Gender Equality at the University of Minho: Empowering Women for Successful Careers in Engineering

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Abstract   With the impacts of technology and globalization, there's an increasing need for studies involving topics related to gender equality. There is a need for growing aware-ness about gender inequalities and promoting effective actions for their eradication., it is no different. Effective policies must be implemented in academia and scientific institutions to address and promote gender equality in managing human resources, research and pedagogical activities. This chapter describes the actions carried out at the University of Minho to implement a Gender Equality Plan (GEP) under the auspices of the European Project H2020, titled "EQUAL-IST – Gender Equality Plans for Information Sciences and Technology Research Institutions". It describes the activities implemented the encountered resistances, the strategic decisions made to overcome them and les-sons learned during the execution along the process.

Keywords   Gender equality plans. Academia. Research. Engineering. Cohalition build-ing. Institutional communication.

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1 Introduction

Gender equality in academia and science has been a central theme of several scientific studies around the world (Bradley 2000; Stewart, Malley, LaVaque-Manty 2007; Gaughan, Bozeman 2016; Sales-Oliveira, Villas-Boas, Las-Heras 2016). In contexts of increasing mobility, globalization and cultural change, it is urgent that science and education policies addressing the management of the University's human resources (including faculty, researchers, administrative staff and students) grow their awareness about gender inequalities and promote effective actions for their eradication. The design of such actions must be a collective and participatory effort to ensure the engagement of stakeholders and that women's aspirations and challenges are taken into account.

Since gender inequality is a transversal problem and holds implications both for the University as an institutions, and individually for people who are its staff members or beneficiaries, this chapter describes the actions carried out at the University of Minho to develop and implement a Gender Equality Plan under the auspices of the European Project H2020, titled "EQUAL-IST – Gender Equality Plans for Information Sciences and Technology Research Institutions". The project involves eight Research Performing Organisations (RPOs) from Northern, Southern, and Central Europe, as well as one from CIS (Commonwealth of Independent States). We also describe the resistances encountered, the strategic decisions made to overcome them and the learned lessons. The narrative intends to share the successes and failures of a highly motivated project team in order to contribute to a collective memory on gender equality initiatives in Higher Education in Portugal and to serve as an inspiration for future initiatives. We believe that changes in this area benefit from cumulative efforts and transfer of experience in order to capitalize on learned lessons.

This chapter is structured in the following sections: section 2 presents an overview of the situation in Europe and Portugal regarding Gender Equality; section 3 describe the implementation of the UMINHO's GEP and the experience of a 3 years' project: EQUAL-IST; section 4 lists the lessons learned and recommendations to other Universities implementing a GEP; while section 5 reports conclusions of this study.

2 Gender Equality in Academia: An Overview of the Situation in Europe and Portugal

Female and male talents in the area of Information Technology and Systems are becoming increasingly necessary as society becomes more digital and interconnected. The quality and excellence of research and teaching now depend on a policy of inclusion and diversity, not limited to any stereotype and / or segregation, but rather focusing on the quality and excellence of initiatives aimed at the development of socio-technical arrangements that advance the human condition. However, much remains to be done to change mindsets and establish learning and work environments that integrate the values of diversity and gender equality.

In the EU-28, women account for more than 50% of all students in the high education system. In 2016, almost one third (32.0 %) of all students were studying social sciences, journalism, information, business, administration or law. Nevertheless, within natural sciences, mathematics, statistics, and information and communication technologies the share of men on the total number of higher education students was 61.1 % (EUROSTAT 2018).

Similarly figures from the year 2016 referring to the EU28 show how male graduates accounted for 57.5% of all graduates in the same disciplines. When focusing on the labor market in the ICT sector, women are underrepresented with only 16.7% female specialists, workers whose job is to develop, operate and maintain ICT systems. Since ICT employment is growing at a fast pace in the EU-28 due to the fast digitalization of work processes, the low number of female workers in this sector requires effective measures to ensure gender equality and the benefits that come with a diverse work environment.

In Portugal, the percentage rate of female students in the fields of science, mathematics and computing is significantly above the EU average – 46.2% vs. 37.6% (EUROSTAT 2018). However, they are as underrepresented in the ICT sector as in the EU, and experience the same barriers to reach the highest positions of the careers in ICT, both in industry and in High Education institutions. In recent years, discussions have been intensifying in Portugal about the factors that lead to gender imbalances in the STEM areas as well as the measures necessary to reduce the gap. The lack of attractiveness of these areas for young women, as well as the difficulties that female graduates encounter in the labor market, are a matter of great concern, as they distract women from jobs and career positions that can ensure greater profitability and professional achievement.

In this context, the importance of bringing these concerns within the university itself is perceived as crucial. The promotion of gender equality discussions and strategies in the Higher Education is the basis for creating mechanisms to attract girls to engineering

and ICT study programs, promoting their successful integration into the labor market and, last but not least, encouraging gender equality more broadly.

2.1 Gender Equality Plans in Portugal

In Portugal, gender equality is one of the State's fundamental tasks taken into account in all aspects of the public and political decision-making processes. It is a fundamental principle of the Portuguese Constitution, and the structural principle of the democratic State. One of the instruments for the implementation of public policies for the promotion of gender equality and the combat of discrimination based on sex and sexual orientation in Portugal, is the V National Strategy for Gender Equality, Citizenship and Non-discrimination 2014-2017 (V PNI).

In the specific area of Higher Education, the V PNI intends, mainly, to promote non-discrimination on grounds of sex and promote equality between women and men in Portuguese Education and Scientific institutions. V PNI is seeking to encourage the definition of Protocols between the CIG (Commission for Citizenship and Gender Equality) and higher education institutions to promote the adoption an implementation of Gender Equality Plans. This national effort, although at an early stage, has produced important results, in particular in terms of raising the awareness towards the many challenges faced by women within the institutions, as students, teachers, managers and administrative staff. Moreover, some of the institutions begin to adopt gender equality plans and to dialogue among themselves to define joint strategies that promote the sustainability of such plans.

2.2 The overview of Gender Equality in the Portuguese Universities

In a global overview, in 2017/18, 53.8% of female students were enrolled in higher education in Portugal (PORDATA). The percentage of new female students was particularly low in the ICT area – 16.5%. This area has seen a continuous decrease of new female students since 2016, our year of reference in this work.

Regarding faculty in Higher Education, the higher the position in the career, the lower the number of women, reaching about 23% of women in the category of Full Professor / Coordinator Professor in Portugal. While men account for 44.8% of faculty members in higher education institutions in Portugal, they hold about 77% of the highest position in the academic hierarchy.
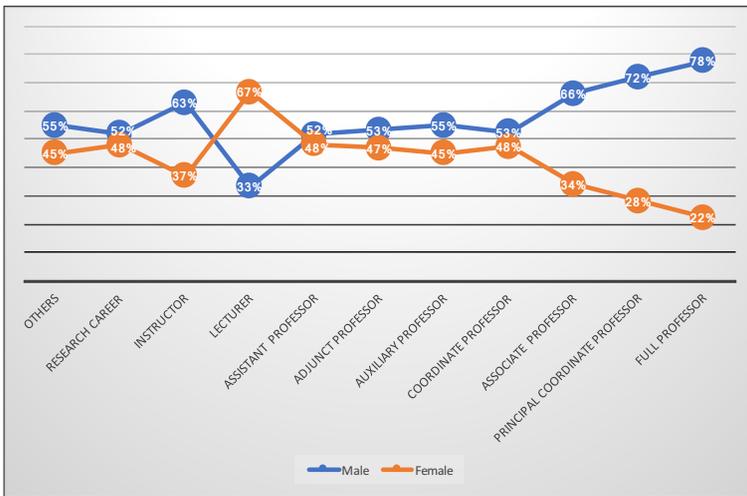
A longitudinal analysis of graduates in ICT between 1999 and 2015 reveals that the rate of feminization has been decreasing. From 26.2% in 1999, it reaches 18.5% in 2015, with some variations over the years. Finally, for what concerns research and development activities, data show that in business and higher education the number of men is always higher than the number of women. The exception is in the Public Sector where the number of women is slightly higher than that of men; the same trend can be seen in private non-profit institutions (PORDATA 2018).

2.3   The overview of Gender Equality in the University of Minho

University of Minho implements a set of principles that promote equal opportunities for its employees, through non-discrimination practices, whether based on race, ethnicity, gender, age, disability, religious belief, opinion or political ideal. University of Minho is committed to the promotion of diversity and equal opportunities for men and women.

In recent years, the educational offer of the University of Minho is growing above the average growth of other higher education institutions in Portugal. New and enhanced study programs at the level of graduate and postgraduate studies have been created in emerging areas. In the academic year 2017/18, the University of Minho had 18,600 students, 12,200 of them in undergraduate and integrated

master's degrees students; 4,500 were masters students; and 1,900 were PhD Students. The University of Minho covers almost all scientific disciplines in 12 schools and institutes and 32 research units.

In 2018, 50.6% of the 2,001 employees were women. In the teaching career, out of the 1,237 professionals that make up the teaching staff of the University of Minho, 555 (44.8%) were women. Career patterns are similar to the already reported trends in higher education institutions in Portugal and Europe. In most disciplinary areas, including those with the highest number of female teachers and researchers, women are underrepresented in the higher level positions, especially in the full professor position. The University never had a female Rector, while various schools and institutes were led by women.

2.4   Gender Equality Plans (GEPs) in Portuguese Universities

In Portugal, 4 Universities (from a universe of 37 universities) have implemented Gender Equality Plans (GEPs), including the University of Minho which has now a GEP formally signed by the School of Engineering. These GEPs systemize principles and regulations that guided the Equality Gender interventions in these universities and describe the adopted actions and best practices. The Portuguese GEPs are:

1.   UBIGUAL Equality Gender Plan, Center of Social Studies, University of Beira do Interior, Portugal
2.   "UTAD rima com Igualdade", Equality Gender Plan of UTAD, University of Trás-os-Montes and Alto Douro (UTAD), Portugal
3.   Diagnostic and Implementation of Gender Equality Plan, School of Education of the Polytechnic Institute of Porto (ES-EPP), Portugal
4.   Gender Equality in Information Systems and Technology, School of Engineering of the University of Minho (UMIN-HO), Portugal

The following sections describe the GEP development process at the University of Minho.

3   UMINHO's GEP Implementation: The Experience of a 3 Years' Project

At the beginning of the EQUAL-IST project, the University of Minho was in a very early stage, in what concerns Gender Equality policies. Despite the impactful research being carried out in the area of gender equality, predominantly in the Institute of Social Sciences, much of its efforts focused on aspects external to the University. Other schools and institutes of the University also had some activity in the gender area. The School of Economics and Management,

where gender issues are analyzed in the labor market; the School of Law with research on various governmental initiatives for gender equality; and the Institute of Education that carries out studies focused on gender violence.

Within the framework of the EQUAL-IST project, it was possible to work internally on policies, actions and strategies in order to introduce structural changes to improve gender equality, diversity and the balance between work and family. The tool for achieving such objectives was to design and implement a Gender Equality Plan (GEP). The strategies adopted for the creation of the GEP, the actions and activities carried out during its implementation as well as the future actions outlined to guarantee the sustainability of the GEP at the University of Minho, are described in the following subsections.

3.1 Defined Strategy: Scope and Goals

Based on what has been outlined by the EQUAL-IST project, 4 dimensions of study were identified: (1) human resources and management processes, (2) research, (3) teaching and (4) institutional communication. For each of these dimensions, an initial diagnosis was conducted to highlight a set of ideas and challenges in higher education in Portugal as starting points to identify the specific needs of the University of Minho in the gender equality realm. To this end, an exhaustive compilation of gender equality initiatives carried out in Portugal was done. All national/regional projects and studies that discussed gender equality in higher education were analyzed.

In order to begin to involve the key organizational actors, and following the EQUAL-IST Participatory Gender Audit Methodology, a series of workshops and individual interviews were held at the University of Minho in order to understand what students, teachers, researchers and administrative personnel perceived as gender equality and what the main challenges each of these communities felt. This internal discussion was important to understand the specificities of the situation at the University of Minho and, thus, propose a Gender Equality Plan that reflected internal preoccupations.

In total, 12 interviews were conducted involving various sectors, positions and functions at the University of Minho; 02 surveys, one for teachers and one for students; and 05 Workshops, of which four were intended for specific audiences (faculty, administrative staff, researchers and students), and 01 Final Workshop involving all participants of the previous actions and in which the results of this initial diagnosis were presented. Such internal audit generated the first ideas of actions and activities that would make up the Gender Equality Plan of the University of Minho.

3.1.1   Human Resources and Process Management

The human resources and management process is a fundamental organizational function in promoting the principles of diversity and equality. Dealing daily with the implementation of legislation and processes related to recruitment, selection, evaluation of people, human resource management includes the implementation of information systems appropriate to the systematic and up-to-date knowledge of variables directly related to gender inequalities.

Data collected at the School of Engineering and University of Minho, particularly through interviews and observation, indicated the existence of several challenges. These challenges include a profound rethinking of a number of issues related to building a more gender-responsive human resource management culture capable of deconstructing some of the existing ideas and beliefs about the preferences and merits of women and men for access and stay in certain activities, as well as to manage family and / or personal balances.

Among others, it was possible to detect an excessive trend towards naturalization of inequalities between men and women, based on supposedly different by merit and / or performance. Information management practices that do not consider gender as a category of analysis also promoted inequalities, particularly regarding absenteeism, maternity / paternity leave management of academic and non-academic staff.

Thus, the main challenges discussed that emerged from the discussions in this dimension of Human Resources Management were:

A   Reflexivity and Awareness on Gender Equality
at the University

A university culture that promotes Gender Equality leads to a better organizational performance benefiting the external recognition of the institution. It is necessary to instigate those who hold academic management positions to reflect and recognize these issues, contributing to a better assessment of the situation of women and men and to mobilize resources in support of initiatives to diagnose and intervene on this reality.

B   Institutionalization of Gender Equality as a Guiding Principle
of the Mission and Strategy of the University

The analysis performed shows that women's participation in ICT / IST
is very low and this happens both at the level of non-academic staff
and at the level of teachers and researchers. In addition, the inter-
views show that women who remain in these areas are ultimately in-
duced to perform administrative / support tasks (horizontal segre-
gation), being "diverted" from currently better evaluated activities,
such as networking activities with companies, or activities which in-
volve resolution of technical problems (compared to teaching and /
or more routine activities).

Thus, along with the promotion of reflexivity and awareness and
training on Gender Equality, it is necessary to create mechanisms
for its formal institutionalization. For this, Gender Equality must be
reflected in the scope of strategic documents, becoming an indica-
tor of institutional performance.

C   Physical Structures and Services that Favor the Practice
of Gender Equality and the Conciliation of Life

During the discussions with the various actors involved, it was found
that one of the major difficulties for academic and non-academic staff,
at all hierarchical levels and in various contractual situations, includ-
ing students, is the lack of knowledge about the rights and proce-
dures to be adopted in situations that indicate the existence of gen-
der inequalities. In addition, the need for the University to provide
infrastructure to support inclusion and diversity was also emerging
from the audit process. Thus, it was decided to include in the GEP
dedicated actions aimed at creating such formal structures that fa-
vor Equality and Diversity, namely by extending the functions of the
already existing Office for Inclusion to support for gender equality.

3.1.2   Research

Taking the gender dimension into account in scientific research is a fun-
damental point in disseminating the principles of diversity and equali-
ty, mainly because knowledge production supports teaching and allows
the interaction between the University and society. Research is, there-
fore, a structuring element of all activities developed at the University.

From the data collected by the previous actions, several challeng-
es were revealed that imply the need to deeply rethink several ques-
tions related to the scientific inquiry process at the University. There-
fore the main challenges identified are:

D Fairly Recognize, Encourage and Evaluate Gender Equality Projects / Publications in the Organic Sub-units of Education and Research

Data show that themes and areas of research continue to be valued and recognized in a very androcentric way, and research projects, publications and other scientific indicators developed on the theme of gender and gender equality are, as a rule, considered less important and therefore devalued and unrecognized. This finding is transversal to the various scientific areas, but is more worrying in the areas of Engineering and Technologies, considering the enormous relevance that gender equality has for the development of science and technology.

In fact, there is an overall predominant trend to identify gender with choices and careers paths of researchers only. Instead, the issues of how results of scientific research conducted without taking the gender dimension into account benefit and integrate more or less positively women and men as users of innovations is not explored and tackled.

E Promotion of Gender Diversity in Groups and Research Projects

Data show that the composition of teams in scientific research projects follows affinities that are often shaped by the gender of the promoters and it has been possible to identify several situations in which there is no gender balance. The main focus of discussion was non-discrimination against researchers, regardless of gender, age, ethnic, national or social origin, religion or belief, sexual orientation, language, disability, political opinion, social or economic status. It was acknowledged how there are a number of mechanisms, some implicit and others explicit, that explain the discrepancy in access, for example of women, to project coordination and / or team integration.

3.1.3 Teaching and Students' Services

The teaching dimension refers to several challenges that touch on gender equality, evident from the still residual number of women in certain degrees such as engineering and technology.

Thus, priority is given to the definition and implementation of measures to increase women's demand for traditionally male dominated degrees and to widen the gender balance in other study programs which tend to be traditionally female dominated. We begin to list the challenges, namely:

F Gender Inequalities During Studying Course

The results of the studies and discussions revealed that gender differentially affects the time spent studying by students, with women, particularly those living with the family, tending to accumulate family and household tasks, something that does not happen with the same intensity and impact in the case of men. Another noteworthy aspect was women's tendency to undertaking 'service tasks' such as report writing activities and organization of meetings when they are part of working groups, particularly in the Engineering and Technology courses; this phenomenon, partly resulting from an expressed preference and partly outcome of social-group stereotyped expectations, limits female students' availability to more technically oriented learning that will later be fundamental for their professional success.

G Awareness of the Impact of Gender on Professional Life Among Students

There is no information on the challenges faced by female graduates once they have entered the labor market. This lack of information leads to a lack of knowledge about solutions to the challenges to be faced, lack of interventions with the industry to promote mechanisms that ensure gender equality and fear of the professional future expressed several times by the female students.

H Lack of Awareness of Teaching Staff About Gender Issues

This situation means that gender issues are not integrated into classroom dynamics and evaluation processes, which can result in injustice and inequality of opportunities for female and male students.

3.1.4   Institutional Communication

The promotion of gender equality in the academic context is facilitated by the development of an effective communication policy that covers the various dimensions (teaching, research and administration) and includes the areas of content design, as well as communication strategies and means to be used, both internally and externally, in the relationship with the surrounding community. The main challenges that emerged from these discussions were:

I   Concern About Language Issues in the Description of Study Programs and their Dissemination Through Communication

The study revealed the importance of a gender-sensitive communication methodology, starting with the construction of communication messages for dissemination of science, to the use of images and other multimedia content sensitive to gender.

This first diagnosis exercise carried out through internal data analysis and the Participatory Gender Audit Methodology was further elaborated by the EQUAL-IST project Team at UMinho and subject to several rounds of negotiations with the internal management structures. This process resulted in the Gender Equality Plan, including a set of actions for each of the concerns and ideas presented and discussed above, and activities emerged, described in the following paragraphs together with the encountered resistances and the implementation strategy which was pursued.

4   The GEP's Implemented Actions, Faced Issues and Engendered Coalitions

In order to respond to the challenges mentioned in the previous subsection, the Gender Equality Plan includes a set of short- and medium-term measures with the objective of developing a policy focused on Gender Equality.

4.1   Human Resources and Process Management

In this dimension, a set of actions were set out in the Gender Equality Plan of the University of Minho, taking into account the main challenges mentioned in the previous section. The actions included in the GEP and already carried out in concrete activities during the duration of the project are:

- To organize scientific and technical events focusing Gender Equality challenges in several contexts.
- To train top and middle managers in the application of informed and gender equality sensitive practices.
- To adopt information systems that support the monitoring of the GEP implementation and to create a Gender Equality Observatory to give visibility to data and monitoring results.
- To create a book of 'life stories' of the Female Portuguese Scientists.
- To define, implement, and disseminate a Code of Conduct for diversity and gender equality.

- To create infrastructures and processes for raising awareness and offering support to gender equality and diversity.

These actions were generally understood as relevant and conducive to greater justice practices. However, difficulties were raised in relation to any financial effort associated, in particular, with the extension of the responsibilities of the Office for Inclusion. This office already exists and has as its mission to promote inclusion in the academic context, aiming at equal opportunities, and to provide support to students, teachers and other workers with disabilities or special needs. Its mission is currently to guarantee the best accessibility conditions at the University of Minho. The extension of its functions shall include the responsibilities of (1) collecting data and disseminating aggregate information on the status of the University with regard to gender equality on a continuous and regular basis, (2) organizing training and other events on gender sensitive practices and communication strategies, (3) dissemination of the code of conduct for diversity and equality, and (4) support for concrete situations of gender inequality.

In order to reinforce the commitment to implement this structural change and make of the University's GEP an example that can be used by other universities in Portugal just starting a similar process, two protocols of collaboration with Gender-Related Governmental Bodies were set up, including the Portuguese Commission for Citizenship and Gender Equality.

4.2 Research

Regarding the research dimension, a set of intervention actions were listed in the Gender Equality Plan of the University of Minho, namely:

- To promote the implementation of projects and publications on gender equality, in all fields of science, with a special focus on IST. This action includes the supervision of internships and project-based learning, involving students from different courses and disciplines; it also includes collaborative activities with local, national and international entities already having in mind future funding gender equality projects.
- To train researchers and research leaders on the need for non-discrimination of specific research themes, including gender equality and diversity.
- To promote gender-balanced project teams as a requirement for the University's endorsement of the submission of project applications.
- To promote seminars to analyze gender issues on science and their implications in alienating talented researchers.

- To ensure a balanced dissemination of research results achieved by female and male researchers.

The major challenge encountered by the EQUAL-IST project team was the lack of regular dialogue on gender issues affecting research at the University. Thus, it was necessary to carry out the above mentioned activities in several research centers, to meet with the leaders of the research centers and the university. From such dialogues a growing awareness of the difficulties faced by female researchers and a genuine interest of many male researchers in implementing fair practices emerged.

Another important result of the GEP implementation in this area was the identification of researchers carrying out gender studies in the various disciplines, from medicine to law through engineering and management to social sciences. This allowed the creation of a multidisciplinary working group committed in pursuing collaborative and cross disciplinary research in the area.

4.3 Teaching and Academic Services

In this dimension the actions outlined took into account the gender imbalances found in the STEM areas and the need to raise both teachers' and students' awareness of the impact of gender issues in studying and working life. Thus, the following actions were defined:
- To establish a program of contacts and clarifications in secondary schools to demonstrate the potential of women in these areas, demystifying some of the stereotypes still existing about women in STEM.
- To carry out regular activities to raise awareness about gender inequalities in the University.
- To organize events to raise awareness among faculty and students about the importance of taking the gender equality principles into account while defining the study programs.
- To offer courses, seminars and lectures on gender equality and specific content, including the segregation and discrimination against women in the business world and ways to identify and address them.
- To establish a practice of putting students in contact with successful women in the information systems and technology field in order to overcome stereotypes and inspire young women.
- To provide specific training for teaching staff on how to adopt a gender sensitive approach in the programs and dynamics they define for the courses for which they are responsible.
- To create an observatory with publications/projects about gender equality and diversity to support gender mainstreaming in

disciplinary areas as well as to promote partnerships and exchanges of experiences with researchers and teachers.

The planned actions and the activities that were carried out to implement them, allowed to establish a permanent dialogue on gender issues and to begin to create a culture of transparency that allows pointing out problems and co-designing solutions. The success of the activities was such that it students themselves ended up integrating issues of gender equality in events that they organize and propose themselves in the framework of the activities of the University's GEP.

4.4   Institutional Communication

With regard to institutional communication, the planned actions focus on language issues in the description of teaching programs and their dissemination through communication:

- To encourage seminars and lectures to raise awareness about the importance of gender-sensitive communication in all dimensions, inviting professionals and experts in the field;
- To organize meetings to inform and train teachers and researchers on materials and informative content to be used year by year;
- To disseminate norms specifically directed to gender inclusion practices in organizational and scientific communication and communication, particularly with regard to the language used.
- To integrate support for linguistic neutrality in marketing Educational Offers and other information.

The activities defined and implemented benefited from the participation of internal experts to the University with wide experience on modes of communication. Currently there is a strong proximity and collaboration with the Office of Communication, Information and Image of the University.

5   Sustainability Initiatives and the Foreseen Future of the UMINHO's GEP

The EQUAL-IST project took place in a context of little reflection on the internal challenges of gender equality. During the three years of the project, a large number of activities were implemented to raise awareness of existing problems. Alongside this efforts activities focused on the production of structural changes, thus ensuring that GEP is maintained and updated by the University were also carried out. Some important permanent changes include: (1) the collaboration with the National Commission of Citizenship and Gender Equality established by a dedicated protocol signed by the Rector of the University of Minho; (2) the data intelligence process to promote transparency

about gender issues at the University and the online observatory that ensures the dissemination of updated insights; (3) the University's Gender Equality network of researchers ensuring the collaboration in multidisciplinary research projects and events; (4) the organization of annual events to attract girls to ICT study programs; (5) the integration of modules/classes on gender equality into existing courses; (6) the issuing of annual calls for multidisciplinary projects and master dissertations on gender equality topics; (7) the annual definition of proposals for projects submitted to local, national and international funding on gender equality topics; and (8) the regular dissemination of guidelines regarding gender-sensitive language and practices.

Creating awareness and changing mindsets requires time and effort. Although the EQUAL-IST project was instrumental in triggering a change process, giving it a multinational dimension and respectability of a theme that deserves European funding, 3 years is a very small period for the changes to mature and strengthen. Many planned structural changes were not implemented. Among these, the recommendation of ensuring parity in the career progression and doctoral dissertation panels, the recommendation for the recruitment of candidates according to the needs of gender balance in the University's units and subunits, the recommendation for the creation of structures to support the balance between professional and family life, the recommendation for greater support for the women's career advancement, among several other recommendations that emerged from the project. In essence, the non-implemented changes are precisely those that alter power balances and, therefore, find the strongest resistance to their implementation. The continuity of the activities initiated with EQUAL-IST is seen as essential to produce the change of attitudes and rooted practices; it is believed that the national and international collaborations that have been established within the scope of the project will allow the continuation of the GEP's actions not yet implemented.

6 Lessons Learned and Recommendations to Other Universities Implementing a GEP

In fact, each step of this trajectory from the design to the implementation of Gender Equality Plan in University of Minho has helped us, on one side, to identify the important challenges in reducing gender disparities and, on the other side, to generate contexts for people to identify the possible measures to be implemented in order to deal with each challenge. In this way, the GEP's implementation has been instrumental to promote internal discussions, identify researchers in the University that are experts in the field, facilitate multidisciplinary collaboration and raise awareness among all University's actors.

Along the process, some lessons were learnt:

- It is important to continuously nurturing awareness of the role played by women in engineering, both to motivate students and to remove existing stereotypes.
- Promoting interaction with academics and researchers of all Organic Units of Teaching and Research (UOEI) of the University of Minho researching gender equality in their different domains and areas of knowledge, was crucial to include a multitude of perspectives and knowledge in the defined GEP.
- While giving visibility to gender disparities is very important to promote internal dialogues, of no less importance is to provide incentives to empower organizational actors to pro-actively define initiatives to deal with those disparities.
- GEP plays an instrumental role in promoting internal discussions, identifying researchers that are experts in the field, facilitating multidisciplinary collaboration and raising awareness among all actors
- Partnerships with funding agencies and governments' entities that address gender equality issues are of central importance to reduce internal resistance.
- Once awareness and motivation are created, it is important to support internal initiatives that result from the self-organization of the actors involved (students, researchers, staff) because they signal that the principles have been incorporated by the various communities.

As recommendations for universities that are starting the process of defining and implementing a GEP, we highlight the need to obtain the support of the top management as well as internal collaboration networks that promote the informed discussion of topics related to gender equality.

On the other hand it is important to relate the recommended structural changes with positive impacts on the image of the university, its programs of study and graduates. Collaborations with national and European entities that promote gender equality can empower the promoters of the GEP implementation process.

Finally, the involvement of the students, the communication with secondary school students and the collaboration with the employers of the graduates are considered of extreme importance. These aspects are of particular importance for the STEM areas where there is still a weak integration of female students and major gender challenges in the various professional careers due to stereotypes rooted in culture.

7   Conclusion

This chapter provides an overview of the work carried out during 03 years of the implementation of the GEP in the University of Minho. All the implemented activities were important to increase awareness of internal gender equality issues; this awareness was almost inexistent at the beginning of the project since there was not enough dialogue between faculty, researchers, administrative staff and students about the topic. Moreover, there was a general belief that merit would be independent of specific personal circumstances, or that supposedly 'natural preferences' different from men and women were at play, many of which are in reality rooted in traditionally gender biased culture.

Based on the experience of the GEP implementation, a set of lessons learned emerged and were presented in this chapter. These lessons emerged from the difficulties and opportunities encountered while carrying out activities: some of the defined solutions to the faced challenges worked very well, others proved to be more difficult to implement in the given timeframe.

Very important factors associated with the success of the GEP implementation at the University were the creation of an internal network of experts in researching gender equality topics (usually focusing issues outside the university) and the close collaboration with the Portuguese Commission for Citizenship and Gender Equality that empowered internal initiatives to change mindsets and structures.

From the lessons learned we developed some recommendations for Universities starting the effort of implementing GEPs, in particular, in Engineering and IST.

For the future, a dedicated GEP Sustainability Plan was designed and approved internally, which includes a set of actions and activities to further enhance gender equality at the University of Minho as well as to continue contributing for a more inclusive society.

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