Chapter 8

Incorporating the Gender Perspective in Engineering Curricula: The Case of École Centrale Marseille

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Abstract

This chapter aims to present the context, the approach and the pedagogical tools deployed at École Centrale Marseille (ECM) to promote gender equality in engineering education. The ECM has put several mechanisms in place such as challenging traditional gender stereotypes, social representation of the engineering profession and facing the realities of a professional world that is overwhelmingly masculine, including awareness of the glass ceiling effect on access to positions of responsibility and prevention of sexual harassment. The ECM model combines multidisciplinary studies with a professional grounding with the aim of educating students to be able to transform society. In 1997, the ECM founded the Mediterranean Network of Engineering Schools with the main goal of fostering sustainable development in the Mediterranean basin. The ECM has been part of the community of practice on gender equality initiated by Mediterranean Network of Engineering Schools through its participation in the H2020 TARGET project on gender equality in research and higher education.

Keywords: Engineering curricula; social responsibilities; engineering education; gender; sustainability; societal transformation

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Introduction

Reducing the gender gap in engineering education could help to reduce the skills gap, increase employment and productivity and reduce occupational segregation. Fostering gender balance among engineering professionals would also contribute to ensuring that engineering addresses the needs of both women and men. However, there is currently a low proportion of women studying and graduating in engineering in France.

Working towards achieving a better gender balance in the scientific professions, and particularly in engineering, is an ambitious task since the prejudices and fears to be overcome are numerous and, unfortunately, emerge early on in the educational process. At the level of an institution that is located at the very end of the educational chain, the leverages can nevertheless be powerful, including the institution's public voice and those of its employees, but also and above all, by training the main 'users' of the institution, that is, the students, to be actors of change themselves, throughout their professional and personal lives. The workload and the pressures for students in engineering are high, which can be linked to students developing individual and collective behaviours useful for them when they hold positions of responsibility in their future careers (Darmon, 2013).

Equal opportunities and gender issues are not specifically addressed as topics within the preparatory courses required for admittance to engineering degree programmes at École Centrale Marseille (ECM) as these courses are focused on the passing of exams. However, since hazing is prohibited in France (Bill No. 98-468, 1998; Ministry of Higher Education, Research and Innovation, 2011; Sénat, 2010), there are measures in place to prevent sexist behaviour among students during the two years of these *classes préparatoires aux Grandes Écoles* (CPGEs) (Blanchard, Orange, & Pierrel, 2016). In line with the works of Steele and Aronson (1995) as well as Régner et al. (2010) and Régner, Steele, Ambady, Thinus-Blanc, and Huguet (2014) on stereotype threat, many studies emphasise the weight of the fear of failing in scientific streams, which are considered more demanding, thereby frightening off some male and female candidates. However, other mechanisms seem to come into play more in line with traditional gender stereotypes and the social representation of the engineering profession as masculine and have a particular impact on women.

That is why developing the educational curriculum is so important and why it must result in a balance between scientific disciplines, social sciences, as well as activities where students are in charge, and activities that prioritise the discovery and analysis of the socio-economic world. It is in this context, which affects all the professional dimensions of the future engineer, that we must act to effectively raise awareness of equal opportunity and gender issues among students. As stated by Mertus, Mršević, Dutt and Flowers (1995, p. 67):

> The curriculum is one of the main motors in developing stereotypes, in terms of gender roles – expected roles for men and women – as well as in promoting acceptance of such stereotypes. […] But school could also reverse gender role stereotypes and lead the fight against discrimination of girls and women.

In the next section, we briefly comment on the main conceptual and methodological reflections that frame this chapter.

Conceptual and Methodological Reflections

This section provides a brief reflection on some of the literature that looks at integrating the gender dimension in engineering curricular, explains the links between ECM and the TARGET project and provides a brief reflection on the origins of this chapter. Integrating the gender dimension into research content and the curricular in higher education institutions (HEIs) means fostering gender knowledge in all areas. This may include interventions to mainstream the gender dimension in higher education curricular in order to raise awareness and responsiveness to the gender dimension. It can also mean initiatives to foster specialised gender programmes to train researchers (Palmén et al., 2020). Becker, Jansen-Schulz, Kortendiek and Schäfer (2007) describe four ways to integrate gender aspects into tertiary education:

- Transdisciplinary approach: provision of single gender modules open to students from a variety of study programmes.
- Integrative approach: implementation of theory, methods and basic research results as a basic fundamental requirement of teaching and research.
- Particular-explicit approach: provision of programme-specific gender modules or particular modules.
- Explicit approach: provision of specific gender study programmes at all levels of tertiary education.

HEIs can carry out the following activities to integrate the gender dimension: mainstream gender awareness in all curricula (LERU, 2015); include methods of sex and gender analysis and related knowledge in all curricula[1] (LERU, 2015); develop new knowledge and training methods for students and researchers in fields where sex and gender analysis is of special relevance; collect and give publicity to research that has successfully integrated sex and/or gender perspectives (LERU, 2015; Palmén et al., 2020). Although real progress has been made on integrating the gender dimension into the curricular in some fields of study, e.g. health (WHO, 2007; Karolinska Institute – through its doctoral training programme), in other areas such as engineering or physics, less progress has been made. This chapter aims to add to this literature by reflecting on the case of ECM.

While integrating the gender dimension into formal knowledge areas has been the main target area for interventions in the field, it is recognised that there are two types of curricula: an explicit one and an implicit one (Arcos et al., 2006). Tazo, Boyano, Fernandez-Gámiz and Calleja-Ochoa (2020) identify how the former pertains to study plans, learning methodologies, outcomes, competences and evaluation systems, etc. (Wesselink, Biemans, Gulikers, & Mulder, 2017).

[1]See https://genera-project.com/. Accessed 6 December 2021.

The latter reflects sets of thoughts, assessments and beliefs that inform the relationships and practices between people (Pehlivanli Kadayifci, 2019; Tazo et al., 2020, p. 3). It is mainly this second area that has been developed at ECM and which is reflected on in this chapter. We comment on the ECM approach, which includes developing key competences in both the formal and informal curriculum, predominantly to make future engineering professionals aware of gender imbalances in the field, the societal lab, as well as developing a sexual harassment prevention system.

ECM, while not directly involved in the TARGET project as an implementing partner, has been indirectly involved in TARGET through the Mediterranean Network of Engineering and Management Schools (RMEI) network (see chapter by Zabaniotou et al. in this volume). ECM representatives have taken part in TARGET project meetings and other activities including the co-creation workshop that was held on 21st and 22nd July 2021 to look at the 'Resistances to Gender Studies or Gender in Content' and to examine 'Gender in Curricular in STEM'. It is this second subject that is reflected on in this chapter. The aim of these co-creation workshops was to provide a forum where implementing institutions could come together with international experts on these themes and discuss the real challenges that the implementing institutions were facing. Originally, it had been planned to hold the workshop at ECM but due to the COVID pandemic the workshop took place virtually. Experts in integrating the gender dimension in engineering participated and provided concrete feedback to implementing institutions (Englmaier, Wroblewski, Leitner, & Fey, 2021).

In this chapter we present the approach pursued by ECM in incorporating the gender dimension in the curriculum. A central point is the long-standing commitment of ECM on sustainable development – including environmental, economic and social dimensions. In participating in the community of practice on gender equality initiated by RMEI it has been important to reflect on gender issues in engineering and go beyond the concern about gender imbalances. In this vein, the comprehensive curriculum of ECM and its emphasis on ethics and responsibility enables the mainstreaming of social and gender issues in the context of the exercise of the engineering profession and its impact on society.

Gender Imbalances in Engineering Education in France

Engineering education in France differs significantly from the classic European university system firstly due to the recruitment system which, unlike the usual university admissions system, is selective. Most of the *Grandes Écoles*[2] recruit their students from candidates who have successfully passed the competitive entrance exam at the end of an intensive two-year undergraduate course in maths, physics and chemistry known as the *classes préparatoires aux Grandes Écoles* (CPGEs).

[2]In France, the *Grandes Écoles* include the engineering schools mentioned above, but also the business/management schools and some specialised schools such as agronomy or veterinary schools, etc.

The majority of students at French engineering schools come from the general scientific streams of secondary education. In these streams, parity has been more or less assured for several years, for instance 48% of final-year science students were women in 2018. If we look a little more closely at the choices made by students by subject in the final year of secondary education, mathematics, physics and chemistry or environmental sciences do not show very marked differences with regard to gender. The *Baccalauréat*, which is the national examination on completion of secondary education in France, is awarded to more than 93% (success rate) of women (90% for men), indicating that the situation on entering higher education is balanced. Access to the scientific CPGEs is subject to an assessment of the students' competencies, taking into consideration not only the results of the *Baccalauréat* (a score of more than 16 points out of 20 may be required for the best schools) but also overall performance during the final years of secondary education.

Although these criteria should be favourable to women as they achieve better results in secondary education, it is here that we begin to see the first signs of gender imbalances. Indeed, even though women are in the majority in higher education when all disciplines are taken together (128 women compared with 100 men, i.e. 56%), they represent only 42% of students in scientific CPGEs. The filter of academic requirements constituted by the selection process for access to CPGEs should in fact favour women, as 42% of female candidates who pass the scientific *Baccalauréat* obtain an honour grade (each stage of the exams passed first time with an average of more than 12 points) compared with only 37% of male candidates (Ministry of Higher Education, Research and Innovation, 2016). This constitutes not only a pool of brilliant female students that is statistically slightly larger than that of male students, but also a pool of female students who have certainly become aware of their scientific value and potential during their final years of secondary education.

Another obstacle is the weight of popular beliefs about the workload at the CPGEs, which certainly plays a significant role at this stage. While the work required from the students during the two years of preparation for the competitive entrance exams is indeed intense (and, for instance, difficult to reconcile with extracurricular activities requiring any significant time commitment: high-level sports or artistic activities, etc.), it turns out that the failure rate in the CPGEs is the lowest in all of higher education. This has been connected to the personalised guidance that the students receive during their schooling and explains why at the end of the two-year CPGEs the gender balance is more or less the same as it is upon entry.

At the end of the two years of CPGEs, students take the competitive entrance exam for admission to the *Grandes Écoles*. Each school, or group of schools such as the Groupe des Écoles Centrale (GEC), has its own competitive entrance exam. This system enables the emphasis during the exam to be placed on particular scientific disciplines and/or skills. The examination usually consists of a written exam followed by an oral exam that focuses only on scientific disciplines and languages (French and English). For the GEC examination alone, there are approximately 10,000 candidates with a success rate of about 20%. Since men

and women have the same percentage of success in the competitive examination, ECM includes numbers of women in the institution in proportions that are ultimately identical to those found in the CPGEs, i.e. 30% (if we only consider engineering rather than management/business, etc.).

The Case Study of ECM

ECM is a French public HEI specialised in engineering education. ECM is a member of the GEC along with the schools in Casablanca, Lille, Lyon, Mahindra, Nantes, Paris and Beijing, which all share a common vision and culture of training multidisciplinary engineers. Around 2,000 students a year graduate from the five schools located on French territory and are known as *Centralien(ne)*s.

The educational approach of the engineering schools also includes a significant part of the training (30% at ECM) dedicated to the learning about the business world. The schools are authorised to award their engineering degrees by an independent national agency, the French Commission for Engineering Degrees (the *Commission des Titres d'Ingénieurs* or CTI), which periodically audits the schools and authorises them to award their degrees for a maximum of five years. The French engineering degree is equivalent in the European system to a master's degree in science, allowing students to continue their studies at PhD level. There are various ways that ECM has tried to tackle gender biases in engineering, including the societal lab, integrating gender awareness into general competences as well as developing a sexual harassment prevention system.

How Is Training at ECM Designed?

In the two years prior to enrolment at ECM, students have developed their thinking, learnt methods and acquired solid scientific knowledge, which constitutes the foundations on which the engineering programme is built. They have also developed a great capacity for work and concentration in order to pass a difficult examination, and have devoted themselves for two or three years exclusively to their scientific work.[3] During this time, they have not received any training in the humanities or social sciences. As previously explained, training on social and gender issues is completely absent during this preparatory stage although measures to prevent sexism and sexual harassment are in place.

To gain admission to an engineering school, students are selected via a competitive exam consisting of written and oral scientific and language tests. Selection is based only on scientific and technical criteria. The selection criteria are related to the ability to apply scientific reasoning in one or more fields, to demonstrate agility, speed and the ability to make the right choices as well as the ability to adapt to a high pace environment. The proportion of approximately 30% of women in the CPGEs is the same proportion found in the large engineering schools albeit

[3]It is not unusual for CPGE students to repeat their final year in order to try to gain access to the school they have chosen.

sometimes differently distributed among the individual schools. Thus, for the *Grandes Écoles* it is not only a question of increasing this rate, targeting external organisations and stakeholders (for instance, through dissemination and tutoring actions with schoolchildren or by looking for other recruitment channels with the help of the 'Societal lab') but also of working within this framework, that is, engaging with individual and collective behaviour change, tackling biased processes, procedures and practices and developing an awareness and a respect for equal opportunities both within the school and later on.

ECM, aware of this role, has set up an internal structure called the 'societal lab', which aims to strengthen the skills of underprivileged groups (secondary school students and NEETs – Not in Education, Employment or Training) by targeting their academic, professional and personal success. This includes a pedagogical approach aimed at raising students' awareness of ethical and social issues and preparing them to be responsible change agents throughout their professional lives. While the participation of female students in the 'societal lab' contributes to challenging the traditional vision of the engineering profession as masculine, the focus on responsibility, ethical and social issues pave the way to addressing gender issues in relation to the profession and its impact on society.

All the skills acquired in the preparatory classes are used to develop scientific and managerial skills in the engineering school. Teaching includes a core of fundamental and engineering sciences through activities led by research professors who themselves develop research activities at a high level, and through the introduction of social and business sciences. Students' managerial skills are acquired and the building of personal and professional networks is supported through participation in relevant association activities that have historically been very present in the *Grandes Écoles*. Students are thus actors in internal school organisations and clubs that they themselves have set up. They organise major events (parties, sports tournaments, conferences etc.) and engage in civil society associations and not-for-profit activities, promoting teamwork and providing experience of legal and financial responsibilities. This participation and the necessary skills and knowledge acquired prepare them for positions of responsibility.

The 'Centralien' Skills Reference Framework: Integrating Gender Equality into the General Competence Framework

The GEC schools have defined a common vision for the engineering degree and share a common training model that is adapted to the specificities of each school's location. In a world of complex and rapidly changing interactions, ECM engineers must integrate high-level scientific knowledge with the ability to innovate and lead change in the face of the various challenges facing our society: environmental, economic, and social, including those challenges related to tackling gender and all kinds of social inequalities. According to this vision, *Centralien* engineers are capable of:

1. creating value through scientific and technical innovation;
2. mastering the complexity of the systems and problems they encounter;

3. managing programmes;
4. managing in an ethical and responsible way; and
5. having a strategic vision and knowing how to implement it.

ECM's goal is to train engineers who are actors in innovation and transformation, capable of acting quickly and effectively in complex and changing environments. This ambitious target requires the development of behavioural, relational and systemic skills, as well as a form of personal knowledge and mastery, in addition to the indispensable scientific knowledge. The GEC schools rely on the fact that these subjects can be effectively addressed within the initial training programme, thereby accelerating graduates' progress within the company even more in the first few years of their careers. These transversal skills are based on a multidisciplinary scientific foundation featuring a broad spectrum (mathematics, computer science, mechanics, physics, chemistry and processes, human and social sciences, business sciences), as well as on language and international culture courses, which must be successfully completed without any gaps.

The managerial dimension is emphasised not only in the spirit of programme management, including the scientific and human aspects, but also in the spirit of contributing to the development of visions and strategies that may lead to change. It is essentially the choice of the fourth competency (managing in an ethical and responsible way) that has enabled us to introduce respect for individuals and an ethical and responsible awareness, which includes equal opportunities and gender issues as a fundamental value.

Ethical and responsible management: the emphasis is placed on how to design, operate and develop management systems, taking into account all their dimensions, whether technical, human, professional or cultural. Students are constantly concerned with optimising performance and results through ethical and responsible questioning (respect for individuals and the common good, critical thinking and humility), in order to leave a positive mark on their actions and management.

If the scientific foundation remains the basis, the question arises of also how these managerial skills can be developed to the right level, which requires, throughout the three years of training, interactions on various levels with different audiences and with professionals. We must create a system that generates mutual enrichment between the academic and professional components. Learning situations and environments need to be diversified. The size of the cohorts present on campus in the same training programme (300 students per class) represents both an undeniable asset in terms of creating real-life situations as well as an obvious difficulty when it comes to thinking about tailoring the curriculum on a large scale. It is in this context that throughout the three years the topics of equal opportunities and questions about gender stereotypes must be addressed, including a focus on the various different issues involved, and through varied and repetitive activities. Indeed, not only do we want ECM students to develop and evolve in a welcoming, inclusive and caring community but also to become future managers capable of sharing these values with their teams and within their companies.

A New Generation with High Expectations: Activism

The students who join us quickly mobilise within the community they create and lead. From the beginning they are made aware of the issues related to sexist abuse and potential violence within the framework of civil society association activities, while these student organisations are very active on all issues related to discrimination (National Office of Student Engineers, 2021). Despite this, practises may still support behaviours related to power (Engineers Without Borders) that need to be challenged. For several years now, we have seen the creation of highly mobilised student movements, which are often supervised by the Student Offices' wish to develop militant actions related to sustainable development issues at all levels and bring to light equality issues (Engineers Without Borders, 2020; Ministry of Higher Education, Research and Innovation, 2011).

Furthermore, in our experience as teachers, students entering industry are very careful when they are looking to be hired, examining the corporate social responsibility (CSR) commitments of companies and their concrete achievements and favouring those that display sincere and effective commitments. They look for companies that are closely aligned with their values, are agile and evolve quickly. They also pay attention to ecological issues but in this context it is working conditions and well-being that are becoming increasingly important. It is here that questions of equal opportunity and gender must be addressed. Upon entering industry, graduates have a heightened awareness regarding acceptance of initial salary offers and respect for the principles of equality but may also question managerial practices.

Management Training: Developing Relevant Skills

In this context, the question arises of introducing subjects aimed at developing responsibility, including those related to equal opportunities and gender into activities engaged in throughout the three years of schooling and to integrate them coherently and transparently into the curriculum.

The engineering programme at ECM is designed to run over three years, that is, six semesters (hereinafter referred to as S5 to S10 as students are admitted to ECM after two years or four semesters of study at a CPGE). The school offers a generalist engineering degree programme in initial training. Since the beginning of the school year in September 2017, a major reform of the programmes has been undertaken, and the learning cycles have been transformed in order to develop active methods of teaching, and to introduce learning situations to enable the development of key skills required in the *Centralien* reference system.

Within this framework, specific weeks (e.g. one week at about a four- or five-week interval) have been created to raise awareness, projects have been developed and individual or team support activities undertaken to complement and reinforce academic teaching. These represent more than 40% of the training activities and are designed to take place between S5 and S9 and involve the entire student body (i.e. 300 students per class). The objective is to develop both the appropriate professional knowledge corresponding to the *Centralien* profile, in terms of both know-how and interpersonal skills and the use of a reflective approach.

The skills that engineers develop are thus based on

- methodology of action, scientific methods;
- teamwork;
- creativity and innovation; and
- communication and leadership.

On the basis of a demanding scientific foundation, the aim is to promote a commitment to professional action, and for students to develop managerial skills and attitudes, to be efficient, and to aim for autonomy in learning and decision-making. We thus propose a system that encourages a commitment to professional action, based on

- *Training actions derived from work situations*: These actions consist of a series of so-called 'opening' sequences, both scientific and cultural or societal. Combining thematic choices and varied pedagogical methods, sometimes developing conceptual aspects and sometimes experimental methods, thereby enabling each student to test his or her skills and to prepare for the academic part of the curriculum.
- *Training activities designed in work situations*: These activities consist of long projects proposed with real, complex subjects, involving several themes. The students are also involved in civil society activities with varying scope, ranging from running a club to organising major events, allowing them to test their organisational, management and leadership skills in real life.
- *Training activities through role-playing*: active learning workshops, through role-playing and behavioural analysis, enable the development of themes such as behavioural agility, team effectiveness and change management.

This holistic approach is enhanced by a comprehensive support and reflexive system, during which each student is encouraged to reflect on his or her experience and choices in order to become an actor in his or her training.

This approach to curriculum reform, through its focus on active learning and development of professional skills, opens up opportunities for dealing with social and gender issues in different ways. Respect for diversity in human relationships, teamwork and team management is a central aspect in all training activities. This reform also supports a more critical, active reflection on broader ethical issues related to engineering and the professional choices to be made in the future by each student, including reflection on the impact on the environment as well as on gender and other social inequalities.

Introduce the Notions of Gender Equality in Various Settings in a Coherent and Systematic Way

Engineering education is therefore conceived as a complex system in which each student will find a path to his or her personal development. We must think about

this system as a whole if we want to support behavioural changes and raise awareness leading to action. We are therefore careful to include different types of subjects for individual development and in various forms.

Knowledge is fundamental. Topics including understanding the construction of gender and stereotypes are addressed in the social and human sciences courses within the ECM curricula. In these courses, prejudices linked to gender and the traditional view of engineering as a masculine profession are challenged. This prepares students to face the realities of a professional world that is overwhelmingly masculine, including raising awareness of the glass ceiling that impacts women's access to positions of responsibility. It is also important to recognise the different categories of sexist acts and be aware of the legislative frameworks in order to have knowledge of the relevant sanctions in place in the private sector.

It is equally important to address these topics through responsible actions: in the context of associations and in the professional context (internships and projects or group work, managerial workshops). All of these subjects must be approached gradually.

The first year is focused on community integration and discovery. Here we focus on raising gender awareness among students.

The second year deals with responsibility, both in civil society associations by preparing to welcome newcomers, by working on the various social actions of the school's Social Lab (where students do more than 15,000 hours of volunteer work per year) but also in the corporate world by doing internships at the assistant engineer level.

In this context, we ensure a robust dissemination of knowledge, which heightens the awareness of the first year, and acts as a call to action as a future professional by focusing on student life within the school. Gender equality issues are dealt with in different ways. Team appointments encourage parity, association work trains the students to share responsibilities, internships provide an opportunity to assess and incorporate gender relations, the managerial courses deal with the diversity of behaviours. All association teams are made aware of the issues of sexism and sexual abuse, the teams are trained and a system of sanctions is put in place.

Finally, the last year is the one that prepares the students for their future profession. Here we rely on the use of observations in the workplace as part of the internships to generate awareness and to equip students with the means to act and react accordingly.

Sexual Harassment Prevention System in ECM: 'L'AnTenne'

ECM in its capacity as a HEI, welcomes more than 1,100 students of all nationalities each year who represent great social and geographical diversity. Due to an internal reflection, initiated and carried out by students and focusing on the organisation and management of a preventative space dedicated to the health and well-being of students, ECM proposed implementing an effective and accessible

alert, detection and prevention system to best accompany students in their social and academic endeavours.

The situations covered include, but are not limited to, the following:

- feeling ill, pain or discomfort, feeling a lack of self-worth, depression;
- academic failure, truancy, social withdrawal, academic or relationship difficulties; and
- hostile attitude, disruptive behaviour, violent or dependent behaviour, sexual violence, harassment, etc.

Prior to this reflection, a space dedicated to student health questions was created in response to requests for online student healthcare services. After a few years of passive operation, students expressed a desire to see it evolve into a dynamic system, coordinating all subjects and preventive actions, to create a real reception point within the school where students could go for help in cases of difficulties and could expect a coherent and coordinated response.

The identified needs were:

- intimate, user-friendly, revamped, managed space presenting clear and useful information for addressing health-related problems;
- listening and psychological follow-up system;
- on-call services with a social worker;
- a project manager responsible for monitoring education;
- creation of an identified prevention group composed of administrative staff, teachers, and students, offering role-playing, listening first and orientation for a professional psychological follow-up in case of aggression, academic failure, family difficulties, addiction, etc.;
- emergency system;
- information and communication;
- information and risk awareness;
- support and guidance;
- up-to-date information with on-site consultation available in several languages;
- actions for prevention and risk awareness actions, from training to detection, listening, support and guidance, notably through implementation;
- updated and consolidated training for the members of the prevention group; and
- awareness raising actions on topics, issues and challenges in society with a view to promoting integration and health for all (destigmatisation of disabilities, information on addictions).

These needs have led the school to create the '*AnTenne*' (antenna), which is a system linking risk awareness and detection with listening and student support services. It facilitates the prevention of issues related to physical and psychological student health and safety, which is a top priority for the school.

The heads of the associations, as well a selected student representative, participate fully in this programme and are committed to its mission of prevention, listening and support.

Conclusions

In this chapter, we have presented the approach adopted at ECM, which is intended and designed as a system. It is a system that is certainly complex, but one which is intended to be comprehensive and not an 'add on' that effectively marginalises gender equality. Our approach to integrating the gender dimension into engineering curricular and tackling gender inequalities is the result of a process in which teachers, staff and of course the students themselves are involved in a reflective process, notably through the various bodies of the institution. A comprehensive curriculum, including scientific and human disciplines, a focus on active learning and development of professional skills through different activities (work-related projects, internships, etc.), prevention of sexual harassment and commitment to ethics and sustainable development, and including social sustainability are the main pillars that have enabled us to incorporate a gender dimension. The era we are currently living in, with its huge environmental challenges, is a real opportunity for these changes because young people are particularly aware of them and are conscious that these changes cannot take place without them becoming the actors in these transformations.

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