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M. Grifoll, F.X. Martínez de Osés, M. Castells and A. Martin **(Eds)**

THE EVOLUTION OF FEMALE FIGURES IN MET INSTITUTIONS OVER A DECADE: SOME CASE STUDIES

CLÀUDIA BARAHONA-FUENTES[1], MARCEL·LA CASTELLS I SANABRA[2], SANTIAGO ORDÁS JIMÉNEZ[3] AND JORDI TORRALBO GAVILÁN[4]

[1]Department of History and Theory of Architecture and Communication Techniques
Barcelona School of Nautical Studies (FNB)
Universitat Politècnica de Catalunya – BarcelonaTech
Pla de Palau, 18, 08003 Barcelona, Spain
e-mail: claudia.barahona@fnb.upc.edu, http://futur.upc.edu/ClaudiaBarahonaFuentes

Department of Nautical Science and Engineering
Barcelona School of Nautical Studies (FNB)
Universitat Politècnica de Catalunya – BarcelonaTech
[2]e-mail: mcastells@cen.upc.edu, [3]e-mail: sordas@fnb.upc.edu, [4]e-mail: jtorralbo@cen.upc.edu

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Abstract. Although the figures of female students in technical studies have increased in recent years, in MET male students still greatly outnumber female ones. This inequality is transferred to the maritime professional sector, where the proportion of women in different types of jobs and management positions is still far from the desirable expectations. This study analyses the enrolment and graduation figures of female students in several MET institutions over the last decade (2009-2018) with the aim of providing a better understanding of the current situation. This analysis also considers the gender policies applied in the different centres over the same period of time to determine their effectiveness over female student enrolment. The results reveal that this gender imbalance persists in all the institutions analysed and that there is no evident raising trend concerning the figures of female students enrolled and graduated over the last decade for the centres examined. In addition, gender equality promotion policies are still scarce or inexistent and have had a limited effect on female enrolment figures. Thus, it can be concluded that much remains to be done to improve the present situation and to overcome this gender gap in MET. Some proposals presented in this paper include the joint development of gender equity policies by national maritime administrations and international maritime organisations and agencies, the incorporation of female student promotion policies at earlier educational stages and the analysis of female students' expectations and motivations for choosing maritime studies.

1 INTRODUCTION

The limited number of female students enrolled in Marine Engineering and Maritime Navigation studies and the lack of gender-policies in most MET institutions is becoming an

increasing cause of concern in the maritime education sector. Research in the field suggests that this is a widespread problem across countries, which requires immediate attention from the corresponding agents [1, 2, 3]. The proportion of women earning technical degrees has increased steadily during the last decades. However, technical professions, including those in the maritime sector, show a clear gender gap with respect to jobs and managerial positions, namely, both in their horizontal and vertical dimensions [2, 4]. This gender inequity has its roots at university level where male students clearly outnumber female ones, so a better understanding of the current situation may be key to provide a new insight into this problem so that we can find ways to reverse the present numerical inequality and resolve existing gender bias in the future.

Up to the present, several attempts have been made at promoting the incorporation of female students in higher education both at institutional and international level. For example, at international level we find IMO's programme on the Integration of Women in the Maritime Sector (IWMS) whose primary objective is "to encourage IMO Member States to open the doors of their maritime institutes to enable women to train alongside men and so acquire the high-level of competence that the maritime industry demands" [5]. However, most of the times, such programs are addressed to women in developing countries where they have even more difficulties for enrolling in maritime programs. At institutional level, the incorporation of more inclusive gender policies is most of the times dependent on institutional leaders and their awareness and goodwill to address these issues [6] or on individual initiatives. Therefore, although some policies for gender equity have already borne their fruits, we are still far from the intended equity expectations. In addition, increasing numbers of female students is not enough because as some authors point out “without effective gender-inclusive strategies and pedagogical and didactic approaches, there is a risk of reproducing inequality instead of producing equality” [4]. Hence, promotion policies for incorporating more female students in maritime training is only the first step, and should go hand in hand with specially-designed curricula integrating gender issues.

These inequities at training level are reproduced in the professional sector where women are clearly under-represented at all levels. On the one hand, this can be due to the lack of specific policies or regulations with respect to women recruitment and working conditions [7]. On the other hand, the history and legacy of an almost entirely male profession also constitutes a major drawback for the employment of women at sea or ashore and for the construction of a female professional identity [8]. In response to this, different groups and associations have begun to emerge to support women in this sector such as WISTA, a Women's International Shipping and Trading Association, which attracts and promotes women, at the management level, in the maritime, trading and logistics sectors.

2 METHODOLOGY

This paper describes a small-scale study concerning the figures of female student enrolment and graduation in some MET institutions and their evolution over the last decade (2009-2018). The participating centres are all Higher Education Schools of Maritime Studies, namely, thirteen schools in ten different European countries, two in South America and one in Africa (see Table 1). The last three institutions were included within a group of non-European countries. This way, European countries and non-European countries were analysed separately.

The group of European universities comprises three schools in Spain, which were also considered independently in this research to contrast Spanish and European outcomes. With the collaboration of all the MET centres participating in the study, we gathered data corresponding to access and graduate figures of female students since 2009, which were examined in order to discover any trend or general pattern of evolution. With the aim of providing some tentative explanation on the findings, we also requested information concerning the implementation of institutional policies aiming at gender equality and university groups promoting those policies in the mentioned institutions.

Country	Institution	Identifying acronym
European countries		
Belgium	Antwerp Maritime Academy	HZS
Croatia	University of Split, Faculty of Maritime Studies	US_FMS
Finland	Satakunta University of Applied Sciences	SAMK
Montenegro	University of Montenegro	UCG
Norway	Western Norway University of Applied Sciences	HVL
Poland	Gdynia Maritime University	GMU
Poland	Szczecin Maritime University	SMU-P
Romania	Constanta Maritime University	CMU
Slovenia	University of Ljubljana	UNILJ
Sweden	Chalmers University of Technology	SMT-CUT
Spain	Universidad de Oviedo, Escuela Superior de la Marina Civil	UNIOVI
Spain	Universidad del País Vasco, Escuela de Ingeniería de Bilbao	UPV/EHU
Spain	Universitat Politècnica de Catalunya, Facultat de Nàutica de Barcelona	UPC-FNB
Non-European countries		
Egypt	Arab Academy for Science, Technology and Maritime Transport	AAST-MT
Perú	Universidad Tecnológica de Perú	UTP
Uruguay	Escuela Naval de Uruguay	ENU

Table 1: Participating institutions

All the participating institutions were sent a form they completed with the total number of students and the number of female students enrolled and graduated since 2009. The same form included some space for describing the female student promotion policies applied in their schools during those years. With the data gathered, the percentages of female students enrolled and graduated each year was calculated for each university and plotted on a graph to determine any possible similarities and differences. Then, the mean value of all the percentages from the different institutions for each academic year was calculated to observe any possible global trend. Here, we considered European universities, including also the results from Spanish schools, and then compared the European global trend to the Spanish one. The mean values for these two groups were also plotted on graphs to detect any tendency over the last decade.

3 RESULTS AND DISCUSSION

The results of this study are grouped into two main areas; namely, evolution of access and graduation figures of female students of all the universities analysed and effects of the institutional policies for engaging female students.

3.1 Access and graduation figures of female students in MET institutions

The access and graduate figures for female students in all the universities analysed show that there is still a small percentage of them that begin and complete their training in MET institutions during the period evaluated and that the situation does not improve over time. In the graphs on enrolment figures, it can be noted that the number of women that begin Nautical Science and Maritime Transport Studies is considerably higher than that of women beginning Marine Engineering Studies in all universities except for the Universidad Tecnológica del Perú and Arab Academy for Science, Technology and Maritime Transport (see Figure 1).

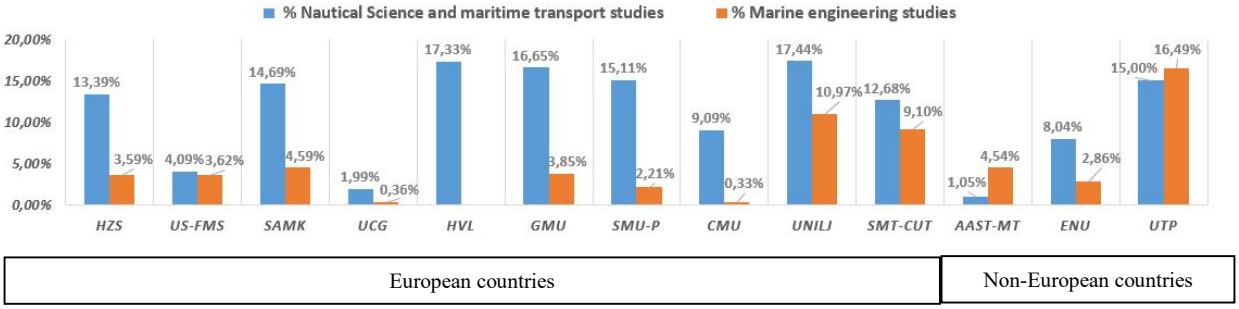

Figure 1: European and Non-European countries - Average of enrolled 1st year female students (2009-2017)

If we consider these enrolment figures over time, that is, the mean enrolment values of all European universities for each academic year, a similar trend can be observed[1] (see Figure 3). It is noteworthy that, contrarily to our expectations, an upward trend cannot be appreciated over that period. The mean values for all the European institutions, including Spain, show that the access figures of female students in Nautical Science and Maritime Transport Studies is 13.50% whereas in Marine Engineering Studies decreases to 6.25%.

With respect to the figures of graduated female students, the results display a similar tendency (see Figure 2). The mean values of graduated female students from all European institutions distributed over academic years, in the same way as with access figures, reflect no gradual increase, only some occasional rise (see Figure 3). Over this ten-year period, the mean value of graduated female students in Nautical Science and Maritime Transport Studies is 15.88% whereas in Marine Engineering Studies is 5.92%. As can be noted, the graduation figures for Nautical studies are slightly higher than those for enrolment whereas in Marine Engineering figures stayed level. Since these percentages are calculated over the total number of students enrolled and graduated, a possible interpretation could be that fewer girls than boys abandon their studies in Nautical science and Maritime Transport.

[1] In the graphs that show the development of figures over time, only European Universities, including Spanish universities, were surveyed. Non-European universities were not considered for this analysis as three institutions do not constitute a representative sample.

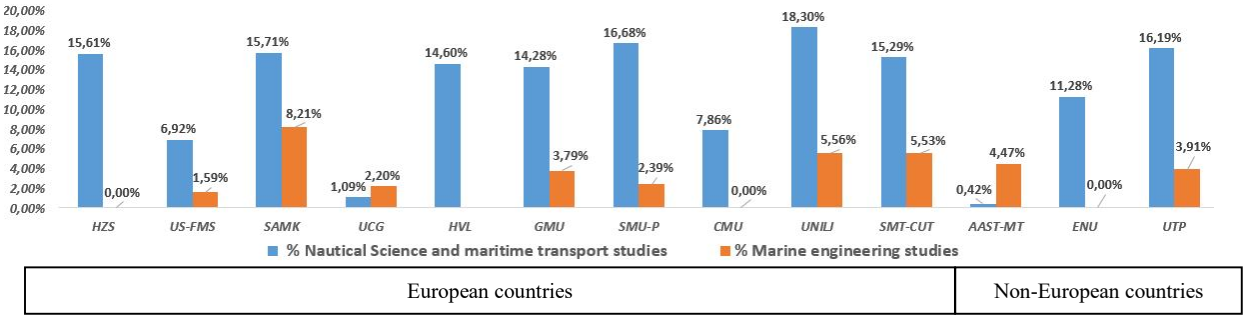

Figure 2: European and Non-European countries - Average of graduated female students (2009-2017)

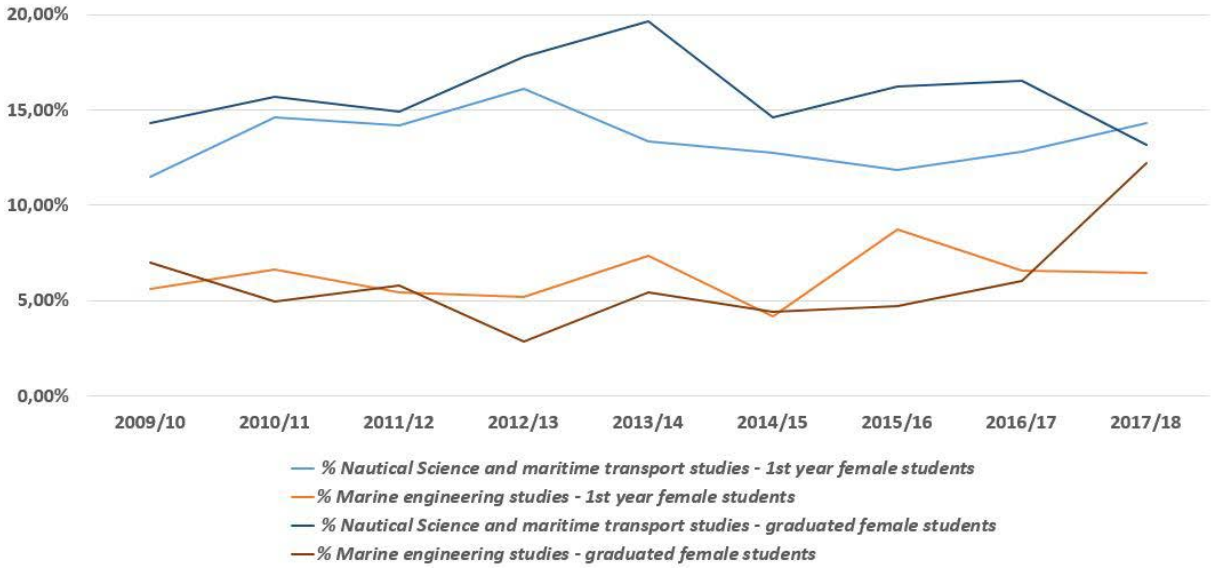

Figure 3: European countries - Average of enrolled 1st year female students and graduated female students (2009-2017)

Considering Spain separately, with respect to the three schools examined, it can be seen that, on average, there is a higher percentage of girls in these studies in Spain than in the rest of European countries (see Figure 4).

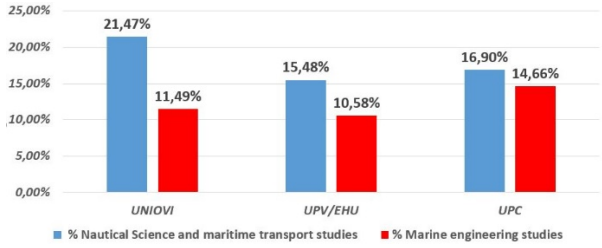

Figure 4: Spain - Average of enrolled 1st year female students (2009-2017)

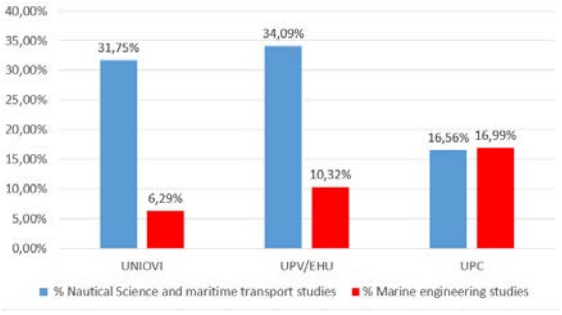

Figure 5: Spain - Average of graduated female students (2009-2017)

Analysing enrolled female students over the last decade, the tendency in Spain is the same as that observed for European countries (see Figure 6). Here again there is no significant increase over this period. The mean access value of female students in Nautical Science and Maritime Transport Studies is 17.95% and 12.24% for Marine Engineering Studies. In line with this, the figures of graduated female students in Spain follow the same pattern (see Figures 5 and 6). For graduated Nautical Science and Maritime Transport female students the mean value is 27.47% and for graduated Marine Engineering female students is 11.20% over this last decade. In the case of Spain, the only significant difference as compared to the mean values of European countries is that although there is also an increase on the graduated figures for Nautical Science and Maritime Transport studies, with respect to access figures, Marine Engineering studies show a reverse tendency, which means that more girls than boys abandon these latter studies.

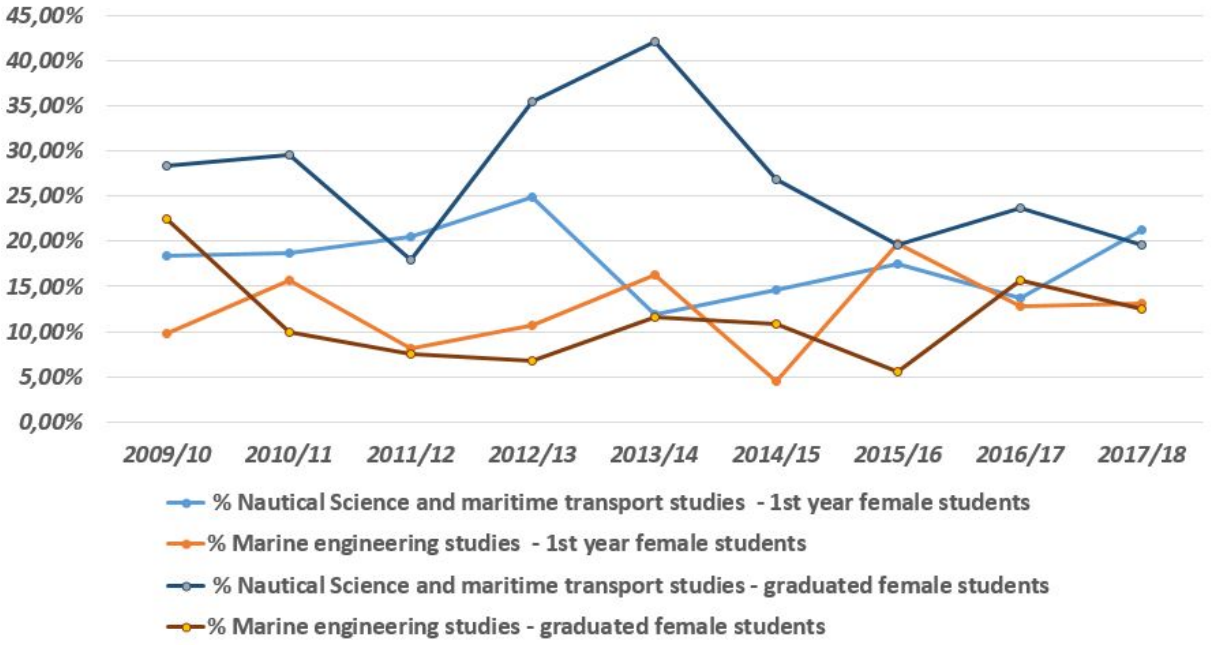

Figure 6: Spain - Average of enrolled 1st year female students and graduated female students (2009-2017)

3.2 Institutional policies for engaging female students

In the majority of countries analysed, no promotion policy for female students in Maritime studies was implemented over the period studied except for Szczecin Maritime University and Universitat Politècnica de Catalunya. Szczecin Maritime University obtained two promotion projects financed by the EU during 2011-2013 and part of the budget had to be obligatorily addressed to women. As a result, there was a general increase in admissions and also in the number of female students admitted those years. Universitat Politècnica de Catalunya also launched the I Equal Opportunities Master Plan in 2007 with the general aim of promoting a culture of equity and equality of opportunities for women. Among some more specific objectives, there was promoting a balance between men and women in the different UPC engineering studies. The I Plan lasted for two years and then during the period between 2013-

2015, the II Plan was implemented [9]. Since 2016, the III Plan for Gender Equality is in place. In this occasion, this is not a plan particularly addressed to Maritime studies, but to engineering studies in general. However, Barcelona School of Nautical Studies also benefited from all these promotion policies and slightly increased the number of female students enrolled when the plan was launched [10].

4 CONCLUSIONS

The findings and observations of this study illustrate how the gender gap in maritime education and training continues in all the institutions analysed over the last decade. Female student figures have the lowest percentages in all studies and in the case of Marine Engineering degrees girls seem to abandon their training more frequently than boys. Nautical Science and Maritime Transport studies are, in general, the ones with higher percentages of female students and also the ones with a lower dropout rate. All the same, it is important to point out that, concerning the mean value of female students enrolled and graduated in Maritime studies in some European MET universities between 2009 and 2018, there is no significant raising tendency for any of the studies examined. It is unclear, however, to what extent these results reflect an actual current trend as a wider sample of MET institutions would have to be surveyed.

In spite of an increasing awareness and some isolated efforts to reverse this gender gap situation [11] [12], female student policies are still scarce or non-existent in most institutions. Gender issues seem to be entirely dependent on institutional leaders who are favourable to set guidelines for more inclusive gender-policies. This awareness and willingness to change policies is welcome but it is not enough. If there isn't a perception of having a real problem, possible solutions won't be addressed and there is an urgent need for a new push to overcome gender imbalance and guarantee the success of gender equity. Therefore, a more in depth analysis and a wider applicability of such policies is required, even across countries, as most of the times they work only at national or institutional level. There have already been some attempts at implementing international programmes to promote gender equality and women advancement, for example by the UN and the IMO among others [13]. In line with this, the joint involvement of national maritime administrations and international maritime organisations and agencies in the development of gender equity policies might be an important and more effective step towards developing a more egalitarian and inclusive maritime education and training system.

Furthermore, this study does not include other considerations of gender discourse or pedagogy in the institutions analysed as it is not within the scope of the present study, but this is also something that would demand attention if we are willing to resolve the present gender gap situation [4]. Increasing the numbers of female students is not enough if it does not go hand in hand with changes in the pedagogy and the curricula of MET institutions as the weight of the male-dominated cultural and historical maritime context will be otherwise difficult to overcome.

Finally, this paper also raises a broader question: When should promotion of maritime studies begin among prospective female students? Beginning promotion at university level might be too late, as female students may have already anticipated more humanistic degrees. Thus, starting promotion in secondary, and even primary, education could be a more successful

attempt to obtain better results to leave behind the present gender inequality in maritime studies. This is closely related to students' expectations for choosing maritime studies [14] [15]. If we try to better understand female students' expectations and motivations for choosing these studies, we will be able to design better promotion policies and strategies and we can even try to implement them at earlier educational stages.

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