



Treball de fi de màster

Títol:

Sustainable development in the context of professional and vocational training: Gender equality challenges

Cognoms: Palom Agustí

Nom: Marc

Titulació: Màster en Formació del Professorat d'Educació Secundària Obligatòria i Batxillerat, Formació Professional i Ensenyament d'Idiomes

Especialitat: FP

Director: Manuel Fernández López

Data de lectura: 19 de Juny de 2019



“Hasta que no tengamos igualdad en la educación, no vamos a tener una sociedad igualitaria.”

Sonia Sotomayor



GREETINGS

I would like to express my most sincere gratitude to the following people.

To Mr. Manuel Fernández López, tutor of this project, for his sensibility over this research topic, as well as his help and expertise throughout the course of this.

To my family, for their constant support and hope in this project, since the very first day.

To all of them, thanks.

ABSTRACT

This research challenge is determined by the need to take a step further regarding sustainable development within a professional and vocational education training (VET) context, by means of understanding its framework and current situation in Catalonia (Spain), concerning the things that have been done as well as the lack of actions or weaknesses.

In particular, this information will be mainly analysed starting from the 17 Sustainable Development Goals (SDG), within the 2030 horizon, stated by UNESCO. Within these goals, the present research is dedicated to both 4 and 5 SDG, being titled as quality education and gender equality, respectively, and more specifically, focused on the elimination of gender disparities in VET as well as standing out the related issues or facts that prove this situation in VET education, and later on, perpetuate into the labour market.

This research will be based on a theoretical framework of gender disparity evidences and empirically accompanied with a survey made with the participation of different VET teachers from a State high school in Catalonia. This survey is basically oriented towards different gender disparity issues that concern and burden the current situation of this matter within the VET system.

The results of the survey embrace the fact that gender stereotypes are notably present in our society, and in consequence, in our schools. VET teachers and high schools are a key element in order to improve this handicapped situation. Future lines that should be recommended are based on integrating gender competences as well as promoting gender-sensitive environments.

Keywords: *Gender inequality; gender parity index; GPI; implicit bias; professional training; sustainable development goals; SDG; Vocational Training Education; VET*

TABLE OF CONTENTS

1. INTRODUCTION	3
2. STATE OF THE ART	6
3. OBJECTIVE AND SCOPE.....	9
4. THEORETICAL FRAMEWORK.....	10
4.1 Implicit bias in society	10
4.2 Gender disparity in the Spanish educational background	10
4.3 Gender gaps in STEM education.....	13
4.4 Gender parity in VET programmes	15
5. EMPIRICAL RESEARCH METHODOLOGY	17
5.1 Data collection	17
5.2 Survey data	18
6. RESULTS OF THE EXPERIMENT	20
6.1 Analytical results.....	20
6.2 Survey conclusions	22
7. FUTURE LINES AND CONCLUSIONS	23
8. BIBLIOGRAPHY.....	25

TABLE OF FIGURES

Figure 1. Participation rate of 15-24 year-olds in technical-vocational programmes and related gender parity index [31].....	16
Figure 2. Results of the first statement	20
Figure 3. Results of the second statement.....	21
Figure 4. Results of the third statement.....	21

1. INTRODUCTION

Vocational education and training (VET) is an education path based on teaching people with skills and/or competences that are directly relevant to the labour markets, in other words, VET aims to provide a practical work-oriented skills base. It is a key factor concerning a country's social and economical performance and competitiveness, as well as it provides knowledge and a personal development for those students. Beyond skilling world populations at large and especially to youth, VET has relevant potential for dealing with two global challenges as youth employability and unemployment, chiefly after the slow recovery from the global economical and financial crisis of 2008 (Marope, Chakroun & Holmes, 2015) [1].

At a European level, VET can count on a well based network of providers, by means of government structures in collaboration with many social partners such as employers or trade unions. VET system is divided into initial VET (I-VET) and continuing VET (C-VET).

On the one hand, I-VET is mainly completed at upper secondary level, before entering to the labour market and it is organised as similar as possible to real-life experience (training companies and apprenticeships frameworks).

On the other hand, C-VET takes place either after I-VET or after being settled into working life. It relies on the acquisition of new skills, training for a new career move, or just continuing a personal and professional development. It mainly takes place at the same working place.

There are many challenges and priorities established by the EU in order to upgrade vocational education and training, by 2020. From the 2010 Bruges Communiqué and the 2015 Riga Conclusions, different policymakers such as EU, candidate countries, European Economic Area countries, EU social partners, the European Commission and European VET providers agreed in different goals for the period 2015-2020, mainly focused on the promotion of the work-based learning, the strengthen of key competences in VET curricula or the equality access to VET studies for all (European Commission) [2].

Taking this information into account, it is safe to make a clear statement regarding the relevance and transcendence within the role model that VET learning studies have in our life and global educational framework. Although the diversity of country contexts, it is notably remarkable how much consensus exists around the idea that skills development through VET is a crucial path for human progress, as stated by Marope *et al.*

Moreover, taking a glance at a more local stage in Catalonia, the responsible for VET education in the Catalan government, known as *Direcció General de Formació Professional*, it is part of the Education Department, which clearly facilitates the coordination with compulsory secondary education and baccalaureate, both of which are competence of the same department. Nonetheless, there is a lack of an effective political space for coordination between the offer of higher education VET courses and university (Valiente, Zancajo & Tarrío, 2014) [3]. Moreover, there is no institution in Catalonia in charge of coordinating the production, systematization and mobility of empirical evidence on VET education at a national level. There is one Vocational Training Observatory in Barcelona, and Valiente *et al* suggest the creation of a Catalan Vocational Observatory that could assume these functions for the whole country, and inform about the political decision making through its link to the Catalan Council for Vocational Training.

Albeit some parallelisms will be used between VET studies and higher education, since higher education VET courses, known as *Cicles Formatius de Grau Superior*, are considered as higher studies, the relevance of this research relies on the importance to bear in mind that VET has its own *statu quo* and structures as well as different particularities and needed improvements, and those will be specifically treated within this research.

Making a closer approach to the main concern of this study, related to gender disparity reality in VET education, and aligned with the Sustainable Development Goals (SDG) stated by UNESCO, research elsewhere identified that VET infrastructures related to the SDG are still on its early stages of deployment, as it will be fully detailed in the following sections. Despite the present research analyses and addresses the current and future challenges in VET education, at the same time that it is steadily rising to the top of policy agendas, the capacity of VET systems to respond to multiple and elevated demands and to shape the future is often limited [1]. Besides, there is an existing lack of actions and evidence done

within the VET context aligned with the 2030 horizon goals, compared to the actions done at a higher education level, being this the main focus on the own SDG initiatives.

Taking into account the current situation of VET, and adding the gender disparity issue among VET studies, this research aims to better understand why gender equality is so important and how the enhancement of this challenge could lead us to shape a fairer society in terms of education, employability, labour environment, or simply as an approach to a better level of global well-being, understanding that gender equality is a fundamental human right.

2. STATE OF THE ART

The relevance of applying the SDG to the VET educational system is mainly due to a lack of actions or research done in this context. In other words, VET educational system is in its early stages of being acknowledged as a crucial role model in order to achieve the lines of action that are linked to the 2030 agenda, mostly faced towards higher studies.

Albeit there is not much literature review in terms of SDG in the context of VET, and even less in a Catalan framework, there are many parallelisms that can be studied and further analysed within a superior education and university literature context, more precisely related to the already mentioned 17 SDG, within the 2030 agenda, stated by UNESCO and promoted by The Global University Network for Innovation (GUNI), together with the Catalan Association of Public Universities (ACUP).

Those 17 SDG are mentioned in the following lines. Related to the topic of this research, quality education (SDG number 4) and gender equality (SDG number 5) goals will be the focus of the study, as they have a specific approach in the interest of this research, in terms of VET education.

End of poverty	Zero hunger	Health and wellness
<i>Quality education</i>	<i>Gender equality</i>	Clean water and sanitation
Affordable and non-polluting energy	Decent work and economic growth	Industry innovation and infrastructure
Reducing inequalities	Sustainable cities and communities	Responsible production and consumption
Climate action	Underwater life	Life of terrestrial ecosystems
Peace, justice and solid institutions	Alliance to achieve the objectives	

Together with many particular researchers and advisors as well as other institutions, the Advisory Council for the Sustainable Development of Catalonia (CADS), have reported

different challenges for meeting SDG in Catalonia, that could be used concerning this research, and somehow, be the backbone of the same (Rodés, Ibáñez & Serena, 2016) [4].

This report goes through the mentioned targets according to different level organizations, from an international framework to national and local ones, starting with the United Nations 2030 agenda targets, followed by an international context, European context and finally the Catalan context. It gives a real approach to the main lines to follow within the 2030 horizon, and can be totally adapted to the VET educational needs¹.

In terms of the quality education SDG, and analysing the specific target related to gender disparities in VET (4.5), the United Nations 2030 Agenda targets states, by 2030, the need to eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for everybody. This goal is one among six other ones that specify other issues related to quality education. Taking this SDG into account, UNESCO itself claims that following the current trends in a worldwide context, society will be 50 years late with the set goals in terms of education. The main issues to tackle rely on increasing the percentage of accessibility to a free, fair and quality scholarship as well as focusing this education on a sustainable context, understanding the same as promoting human rights, gender equality, a culture of peace and non-violence and valuating the global cultural diversity among others.

Bearing in mind the quality education specific target related to gender equality, the following SDG number 5, named as gender equality, fully approaches this issue and its main statement calls for ending all ways of discrimination against all women and girls everywhere, claiming that equality between men and women has not been attained in Catalonia. For this reason, the Parliament of Catalonia approved Law 17/2015, of 21 July, on effective equality between men and women, establishing transversal measures affecting all aspects of life with the aim of eliminating gender disparities and discrimination against women.

This law aims to eliminate the stereotypes that form the basis of the unequal status of women in different contexts, such as political, economical, social and cultural.

¹ Despite VET remains in between secondary and tertiary (superior) education, this report takes into account the vocational training education.

Relating both SDG, it is a fact that there is an important gap between different educational outcomes depending on the gender. Among the last few years, there have been different trends or results regarding boys or girls results in the educational system, as well as their entrance in the labour market and so on. The 2012 PISA survey revealed that Catalan girls, on average, obtained lower scores than boys for Mathematics and Sciences, but on the other hand, they obtained better qualifications for reading skills (Bonal, Castejón, Castel & Zancajo, 2015) [5].

It is crucial to help the development of people free of gender stereotypes limitations and imposed social pressures by means of fostering this willingness in all levels of education as well as the teaching community, which needs an appropriate training within this issue.

Besides the official SDG context applied to VET education, and more precisely, regarding the gender disparity issue, there is some research elsewhere that claims that those differences in educational systems are mainly associated with the educational principles and policies from the corresponding countries ([3]; Ganea & Bodrug-Lungu, 2018 [6]). Moreover, Marope *et al* make clear insights related to gender disparity. For instance, they assure that gender disparities in learning opportunities are a cause of concern, and that achieving gender equality requires attention and actions by men and women, not only targeting the most disadvantaged gender group (most often women).

All these data fed my own impressions over this research and related analysis in order to better understand the origin and reality of gender disparities in the VET system, from a holistic point of view, to later on enable me to compare and analyse it within the Catalan situation, and further propose feasible future lines of action and related conclusions.

3. OBJECTIVE AND SCOPE

The chased goal of this research is to contribute with facts that prove the mentioned reality regarding gender disparity among VET education in Catalonia and how this could be addressed in order to approach to the 2030 horizon goals, specifically goal 4.5 regarding the elimination of gender disparity in an education context, and more precisely in the VET framework, by proposing future lines of action as possible solutions.

More precisely, the objective of this research is to deliberate about the current situation of gender disparity in VET studies, concretely addressed in Catalonia, to further propose feasible solutions linked to the exposed facts and empirical results obtained, that could help diminishing gender disparity.

The objective will be addressed by tackling some independent facts that will be exposed within the theoretical framework of this research, but yet related to the nature of the gender sensitivity in a VET context.

Regarding the scope, it is not part of this research to embrace and deepen through the psychoanalysis theories related to the study of the unconscious mind, yet some insights will be done throughout this study, as a result of the theoretical framework basis.

Finally, despite the fact that the research is addressed in the context of Catalonia, as well as the empirical research under study that has been made in a Catalan high school, the general future lines and conclusions could apply to a wider geographical scope.

4. THEORETICAL FRAMEWORK

Linked with the introduction, state of the art and objective sections, the theoretical framework stands for developing the gender inequality evidences that may be relevant for this research, as well as defining the work hypothesis. So, the assumption of this research is based on making incision to certain facts and information of notable relevance, related to gender disparity issues that could be addressed and replied within a VET context.

4.1 Implicit bias in society

The focus of the work hypothesis relies on figuring out that all those stereotypes regarding gender inequality may be provoked by ignoring or misunderstanding a common nexus among them, which is notably related to the unconscious of people, like teachers or parents in this case. In other words, implicit bias research states that one does not have to have negative intentions in order to have discriminatory outcomes (Staats, 2014) [7]. This sentence applies to the concern of this research, and enlightens the path and solutions that could arise from it.

Even though our modern society has come a long way overcoming explicit bias, discrimination and prejudice, that are broadly considered as unacceptable, or at least, less common, Staats assures that implicit bias remain incredibly omnipresent among us, as everyone is susceptible to implicit biases. Also, one can consciously agree or disagree with some statement, but unconsciously, still hold biases against their own thoughts.

The following sections tackle the background that supports and gives meaning to the previous mentioned hypothesis.

4.2 Gender disparity in the Spanish educational background

First of all, there is a gap to be filled in relation to the initiatives that could be done at a VET level. Understanding VET as a specific studying and reliable working path, rather than despise it or qualifying it as less valuable or transcendent among higher education and college, is the first step to do so. From an international standpoint, at a policy level, some critics highlight the fact that VET studies are expensive, inefficient and unresponsive, mainly claiming that specific jobs belong in the workplace rather than in education and training

institutions [1]. Moreover, in many countries, the public in general do not favour VET studies and still view it as a choice of last resort, as well as find this type of studies unattractive, compared to other academic tertiary education programmes. In consequence, VET programmes are perceived, in a stigmatized point of view, as leading to less distinguished career paths as well as lower expectations of higher earnings once employed and lower prospects for further education and training, as Marope *et al* stated.

From a Spanish national point of view, one can easily expect a similar approach, as VET has always been classified as a lower degree of studies, for people who could not achieve a university degree, falling into the temptation to look down upon it (Stegmann, 2017) [8].

Contrarily to these general thoughts described in the preceding lines, and focusing on unleashing the potential of VET studies, within the SDG context, many efforts have been put together in order to overcome these general thoughts, propel and place VET studies in a higher *statu quo*. Hence, VET is steadily emerging, albeit doing it slowly, as one of the most relevant global debate in government priorities for education and national development agendas [1]. Furthermore, as an inspiration quote, the Bonn declaration states that since education is considered to be the key to effective development strategies, technical and vocational education training (TVET) must be the master key that can alleviate poverty, promote peace, conserve the environment, improve the quality of life for all and help achieve sustainable development (UNESCO-UNEVOC, 2004) [9].

Focusing on the real issue to tackle, the mere hypothesis of this research relies on the evidences of an existent gap in terms of gender disparity within all levels of education, from primary education to doctoral research, and later on in a professional framework. This gender gap normally places women at a lower status, in any term that could be object of discussion or debate. Although the following research embraces different levels of education, as a common nexus regarding the gender disparity issue, the focus of attention remains on the VET educational system, that will be analysed and discussed one step further.

The analysis related to this research is done at different levels, thinning out from a generic exposure to a concrete level of approach, being all of these stages interconnected.

From a holistic point of view, one has to analyse the reality of the Spanish education background. The main foundation is based on two processes that took place in Spain during the last decades. On the one hand, the globalization of compulsory education that leads to a considerable increase of studies among the population. On the other hand, there is a reality of a massive embodiment of young people applying for university. Both facts truly contributed in a positive way to enhance women's education, and in consequence, reduce the gender disparities (Bericat & Sánchez, 2008) [10].

Nonetheless, research elsewhere pose that new trends related to education means new possible emergent dynamics that could worsen the whole gender disparity situation. In order to evaluate and interpret that, there are some statistic results that have to be taken into account. The authors of the research, Bericat and Sánchez, focus on the same with two indicators of great relevance regarding gender disparity, such as the level of studies and the election of technical studies. Despite the fact that this second indicator is based at a higher education level, it can be feasibly applicable to VET education.

As a result of the previous research mentioned above, in Spain, the presence of women at secondary studies (baccalaureate and VET) is relatively less than men. This little deviation could represent a serious handicap for gender disparity, taking into account the possibility that women keep not considering the performance of certain types of professions, related with secondary studies. Still, this deviation is being minimized facing the new generations. In sum, the educative structure of young Spanish population gives us some clues related to the gender disparity evolution, concluding that the disparity seen at primary levels of education is due to the traditional education exclusion of women in the past. However, the same disparity at a higher education level has totally changed its sign, taking into account that women took advantage of the educative globalization and the access to university. Moreover, Valiente *et al* assure that educational progress in Catalonia has been mainly led by the good performance of young women in tertiary studies.

Regarding the second indicator, there is a very clear bias on the election of studies. Women choice is concentrated on social and humanities studies, whereas men election into scientific and technical studies, also known as STEM (Science, Technology, Engineering and Mathematics), is three times the ratio of women. As a conclusion, even in young generations

there is a sexist academic orientation that could have serious outcomes. On the one hand, the actual scientific-technical societies are being developed without a clear participation of women, what shows the real need of social policies towards the elimination of gender disparity in this context. On the other hand, this sexist academic orientation leads to a limitation of women own development as well as their professional success. Both conclusions point out the fact that this bias surely has relevant consequences within the context of women labour insertion, taking into account the direct connection between education and the labour market, as well as associating STEM careers to a higher professional and social status.

4.3 Gender gaps in STEM education

Taking a deeper thought on how is the gender disparity involved or related with STEM education, it is safe to state that there are visible gender gaps within this context (Xie, Fang & Shauman, 2015) [11]. In order to explain that, this causal link between cultural beliefs and STEM interest is demonstrated in studies of stereotype and identity threat (Nosek, Banaji & Greenwald, 2002 [12]; Aronson & McGlone, 2008 [13]; Nguyen & Ryan, 2008 [14]) and occupational preference formation (Correll, 2001, 2004 [15][16]).

Research elsewhere also points out that female students face negative biases in the grading of their school work (Lavy & Sand, 2015) [17] and evaluation of their competence and qualification for STEM employment (Moss-Racusin, Dovidio, Brescoll, Graham & Handelsman, 2012 [18]; Knobloch-Westerwick, Glynn & Hoge, 2013 [19]; Reuben, Sapienza & Zingales, 2014 [20]), and gender segregated networks and “cold” climates in STEM higher education and workplaces (Steele, James & Barnett, 2002 [21]; Logel *et al.*, 2009 [22]; Koput & Gutek, 2010 [23]; Sheltzer & Smith, 2014 [24]). Future research on this issue should focus more on identifying the nature, timing, and relative impacts of these processes to develop effective practices that foster and sustain interest in STEM among girls and women, as stated by Xie *et al.*

Besides these generic suggestions regarding gender gaps in STEM education, there are more conclusions to extract from different inquiries, such as the fact that the lack of diversity in STEM academic and professional positions is a multilevel problem that begins in early

childhood, where the motivations that nourish the election of studies start being consolidated [10], from stereotypes of girls' lack of STEM talent (Gunderson, Ramirez, Levine & Beilock, 2012 [25]; Shapiro & Williams, 2012 [26]). As stated by Gunderson *et al*, regarding Mathematics competences, girls tend to have more negative Math attitudes, including gender stereotypes, anxieties, and self-concepts, than boys. These attitudes are somehow critical considering that will certainly develop difficulties within Math performance, Math courses and Math-related career paths. As a conclusion, it is shown that parents' and teachers' expectancies for children's Math competence are often gender-biased and can influence children's Math attitudes and performance [25], and ultimately undermines the performance and interest in STEM fields, as stated by Shapiro and Williams.

From a group-discussion involving scientist at different stages of their careers, a group conclusion relied on the fact that changing the academic culture to make it more welcoming for women should focus on making it more welcoming for other underrepresented groups, that also account for a lack of diversity in STEM academic and professional positions, such as colour people, LGBTQ+ and individuals with disabilities (Adamowicz, 2017) [27]. Regarding the already named culture of welcoming women to STEM fields, experts claim the need of place greater emphasis on increasing the number of women applicants and placing advertisements in venues that specifically target women (Glass & Minnotte, 2010) [28], being this latter one a crucial issue within VET educational system, since there is an important lack of appropriate psycho-emotional environment to attract girls: lack of gender-sensitive images on informational boards in vocational/technical schools and websites, specifically those related to traditional male professions, as stated by Ganea and Bodrug-Lungu.

Taking into account a national Spanish perspective, but following the generic trends and conclusions explained above, that are more based on an international context, back with the entry into force of the *LOGSE* Spanish education law (1990), the principle of the education in equality of opportunities as well as non-discriminatory sex behaviours was first introduced at schools. Different studies that relate the educational system with the kids' education reveal that the presence of sexism has still not surpassed in the classrooms, where some ideas and educative procedures related with gender disparity still persist nowadays. Although these

issues are explicitly present in the current Spanish educational policies, it has not been consolidated on a day to day basis, in the classroom context, where stereotyped social schemes are still being reproduced. Besides, this disparity remains valid after secondary education, within a social and professional context, where these traditional schemes of roles division still happen (Sebastián, 2006) [29].

This whole information can be easily extrapolated to a VET educational system, understanding that the main issues and extracted ideas are also perpetuated in this specific area. Nonetheless, there are some specific arguments that are of great importance and should be further analysed.

For instance, in Catalonia and many other Southern Europe regions, both interests and possibilities of students are strongly marked by the profile of young people with a gender, social status and migratory origin and for the same effect generated by the schools where they are enrolled during secondary school (*ESO*). Thus, one has to bear in mind that young people identities are intrinsically social, as well as their desires, interests, talents and abilities. In other words, what some students may consider as normal, for others is not part of their symbolic universes, due to their own reality in terms of familiar, personal and social daily situation. This explains, for example, why girls, regardless of their results and status, continue to choose much less post-compulsory studies within STEM fields, in relation to boys (Tarabini, 2017) [30].

4.4 Gender parity in VET programmes

Directly related to target 4.5 of the SDG, being this the elimination of gender disparities in education, there is a very relevant indicator to measure this target. The gender parity index (GPI), is the main indicator to measure equity across the SDG 4 agenda. GPI is defined as the ratio between the values of a given indicator for two different groups, with the value of the likely most disadvantaged group in the numerator. A parity index equal to 1 indicates parity between the two considered groups. A value of less than 1 indicates a disparity in favour of the likely most advantaged group, and a value greater than 1 indicates a disparity in favour of the most disadvantaged group (OECD, 2018) [31]. Thus, this index, which is widely spread,

generally shows the under-representation of women, in this case, within the vocational education context (Bartlett, 2009) [32].

As a general idea out coming from the OECD indicators, in most OECD and partner countries, boys are at least 40% more likely than girls to enrol in vocational education (figure 1), and concretely a 32% in Spain, with a GPI of 0,756.

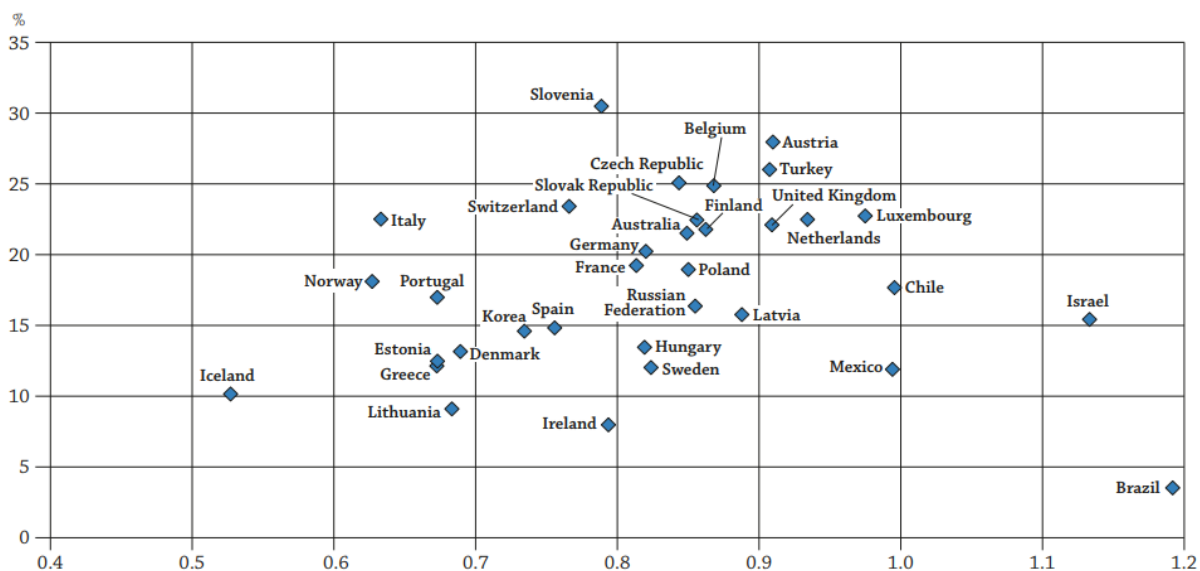


Figure 1. Participation rate of 15-24 year-olds in technical-vocational programmes and related gender parity index [31]

5. EMPIRICAL RESEARCH METHODOLOGY

The empirical research methodology related to this investigation is based on a survey towards different VET teachers from a State high school located in Girona (Spain).

The willingness of the experiment is to analyse and evaluate the sincere impressions and judgment of different teachers that freely wanted to participate, regarding the opinion and point of view of different gender disparity issues that came up in this research, and may be of great value in order to better understand this situation as well as envision the capability of enhancing the same within a SDG framework towards the 2030 agenda.

5.1 Data collection

This survey, without taking into account any gender or age constraints covered a total of 36 teachers (20 men and 16 women), all of them heading and teaching the VET studies of the called high school.

Taking into account the reality of the named high school itself, there are different VET studies that can be chosen there. These are the following.

- Intermediate VET (*Cicle Formatiu de Grau Mitjà - CFGM*)
 - Commercial activities
 - Aesthetics and beauty
 - Administrative management
 - Electrical and automatic installations
 - Maintenance of ships
 - Hairdressing and hair cosmetics

- Higher VET (*Cicle Formatiu de Grau Superior - CFGS*)
 - Management and finances
 - Childhood education
 - Management of sales and commercial spaces

Most of the studies held in this particular education centre have a clearly strong trend regarding gender disparity depending on the type of studies. For instance, the maintenance

of ships VET course has never had women since it started ten years ago, and the same stands for the hairdressing and hair cosmetics VET course, that have hardly ever had male presence.

Taking this into account, the participation of these VET teachers could take great value understanding their day to day situation, living and handling with these gender particularities.

The survey itself is based on three statements that respond to different gender disparity issues, but yet deal with the same problem. The respondents have to choose over five options of response on a five point Likert scale: “strongly agree”, “somewhat agree”, “neutral”, “somewhat disagree”, “strongly disagree”.

After answering the gender biased statements, they will read an interspersed paragraph regarding some gender disparity facts that have been mentioned along the research. Therefore, they will be able to change their opinion or not.

At the end of the survey, the participants will optionally comment or make observations about the mentioned statements. These reviews could be of great interest in order to integrate different perspectives and thoughts.

5.2 Survey data

The statements are the following.

- Generally, women choose VET studies that are less technical for the simple fact of their personal interests and/or aptitudes.
- Generally, VET studies’ offer in Catalonia (or at your high school) is adequate within a gender equity context; in terms of promoting these studies to equally captivate boys and girls (by means of open day sessions, informative boards, website information and so on).
- Generally, teachers may have certain gender biased behaviours that could undermine girls throughout their academic career (from primary to high school and higher education).

After having answered the questions, the respondents will read the following information, respectively, so they will be able to change their opinion afterwards.

- Several studies point out the fact that women choose VET studies that are less technical because they may feel uncomfortable or embarrassed by choosing those types of studies. Besides, kids' motivation about their future studies expectations has a strong relation with the education received from their parents as well as parents' and teachers' expectations for STEM field competences are often gender-biased.
- Several studies point out the fact that there is an important lack of appropriate psycho-emotional environment to captivate girls towards VET education, or at least, to specific courses traditionally related to male studies (lack of gender-sensitive images on informative boards, web pages and so on). Besides, one can add a lack of gender-sensitive teaching material in high schools (guides and methodological support to incorporate gender in the education and training process).
- Several studies related to implicit bias point out the fact that one does not have to have negative intentions in order to have discriminatory outcomes, taking into account that everyone is susceptible to implicit biases. In other words, one can consciously agree or disagree with some statement, but unconsciously, still hold biases against their own thoughts (i.e., considering the stereotype that men are better than women in technology, a woman, could consciously disagree with this affirmation, but yet, could unconsciously associate superiority in this field with men rather than with women).

6. RESULTS OF THE EXPERIMENT

Having compiled and analysed the results of the experiment, one can manifest a noticeable opinion change before and after the interspersed facts, in all the given statements, respectively.

6.1 Analytical results

The obtained results are represented in the following figures.

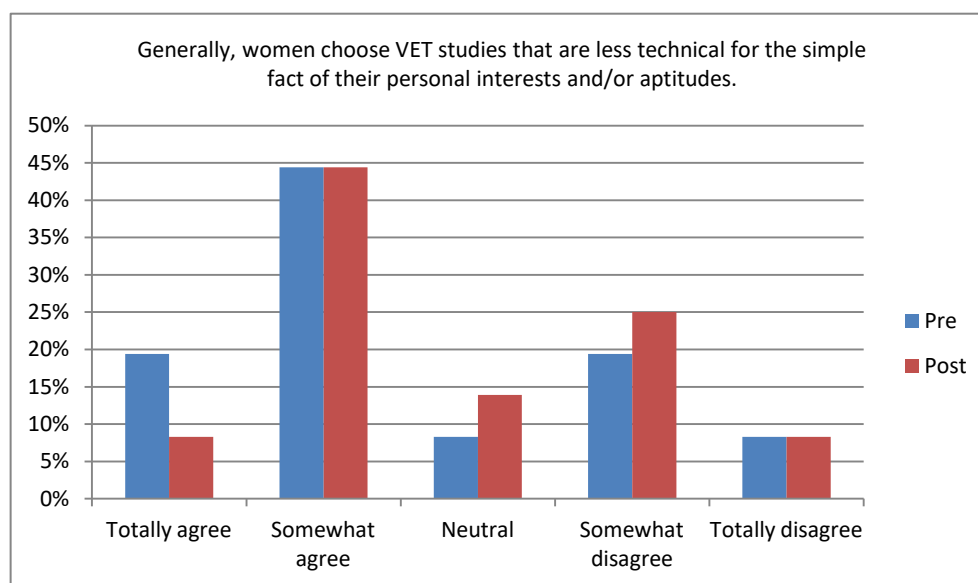


Figure 2. Results of the first statement

As seen in the figure above, regarding the first statement, there is an appreciable change of opinion after having read the supplied gender-sensitive data. Thus, 63.85% of respondents that initially “Totally agree” or “Somewhat agree” with the statement, changed their opinion and the percentage diminished to 52.75% (-11.10%), mainly relocating this proportion to the “Neutral” (+5.55%) and “Somewhat disagree” (+5.55%) options.

Despite the fact that “Somewhat agree” response has been maintained, the “Totally agree” rate has been radically reduced from 19.45% to 8.35%.

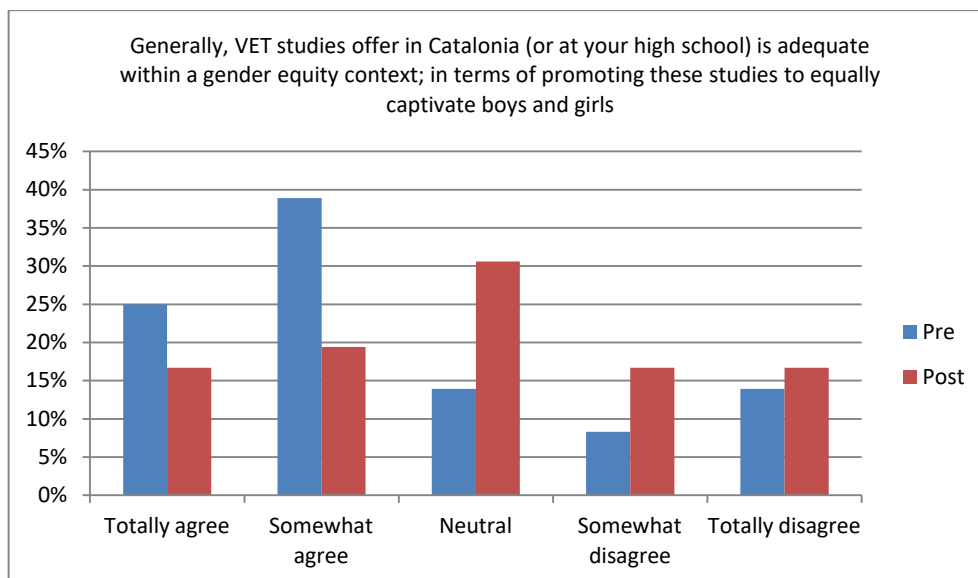


Figure 3. Results of the second statement

As seen in the figure above, regarding the second statement, there is also a considerable change of opinion, after the given interspersed information, mainly affecting the left columns of the figure. So, 63.90% of respondents that initially “Totally agree” or “Somewhat agree” with the statement, changed their opinion and the percentage diminished to 36.10%, mainly relocating this proportion to the “Neutral” (+16.70%) option. This may explain that the respondents are not really aware of this situation, or they maybe found the statement slightly difficult to answer with enough conviction.

Furthermore, the “Somewhat disagree” column increased its value from 8.30% to 16.65%.

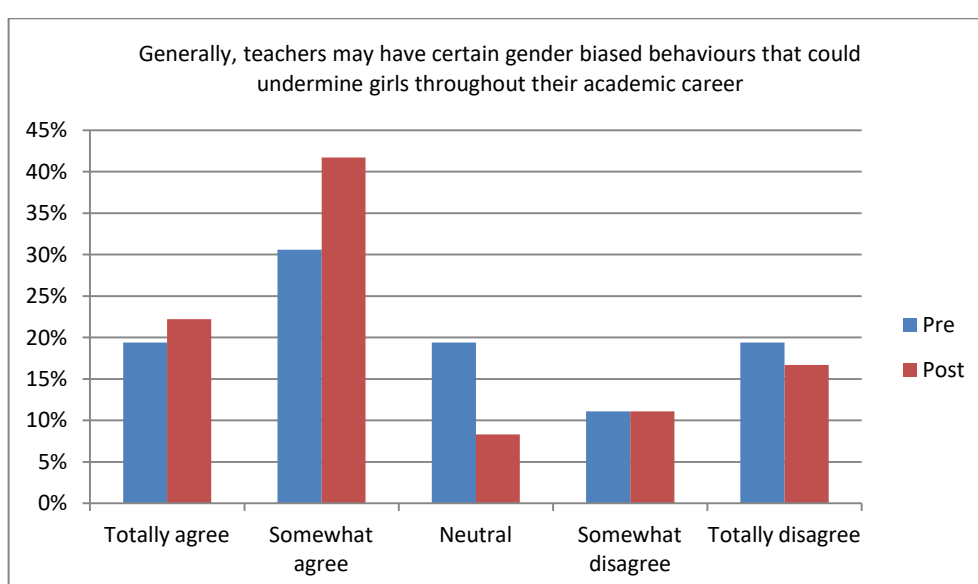


Figure 4. Results of the third statement

Finally, as seen in the figure above, regarding the third and last statement, there is a slightly mind shift in terms of agreeing with the given affirmation. The majority of the respondents initially choose the “Totally agree” or “Somewhat agree” columns, concretely a 50%, and afterwards, these columns have increased by 63.90% (+13.90%), empowering the agreement over the mentioned assertion.

6.2 Survey conclusions

Once the results have been analytically exposed and commented, it is safe to say that the unconscious bias of VET teachers may notably contribute to the broadly commented gender disparity reality.

In particular, the experiment results have left slight changes within the teachers’ perceptions and opinions that may explain why these gender stereotypes are still very relevant in a daily basis, and have to be tackled from the origin in order to improve its current situation. Having said that, teachers are increasingly expected to play relevant roles in forming the youngest to face their future with endeavour, courage, ambition and gender sensitivity (UNESCO, 2015) [33]. For this reason, it is important to provide palpable future lines to follow, at a high school/classroom level, in order to improve this handicapped situation.

Nonetheless, it is not fair to blame VET teachers as if they were the only responsible ones, taking into account that there are many more agents involved, such as respective families, friends and the students’ inner circle. Consequently, considering the respondents’ points of view, there is a common nexus of opinions regarding how this gender bias begins to be formed within the first community that students recognize: the family. Once students reach VET studies, they are already conditioned by their familiar nature, which will get intensified throughout their educational career when students seek and find partners that are of their interests, as a symbol of condescension and survival.

7. FUTURE LINES AND CONCLUSIONS

Prospective lines and possible actions that could arise from the results of this research should focus on taking a deep insight in gender bias processes and promote gender-sensitive environments, within a VET context.

First of all, it is crucial to interfere in the teaching staff in order to develop gender competences, and thus, avoid and eliminate the proliferation of gender stereotypes during their guidance to young people. This could be addressed by means of offering gender-sensitive courses, seminars and specific trainings for VET teachers, in order to have a positive effect on their mentality and truly seek for a game changer.

Besides, deepen on the implicit bias theories towards educators could be of great interest, as an approach to modern educational practices, and understanding VET teachers as professionals that are constantly learning. Related to this, a key factor is the VET teachers' awareness about the importance of integrating this gender dimension in their own way of teaching, by means of developing such gender competences, defined as the capability of people to find gender aspects in their jobs and perform in such ways that end up with unbiased outcomes for both men and women (Ebenfeld, 2018) [34]. These gender competences are grouped in three key aspects: knowledge, willingness and capacity.

Secondly, it is just as relevant to propitiate an adequate gender-sensitive environment in terms of infrastructure and services. Hence, it is important to assure a comfortable atmosphere in VET high schools, providing enough information regarding VET curricula, admission requirements and so on. Besides, it is important to impose a non-sex classification in terms of avoiding the previously mentioned traditionally male studies or jobs.

This last proposal takes special interest in the specific VET structure, since it provides a wide variety of workforce opportunities, the sex classification may be more polarized, mainly considering that some type of jobs may require physical strength, and this has been traditionally related to male jobs. For instance, gender bias related to this issue has existed for many years, being more accentuated 50 years ago, when women were not even considered as suitable for certain jobs that could require physical strength (Kincade, 1976) [35]. Despite the fact that the society has changed and moved on, many notions that people

have remain locked in a pattern set decades ago, when the world looked very different (Kimmel, 2001) [36]. Hence, whereas society is moving towards gender equality, there is still a noticeable gender bias attitude against women doing jobs traditionally associated with men, such as electrician, mechanic or plumber (Peacock, 2013) [37].

Even though the focus of attention may be addressed to men, as the guilty part of the dilemma, both men and women are responsible for this distrust. In order to justify that, Peacock suggests that there may be a greater bias by women against other women doing jobs traditionally associated with men, whereas men themselves would not trust a male beautician or primary school teacher.

As general conclusions, this research has provided independent evidences, but yet interrelated, of the existent gender bias reality, in the educational system, and particularly within a VET context, where the academic offer may be noticeably polarized between boys and girls, possibly more than in higher education.

Moreover, empirical research based on a survey supports the hypothesis that the unconscious bias, particularly in VET teachers in this case, may be a key factor that answers why there is no such improvement towards diminishing gender disparities in high schools, and more precisely in VET studies. These issues affect negatively to the most disadvantaged gender group, most often women, in terms of women biased expectations for STEM field competences or for a lack of confidence applying for future jobs traditionally related to men, among other stereotypes.

Some future propositions have been made in order to overcome this current burden, mainly focused on VET teachers themselves and high schools, as key elements to make a game changer towards this issue.

The elimination of gender disparities must be understood as a win-win situation for the whole society in terms of attaining equality in all forms.

8. BIBLIOGRAPHY

- [1] P.T.M. Marope, B. Chakroun, and K.P. Holmes, “Unleashing the Potential. Transforming Technical and Vocational Education Training”, 2015.
- [2] European Commission. EU policy in the field of vocational education and training (VET). Recovered from <https://ec.europa.eu/>
- [3] O. Valiente (Coord.), A. Zancajo and A. Tarriño, “Els reptes de la Formació Professional a Catalunya: indicadors comparats i propostes de reforma”, *Dossier de premsa Fundació Jaume Bofill*, no. 16, Jun. 2014.
- [4] F. Rodés Vilà (Coord.), C. Ibáñez Martí and J.M. Serena, “The 2030 Agenda: Transform Catalonia, improve the world”, *Report 3/2016 Consell Assessor per al Desenvolupament Sostenible. Generalitat de Catalunya*, Set. 2016.
- [5] X. Bonal (Director), A. Castejón, J.L. Castel and A. Zancajo, “Equitat i resultats educatius a Catalunya”, *Informes breus Fundació Jaume Bofill*, no. 60, Feb. 2015.
- [6] E. Ganea and V. Bodrug-Lungu, “Addressing Inequality in Vocational Technical Education by Eliminating Gender Bias”, *Rev. Rom. pentru Educ. Multidimens.*, vol. 10, no. 4, pp. 136–155, Dec. 2018.
- [7] C. Staats, “State of science: Implicit bias review”, Columbus, USA: Kirvan Institute, 2014.
- [8] J.G. Stegmann (2017, September 14). ¿Por qué se le da tan poco valor a estudiar FP en España?. ABC Sociedad. [Online]. Recovered from <https://www.abc.es/sociedad/>
- [9] UNESCO-UNEVOC. Bonn Declaration on Learning for Work, Citizenship and Sustainability. UNESCO International Meeting of Technical and Vocational Education and Training Experts. Bonn, Germany, 25 to 28 October 2004.
- [10] E. Bericat Alastuey and E. Sánchez Bermejo, “Balance de la desigualdad de género en España. Un sistema de indicadores sociales”, *Rev. Actualidad Centro de Estudios Andaluces.*, no. 23, Ene. 2008.
- [11] Y. Xie, M. Fang, and K. Shauman, “STEM Education”, *Annu. Rev. Sociol.*, vol. 41, no. 1, pp. 331–357, Aug. 2015.
- [12] B.A. Nosek, M.R. Banaji and A.G. Greenwald, “Math = male, me = female, therefore math ≠ me”, *J Personal Soc Psychol.* 2002; 83:44–59.
- [13] J. Aronson and M.S. McGlone, “Stereotype and social identity threat”. In: Nelson, TD., editor. *The Handbook of Prejudice, Stereotyping, and Discrimination*. New York, NY: Psychology Press; 2008. p. 153-78.
- [14] H-H.D. Nguyen and A.M. Ryan, “Does stereotype threat affect test performance of minorities and women? A meta-analysis of experimental evidence”, *J Applied Psychol.* 2008; 93:1314–1334. [PubMed: 19025250]

- [15] S.J. Correll, "Gender and the career choice process: the role of biased self-assessments". *Am J Sociol.* 2001; 106:1691–730.
- [16] S.J. Correll SJ, "Constraints into preferences: gender, status, and emerging career aspirations", *Am Sociol Rev.* 2004; 69:93–113.
- [17] V. Lavy and E. Sand, "On the origins of gender human capital gaps: Short and long term consequences of teachers' stereotypical biases", *National Bureau of Economic Research Working Paper Series.* 2015; (20909)
- [18] C.A. Moss-Racusin, J.F. Dovidio, V.L. Brescoll, M.J. Graham and J. Handelsman, "Science faculty's subtle gender biases favor male students", *Proc Natl Acad Sci.* 2012; 109(41):16474–16479. [PubMed: 22988126]
- [19] S. Knobloch-Westerwick, C.J. Glynn and M. Huge, "The matilda effect in science communication: an experiment on gender bias in publication quality perceptions and collaboration interest", *Sci Communication.* 2013; 35:603–625.
- [20] E. Reuben, P. Sapienza and L. Zingales, "How stereotypes impair women's careers in science", *Proc Natl Acad Sci USA.* 2014; 111(12):4403–4408. [PubMed: 24616490]
- [21] J. Steele, J.B. James and R.C. Barnett, "Learning in a man's world: examining the perceptions of undergraduate women in male-dominated academic areas", *Psychol Women Q.* 2002; 26:46–50.
- [22] C. Logel, G.M. Walton, S.J. Spencer, E.C. Iserman, W. Von Hippel and A.E. Bell, "Interacting with sexist men triggers social identity threat among female engineers", *J Person Soc Psychol.* 2009; 96:1089–1103.
- [23] K.W. Koput and B.A. Gutek, "Gender Stratification in the IT Industry: Sex, Status and Social Capital". Northampton, MA: Edward Elgar Publishing Ltd; 2010.
- [24] J.M. Sheltzer and J.C. Smith, "Elite male faculty in the life sciences employ fewer women", *Proc Natl Acad Sci.* 2014; 111(28):10107–10112. [PubMed: 24982167]
- [25] E. A. Gunderson, G. Ramirez, S. C. Levine, and S. L. Beilock, "The Role of Parents and Teachers in the Development of Gender-Related Math Attitudes", *Sex Roles*, vol. 66, no. 3–4, pp. 153–166, Feb. 2012.
- [26] J. R. Shapiro and A. M. Williams, "The Role of Stereotype Threats in Undermining Girls' and Women's Performance and Interest in STEM Fields", *Sex Roles*, vol. 66, no. 3–4, pp. 175–183, Feb. 2012.
- [27] E. M. Adamowicz, "Why aren't women choosing STEM academic jobs? Observations from a small-group discussion at the 2016 American Society for Microbiology annual meeting", *FEMS Microbiol. Lett.*, vol. 364, no. 6, Mar. 2017.
- [28] C. Glass and K. L. Minnotte, "Recruiting and hiring women in STEM fields", *J. Divers. High. Educ.*, vol. 3, no. 4, pp. 218–229, 2010.

- [29] A. Sebastián Ramos (Coord.), *La presencia de estereotipos de género en el sistema educativo como determinante del desarrollo personal y profesional (estudio descriptivo)*, Madrid. Editorial DYKINSON SL, 2006.
- [30] A. Tarabini (May 11, 2017). L'educació secundària postobligatòria a Catalunya: dilemes, indicadors i hipòtesis. Crític. [Online]. Recovered from <https://www.elcritic.cat/opinio/>
- [31] OECD (2018). *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris. [Online]. Recovered from <http://dx.doi.org/10.1787/eag-2018-en>
- [32] W. Bartlett, "The effectiveness of vocational education in promoting equity and occupational mobility amongst young people", *Econ. Ann.*, vol. 54, no. 180, pp. 7–39, 2009.
- [33] UNESCO (2015). *A guide for gender equality in teacher education policy and practices*. [Online]. Recovered from http://www.ungei.org/A_Guide_for_Gender_Equality_in_Teacher_Education_Policy_and_Practices.pdf
- [34] M. Ebenfeld (2018). *Gender in teaching*. [Online]. Recovered from <https://www.htw-berlin.de/en/organisational-units/central-offices/gender-equality-equal-ppportunities/gender-in-teaching/>
- [35] V. Kincade Oppenheimer. *The female labor force in the United States: Demographic and economic factors governing its growth and changing composition (population monograph)*. Praeger. California: University of California, Berkeley, 1976, pp. 103-104.
- [36] M. S. Kimmel, "Gender equality: Not for women only", presented at International Women's Day Seminar, European Parliament, Brussels, Belgium, 8 March 2001.
- [37] L. Peacock (2013, December 3). *The 10 jobs men don't trust women (or men) to do: From a male nanny to a female bus driver*. The Telegraph. [Online]. Recovered from <https://www.telegraph.co.uk/women/womens-business/10490832/The-10-jobs-men-dont-trust-women-or-men-to-do-From-a-male-nanny-to-a-female-bus-driver.html>