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Exploring and Comparing Gendered Experiences in Construction Management Education in Ireland

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Abstract

Despite efforts by Irish governments and construction industries, women are still distinctly underrepresented in 3rd level construction management courses in Ireland. This study investigates the age-old barriers and challenges faced by women in pursuing careers in construction management, focusing on gender stereotypes, the industry's image, access to STEM (Science, Technology, Engineering and Maths) education, and the role of career guidance. Using a mixed-methods approach, the research combines a literature review with semi-structured interviews conducted with eight students from Technological University Dublin. The findings reveal that gender stereotypes remain pervasive, with female students facing challenges such as lack of female role models, isolation in male-dominated environments, and insufficient guidance in school. Key motivations for choosing construction management include financial prospects and job security, with family influences playing a stronger role for female students. The research also highlights a lack of exposure to construction-related subjects in secondary education, particularly for female students, which limits their engagement with the industry. This research contributes valuable insights into the gender dynamics in construction management education and highlights areas for future policy and industry development.

Keywords

Construction, gender, comparison.

1 Introduction

1.1 Women in Construction:

Despite recent efforts by both the Irish Government and the Irish construction industry to recruit more women into construction, women are still distinctly underrepresented in many areas of the industry, including Construction Management. A contributing factor for this is the low number of women students choosing construction management degrees as options following the Leaving Certificate.

Table 1. Student numbers in Construction Management in Technological University Dublin segregated by sex

Technological University Dublin		
	Total (100%)	Female
2022/2023	50	7 (12%)
2021/2022	41	5 (12%)
2020/2021	49	4 (8%)
2019/2020	51	5 (10%)
2018/2019	42	1 (2%)
2017/2018	56	2 (4%)

Table 1 above show the numbers of female students in Construction Management courses in Technological University Dublin from 2017 – 2023. While the number entering the course are increasing, having first-hand experience dealing with these classes, when we take into consideration the retainment rate, numbers are still very low.

2 Literature Review

Why are these numbers so low? This literature review explores the barriers women face in entering and advancing in construction management. It examines factors such as gender stereotypes, the industry's image, access to STEM education, and the role of career guidance, highlighting the need for more female role models and mentorship to address these challenges.

2.1 Stereotypes

There is a long-standing assumption that the construction industry is better suited to men than women. IWISH is a volunteer led community that specialize in providing women secondary school students, and their teachers, with the opportunities associated with STEM. IWISH conducted a survey in 2021 on 2449 women secondary school students and surveyed their attitude towards STEM. Overall, 83% IWISH respondents and 44% of the Construction Industry Federation (CIF) (2018) respondents felt that there is not enough gender equality or noted gender stereotyping in STEM careers. Finger (2020) discusses gender stereotyping in detail and notes that ongoing gender stereotypes and roles can lead to students making gender- appropriate decisions within school and college. Society has a pervasive view that science and engineering professions are male-dominated and masculine in nature, thereby causing negative attitudes toward these disciplines among women. This in turn can lead to women feeling isolated within STEM fields. Differences in sexual stereotyping between disciplines may also steer women to enrol in certain fields and avoid others, such as construction. (Knight et al. 2011). Sewalk and Nietfeld (2013, p. 250) found that the culture surrounding women and media pictures consider construction to be a “dirty, manly, physical, sexist job that women are not welcome”.

2.2 Poor Image of Industry

Having conducted surveys with the Associated Schools of Construction colleges in America, Sewalk (2013) found that the image, or perception of the industry was preventing women from choosing this as a career option. Kelly et al (2019) describe references to the chilly climate experienced by women students who find themselves in men dominated environments. These studies show that in these men dominated environments, women may find themselves more liable to gender harassment, have less informal interaction with their peers and are ultimately faced with the overriding stereotype that they are less capable than their men counterparts.

The engineering union Connect declares that the construction industry and other sectors are far behind in supports for women workers: “Whereas other industries are now discussing increased supports for women dealing with menstruation and the menopause, the construction and other sectors which

employ trades workers have not even dealt with the issue of adequate toilet facilities,” the union’s assistant general secretary Brian Nolan stated. (Malone 2022) This is confirmed by the findings of the CIF survey, with 40% of participants stating that the sector is not viewed as attractive to women (CIF 2018). This report continues by discussing the fact that 17% of respondents stated the physical nature of the job as a reason for the shortage of women in the sector (CIF 2018).

Sewalk (2013) notes that women are almost discouraged from entering the industry if they want to have children due to maternity leave after having a child. Women with families find it difficult to deal with extended working hours when they have caretaking responsibilities elsewhere. There is also discussion about how difficult it can be for women to get into the industry as managers are wary of women of a certain age and the potential family needs “Women felt penalised for wanting or having families as their employers saw them as unreliable if they had to take time off for their children” (Sewalk and Nietfeld 2013, p. 243). Another area that may cause women students to discount the industry as an option are the issues surrounding the lack of paid maternity leave should it be required (CIF 2018). In an aim to combat this, the company Laing O’Rourke (2022) announced in July 2022 that employees will be entitled to take six months parental leave at full pay, irrespective of gender. Other Construction companies in the United Kingdom, such as Kier, offer similar policies (Kier 2022).

2.3 Science, Technology, Engineering and Maths (STEM) Provision

2.3.1 Schools offering STEM

The fact that most women secondary schools do not even offer the choice of some STEM subjects is not a new issue. Decades ago, Breen et al. (1983) stated that while these “technical” subjects are almost universally taught at co-ed and vocational schools, they are absent from girls’ secondary schools. According to TIMSS (2015), in the top 60% of higher-earning countries, less than 5% of primary schools are single-sex. Apart from Muslim countries, Ireland has the second-highest instance of single-sex schooling, with only Malta having more single sex schools.

If a school provides STEM subjects, this allows students to become familiar with related professions including the contents, demands, and challenges of such industries. Exposure to STEM subjects in school may allow students, particularly women students, to develop an interest in this area. It is believed that greater exposure to STEM subjects in secondary school may enhance a student’s interest in those subjects, which may result in higher enrolment rates in STEM fields in higher education. Understandably, if the student has limited exposure to STEM subjects, this may lead to lower levels of STEM involvement. (Jacob et al. 2020)

This corresponds with the findings of the 2021 IWISH survey, which found that 55% of respondents were interested in studying Engineering, 52% interested in Construction Studies and 46% were interested in Design and Communications at Leaving Certificate level. However, they did not have access to these subjects. (IWISH 2021)

2.3.2 Women choosing STEM

Setting aside the barrier that some schools do not offer a full array of STEM subjects, even when they are offered, women students tend not to choose them. (Ertl et al. 2017). Preconceived assumptions about STEM subjects in terms of their gender bias have been instilled in women students before they make their leaving certificate choices. The numbers of women undertaking these STEM subjects at secondary school level may have an impact on their 3rd level choice (IWISH 2021). In 2022 a study was undertaken on the breakdown of men and women taking higher level STEM subjects at leaving certificate level (IWISH 2024):

Table 2 Student numbers undertaking STEM subjects 2024

Subject	% Men	% Women
Engineering	91	9
Construction Studies	87	13
Design and Communication Graphics	81	19
Maths	50	50
Applied Maths	71	29

If female students were able to study these subjects, it may spark an interest, leading them towards a construction related degree. CIF (2018) agrees that there is a need to engage with women students in secondary school and encourage them to undertake STEM subjects. This is agreed in WISH (2024) survey results, where 60% of respondents noted lack of information about careers in STEM and 43% noted limited STEM subject in their school, as barriers to entering the industry.

2.4 Career Guidance & Influences

Finger (2020) highlights that educational decisions are often made under uncertainty and with biased information. Similarly, Bigelow et al. (2015) note that advisors have limited understanding of construction degree programmes, particularly in distinguishing between construction labour and management roles. High-school counsellors, as Sewalk and Niefeld (2013) point out, rarely promote construction management or may be unaware of its opportunities. This is concerning as McCoy et al. (2014) found that 83% of school leavers rely on guidance counsellors for advice, followed by parents. However, these key influencers often lack knowledge about career progression in the construction sector. The Construction Industry Training Board (CITB, 2013) reported that construction careers scored low in attractiveness among both parents and career advisors, with roles in the industry often perceived as dirty or unsuitable for school-leavers who could attend higher education (Waters and McAlpine, 2016). A CITB survey (2014) revealed that 35% of career advisors viewed construction as an unattractive career. Furthermore, 82% of teachers lacked knowledge to advise on construction careers, and 44% admitted to providing inaccurate advice (CITB, 2014). The Educating the Educators Report (2012) emphasized that educators recognize this knowledge gap and seek assistance to address it (Waters and McAlpine, 2016).

Peers are a major influence on women's participation in STEM, as noted by Kelly et al. (2019) and Shi (2018). Parental occupation also reinforces gender-based expectations in subjects like math and science. The IWISH (2021) survey found that 56% of respondents were influenced most by family when choosing subjects, with 30% citing peers. This aligns with findings by Hodgkinson and Sparkes (1997) and Paulsen et al. (2001) on the strong impact of family on career choices, including discouraging young people from entering trades like construction (NHBC Foundation, 2016).

2.5 Lack of Role Models

As previously noted, women in the construction industry may feel a sense of isolation due to the lack of women company or women colleagues. It has been found that most women will progress their career within the industry through the involvement of a mentor (Sewalk 2013). Bigelow (2015) notes that higher education institutions have had to make efforts to address negative stereotypes through undergraduate mentoring programmes intended for women, something which Technological University Dublin offers to its built environment students.

This corresponds with the IWISH (2021) survey, in which 84% of respondents noted a lack of women role models as a barrier to choosing a career in STEM and as exacerbating the gender stereotyping within the industries. Correspondingly, (Kelly et al. 2019) conducted a survey of second year

undergraduate STEM students and found that 48% of participants believe that a lack of role models accounted for a lower number of women in STEM fields. Women lecturers may provide a way to increase women student enrolments, as they may serve as role models for young women and influence students perceptions of who a construction professional is. Recruitment efforts in general are more effective if students can relate to someone like themselves, i.e. a women student with a women lecturer (Bigelow et al. 2015).

3 Research Methodology

There are various methods that can be used when undertaking any form of research. Fellows and Liu (2008) state that research is the systematic investigation into and study of materials, sources, etc. in order to establish facts and reach new conclusions. Semi-structured interviews were chosen for this research due to their flexibility and ability to capture both qualitative depth and consistency across participants. This method allows the researcher to ask predetermined questions while also probing deeper into responses, enabling the exploration of individual experiences and perceptions in more detail (Kvale, 2007). A qualitative research approach was adopted for this paper including a literature review and semi structured interviews with students from Technological University Dublin. A minimum one male and one female from each year group were interviewed using the same set of questions. 20 students in total were interviewed. Participants were asked their opinion on the below questions as listed Table 3 below.

Table 3: Qualitative data interview questions topics

Qualitative data interview questions topics
1. What made you decide to enter construction industry?
2. What age did you develop an interest in industry?
3. Who/What gave adequate support and guidance in school while making college decisions?
4. Who has been most influential on journey so far?
5. Have you had any experience of any gender imbalance
6. Do you believe that there are any barriers evident to stop you staying in the industry?
7. What would encourage more women to enter the industry?
8. Would you recommend Construction Management to female students?

The initial data analysis of the 20 semi-structured interviews included an assessment of the interview responses to identify any specific patterns within the collected data. Thematic Analysis was undertaken on the interviews and in this case, the participants' interview transcripts were analysed systematically, with various themes and repeated patterns being highlighted and identified. (Braun and Clarke 2006)

4 Findings and Discussion

4.1 Question 1: Why did you decide to study construction management?

4.1.1 Motivations:

Both sets of students identified financial motivations as a significant factor in their decision. Male students explicitly noted wages as a primary reason for their choice, whereas female students mentioned financial opportunities alongside broader social concerns such as housing crisis. Both groups expressed interest in the employment prospects alongside job security.

4.1.2 Influence of Family and Role Models

Family influence on the decision emerged in both groups, but appeared to be more pronounced within the female students. In particular, a third-year female students noted her father and aunt as role models in the industry. Male students also noted familial connections, like the second year student referencing his grandfather, however these were less about inspiration and more in relation to sparking an initial interest. The female students seemed to benefit more from these familial connections, suggesting a potential advantage in terms of encouragement. Male students noted influential teachers, particularly in STEM subjects, which highlights a slightly different source of motivation.

4.1.2 Educational Background and Interests

The male students specifically cited their experiences in secondary school, including subjects like woodwork and technical graphics, as critical in shaping their decisions. In contradiction to this, female students mentioned a lack of exposure to construction related subjects in their educational background but did not indicate this as a significant obstacle in adapting to their current studies.

4.2 Question 2 – At what age did you develop an interest in the Construction Industry?

Female students were more likely to mention play activities such as Lego, as early indicators of interest, while males did not. This could suggest differing societal expectations regarding gendered play and interest in construction related activities during childhood. Both male and female students reported developing a real interest in construction during early to mid-secondary school years, indicating a potential commonality in how secondary school education influences career paths.

4.3 Question 3 – Who gave you adequate support and guidance in school when deliberating on Construction as a college/university option?

4.3.1 Guidance Counsellors

Male student consistently rated guidance counsellors as their top support, while female students had mixed feelings, often ranking them lower due to inadequate knowledge of construction options available.

4.3.2 Teachers, Peers and Family

Male students found teachers to be more supportive and knowledgeable about construction related courses, in stark contrast to female students, who felt teachers were less engaged in promoting the industry as a viable option. While both sets of students noted support from peers, female students reported feeling isolated in their interests, likely due to the male dominated nature of the construction industry. Family members, particularly parents, were a stronger influence for female students than male.

4.4 Question 4 – Who has been the most influential in your journey so far?

4.4.1 Lecturers vs. Career Advisors:

Female students primarily identified lecturers as their main sources of influence, while male students favoured career advisors. This difference may indicate a disparity in how each group perceives academic and career guidance roles in their educational journeys.

4.4.2 Family Connections:

Both genders acknowledged family influences, but male students emphasised a stronger legacy from family members in the construction industry. This suggests that males may benefit from more established networks within the field compared to their female counterparts.

4.4.3 Networking and Mentorship:

Female students appeared to place a higher value on informal networking and mentorship from lecturers and industry professionals, whereas male students focused on structured guidance from career advisors. This may reflect differing approaches to seeking support and advice in their respective journeys.

4.4.4 Perceptions of the Industry:

Female students expressed a need for validation and positive representation from their lecturers, highlighting the importance of role models in overcoming gender barriers in construction. In contrast, male students seemed to draw confidence from familial connections, which may contribute to a more established sense of belonging in the industry.

4.5 Question 5: What has been your experience on the gender divide within construction management, both in your courses, and the industry as a whole? Do you believe there is a balance?

4.5.1 Diverse Experiences:

The responses from female students reveal a significant range of experiences regarding gender dynamics in construction management, from supportive environments to overt discrimination. In contrast, male students largely reported neutral or positive experiences, indicating a potential disconnect in understanding the challenges faced by their female counterparts. Male students recognised the gender disparity, but many lacked personal experience in the industry to fully appreciate its implications. Female students, on the other hand, brought personal narratives that highlighted systemic issues, suggesting that their experiences should inform efforts to foster inclusivity in construction management.

4.5.2 Desire for Balance:

While female students expressed a clear desire for increased female representation in their courses and the industry, male students seemed less concerned with the imbalance, with some feeling that the current ratios were acceptable. This difference underscores the need for continued dialogue about gender equity in education and industry.

4.5.3 Impact of Gender Dynamics:

Female students' experiences reveal that gender dynamics can affect their educational journey, with some facing barriers that male students do not encounter (childcare, on site challenges etc). This difference necessitates tailored support for women in construction management to address these challenges.

4.6 Question 6: Do you perceive there to be any barriers to you staying in the industry?

4.6.1 Perception of Barriers:

Female respondents predominantly identified potential barriers related to gender bias and work-life balance, highlighting systemic issues that could impact their careers. In contrast, male respondents focused on logistical challenges, such as job availability and hours.

4.6.2 Resilience vs. Complacency:

While female students expressed determination to stay in the industry despite challenges, male students generally did not express concerns about barriers, suggesting a potential lack of awareness regarding the unique challenges faced by their female counterparts.

4.6.3 Support Systems and Flexibility:

Female respondents stressed the need for improved support systems for parents, indicating a desire for more flexible working conditions in the industry. Male responses did not address this issue, suggesting a possible disconnect in understanding the additional challenges women face. This could also be due to none of the male respondents being parents at this stage.

4.7 Question 7: What do you think would encourage more women to be a part of the industry?

4.7.1 Focus on Education:

Both male and female respondents emphasised the importance of education in attracting more women to construction. However, female respondents were more specific about the need for educational content that challenges gender stereotypes, such as availability of STEM subjects.

4.7.2 Role Models:

Female participants stressed the significance of female role models, particularly in early education, while male respondents focused on the general need for visibility and awareness of women in various roles.

4.7.3 Perception of the Industry:

Female respondents expressed concern about how women perceive the industry, noting fears and misconceptions. Male respondents, on the other hand, highlighted the need to reframe how the industry is viewed, suggesting a broader approach to combating stereotypes.

4.7.4 Work-Life Balance:

Only female respondents addressed the need for better support systems for women with families, indicating a gap in understanding among male respondents regarding this crucial factor that influences women's career choices.

4.8 Question 8: Would you recommend Construction Management as a viable option to other female students?

Both male and female respondents overwhelmingly support the idea of construction management as a viable and attractive option for female students. Key points include:

4.8.1 Versatility and Opportunities:

Respondents highlight the diverse career paths that construction management offers, making it a flexible and strategic choice for students. Many express genuine enthusiasm for their studies and careers within construction management. The course allows students to explore different aspects of the industry, helping them make informed decisions about their career paths.

5 Analysis

5.1 Guidance Counsellors

Considering that both the interviews and literature review (Bigelow 2015 and McCoy, Smyth et al. 2014) noted that Guidance Counsellors were among the top ranked for influence and information for students, it could be agreed that there is a need for improved guidance structures in place to provide comprehensive support for students, particularly females, who are interested in the construction industry. Enhancing counsellor training and awareness of construction pathways could help bridge the gap in support for these students.

5.2 Image of Industry

The construction industry is often seen as unattractive, especially for women. A significant 40% of women in surveys describe the sector this way, due to issues like gender harassment, long hours, and poor work-life balance (Kelly et al., 2019). Interview responses confirmed these concerns: female students mentioned the lack of female role models and unsupportive work environments as deterrents. However, companies like Laing O'Rourke and Kier are starting to address these issues, offering policies for improved maternity leave and flexible working arrangements, which was acknowledged by both male and female students during interviews as a positive step.

5.3 STEM

Limited access to STEM education in schools is a major barrier, with many girls' schools offering few STEM options. IWISH (2021) found that 55% of students interested in construction lacked the relevant subjects. Interviewees mirrored this finding: female students in the study often expressed frustration over the limited STEM offerings at school, making it harder to pursue construction management. It was noted however that a small number of female students interviewed did not undertake STEM subjects at school and did not feel at a disadvantage entering university. Despite STEM subjects being available, women are less likely to pursue them. In Ireland, women make up just 9% of engineering students and 13% in construction studies (IWISH, 2024). This trend was reflected in the interviews, where female students noted that they were often steered toward more traditionally "feminine" careers, and fewer girls took subjects like engineering or construction at school.

5.4 Role Models

The absence of female role models in construction is a well-documented barrier (Bigelow, 2015). IWISH found that 84% of female students cited this as a significant challenge. In interviews, many female students reiterated this point, expressing the need for more female mentors and role models to help them visualise themselves in construction roles. None of the male students, however, identified this as a significant issue, highlighting the contrasting experiences between genders.

6 Conclusions and Further Research

This research aimed to explore gender disparities in construction management, focusing on the barriers faced by female students in entering and progressing in the field. Based on interviews with 20 students

from Technological University Dublin, the study identified key challenges such as gender stereotypes, an unattractive industry image, limited STEM education access, and a lack of female role models. Both male and female students shared motivations like job security, but female students specifically noted gender bias, work-life balance issues, and insufficient career support. While these findings align with existing literature, the study also highlighted the importance of flexible career options and increased female representation in both education and the workforce. The research contributes valuable insights that can help educational institutions, industry leaders, and policymakers better understand the barriers to female participation in construction.

Future research could broaden the scope by including more universities and a larger, more diverse sample to gain a fuller picture of the gender dynamics in construction management. A longitudinal study tracking female students into their professional careers could provide deeper insights into the challenges and barriers they face post-graduation.

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