The 23nd IAMUC
samk
Helsinki, 19-20 Oct 2023

Proceedings of the
International Association of Maritime Universities Conference

Incorporating the gender perspective in teaching: the case of Barcelona School of Nautical Studies

Claudia Barahona-Fuentes [1]*, Marcella Castells-Sanabra [1] and Momoko Kitada [2]

[1] *Barcelona School of Nautical Studies - Universitat Politècnica de Catalunya, Spain*
[2] *World Maritime University, Sweden*
** Corresponding author: claudia.barahona@upc.edu; Tel.: +34-93-401-7919.*

Abstract: The maritime sector is strongly legalized owing to a great number of necessary international conventions. MET is also affected by numerous regulations and by a teaching standardization through the STCW and IMO model courses. In addition, MET suffers the extra pressure of different types of international and national audits, which may make the implementation of regulations rather rigid. Traditionally, the implementation of legislation has followed top-down approaches but this paper shows that the combination of both top-down and bottom-up approaches becomes an efficient method to implement objectives and regulations while fostering an increased participation and active involvement of practitioners to better achieve goals. This combination of approaches, with a special emphasis on bottom-up ones, also constitutes a good opportunity for METIs to respond to the need of educating Global Maritime Professionals (GMPs) and to mainstream gender in teaching. This paper illustrates an example of this combined implementation methods through an innovation project to mainstream gender in teaching conducted by Barcelona School of Nautical Studies (FNB-UPC). The initiative described not only empowered MET teachers at FNB-UPC to transform their teaching practices but also served to build a sense of community by allowing them to work jointly to bridge the gender gap in maritime education.

Keywords: gender mainstreaming; Maritime Education and Training (MET); legislation for educational practices; bottom-up approach; Education of Global Maritime Professionals

1. Introduction

Maritime Education and Training (MET) has been recognized as a vocational discipline in formal education around the world for many years. However, thanks to international legislation efforts, there has been a gradual transformation of national MET systems towards a more university competence-based education going beyond the acquisition of specific vocational skills (Manuel, 2017). Since the adoption of the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978, as amended, and the development of the International Maritime Organization (IMO) Model Courses, Maritime Education and Training Institutions (METIs) have been following these standards guided by their national authorities which implement the STCW Code in their training schemes for seafarers. The compliance with STCW at national level is regularly being monitored and evaluated through international and national audits. As a result, the curriculum development and delivery in MET tend to be rigid and usually follow a top-down approach. While this seems the safest way to comply with the requirements of STCW, the adaptation of modern innovative pedagogies may be challenging.

Indeed, MET is currently being criticized for not meeting the industry's changing needs (Scanlan et al., 2022). The maritime industry is facing new challenges, such as automation and digitalization, decarbonization, and occupational safety and health. MET experts are aware of integrating emerging topics in teaching and learning, however, updating only the contents in MET is insufficient. It is important to consider not only what to teach but how to teach it. Nonetheless, so far, the focus in the MET domain has been placed on the Knowledge, Understanding and Proficiency (KUP) in the STCW rather than on innovative methodologies for

a better acquisition of this knowledge. Increasingly, the interdisciplinary nature of maritime subjects requires the skills to organize and coordinate various areas of knowledge in the maritime context rather than adding more training and overloading seafarers. This point was addressed in the Principles of the Comprehensive Review of the STCW Convention and Code during the 9th session of the Human Element, Training and Watchkeeping (HTW) Sub-Committee at IMO[1].

In the light of the above, motivating MET teachers as active practitioners to innovate in their teaching and to adapt to new changes is an important strategy to enhance the training of Global Maritime Professionals (GMPs). This paper presents a case study in Barcelona School of Nautical Studies (FNB-UPC) where, through an innovation teaching project, MET teachers were encouraged to incorporate the gender perspective in their teaching. The examined case demonstrates how the combination of top-down and bottom-up approaches together with the incorporation of innovative teaching pedagogies was found to be an effective way to implement gender legislation. The paper begins with some initiatives on gender equality in MET, followed by a detailed explanation of this case study with key findings and conclusions.

2. Implementing the gender equality agenda in MET

The last decades have seen an increase of attention to women's empowerment and the promotion of gender equality worldwide. Many influential international organizations have contributed to addressing these issues and so raise the women's profile to advance towards gender equality. An example of this is found in the United Nations commitment with initiatives such as the United Nations Decade for Women (1986-1976), which was followed by the Millennium Development Goal 3 (2000-2015) and the Sustainable Development Goal 5 (2015-2030). In the maritime sector, IMO, one of the UN specialized agencies, launched the IMO's gender program under the slogan 'Training-Visibility-Recognition' in 1988 (Tansey, 2015). Subsequently, in 1989, within the framework of maritime development, and through its Women in Development Programme (WID), which includes a strategy on the Integration of Women in the Maritime Sector (IWMS), IMO promoted women's participation and encouraged its Member States to offer women equal access opportunities to maritime education and training. Furthermore, through its gender and capacity-building program, IMO developed formal regional associations for women in the maritime sector, the so-called Women in Maritime Associations (WIMAs), to help women overcome institutional barriers and gender bias when entering the maritime industry. At present, IMO is actively engaged to help its Member States achieve the UN 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs). With its Women in Maritime programme, IMO is working towards Goal 5 through a number of gender-focused actions supporting the participation of women in maritime jobs both at sea and ashore. All these initiatives are added to the numerous international regulations in the strongly legalized maritime sector, which, traditionally, have followed top-down approaches for their implementation. However, there have already been some successful bottom-up approaches to implement the gender agenda such as IMO's WIMAs, which work as active agents to advance towards a global gender equality or the Participatory Gender Audit methodology developed by the International Labour Organization (ILO), which establishes communication between various levels of the organizational hierarchy. Another example of these combined methods for implementing gender legislation is the case study of Barcelona School of Nautical Studies, which is described in detail in section 3 below.

Undoubtedly, one way to address gender equality is through education. In this sense, the role of METIs becomes key as different authors illustrate. According to Boström Cars & Österman (2015), MET is decisive in training more gender- and culture-sensitive seafarers, and MET institutions are key agents to transmit societal values. In line with this, different authors draw their attention to the importance of including the gender perspective in the maritime curriculum (Barahona-Fuentes et al., 2019; Boström Cars & Österman, 2015; Horck, 2010; Walker et al., 2003). Another recent research project on Gender Equality and Cultural Awareness in Maritime Education and Training (GECAMET) (Dragomir, 2018) also examines diverse leadership and coaching techniques practiced by MET institutions to promote gender equality and cultural awareness and recognizes the significant role of METIs to increase and enhance gender awareness in their curriculum and instruction. In line with this, the case study of Barcelona School of Nautical Studies illustrates how the incorporation of gender mainstreaming in teaching brings about positive outcomes for advancement towards gender equality in MET.

---

[1] See Paragraph 16 of Annex 3 in HTW9/WP.9

3. Mainstreaming gender in teaching: the case of Barcelona School of Nautical Studies

3.1. Context

Barcelona School of Nautical Studies was one of the first members joining the International Association of Maritime Universities (IAMU), after its foundation in November 1999. The first MET institutions joining the IAMU shared a recognition of significance in MET in the rapid globalization of the international shipping arena. In line with this, Barcelona School of Nautical Studies provides solid scientific and technological training to future maritime professionals. The School promotes different maritime studies among male and female students alike; however, the remarkable gender gap in Science, Technology, Engineering and Mathematics (STEM) disciplines is even more severe in the area of nautical, marine and naval engineering. In the 2019-2020 academic year, of all the students enrolled in the Spanish university system (first- and second-cycle and bachelor's degrees), 55.7% were women. By field, the highest percentage of women enrolled in the university system was in health sciences (71.4%), followed by arts and humanities (62.2%). The figure dropped to 25.7% in the case of women enrolled in the area of engineering and architecture (INE, 2022). More specifically, the area of nautical, marine and naval engineering at the Universitat Politècnica de Catalunya (UPC), the same 2019-2020 academic year, only registered 17.3% of women enrolled, that is, 8.4 points below the percentage of female students in engineering and architecture. Figure 1 shows the evolution of enrolment in the area of nautical, marine and naval engineering in Barcelona School of Nautical Studies at the UPC during the last decade, according to the UPC sex-disaggregated indicators (Observatori UPC, 2022). The enrolment distribution by sex reflects the marked gender gap in the area.

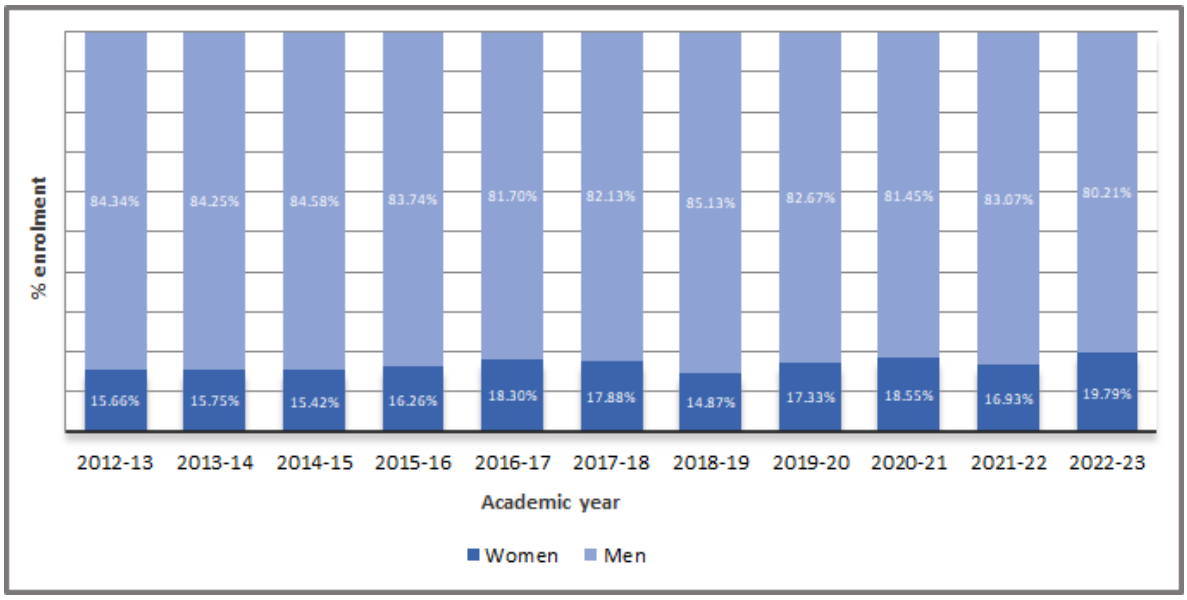

Figure 1. Enrolment disaggregated by sex for nautical, marine and engineering degrees at the UPC, during the period 2012-2013/2022-2023 (Observatori UPC, 2022)

3.2. Background

In view of the context described in the previous section, the UPC has been working for years to enhance the university's commitment to equality, non-discrimination and respect for diversity. The gender equality plans developed, now with the Fourth Equality Plan (2022-2026) currently in force, are the UPC's strategic tool to foster equal opportunities among the groups that make up the university community; incorporate the gender perspective in teaching, research and management; promote the incorporation of women in decision making; and work towards a university free of violence against women and the LGBTI community. The gender equality plans and all their associated programmes serve to provide a framework for action to implement measures within the university community and also, externally, to support the University's commitment to the society it serves. In keeping with this, the UPC supports the international 2030 Agenda with a special emphasis on two Sustainable Development Goals (SDGs) that are particularly relevant to the University's mission: SDG 4, "Quality Education", and SDG 5, "Gender Equality".

With a view to incorporating quality education and gender equality in the different studies offered at the university, the UPC has fostered different actions in recent years. Additionally, in order to promote gender mainstreaming in all Catalan Universities, AQU Catalunya published in 2018 the *General Framework for the incorporation of the gender perspective in university teaching* (AQU Catalunya, 2018). AQU Catalunya is an internationally recognized public body whose aim is to guarantee the quality of higher education in Catalonia as well as to protect the interests of society by assuring that tertiary education fulfills its full potential. This agency works with higher education institutions across Catalonia to ensure and improve the quality of study programmes, teaching practices and teaching staff, faculties and schools, for which institutions themselves bear the ultimate responsibility. In this context, in order to progressively incorporate the gender perspective in all the university's bachelor's and master's degrees, thus also meeting the AQU Catalunya requirements, the UPC approved the new cross-disciplinary competence of gender perspective (UPC, 2020). According to point 2 of this UPC Governing Council Agreement, "All bachelor's and master's degrees taught at the UPC must gradually incorporate the new competence on gender perspective." To ensure an effective incorporation of this new transversal competence, the UPC promoted various actions among which there is the innovation teaching project described in this paper.

3.3. Innovation teaching project to incorporate the gender perspective in maritime studies

This teaching innovation project to mainstream gender in nautical, marine and naval engineering, the three disciplines taught at Barcelona School of Nautical studies, was carried out during the 2021-2022 academic year (Barahona-Fuentes, et al., 2022). Based on the participation in a previous pilot project on Gender and Teaching promoted by the UPC within the framework of the European Project GEECCO (GEECCO, 2021), this project continued with the task of incorporating the gender perspective in the area of nautical, marine and naval engineering in a more systematic manner. Thus, this innovation teaching project aimed to provide teachers with tools and resources for progressively incorporating the gender perspective in the study plans of all the degrees taught in this METI. To accomplish this main objective, different types of actions were conducted with a focus on the design of solutions to aid teachers in the development of the necessary abilities to assess inequality and transform their study plans, teaching methods and course contents. These actions were organized around three main aims:

1) Developing a web platform with resources for mainstreaming gender in teaching.

A web platform containing different types of resources to foster gender equality and to mainstream gender in the area of nautical, marine and naval engineering was developed (https://igualtat.fnb.upc.edu/en). Among the resources, there is a gender equality observatory, general resources on gender equality and resources for the incorporation of the gender perspective in teaching and research. This web platform constitutes a dynamic virtual environment that allows users to share both experiences and knowledge, thus becoming a flexible learning tool.

2) Training teaching staff on gender and feminist pedagogies.

The gender mainstreaming resources for teaching staff provided on the web platform would not produce satisfactory results in isolation, that is, without some gender-specific teacher training. Therefore, a teacher training course was held to guide teachers and address any question that could emerge. The course was based on the feminist pedagogy, which according to Crabtree et al., (2009), provides a framework for developing strategies and teaching methods aimed at producing learning outcomes that may lead to social change. Fifteen teachers participated in the course and the training empowered them with tools to effectively incorporate the gender perspective in their teaching practice.

3) Incorporating the gender perspective in three courses.

Following the teacher training on feminist pedagogies, three courses were chosen to incorporate the gender perspective competence. All the practitioners had participated in the specially-designed teacher training course as well as in other university courses, actions and initiatives on gender equality. Teaching staff participants consisted of four full-time teachers, one woman for the *Ship theory and naval construction* course and three men, one for the *Marine pollution prevention and sustainability* course and two of them sharing the teaching of the *Structures for naval engineering* course. These three courses selected were all third-year courses but each of them belonged to a different degree programme so as to cover the three different disciplines taught at Barcelona School of Nautical studies. A total number of 131 enrolled students participated in this study out of which 108 were men (82.4%) and 23 were women (17.6%).

3.4. Methodology

The changes introduced in the three courses incorporating the gender perspective began with the modification of their corresponding study plans. These changes in the curriculum affected competences, objectives, contents, teaching methodology, assessment and references. All these aspects were addressed and transformed in a more gender-sensitive way. Once the study plans were modified, the teaching practices in the classroom were also transformed accordingly to adjust to the newly-designed study plans and to promote a more gender-sensitive training.

The research method applied to analyze the implementation of the gender perspective in the three different courses of the area of nautical, marine and naval engineering consisted of a pre- and post-survey to determine its impact both on students and teachers. In the case of teachers, some informal individual and group conversations also contributed to refine the findings. The pre-survey was carried out at the beginning of the course and the post-survey at the end. The aim was to gather information concerning students' and teachers' perceptions about the incorporation of this new cross-disciplinary gender perspective competence. All surveys included closed- and open-ended questions relevant to the changes incorporated in the three courses and to the participants' perceptions on the gender equality work done in the area of nautical, marine and naval engineering so far. The closed questions were organized according to common Likert scales and provided practical quantitative information, which was plotted into useful graphs for comparison and analysis. On the other hand, open questions became a valuable source of qualitative information providing more abundant detail regarding the implementation of the gender perspective. The data gathered was analyzed to discover any meaningful difference between the pre- and post-test results. This data analysis combining quantitative and qualitative information based on the questions in the surveys intended to provide some insight on the impact of the implementation of the gender perspective.

3.5. Results

The overall assessment of the implementation of the gender perspective competence obtains positive outcomes from both groups of participants, i.e., teaching staff and students. Teachers believe that this implementation has been constructive for the development of the course, for students' participation and for a better understanding and improvement of relationships in class. They also report an improved engagement and motivation of students with course contents, resulting in an increased overall learning. Likewise, students also highly value this initiative. In general, they think that reflecting on gender issues is not only good but also necessary. In addition to this, the proposed gender activities allowed students to question accepted values and opinions, thus steering their thoughts in new directions in accordance, once more, with the principles of feminist pedagogy (hooks, 1994). It is likely that, for this reason, some students highlight how this gender work will help them not only towards their future professional practice but also to become better persons. This reflection also meets the objective of humanizing the discipline by training future maritime professionals with a more useful perspective for society. Nevertheless, not all the feedback gathered has been constructive. An aspect that deserves special mention are the negative or despising comments issued by some male students throughout the surveys. While most women claim that there is still a lot left to do concerning gender equality, some men resoundingly deny this need. This is a common characteristic in institutions, organizations and workplaces, where, although undesirable, there is an inevitable resistance to efforts to advance towards gender equality. This resistance can take various shapes and can be individual or collective but it usually comes from members of the privileged group, that is, men in an attempt to defend their institutionalized privilege (Flood et al., 2021).

A final question asked teachers and students whether they consider the incorporation of the gender perspective into university studies positive and necessary. All teachers agree on their need and, in line with Grünberg (2011), they believe that this should be out of question. Their comments emphasize the need to tackle gender issues to advance towards gender equality and to avoid the transmission of an androcentric model of knowledge. Raising awareness with respect to gender and other forms of discrimination is deemed necessary and the university is considered an appropriate setting to work to achieve this social transformation. As for students, women's general lower perception of gender equality results in a markedly higher claim of this need as compared to men. Women consider that raising awareness with respect to gender issues is particularly necessary in this male-dominated area of knowledge and request equal treatment at the university and in the profession to combat the existing discrimination. In sum, they want to feel equally included and heard. Encouragingly, the great majority of male students' contributions go in the same direction, approving the incorporation of the gender perspective, claiming equal treatment and asking for tools to combat discrimination and toxic behaviors. Moreover, they believe that all this gender awareness work is useful not only for their present time at the university, but also for their professional future.

4. Conclusions

The case study of Barcelona School of Nautical Studies illustrates the benefits of a bottom-up approach to implement gender equality legislation. Fostering these knowledge-based actions at lower levels encourages practitioners to participate in the implementation of regulations in an active way. The incorporation of gender mainstreaming in teaching, as required by AQU Catalunya, from a bottom-up approach has proved to be an effective method to motivate and empower MET practitioners to transform their teaching practices in a more gender-sensitive way. This case study shows that, through a bottom-up implementation, teachers do not become simple passive receptors of decisions made higher up the administrative hierarchy but actors actively engaged in making decisions and taking on responsibilities in their own context. Nevertheless, in order to make these informed decisions, practitioners require specialized gender-related teacher training. As some of the teachers themselves express in the surveys, this formal training is key to understand the implications of mainstreaming gender in teaching and to provide them with tools to transform their teaching practices accordingly. In sum, METIs should encourage and provide their teaching staff with specialized gender-focused training to facilitate a much-needed transformation in this area of knowledge.

Acknowledgements

Authors appreciate the funding from the UPC Teaching Innovation Projects 2021 Call Resolution (Agreement CG / 2021/02/34, of 9 April 2021) and Barcelona School of Nautical Studies to grant a project whose insights and outcomes were partly reported in this paper.

References

[1] AQU Catalunya. (2018). General framework for incorporating the gender perspective in higher education teaching. The Catalan University Quality Assurance Agency. https://www.aqu.cat/doc/doc_21331700_1.pdf

[2] Barahona-Fuentes, C., Castells-Sanabra, M., Ruiz, Á., Codina, M., Fernández-Cantí, R. M., Vela, M., Ordás, S., Isalgué, A., & Martín, A. (2022). A UPC innovation teaching project for the incorporation of the gender perspective in nautical, marine and naval engineering. 50th Annual Conference of The European Society for Engineering Education, SEFI 2022, 934–942.

[3] Barahona-Fuentes, C., Castells-Sanabra, M., Ordás, S., & Torralbo, J. (2019). Gender equality policies for the incorporation of the gender perspective in maritime studies: A case study. Proceedings of the 20th Commemorative Annual General Assembly of the International Association of Maritime Universities, Tokyo, Japan, 321–328.

[4] Boström Cars, M., & Österman, C. (2015). Mind the gap! Maritime education for gender-equal career advancement. In M. Kitada, E. Williams, & L. L. Froholdt (Eds.), Maritime women: Global leadership. WMU Studies in Maritime Affairs, vol 3 (pp. 143–153). Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-45385-8_11

[5] Crabtree, R., Sapp, D., & Licona, A. C. (Eds.). (2009). Feminist pedagogy: Looking back to move forward. Johns Hopkins University Press.

[6] Dragomir, C. (2018). Gender Equality and Cultural Awareness in Maritime Education and Training (GECAMET). IAMU Research Project. IAMU.

[7] GEECCO. (2021). Gender Equality in Engineering through Communication and Commitment. European Commission. https://cordis.europa.eu/project/id/741128

[8] Grünberg, L. (2011). From gender studies to gender IN studies: case studies on gender-inclusive curriculum in higher education. European Center for Higher Education (CEPES). https://unesdoc.unesco.org/notice?id=p::usmarcdef_0000211180

[9] hooks, bell. (1994). Teaching to transgress: Education as the practice of freedom. Routledge.

[10] Horck, J. (2010). The gender perspective in maritime education and training. WMU Journal of Maritime Affairs, 9(1), 93–119. https://doi.org/10.1007/BF03195168

[11] Manuel, M. E. (2017). Vocational and academic approaches to maritime education and training (MET): Trends, challenges and opportunities. WMU Journal of Maritime Affairs, 16(3), 473-483. https://doi.org/10.1007/s13437-017-0130-3

[12] INE. (2022). Estudiantes matriculados en educación universitaria. Instituto Nacional de Estadística. https://tinyurl.com/3jnx9xna

[13] Observatori UPC. (2022). Indicadors desagregats per sexe de la UPC. https://igualtat.upc.edu/ca/observatori

[14] Scanlan, J., Hopcraft, R., Cowburn, R., Trovåg, J., & Lützhöft, M. (2022). Maritime Education for a Digital Industry. In ErgoShip 2021 - Maritime Artikler (Vol. 7, pp. 23-33). The Norwegian Defence University College, The Royal Norwegian Naval Academy.

[15] Tansey, P. (2015). Women at the Helm: 25 Years of IMO's Gender Programme. In: Kitada, M., Williams, E., Froholdt, L. (eds) Maritime Women: Global Leadership. WMU Studies in Maritime Affairs, vol 3. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-662-45385-8_2

[16] UPC. (2020). Nova competència transversal de perspectiva de gènere. In Acord CG/2020/02/13. Vicerectorat de Responsabilitat Social i Igualtat. https://tinyurl.com/2ef4dyhf

[17] Walker, C., Gleaves, A., & Peart, D. (2003). Problems in the construction of gender and professional identities for women in a United Kingdom Merchant Navy training school. Research in Post-Compulsory Education, 8(3), 285–304. https://doi.org/10.1080/13596740300200156