logistics, engineering and management, which is meant to produce maritime industry professionals who match the industry's needs. While more development and study are needed, the authors argue that this programme already represents a first step toward forming marine professionals in the 21st-century.

Outline of Review

The reviewer has some concerns regarding the article, which could be used to improve the quality of this article. Therefore, the reviewer divided the concerns into three focuses. The first focus will discuss more the challenges identified for maritime education and training in fulfilling the needs of the maritime industry, where soft skills are as important as hard skills in current practice – then blending both of those skills through learning activities to produce maritime professionals equipped with 21st-century skills to meet the industry's requirements. The second focus will discuss solutions proposed by the authors to overcome the challenges, encompassing the knowledge triangle concept and the double-loop learning model. The knowledge triangle concept will become the foundation of curriculum design for future maritime professionals, particularly in Maritime Higher Education Institutions (MHEIs). Moreover, by implementing a double-loop learning model into teaching methods to engage in critical thinking, decision-making and leadership skills as parts of soft skills. Furthermore, the last focus will discuss the suggested master's degree program by the author based on the MarLEM project in logistics, engineering and management.

Determined Challenges for Maritime Education and Training

For this focus, the reviewer entirely agrees with the challenges for maritime education and training as laid out by the authors in the article. In the era of globalisation, where the interaction rate between people increases rapidly, the industry's demand for the workforce, including the maritime industry, has widened in the scope of workers' skills. Alongside skills in seafaring and shipping technology which are categorised as technical or hard skills, soft skills are needed in the 21st-century to solve the complex problems inside the maritime industry. However, seafarers and shore-based personnel who are considered part of maritime professionals lack these important skills in reality. The prior conducted survey, which was part of the Skillsea project (EU-funded) and involved more than 1,600 maritime professionals (seafarers and shore-based personnel), showed the result that there is a lack of skills. Especially in creative thinking, problem-solving, digital technologies such as cyber-security, teamwork and interpersonal relations, and maritime law, particularly seafarers (Chala & Bouranta, 2021).

Moreover, the reviewer understands that one of the objectives is to raise awareness of the educational and training challenges within the maritime industry, as stated by the authors. While it is true that the challenges have been explained throughout the article, however, the explanation revolves around the need to develop some "essential skills" for maritime professionals in 21st-century. These essential skills



are discussed by using various terms such as “people skills” on page 346, “social skills” on page 348, “critical thinking skills” on page 349, “management skills” on page 351, and “multicultural skills” on page 352, which in the reviewer’s opinion could confuse the readers, especially the ones who are not exposed to the context of soft skills before. The authors should holistically elaborate on the soft skills, covering all the terms mentioned above and could guide readers in defining various critical soft skills needed in the maritime industry. According to Maniscalco (2010, as cited in Chala & Bouranta, 2021), soft skills as a “cluster of qualities, habits, personality traits, attitudes and social graces” which revolves around basic categories such as integrity, communication, courtesy, responsibility, social skills, positive attitude, professionalism, flexibility, teamwork and work ethic (Robles, 2012, as cited in Chala & Bouranta, 2021). Soft skills give hard skills the required flexibility to develop and adapt to the changing circumstances in the industry, answering the question of why they are essential since there has been a surge in demand for maritime professionals equipped with soft skills (Chala & Bouranta, 2021). The authors could elaborate more on this question of why soft skills are essential for maritime professionals and how soft skills possibly affect their performance, not only pointing out the importance of soft skills.

The authors also discussed the 21st-century skills where skills including collaboration, communication, digital literacy, citizenship, problem-solving, critical thinking, creativity and productivity are needed by professionals to enter the workforce (Voogt & Roblin, 2012, as cited in Van Laar et al., 2017). Then these skills are further discussed and categorised: (Leahy & Dolan, 2010, as cited in Van Laar et al., 2017):

- Ways of Thinking
 - creativity and innovation
 - critical thinking, problem-solving, and decision making
 - learning to learn & metacognition
- Ways of Working
 - communication
 - collaboration and teamwork
- Tools for Working
 - information literacy
 - information technology and communication literacy
- Living in the World
 - life and career
 - personal and social responsibility

From this categorisation, readers could see the integration of hard skills (technical skills) and soft skills within the scope of 21st-century skills. Therefore, Voogt argues that education needs to find a new balance between the pedagogical approaches that are considered to be useful in industry and those that are relevant due to the nature of knowledge society in 21st-century, including variety in learning activities, opportunities for learning at students’ own pace, collaborative work, problem-solving and student involvement in assessment (Voogt & Roblin, 2010)

Proposed Solutions to Challenges

The article proposes solutions that could address the challenges in developing 21st-century skills for maritime professionals, encompassing curriculum design at the higher education institutions in the maritime field that underpins the knowledge triangle and implementation of double-loop learning in learning methods, which are aligned with reviewer’s opinion as means to overcome arise challenges due to globalisation. The knowledge triangle concept has been used as the framework for innovation policies that emphasises a systemic correlation between research, education and innovation, especially for OECD (Organisation for Economic Co-operation and Development) and Europe countries (Unger & Polt, 2017). This concept illustrates a systemic approach in the development process of knowledge creation and innovation by linking the previously mentioned areas in tackling socio-economic challenges as the



consequences of following global trends affecting developed countries and emerging economies (Unger et al., 2020).

As stated accordingly by the authors, “the implementation of the knowledge triangle will imply the change of teaching methods and the rethinking of the university governance system as a whole” is true in the reviewer’s opinion. One of the significant changes in the university’s role as a higher education institution is implementing an “entrepreneurial university” for economic development, which in the article is not clearly expressed by the authors. This concept serves as the foundation of partnership between authorities, industry and academia (Unger & Polt, 2017). The direct contribution of universities in the form of knowledge transfer to society and/or economy becomes the attention since innovation research contributes to economic and industry growth (Lassnigg et al., 2017). This concept enhances the importance of maritime higher education institutions’ role in developing the maritime industry, which must be followed by strengthening the learning experience during learning activities.

Hence, it brings us to the second idea related to the implementation of double-loop learning in learning activities, which is also aligned with the reviewer’s opinion. Created by Chris Argyris, the double-loop learning concept discusses reformulating the thought process to develop critical thinking and foster innovation, as expressed by the authors. It is an educational concept and process that involves teaching students to question their assumptions and beliefs about an objective. Therefore, it could change the objective itself rather than changing the methods to obtain the objective as defined in the single-loop learning concept (Cartwright, 2002). Furthermore, the case method and use of simulation as the learning methods that could achieve double-loop learning in play. However, the way the authors presented these ideas could suggest to the readers that these two learning methods are conducted separately.

Argyris (1980, as cited in Pérez-Bennett et al., 2014) argues that “the case method, as traditionally implemented, may hinder double-loop learning by, among other issues, controlling the purposes of learning, promoting ideas that are of interest to the instructor but not necessarily to the student, conforming to some predefined script, maintaining control of interactions to avoid the discussion veering off toward unwanted paths, behaving to maximise their teacher evaluations, and establishing fuzzy assessments – explicitly or not – of students’ opinions” (p. 1803).

The case exposed students to problems that started with “individual study, group discussion, and then a class discussion”, as depicted in the article, in which the end, they will receive feedback. The feedback comes in criticism or a course of action from peers and teachers, which could differ from reality. This limited feedback could refine an action plan but not provide a good ground for learning. As the authors stated, the case studies allow students to exercise their critical thinking skills (analytical skills) but do not allow students to exercise their decision-making and leadership skills. Consequently, complementing a case study with a simulation could improve students’ understanding of the impact management decisions have on the complex system (Graham et al., 1992; Schwaninger & Jones, 2000, as cited in Pérez-Bennett et al., 2014). A simulation gives students a more realistic perspective in making decisions by allowing them to test their action plans and harness the complexity behind complex problems, then obtain close-to-reality results (Borda de Água et al., 2020). Even though the proposed idea Case+Sim learning method is unusual, this methodology closes the learning feedback loop of the case study more efficiently (Goodman & Wood, 2004). Combining these two methods could complement the strength of traditional case studies in developing students’ analytical skills and enhancing their decision-making process (Pérez-Bennett et al., 2014).

Proposed Programme Based on EU MarLEM Project

There are some concerns about this focus based on the reviewer’s opinion. The article suggested an education programme at the master’s degree level based on the EU MarLEM project, which intended to develop “logistics, engineering and management competencies for 21st-century maritime leaders and professionals”. Moreover, the field programme is related to maritime logistics, with its subjects organized into three groups: management and maritime logistics skills, regulatory and compliance skills, and people skills. The reviewer agrees that maritime logistics is essential in the shipping industry and requires further



development continuously through education and training to meet the industry's demand. However, maritime education and training (MET) could not be limited to subjects related to maritime logistics only. The reviewer argues that this MarLEM project that becomes the foundation of this proposed programme is aimed to "accelerate the implementation of the EU Maritime Policy and the sustainable development of the blue economy across Europe" (Grupoqualiseg, n.d., para. 2). It suggested that this programme is designed to fulfil the needs of the Europe maritime industry while focusing on geographic, socio-economic and infrastructure conditions in Europe so MET Higher Education Institutions, mainly European maritime universities, can adopt it (Grupoqualiseg, n.d.) rather than MET on the global scale. According to Prylipko (2016), "Maritime Education and Training is a pathway to science and a requirement for maritime advancement in a broader context", which serves as an essential element in ensuring the growth and sustainability of the maritime industry. In practice, it provides knowledge and skills about the shipping industry and related activities valuables at the management institution level (Boonadir et al., 2020). Therefore, limiting the scope of the curriculum to a single programme would be against the authors' objectives, as expressed in the article, to develop professionals in the maritime industry equipped with the 21st-century skills that meet the requirement of the maritime industry and could overcome the complex challenges.

Furthermore, in the reviewer's opinion, it could be better if this programme could be separated into different specialisations with their focus study that could respond to the real needs of the maritime industry, for example, the maritime affairs postgraduate programme at master's degree level that consisted of seven available specialisations at World Maritime University (WMU). This postgraduate programme is designed to fill the shortage of well-qualified and highly educated maritime professionals in maritime and ocean fields (WMU, 2021). Even though there is no syllabus for people skills like in the suggested maritime logistic programme, the development of those skills is already integrated into the education process through applied learning methods so that students will obtain essential soft skills such as leadership skills on graduation day (Horck, 2010).

Some extensive capacity-building packaged in a one-year programme which carries European Credits (ECTS) or executive and professional development courses (EPDCs) or education for professional excellence (EPEX) programme through distance learning are also available and could be chosen by existing maritime professionals. They could adjust to their needs to upgrade their capabilities on a wide range of topics related to maritime activities (WMU, 2021), which in the reviewer's opinion, could probably provide more alternatives in realising the industry-need maritime professionals. In EPEX, for example, where participants could engage in interactive sessions with a panel of high experts to discuss current practices in the maritime industry or participate in a simulation during meetings at an international organisation, it could enhance the implementation of double-loop learning in the learning process for professionals' skills development (WMU, 2021). Besides the maritime professionals in administrative or regulatory tasks, it could also benefit seafarers as the maritime industry's key drivers to simultaneously progress during the 21st-century (Lušić et al., 2019, as cited in Shahbakhsh et al., 2021). Some seafarers started their professional careers in seafaring in its practice by building up their knowledge and skills through experiences obtained from sea service and specialised training courses based on life learning concepts (Čampara et al., 2017). It causes that mostly experienced seafarers who have taken advantage of an alternative system to obtain the required qualification do not intend to pursue higher education in their professional careers. Based on the survey that was carried out by interviewing 154 marine engineers with different sea service, educational level, and rank in Croatia shows that 46% or nearly half of them do not intend to continue with further higher education (Čampara et al., 2017), which suggested the weakness of proposed maritime logistic programme at master's degree level.

Conclusion

It is respectfully considered by the authors that there should be minor revision to the article based on the provided critique in the paper. The reviewer agrees with the ideas expressed by the authors in the first and second focuses. However, the gap found in both of those focuses is how the authors present their



idea. They discussed the importance of soft skills without holistically explaining the soft skills. They applied too many “skill terms”, including in soft skill categories, and then straight to the discussion about 21st-century skills. In the reviewer’s opinion, this structure could confuse the readers and make it difficult to engage in the discussion. Then in the second focus, the knowledge triangle is presented in a good structure; it could be improved by adding another concept relating to the knowledge triangle that would present a more comprehensive explanation of the connection between MHEIs and the knowledge triangle as well as with the double-loop learning model where authors presented both teaching methods in separated concepts, which combination of both will provide more effective methodology in applying double-loop learning. The gaps in the last focus related to subject content in the proposed programme, which could provide more variety in MET context not limited to maritime logistics and be delivered in different methods. The reviewer has provided another example of an education programme that could be a suggestion for the authors as explained previously.

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Conflict of Interest

The author of this review was a student at World Maritime University when this article was written.

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