Leveraging Mentoring to Promote Balance in Academia, Industry, Human Resources and the General Community

A complete mentoring roadmap

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EQUAL.STEAM

**A Complete Mentoring Roadmap
Booklet 4: Leveraging Mentoring to Promote Balance in Academia,
Industry, Human Resources and the General Community**

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"ESTeEM was one of my best experiences as a fresher (first year student). Being shy didn't help me a lot but when I attended the first event it gave me the courage that I needed. They helped me to come out of my shell, to experiment with new things and to create wonderful memories. My mentor wasn't just a person from a company, it was an entire table of students, lecturers and amazing people from industry. —ESTeEM participant"[1]

Executive Summary

The main goal of this booklet is to raise awareness of the seriousness of the shortage of women in senior positions in academia, industry and STEM disciplines and how to leverage mentoring to promote balance in these areas in addition to human resources and the general community. This booklet is aimed at supervisory and management bodies in academia, industry, human resources and the general community who want to know how to foster equal gender opportunities through mentoring and other measures. The topics covered include the under-representation of women in senior positions in academia and industry; addressing and closing the gender gap; steps to increase and enhance women's participation in industry and academia supported by examples; rewarding mentors and the importance of mentoring.

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The under-representation of women in senior positions in academia and industry

The issue of women's under-representation in grade A, decision-making and leadership positions in academia and industry is long-standing. Consequently, in 2012, EU member states were invited to ensure at least 40% of under-represented sex participation in recruitment and career progression committees and institutions, in addition to implementing Gender Equality Plans (GEPs)[2]. Moreover, in 2015, the Council of the EU invited member states to develop targets for gender balance among professors[3].

Despite efforts, there remains a serious lack of progress in these areas that continues to impede the growth of the European Research Area[4] [5] and, in the EU, in 2018, the percentage of women represented among academic staff in grade C positions stood at 47%. This percentage fell to 26% of women in grade A positions, demonstrating a clear decline as careers advance5. At the European level, in 2019, slightly more than 3 in 10 board members were women (31.1%) and less than a quarter of board leaders (24.5%) were women[5].

Current challenges

Some of the current challenges that contribute to the under-representation of women in senior research roles and grade A positions, among others, are (i) the "leaky pipeline," which refers to the effect of women leaving the career pipeline at different stages, (ii) the "glass ceiling phenomenon," which refers to structural barriers such as gender bias that can hinder women's access to senior positions5, and (iii) the "sticky floor" that refers to these issues and women being stuck in less valued tasks[6].

Address the gender gap

During this green and digital decade, in which the economy is moving towards digitalisation at an ever-increasing rate, a trend that was further expounded by the COVID-19 pandemic and the subsequent leap towards a digital era, the Gender Equality Strategy 2020-2025 highlights the relevance of addressing the gender gap. It is worth mentioning here that according to the European Commission's Women in Digital Scoreboard 2021, women represent only 33% of STEM graduates and 19% of ICT specialists[7]. The number of female STEM graduates impacts the gender pay gap5 as women are more likely to be pulled away from higher-paying STEM jobs to other lower-paying areas (Education and Humanities) where in fact they are over-represented, thus widening the gender pay gap.

The scarcity of women in STEM careers and education is due to several factors, the root of which lies in gender stereotypes as STEM fields are often seen as masculine and this extends back to as early as preschool where teachers and parents may underrate the maths abilities of girls. Work and study in the field of STEM are shrouded by a male-dominated culture, which perpetuates an inflexible and exclusive environment that is not appealing to women and minorities[8] and consequently has led to fewer role models in these areas[8].

Close the STEM gap

Fostering equal opportunities for women to follow and be successful in STEM careers will contribute towards narrowing the gender pay gap, increase women's financial security, guarantee a diverse and dynamic STEM workforce and in turn deter biases in these fields and regarding the subsequent design and development of STEM products and services. These are all important steps towards closing the STEM gap[8]. The continued prevalence of phenomena such as the "glass ceiling phenomenon", "leaky pipeline" and "sticky floor", in addition to the scarcity of female STEM graduates, women in STEM careers and education, has led to a renewed commitment to women's involvement in STEM through such strategies as the Women in Digital (WiD) Declaration, amongst others, with an emphasis on mentoring programmes. It has been pinpointed as one of the strategies to address these disparities and it encourages women to play an active and prominent role in the digital and technology sectors, for example, "by combating digital gender-related stereotypes, promoting role models, motivating girls early on to explore STEM studies, stimulating the re-skilling or upskilling of women, mentoring schemes, or improving the image of ICT jobs"[9].

Steps to increase women's participation

Furthermore, steps to increase women's participation in decision making involve ensuring bias training is provided for committees responsible for recruitment and promotion and the drafting, development and implementation of GEPs[5]. In order to tackle the low participation of women in the digital economy, it is crucial to, "integrate awareness of gender bias across all relevant sectors including in the initial and continuous training of teachers; address structural barriers such as work conditions and culture, which hinder girls and women to enter a predominantly male-dominated field; and increase the visibility of insufficiently valued role models to inspire women and girls"[9]. If this does not suffice, it is worth remembering that, "an increase in the number of women entering the digital skills market would generate an additional annual EUR 16 billion for the European economy[7].

Enhance gender equality in industry

In the private sector, measures to enhance gender equality include providing training to increase gender knowledge within the company and human resources management in areas such as recruitment and both internal and external communication channels, in addition to implementing actions to foster work-life balance and encourage employee development and satisfaction. Providing support to women entrepreneurs is also essential. Training and mentoring programmes can play an important role when it comes to reducing the gender gap in the private sector[5]. Mentoring should be employed as a good practice in career planning and monitoring, as well as to contribute towards the creation of a truly inclusive environment. Unless measures are taken to widen women's participation in the tech discipline, "we will continue to be faced with a skills shortage that hampers the growth and development of the tech industry"[10].
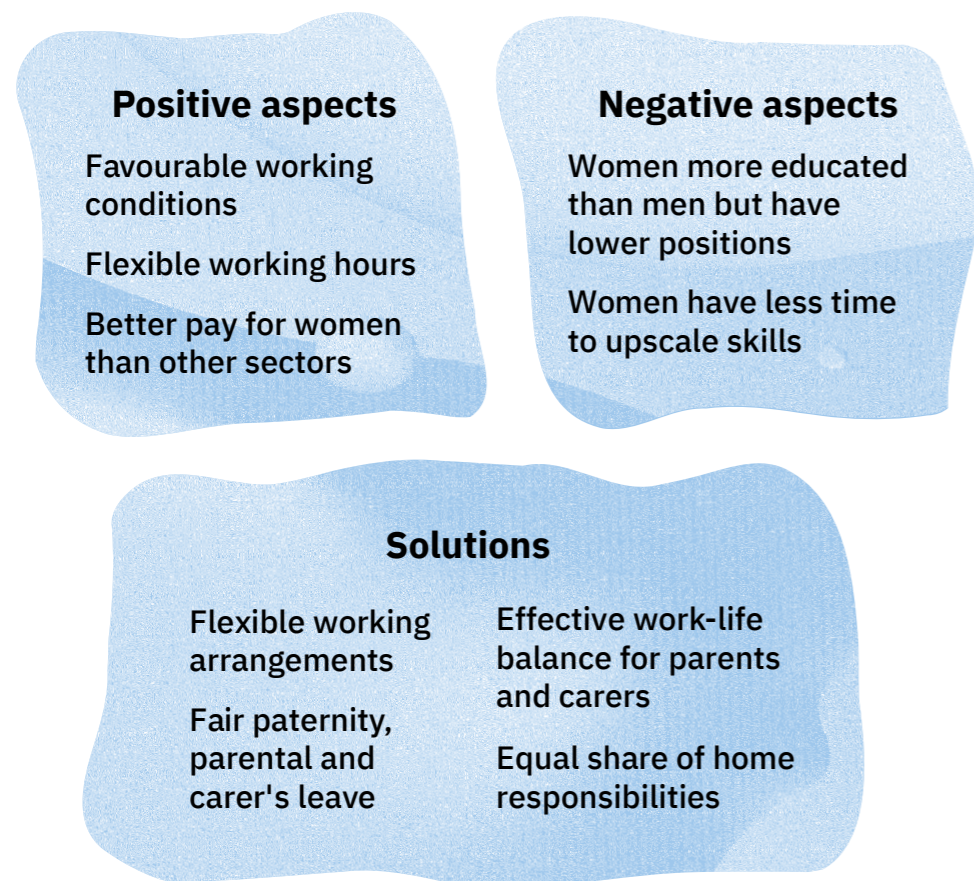
Progress continues to be made in some areas and the European Parliament has formally adopted the new EU law on gender balance on corporate boards. By 2026, companies will need to have 40% of the under-represented sex among non-executive directors or 33% among all directors[11]. This is a formidable accomplishment, from when the European Commission proposed a directive to improve gender balance in company boards in 2012[12], as companies will now have to ensure that they strive to meet these targets. As reiterated in the words of President von der Leyen, together with Vice-President Jourová and Commissioner Dalli, "This is a long-awaited moment, a moment to be celebrated as a breakthrough in gender equality. After ten years since its proposal by the European Commission, we will now have an EU law to break the glass ceiling of listed companies' boards. There are plenty of women qualified for top jobs and with our new European law, we will make sure that they have a real chance to get them"[11].

Gender equality in the ICT sector and the vital role mentoring plays

To promote career advancement for women in the ICT sector it is necessary to promote gender equality in career progression for scientists and engineers[13]. Furthermore, additional categories were included for strategies in order to foster gender equality in career advancement. Mentoring professionals was deemed highly relevant as a way to ensure employees progressed more rapidly to senior roles[13].

Below, we use a sectoral case study from 2018 to reiterate the need for

mentoring in the workplace with a particular focus on work-life balance in the ICT sector. If we take a closer look for example at women and men in the workplace in the ICT sector, "only 17% of the 8 million ICT specialists in the European Union" were women in 2018[14]. There are positive and negative aspects to working in the ICT sector for women, as depicted in infographic 1 below. On the one hand, some of the positive aspects include favourable working conditions such as flexible working hours and better pay for women than in other sectors. On the other hand, women may have better qualifications than men, but still occupy lower positions (evidence of the sticky floor metaphor) and have less time to improve their skills. Additionally, some solutions are also made to address these disparities such as ensuring flexible working arrangements, fair paternity or parental carer's leave, equal share of home responsibilities and effective work-life balance for parents and carers[14]:

Positive aspects

Favourable working conditions

Flexible working hours

Better pay for women than other sectors

Negative aspects

Women more educated than men but have lower positions

Women have less time to upscale skills

Solutions

Flexible working arrangements

Fair paternity, parental and carer's leave

Effective work-life balance for parents and carers

Equal share of home responsibilities

Infographic 1- Some positive and negative aspects to working in the ICT sector for women.

Mentoring in the workplace can play a key role in narrowing this gap and contributing to attracting and retaining more women in the ICT sector. Mentoring is considered to be a valuable intervention strategy that has played an important role in retaining and promoting women in the ICT sector to high-ranking positions. If the industry truly wants to address the shortfall of women in ICT, when formal mentoring programmes are not in place internally, access to external mentoring programmes should be included as part of the human resources policies for ICT workers[15].

Enhance gender equality in academia

According to Nilsen[16], science and research should be generally managed in a gender-responsible way to strengthen high-quality research and societal empowerment. They argued that gender has an impact on three elements of research: (1) the composition of the research groups; (2) the research questions in research projects; and (3) the research methods used. Thus, they suggested an approach that can be summarised as: fix the numbers, fix the institutions, and fix the knowledge - briefly, a structural change. However, they point out that women in leadership positions in academia face challenges in structures, systems, and mindsets[17][1]. Moreover, in line with the European targets of at least 40% of under-represented sex participation in recruitment and career progression committees and institutions, the implementation of GEPs[2] and the development of targets for gender balance among professors[3], higher education institutions have taken measures towards addressing gender equality, in terms of implementing measures to meet student and staff gender ratios, representation on decision-making bodies and research positions. This will in turn help the composition of research groups to ensure gender parity and that the research questions in research projects and the research methods used are gender-responsive.

Lead by example – University of Coimbra

Below, in table 1, there are some figures from the University of Coimbra's (UC) Equality, Equity and Diversity Plan 2019 – 2023[18]. This is particularly relevant given that the 2015 - 2019 Strategic Plan did not include references to gender in its mission. This has been clearly rectified with a statement of gender issues in the 2019 - 2023 UC Strategic Plan as well as an in-depth analysis of the situation of men and women in the institution as the UC strives to identify and improve its gender equality targets. The following targets are detailed:

Strategic Objective 1		
Mitigate horizontal segregation, by promoting the integration of women and men in scientific/study areas in which they are under-represented		
Goals	**Initial situation** (2017)	**Target** (2023)
Raise awareness and promote the increase of female academic staff in the scientific area of Engineering and Technology by 3-7 percentage points (p.p.)	33.1% (91 out of 275)	36.1 – 40.1%
Raise awareness and promote the increase of female students in the field of ICT study by 3 – 7 p.p.	15.9% (132 out of 828)	18.9 – 22.9%
Raise awareness and promote the increase of male students in the areas with less representation, such as in the area of Education by 3 -7 p.p.	24.2% (159 out of 658)	27.2 – 31.2%
Strategic Objective 2		
Combat vertical segregation, by removing institutional barriers to career progression and supporting career advancement		
Goals	**Initial situation** (2017)	**Target** (2023)
Raise awareness and foster an increase in the number of female full professors by 3 - 7 p.p.	27.9% (43 out of 154)	30.9 – 34.9%
Raise awareness and foster an increase in the number of main and coordinator female researchers by 3 - 7 p.p.	15.4% (2 out of 13)	18.4 – 22.4%
Ensure a minimum level of representation of 33-40 percent of women and men in selection boards (recruitment)	Selection board (2018) 30.8% women 69.2% men	33 – 40 %
Ensure a minimum level of representation of 33-40 percent of women and men in examination boards (Ph.D.)	Ph.D. examination board (2018) 32.2% women 67.8% men	33 – 40 %

Table A - Some figures from the University of Coimbra's Equality, Equity and Diversity Plan 2019 – 2023 as detailed under Strategic Objective 1 and 2.

With regard to the University of Coimbra's Equality, Equity and Diversity Plan 2019 – 2023, as outlined above, mentoring could be used as an effective tool to facilitate and reach their 2023 and future targets of an increase of 3 – 7 percentage points of (i) female academic staff in the scientific area of engineering and technology; (ii) female students in the field of ICT study; and (iii) male students in the areas with less representation, such as in the area of education; (iv) female full professors; (v) main and coordinator female researchers, in addition to the minimum level of representation of 33 - 40 percent of women and men in (vi) selection boards (recruitment); and (vii) examination boards (Ph.D.), respectively. The importance of mentoring schemes is reflected in the specific objective of Strategic Goal 2, which is to support the career of academic staff by means of training and mentoring activities; Action Plan (Action 4) - Perform mentoring activities and bootcamps with students, professors and researchers; Action Plan (Action 5) - Create an e-learning pack on "transferable/ transversal competencies in science", as a career management/development tool to enable researchers to have support and supervision of supervisors or mentors[18].

Rewarding mentors

The importance of mentoring should not be overlooked and ways to recognise the value of mentoring activities, specifically the mentor's time should be addressed. Mentoring can be especially demanding in terms of the time required to carry out this role effectively. While this might be challenging for the already strained budget of universities and industry, research suggests that incentives for mentors should be considered such as, "Mentor rewards in the form of money or course relief"[19]. Mentors can be renumerated in line with the number of hours and students/peers that they mentor or offered relief in terms of teaching obligations. Each mentor-mentee partnership can allocate the time they feel appropriate to sustaining the mentoring programme, however recurrent contact between the mentor and mentee is essential and ensures fruitful collaboration, "Those pairs that had the most frequent, regular contact rated their relationships as above average or excellent much more frequently"[20]. Therefore, ideally, consider at least a one-to-one meeting, once a month for approximately one hour in-person or at distance.

Integrate women at all levels and monitor progress

To guarantee that there will be more women in tech research and education, it is vital to recruit female students, recruit women, interview women, keep women, promote women and put support measures in place[10]. It is also important to monitor the percentage of women at all levels in an organisation so that specific, but realistic targets and action plans can be created. These figures should then be made public in annual reports and departmental evaluations[10]. In this way progress can be tracked and successful areas, as well as areas for improvement, can be easily identified. Accordingly, the Action Plan, included in the UC's Equality, Equity and Diversity Plan 2019 – 2023, also indicates the strategic objectives, specific objectives, actions,

timelines, indicators, responsible person/team, area(s) involved and alignment so that progress towards gender equality can be closely monitored[18].

The importance of mentoring

Moreover, the relevance of mentoring for higher education institutions and organisations that conduct research is consistently highlighted as demonstrated below:

"Recognise interdisciplinary skills and roles, such as mentorship and teaching, in evaluation criteria for academic recruitment and promotion to create a multidisciplinary education and research environment"[21]

"Provide gender-sensitive training for mentors and supervisors to act responsibly and adequately support women students and professionals in their career development"[21]

For innovative businesses in science, technology and engineering, it is essential to "support inclusive recruitment and career development through e.g., gender-responsive language in job descriptions and mentorship programmes"[21]

Finally, to conclude, academia, industry, human resources and the general community should integrate sex and gender aspects into the decision-making bodies and policies determining their overall ethos and performance so as to, "ensure the social relevance of their produced knowledge, technologies, and innovations"[21]. Gender equality is a fundamental requirement for, "an innovative, competitive, and thriving European economy" and is necessary to support the transition to a green and digital era[22]. Undoubtedly, mentoring programmes will contribute towards achieving gender equality for all.

Further information

For further information about launching, implementing and sustaining a mentoring programme, the following booklets, available from the same authors, offer A Complete Mentoring Roadmap – Booklet 1: The Basics of Mentoring in Academia; Booklet 2: A Step-by-step Guide to Setting Up a Mentoring Programme in Academia; and Booklet 3: Sustaining a Mentoring Programme and Dealing with Invisible Work. These booklets include suggestions and an outline for an introductory session, a detailed plan of subsequent, complementary mentor-mentee activities and training material to be carried out on in group sessions or on a one-to-one basis, a specific session for mentors, ideas for further activities and a checklist for monitoring progress of the mentoring programme. Several resources have been developed in the context of the project Equal.STEAM, please take a moment to review them on the project website: www.uc.pt/equal.steam/
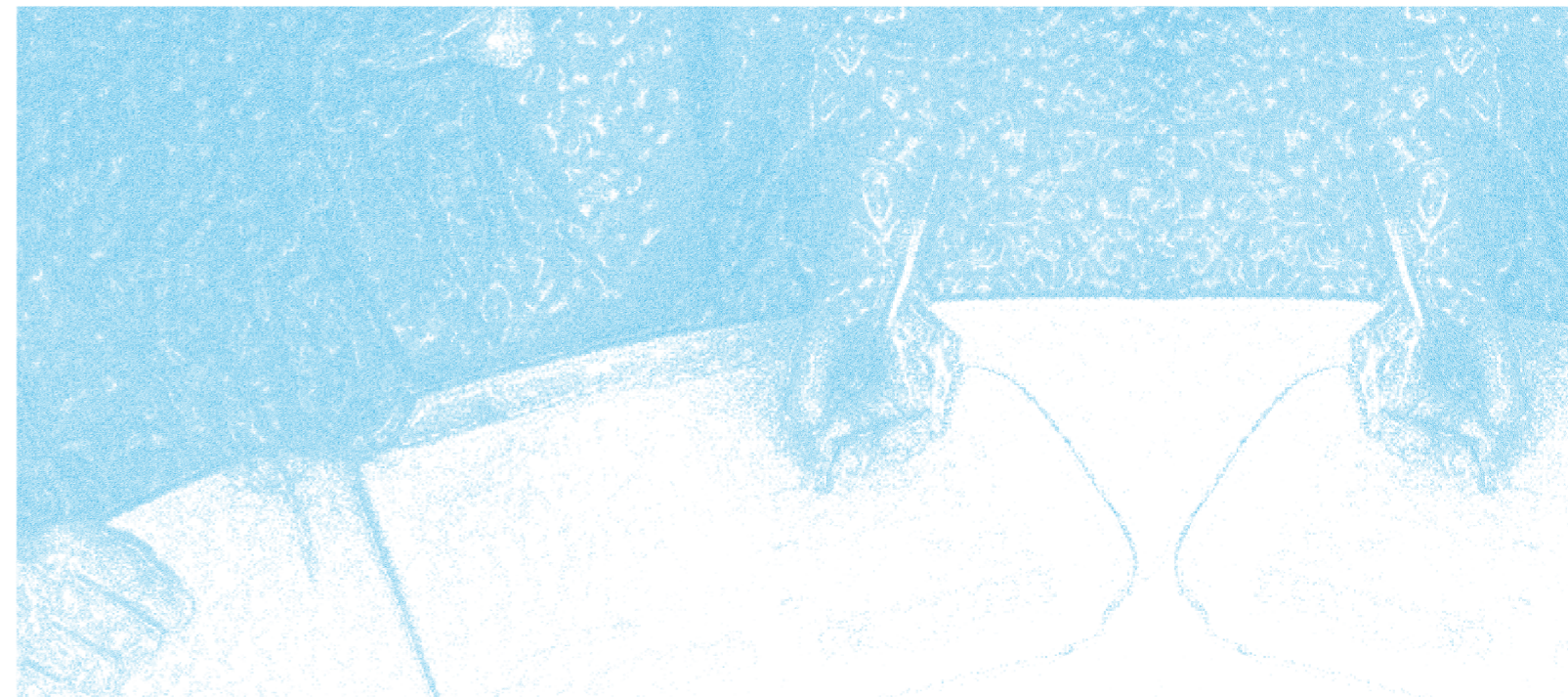
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