Girls in Vocational Education and Training (VET): Choosing and Navigating Male-dominated Qualifications in Engineering and Construction.

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Abstract

Women remain underrepresented in occupational sectors such as engineering and construction - as sectors with increasing skills shortages and implicated in UK political growth agendas, the sectors themselves and government agendas report urgent needs to expand their recruitment. The multi-faceted barriers women face in entering these highly masculinised occupational spaces are well documented in existing literature. Despite these barriers, there are women who *do* embark on qualification pathways into these occupations. This thesis explores the choices and experiences of young women pursuing different male-dominated vocational qualifications. Interviews were carried out with 17 young women pursuing engineering and construction qualifications at an English Further Education (FE) college. Alongside these, a sub-sample of college staff, related industry informants, and young women on gender-typical pathways (n=15) were interviewed to provide contextual insights and comparative data. This thesis proposes an emergent framework for conceptualising choice-making as *visible, plausible*, and *viable* possibilities, developed through empirical data collection and analysis. Through this framework, the research reveals the interconnected, overlapping arrangements in homes, schools and colleges that act to make male-dominated pathways a possibility for some young women. Through exposure to practices at home and school and the influence of social actors such as parents and teachers', women are unbounded from gendered conventions, and accrue crucial forms of social and cultural capital that enable pathways towards these male-dominated careers. Important differences emerge in the preceding practices and shape dispositions that orient women more towards engineering or construction. However, I argue that despite making choices contrary to gendered norms as a resistance to countervailing processes, normative gendered dynamics are often (re)produced in different ways. Tensions and complexities are revealed throughout the women's choices and experiences. Young women recognise their choice as contrary to gendered norms and their role in potentially pioneering social change whilst concurrently want to fit in and be accepted as legitimate in their chosen career paths. Through a focus on the atypical this thesis contributes broader explanations about wider processes that shape the reproduction of gendered educational and occupational choices. Practical recommendations are made, suggesting the value of a coordinated approach between schools, colleges, and industry.

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List of Abbreviations

BERA	British Educational Research Association
BTEC	Business and Technology Education Council
DfE	Department for Education
ECITB	The Engineering Construction Industry Training Board
FE	Further Education
HE	Higher education
LLM	Local Labour Market
ONS	Office for National Statistics
STEM	Science, technology, engineering and maths
VET	Vocational Education and Training

Chapter 1. Introduction

1.1 Background and rationale for the research

Engineering and construction represent some of the most male-dominated, gender segregated occupations in the UK and across the Western world. Initiatives and national government spending has sought to drive numbers of women into STEM (Science, Technology, Engineering and Maths) and in particular, engineering (Barnard et al., 2010; Phipps, 2008; Smith, 2011; White and Smith, 2022). Whilst numbers of women in engineering have increased slightly in the last decade or so[1], women persistently remain in the significant gender minority in the related educational qualifications and occupational sectors. Comparatively, far less policy attention has been given to gender diversifying initiatives in construction and trades sectors. Women are underrepresented across these sectors and, even when actions are taken to address this, it is seemingly resistant to significant change (Engineering UK, 2024, SIMIAN, 2024). This thesis forefronts the issue of women's persistent underrepresentation in these highly masculinised and male-dominated labour market sectors and educational qualifications.

As highly gender segregated sectors of employment, engineering and construction represent an education-to-work pipeline whereby girls and young women are underrepresented at each stage. As an 'arms length' Government body reporting to the Department for Education, The Engineering Construction Industry Training Board (ECITB) report these sectors are facing significant skills shortages and experience gaps which are only set to get more problematic, with the advancement of technology and the fact that nearly 20% of the current engineering workforce are aged over 60 and set to retire by 2026 (ECITB, 2018; see also Ball, 2019). These sectors also relate significantly to pressing UK political agendas in tackling housing shortages through new home-building initiatives, improving clean energy infrastructure, and net zero targets. In the construction industry, The UK Trade Skills Index (2023) report highlights the need for 937,000 new recruits by 2032 to bridge the skills gap in the construction and trades industry. This shortage is particularly prevalent amongst plumbers, bricklayers, carpenters, and electricians. This research,

then, is especially time-relevant given that a significant portion of current construction workforces are aged over 50 and set to retire in the next decade. Industry bodies state there is an urgent need to engage more young people, beyond the current overrepresentation of white males, to pursue careers in engineering and construction sectors (ECITB, 2018). The ECITB *Equality, Diversity and Inclusion Action Plan* (2024) acknowledges that greater 'diversity' is key to addressing these gaps, and this importantly includes greater recruitment of women.

These wider contexts compounded my interest in this area but were also developed through everyday observations at my place of employment – a further and higher education provider, pseudonymised within this thesis as 'The Aspire Institute'. The education setting where I work as a lecturer in higher education (HE) is a key provider of post-16 qualifications for the town located on the east coast of England, pseudonymised 'Thornfield'. Prior to commencing my PhD I completed a social science undergraduate as a widening participation and mature student at The Aspire Institute. I then went on to study for a master's degree with another University close to my home. I increasingly found the sociological enquiry one that married my personal curiosities with professional interests. This would prove to be crucial in shaping my doctoral research as reflecting both a deeply personal and professional journey as a researcher. This also foregrounded my investment in Thornfield as a town and community I have lived and worked for many years, and also my belief in the potential of The Aspire Institute as an education provider for people in the local area to be supported to achieve personal and academic goals.

At the college, the vast majority of the further education (FE) students follow post-16 qualifications that are gender-typical, echoing national trends. These patterns of participation are evident in both the providers' student data across different qualifications and programmes of study and in the visible displays of uniforms and clothing. Commonly, the young women's uniforms would clearly associate them with a qualification in social work, hairdressing, or beauty therapy for example. Likewise, the young men and their trades uniforms would never feel unexpected or out of place. However, I would occasionally notice young women in their workwear and steel-toe boots, clearly demarking their qualification as contrary to gendered norms. I was driven to consider what this meant for these young women who were

embarking on a qualification that goes against pervasive, and long-standing gendered trends.

To explain and potentially change gender labour market patterns requires examining what has gone before. This draws the focus of this thesis to explore the practices and processes that precede young women's choices and their college experiences when they *do* opt to follow engineering and construction routes as a post-16 qualification. By examining 'exceptions' with a focus on those who disrupt normative gendered conventions in vocational education, I was able to offer a novel angle on wider choice-making processes. In focusing this research on young women during their time at college, I was also able to capture a moment in time where young women could offer insights into their recent school-to-college transition and their college experiences. In doing so, I hoped to reveal not just individual dispositions, but the wider practices and processes that informed and shaped their choice of qualification. By attending to these processes, I was able to explore past contexts, current experiences and anticipated futures and trace a temporal and biographical flow through their home, school, college, and anticipated future career experiences. This allowed an in-depth exploration into these different structural arrangements rather than treating these as influential but often separate social domains. The value of adopting this approach enables this study to bolster our understanding of processes and structural contexts through a specific lens on choices that are contrary to normative gendered conventions.

For this thesis, interviews were carried out with a total of 22 young women aged 16-19 attending The Aspire Institute. Drawn from various levels and vocationally oriented qualifications, this research focuses on young women completing different engineering and construction related qualifications. The thesis makes the case that the young women's choices to pursue atypical pathways demonstrate both a resistance to normative gendered action and also highlight the subtle ways that young women at times subvert gendered norms through their choice of qualifications and uphold other gendered expectations. Women often navigate wanting to 'fit in' by conforming to wider normalised cultural expectations whilst concurrently recognising their role model-like status for other women in disrupting gendered trends. Attempts to fit in and feel legitimate in male-dominated spaces are manifested

in the reproduction of broader gendered norms. Through the layering and intersecting effects of practices and exposures in the home and secondary school, young women choose and navigate male-dominated qualifications by largely enacting 'appropriate' displays of gender in these spaces within masculine terms. The importance of the home for engaging girls in hobbies and activities traditionally associated with boys implicates not only skills and interests less bounded by gendered conventions in choices to follow male-dominated routes, but also how fathers particularly can imbue young women with the skills that can make male-dominated career routes a later possibility. Even in demonstrating some resistance to masculine dominant cultures at college, young women's compliance with the normative cultures, alongside the perceptions and values of wider social actors, proliferates the cultures associated with these highly masculinised spaces.

Through a critical engagement with extant literature, and as a particular expansion of Hodkinson and Sparkes (1997) models of careership and pragmatic rationality, which draw heavily on Bourdieusian concepts of habitus and forms of capital (Bourdieu and Passeron 1990), I examine and explain the choice-making processes in this thesis as *visible, plausible,* and *viable*. I have developed this framing as a novel lens through which to understand and explain more clearly the layered, intersecting practices, processes and structural arrangements that can enable (or disable) certain choices within the highly gendered context of this thesis. In doing so, I contribute to our understanding of wider choice-making processes and explain more complex and nuanced contexts that enable these choices. This approach also allows an examination of choices where both agentic action and structural arrangements can be analysed within the same framework. I revisit this framework later in the chapter and apply this throughout the analytical chapters of this thesis. The remainder of this chapter introduces the policy context of this research. I then introduce a brief overview of the extant academic literatures that are drawn on throughout this thesis. In doing so, I provide the rationale and context that informed and shaped the research questions and objectives of this study.

1.2 The English Vocational Education and Training and policy context

I will now offer an overall context and explanation of the English vocational education system, including some contemporary policy developments which act as a backdrop to this thesis. All participants in this study were engaged in a form of vocational learning, falling outside traditional academic tracks. Academic routes have long been the focus of educational and sociological research. Whilst the focus of this research is how gendered patterns are reproduced within VET, the attention to the vocational arena means this study also makes contributions to calls by other scholars for greater attention to non-academic education and the so called 'missing middle' in youth studies (Irwin, 2021; Roberts, 2015).

Vocational education and training, abbreviated as VET (or sometimes simply called vocational training), is the training in skills and teaching of knowledge related to a specific trade or occupation. Vocational education may be undertaken at an educational institution as part of secondary or tertiary education. This may be part of the initial training during employment, for example, as an apprenticeship, or as a combination of formal education and workplace learning. In England, young people attend a secondary school setting aged 11-16 and then must remain in a form of education, work, or training until aged 18. The post-16 transition provides the opportunity to follow more traditional academic subjects through A-level study. These are often a prerequisite for going onto higher education at university. Alternative Academic Qualifications (AAQs) are a catch-all phrase for qualifications that offer a broad study into a specific vocational subject. These include BTECs, NVQs, T Levels and apprenticeships. These are often available at entry Levels 1-3[1] depending on the qualification. For the purposes of clarity in this thesis, all these areas of Vocational Education and Training are referred to as VET or vocational education throughout to refer to a range of qualification titles under the VET umbrella[2]. Higher National Certificates (HNCs) and Higher National Diplomas (HNDs) are work-related or vocational, higher education qualifications. They are Level 4 and Level 5[2] qualifications respectively. These more vocationally oriented

[1] Level 1 and 2 are considered GCSE equivalent and level 3 is A level equivalent (GOV. UK, 2025)
[2] Level 4 is equivalent to the first year of a bachelor's degree and level 5 a foundation degree. (GOV.UK, 2025)

qualifications are often studied within a further education college setting rather than for example, a school-based 6th form (Orr, 2020).

Available data demonstrates that certain BTEC (Business and Technology Education Council) subjects have seen growing gender parity in recent years, including in business studies and sports science. (FFT Education Datalab, 2021). Other vocational fields, such as childcare, health and social care, engineering, and tech related qualifications remain highly gender segregated and seemingly resistant to change. In 2021 94% of entrants for a BTEC qualification in healthcare were female, and in engineering 92% were male. To address some of the complexities of past VET systems and 'raise the status' of the vocational education system, T Levels were introduced in England in 2020 (Orr and Terry, 2023). Equivalent to three A-Levels and aimed at post-16 school leavers, they are designed to embed employment and training into qualifications designed in collaboration with businesses and employers (Lewis and Bolton, 2023). Similar gender participation patterns are being replicated in the newer T Level qualifications. In 2024 just 9% of those who completed engineering and technology related T Levels in 2023 were female (FFT Education Datalab, 2024). On courses related to construction and planning, 17% were female with just 1% where this was 'onsite' construction, which includes trades such as bricklaying and carpentry. Where VET is strongly linked to certain, often specific employment sectors, vocational trajectories to labour markets are, and have remained, strongly gender delineated. This 'stunning persistence of gender inequality in the field of VET' (Niemeyer and Colley, 2015:1) means VET has been identified as contributing to '…patterns of constructing gender differences and the resulting gender inequalities' (ibid:1). This underscores the value of this study in examining how young women have both come to undertake qualifications in highly masculinised sectors and their experiences of navigating these during college.

The former Conservative government's White Paper *Skills for Jobs* (2021) put vocational training firmly in their toolkit to tackle rising inequalities and skills shortages; however, vocational modes of learning exist in a policy space marked by contradictions and states of flux (Newton and Winch 2019). VET is often cited as being both neglected and underfunded but also emphasised in policy agendas around 'levelling up' (Orr and Terry, 2023). Under the new Labour government, a 2024 cross

department white paper *Getting Britain Working* sets out a specific 'Youth Guarantee' with strategies to provide opportunities for young people to 'earn' or 'learn'. The paper generally emphasises the value of apprenticeships and T Levels to prepare young people for the workplace and recognises the value of a varied and flexible post-16 curriculum. However, a 2024 House of Lords Education Committee suggested that an overly academic focus remains in the 11-16 curriculum that was overloading content and disadvantaging other forms of learning and qualifications, including vocational routes. I illustrate this here as recent policy developments do little to address or challenge long standing critiques of the field of vocational training. They exemplify an ongoing pattern of successive governments pledging to enhance the quality of apprenticeships and vocational forms of learning, and yet 50 years of successive governments have merely 'tinkered' with VET policies, serving to create a system that is often devalued by both young people and employers (Sainsbury, 2016; Misselke, 2022; Wolf, 2011).

The contributions of this study then not only lie in the insights into educational gendered trends, but also respond to calls to attend to those 'in-between' or the 'ordinary kids' (Brown, 1987) by examining the processes and mechanisms that surround choice and experiences of pathways that are neither a traditional academic route nor NEET (not in education, employment or training) (Irwin, 2021; Roberts, 2011). Relatedly, scholars argue there is a division of the academic and the vocational, which remains a dominant narrative amongst policymakers and academics alike (Brockmann and Laurie, 2016). In the past, particularly within the UK, the vocational option has often been defined not by what it is but by what it is not: the academic option (Sainsbury, 2016: 23). Educational and sociological literature has long been preoccupied with the 'academic' and scholars have argued that less academic attention has been given to those outside of Higher Education and more formal academic routes (Brozsely and Nixon, 2023; Irwin, 2021). When vocational and mid-level qualifications are in the spotlight, it is often to cite them as a panacea to rising young inequalities or as Keep (2012:9) writes, as a means to engage 'disaffected' learners as a 'vehicle for social inclusion' meaning a vocational qualification is not always seen as a 'high-status learning pathway in its own right'. As such, it is important to situate the focal participants of this study as not only young women who represent the gendered 'exception', but to also acknowledge that their

qualifications represent those in ‘the middle’, falling outside traditional academic tracks. This makes the focus of this thesis on vocational forms of learning valuable for its contribution across arenas of sociological thought as well as providing insights for educational and industry policy.

The VET space, which acts as an often clearly defined pipeline to careers in the engineering and construction industry, is one worthy of further attention. This is especially relevant to understanding more about patterns of gendered participation for industries facing an urgent need to diversify permeating gendered patterns in their recruitment. I now turn to outlining some of the theoretical and academic contexts that have shaped and informed this research.

1.3 Theoretical and academic context of the thesis.

These educational and industry contexts represent a complex space and despite sociological literature long documenting women’s under representation in engineering (Barnard et al., 2012; Moote et al., 2020) and construction (Barnard and Dainty, 2017; Fielden et al., 2000; Thurtle et al., 1998) participation patterns persist. To make a contribution to this field, the following section briefly outlines some of the theoretical and academic context that inform this research and the gaps to which this thesis contributes.

Gender is understood in this thesis by drawing on literatures that conceptualise gender as the socially constructed characteristics of women/girls and men/boys (Jones, 2020) and as normative and performative (Butler, 1990; West and Zimmerman, 1987). Learnt social rules and norms (re)produce appropriate gendered behaviours (Jones, 2020). These norms or rules that govern ideas of appropriate displays of femininity and masculinity are reinforced through ‘systems of social practices’ (Ridgeway and Smith-Lovin, 1999:192). These systems and structures can shape and regulate the behaviours and roles of men and women. Different traditions of research have sought to explain how gendered differences and inequalities are reproduced. Literatures in gendered educational and occupational divisions have

been influenced by culturalist accounts but have tended to continue to emphasise that certain subjects and careers remain perceived in highly gendered terms (Archer et al., 2013; Dewitt et al., 2019; Francis, 2000, 2017). This emphasis proliferates attention to structural barriers, overshadowing the processes and tools that individuals use to navigate spaces in which they are underrepresented.

As systems of social practices, family and home contexts and education systems all play a pivotal role in reinforcing gender socialisation (Jones, 2020). Moreover, the qualifications of interest in this study represent highly masculine cultures of practice (Carroll, 2023; Smith 2013: Bridges et al., 2020) and so the constructions and experiences of gender are highly salient in these contexts (Ridgeway, 2009). This thesis engages with key bodies of literature and debates that have explored influences on young people's educational choices and outcomes, including parents (Archer et al., 2013;2014; Barnes et al., 2020; Carroll, 2023; Eccles, 2005; Irwin, 2018); teachers (Archer et al., 2014; Swan et al., 2021); and arrangements in schools (Archer et al., 2014; Bourdieu, 1990; Francis, 2003).

VET pathways reflect strong gender stereotypes and dominant cultural beliefs about the behaviours of men and women, and often the associated occupations remain quantitatively gender-segregated (Cameron et al., 1999; Chester, 2021; Rolfe, 2006; Ward, 2018). Qualifications such as engineering, childcare, health and social care, and skilled trades are closely linked to occupational outcomes that reinforce societal expectations of gender roles. In this context, educational settings and labour markets are also located as key in reproducing stereotypes that reinforce broader gender ideologies of how men and women are expected to behave (Chesters, 2021). This gendered participation is influenced by a complex mix of individual choices, social orientations, and institutional arrangements that sustain the broader social division of labour between men and women (Niemeyer and Colley, 2015). This persistence of gendered participation highlights the need for a deeper understanding of how these stereotypes are maintained and reproduced through the impact they have on those following highly gendered forms of vocational education and training.

To explain and understand power relations and the reproductions of inequalities in society through the practices of schooling and education, academics in the field of

the sociology of education have long drawn upon the works of Pierre Bourdieu (Edgerton and Roberts, 2014; Reay, 2004, 2006; 2019). Bourdieu's concept of the habitus is a way to understand how values and predispositions are shaped and embodied into schemes for practice (Bourdieu et al., 1977). Forms of social and cultural capital are also a conceptual tool operationalised in empirical research to understand how people's access (or lack of) to resources and relationships can result in inequalities, and is particularly relevant in the sociology of education (Ball et al., 2013; Croll; Reay, 2010).

Conceptualisations of the habitus have been applied to the specific domains of vocational education. Lehman and Taylor (2015) posit that Bourdieu's work has significance in understanding non-traditional educational choices as a response to the relatively few studies that draw on a theory of practice in the context of vocational education. Lehmann and Taylor (2015) go on to argue that a vocational habitus is fostered in home contexts that shape a naturalness for working in the trades. Bridges et al. (2021) examined factors contributing to women's success in the Australian skilled trades industry, identifying that cultural and social capital were key to women's successful navigation and assimilation of this masculine sector. Building from this, Carroll (2023) also identified a vocational habitus in young women working in heavy trades that, she argues, is shaped through routines of practice enacted within the home and school contexts. These bodies of work offer valuable insights into the outcomes of accruing social and cultural capital but leave us with a thin understanding of the specific processes that enable different atypical choices. Building on these intellectual resources, Bourdieusian concepts are drawn upon and applied throughout this thesis to move between theory and practice.

Theories and models of choice-making have drawn upon debates based on the structure/agency dichotomy arising in calls for more middle ground theories (Evans, 2007; Hodkinson and Sparkes, 1997, 2008). Exploring the educational choices and experiences of young women on male-dominated qualifications, this study is concerned with illuminating choice-making in a middle ground sense. Understanding individual values and predispositions is crucial whilst remaining attuned to the social processes and multi-layered contexts that surround young people (Hodkinson and Sparkes, 1997; Reay, 1998). The focus of these literatures is often on the 'normalised'

and majority pathways young people follow leaving obscured the more specific contextual factors and processes within social domains that interlink and overlap making atypical choices a possibility.

Hodkinson and Sparkes (1997) make use of Bourdieusian concepts of habitus and forms of capital to propose that career choices are pragmatically rational through a theory of careership (Hodkinson and Sparkes 1997;2008). Their theoretical propositions were in response to a number of 'folk theories' of career planning. These theories, they argue, made assumptions about such decisions being linear and straightforward when they are 'good', and over emphasise either structural constraints or agentic action. Hodkinson and Sparkes have usefully argued that career choices are the result of both structural effects and personal dispositions but leave overlooked more specific processes relating to highly gendered educational choices.

Through a critical reading of Hodkinson and Sparkes (1997) and Bourdieusian concepts, I situate these choices through the lens of *visible, plausible,* and *viable* possibilities. Through this, choice-making of highly gendered pathways is contextualised, expanded, and evidenced throughout the thesis. Put simply, this is about the young women's choices being: Visible - *can I see it?* Knowledge of different careers and information about possible qualifications and occupations through for example, formal career advice or knowledge exchanges in the home. Plausible - *is this for me?* Qualifications and employment sectors need to be compatible with constructions of gender implicating the formation of the habitus within the home and school contexts. Viable – *do I have the skills to do this*? The young women perceive they have the appropriate skills and abilities to follow this pathway. Implicated here are forms of meaningful social and cultural capital accrued through home, school, and college contexts.

Using this approach means I build on extant intellectual resource relating to careership and pragmatic rationality (Hodkinson and Sparkes, 1997) and Bourdieusian concepts, allowing this research to speak more to the nuances and complexities surrounding choices contrary to gendered trends by attending, in greater depth, to the specific nature of the overlapping and interacting structural arrangements and individual dispositions that surround these choices. As a conceptual tool, explaining choices in this way builds our current understanding of

choice-making through greater attention to specific factors that enable (or obstruct) certain 'exceptional' choices. Importantly, each of these elements are inherently related to each other. As I show, for male-dominated courses to be a possible course of action, visibility, plausibility and viability are co-constructed iterations continually impacting upon each other.

As a study concerned with the atypical, this thesis also engages with work that has documented the barriers to girls' and women's participation in male-dominated and highly masculine fields (Archer, 2013; Bridges, 2020;2023). The thesis is informed by bodies of work that have sought to explain barriers to participation in male-dominated spaces and, echoing the earlier concerns of VET as a lesser researched space, this has been particularly in relation to STEM and higher education more broadly. Explanatory detail in these works largely foregrounds incompatibilities with feminised gendered identities (Archer et al., 2013; Archer and Dewitt 2015). For engineering, trades, and construction in particular, the possibility of hostile classroom environments and inequalities and sexism in the workplace can also act to discourage women's participation (Bridges et al., 2021;2024 Fielden et al., 2000; Foley, et al., 2022; Pringle and Winning; 1998; Thurtle et al., 1998). These literatures form the foundations on which permeating trends of gendered patterns can theoretically explain the barriers and obstacles women face. These studies paint a detailed picture of the barriers women face yet leave us with a relatively thin understanding of the specific practices and processes when, despite these reported barriers, male-dominated qualifications are a possibility for some young women. In this research, I considered how young women both experience and navigate these barriers within highly masculine spaces This reveals important and complex tensions in the women's choices and experiences that contribute to debates around women's participation in male-dominated fields and the role of social actors such as teachers and parents in supporting these choices.

Although research into women pursuing atypical pathways exists, it has often been framed with specific reference to educational and employment pathways, offering limited insights into the varied contextual factors which also influence women's decisions and experiences of different male-dominated qualifications and careers. These literatures and their empirical investigations have been highly valuable in

shaping and defining the scope of this research. Through examining the processes that influence young women to pursue different male-dominated qualifications, I will argue that these contexts of home, school and going to college - and their intersection, are key to a more sufficient understanding of atypical pathways.

More specific examples of empirical research where scholars have explored the occupational experiences of women who *do* successfully follow male-dominated careers are especially useful in drawing out contexts of women's experiences in the heavy trades industries (e.g. Bridges et al., 2021; Carroll, 2023). These extant literatures and empirical investigations have often focused on either the educational and learning context (Bridges et al., 2024; Swan et al., 2024; Thurtle et al., 1998) or women's later assimilation into and navigation of highly masculine labour market sectors (Bridges et al., 2021; Potter and Hill, 2009; Mykleburst, 2019; Wulff et al., 2022). Exploring these different social domains throughout this research ultimately foregrounds not just the influence of different social and structural contexts but, importantly, deepens our knowledge of how these domains impact upon and influence each other.

Empirical research has also tended to be focused on one male-dominated sector, for example, engineering (Swan et al., 2021) or trades/heavy industry (Carroll, 2023). This focus situates the industries currently as entirely separate social domains, and, as such there is value in being able to explore any divergences or similarities that exist for women in and across these sectors. These literatures and bodies of work have been highly influential, especially in shaping the design of this research in ways that allows this thesis to offer novel insights and contributions through the inclusion of participants following different highly gendered typical and atypical pathways. This approach and design is a key feature of this research that enables the claims to shed light on the reproduction of gendered educational and career choices. The literature review in Chapter 2 expands this context and the research design and methodological approach is set out in Chapter 3.

1.4 Aims of the research

This study aims to explore and deepen our understanding of the choices and experiences of girls and young women who choose vocational pathways that are contrary to long-standing gendered trends. By exploring their choice to embark on qualifications leading to male-dominated fields, this study will identify some of the key factors and processes that shape their choices, examining the intersection of the embodiment of personal values and dispositions within wider structural and social influences. Crucially, this study aims to uncover how these personal and social factors may impact upon and influence one another. In focusing on the context of young women during their post-16 educational qualifications, I explore the young women's past contexts and anticipated futures for working in highly gender segregated, masculine industries. These include how the social experiences of college impact upon expectations for the workplace and act to cultivate the (im)possibility of a male-dominated career. By including a mixture of selected male-dominated courses and a range of levels of study, the research engages with not just women in male-dominated industries more generally but also explores any divergent or common patterns that exist between differing qualifications. This is designed to offer novel insights - not just to women in male-dominated spaces but also draw out any differences and similarities between these masculinised spaces. There are also greater embedded preconceptions in terms of the academic competencies associated with the engineering sector compared to construction routes. This research aims to contribute to broader theoretical debates on choice-making processes, educational pathways, and gender. It seeks to provide insights that can inform future policies and labour market interventions designed to address gender imbalances in vocational education and related industries.

These aims will be guided by the following research questions:

1. Why do some girls undertake male-dominated vocational qualifications and how is this experienced and understood by these young people?

2. How can we understand choice-making by women on male-dominated pathways and what factors and social processes inform these choices?

3. What is the role of an FE college and its teaching and support teams in shaping experiences and choices of girls on male-dominated pathways?

1.5 Research approach and site

The Aspire Institute is a large further and higher education provider of a diverse range of vocational, technical, and apprenticeship-based courses. All participants were sampled purposively from this site. The college is highly representative of other local and national FE colleges in terms of gendered participation trends in the sectors of interest. As I discuss in detail in Chapter 3, data for the college indicates that young men and women at The Aspire Institute are largely undertaking qualifications that are representative of normative, national trends that were indicated in section 1.2. The Aspire Institute also employs staff and teaching teams whose gender make up is representative of these trends. The majority (in some departments all) of the teaching staff on the male-dominated qualifications were men. The town of Thornfield has a significantly high white British population[3] with low levels of formal educational qualifications and high levels of deprivation compared to national averages (ONS, 2019; 2021).

Thornfield, like other coastal towns, has been subject to declining traditional industry but is now experiencing recent and planned significant industry and government investment in renewable and offshore energy. With this investment and industry growth, there will be increased jobs within the engineering sector in particular, with several key companies in the region. These companies widely report a desire to drive diversity in its recruitment as well as establish strong connections within the locale. Thornfield is not unlike other coastal towns that are attracting investment aimed at expanding the county's clean and renewable energy initiatives. Thornfield provides an interesting case upon which to explore the current context of young women choosing engineering and construction industries as this is only set to become a more

[3] Census data for 2021 demonstrates the town has a 96.2% white British population compared to a UK average of around 74.4%

significant labour market sector in the region and is highly relevant to other geographical sectors.

The approach to the selection of one fieldwork site focuses the thesis on the internal comparisons between groups of different male-dominated routes and the gender-typical choices whereby the participants share college and geographical contexts. In doing so, the choice and experiences of their pathway were the foregrounded element of exploration. Data were also captured through interviews with 10 local labour market informants and college staff adding crucial contextual information to the thesis.

In this study, I adopted a qualitative interview-based approach as a tool to examine participants lives relating to their choice of qualification, college experiences and expectations about their subsequent career. Interviews were conducted with 22 young women aged 16-19 from both male-dominated (n=17) and gender-typical (n=5) qualifications. This included young women undertaking qualifications in engineering, construction, trades, childcare, hairdressing, and beauty therapy. The sample of young women were all White British which was highly reflective of the demographic of the town in which the fieldwork was conducted as noted above. I highlight this here as this does of course limit the scope for applying a wide-ranging intersectional lens on the data generated and is not intended to do a disservice to broader and underrepresented groups. That said, the depth of the research analysis and richness of participants narratives does offer important insights into gendered dynamics and choice-making. Alongside this, the framework I propose for examining and explaining choice-making remains highly relevant to the development of future studies with more diverse samples and is discussed in Chapter 7.

By including young women following different qualifications and levels of study this thesis compares the experiences and choice-making processes that relate to these different but highly gendered pathways. Taking influence from Barnard et al. (2010:373) who critically reviewed measures that have sought to address gender diversity in engineering, ‘much research emphasises differences between men and women and therefore ignores similarities and potential arenas for positive solutions for all’. This results in homogenising women’s experiences as they are treated as a

'unit of analysis'. These arguments in part shaped my inclusion of a small comparative group of young women on gender-typical pathways to enable this research to offer insights into choices and experiences of highly gendered contexts that are not directly compared to male experiences. Women are not treated as a 'unit of analysis', rather their accounts are the central focus ensuring that women's voices remain at the heart of the study.

1.6 Contributions

As I have outlined, given the skills shortages and attention on development of gender policies to drive diversity, the contributions of this thesis are timely and highly relevant. By exploring in detail what has made different male-dominated routes a possibility for these young women, this thesis makes an original contribution to several sociological puzzles that also inform the practical recommendations from this study. This thesis offers a novel analysis of women's pathways to 'masculine' vocational work. As an empirical contribution the design of the research and the inclusion of participants from different male-dominated vocational qualifications acts as a pivotal part in providing original insights as extant literature has tended to focus on either academic tracks or, different vocational sectors. This focus has left a gap in understanding any similarities or divergences that exist in these VET spaces that could prove important in going about addressing gender segregation across these sectors. The inclusion of different male-dominated sectors and a small comparative group of young women on highly gender-typical pathways offers insights through both a biographical and temporal mapping across choice-making and college experiences. This methodological approach also provides a deeper and more nuanced grasp of how these choices can be compared not against male experiences, but the complexities and tensions in varying practices and structural arrangements surrounding girls and young women.

Examining choice-making by focusing on those that represent the gendered exception informs the theoretical contribution of this thesis. I conceptualise choice-making in this thesis as *visible, plausible,* and *viable.* This framework synthesises existing

literature incorporating key refinements to explain not just *what* choices are made, but to elucidate the factors influencing choices. This contributes a more processual understanding of the reproduction of gendered patterns in education that captures the complexities and structuring of gendered dynamics in real world contexts. The value of this framework lies in what it enables me to observe and explain about choice-making and gender. By applying this framework, I can systematically analyse the factors and processes influencing choices and uncover patterns that might otherwise remain hidden and contribute to sociological literature on gender, choice-making and vocational education.

1.7 Chapter overview and organisation of the thesis

Chapter 2 *Review of the Literature:* In this chapter, I review the dominant theoretical explanations for gendered participation and empirical studies relevant to this research, including outlining how gender is conceptualised in this thesis as well as important literatures relating to choice-making and cultures within gendered occupations. The chapter presents the theoretical framework that underpins the study. This chapter locates the sociological puzzles that remain after having reviewed extant literature which this study seeks to address.

Chapter 3 *Methodology:* I provide comprehensive details on the design of the research and the choices and decisions that were made in the planning of data collection and analysis. In this chapter, I discuss the approach to data collection and analysis. The chapter includes an outline of the fieldwork setting, participants, research methodology, analysis process and ethical considerations. Throughout the chapter, I discuss the key design features and reflect on how these are influential in shaping the boundaries and scope of this research. The detail in this chapter explains the practical stages of the data collection and the approach to analysis of the data presented in Chapters 4, 5 and 6.

The analytical chapters are then presented. These are organised in such a way as to capture the multi-layered effect of the young women's life experiences with a temporal flow. From home – to school – to college. The aim of this is to demonstrate

the importance of each of these social fields, whilst recognising they do not exist in isolation from each other, nor are current contexts isolated from past experiences and anticipations for the future.

Chapter 4 *Home life, the family and growing up*: The first analytical chapter addresses the home contexts of the young women. The accounts of both those on male-dominated and more gender-typical pathways are included and provide important insights into the divergent home contexts of the young women who followed male-dominated qualifications. The chapter explains the lens through which I interpret and explain relational patterns in the data. I explain how the home contexts contribute to male-dominated qualifications being *visible, plausible and viable* home contexts. The social and cultural processes embedded in parental and family involvement within home contexts are the focal point of this chapter. I demonstrate how even in the absence of direct occupational role-modelling, the visibility of possible occupations can come through informal exchanges of knowledge and skills. In home contexts that do not conform to typical gendered roles, young women are unbounded from gendered conventions as structural arrangements interact with individual dispositions, fostering the plausibility of male-dominated qualifications. Often through fathers exposing their daughters to skills and 'tinkering' in the home, young women are imbued with forms of cultural capital, contributing to the viability of an atypically gendered qualification. The chapter sets the foundation for understanding how home contexts shape, interact and are layered with educational and career decisions, leading into discussions of school influences in Chapter 5.

Chapter 5 *School life and the influences on post-16 choice-making*: In this chapter, I present the school contexts of the young women from across all qualifications. Building upon Chapter 4, this chapter further locates the *visibility, plausibility and viability* of choices within school contexts. This chapter discusses the complexities of structural arrangements in schools including subject choices and options, careers advice and guidance and gender-diversifying recruitment events targeting school-age girls. Social actors, such as school teachers and college liaisons and their role in making career choices visible and viable through aligning skills to careers, are also discussed.

Chapter 6 *Navigating college and expectations for working in male-dominated industries*: This chapter moves on from understanding choices to making sense of the outcomes of these choices through the young women's experiences at college within highly masculine spaces. As this chapter is concerned with the college experiences of the young women, the previous chapters have established how these qualifications become visible. The structuring of the ongoing plausibility and viability of male-dominated careers are therefore most relevant within this chapter. As this chapter focuses on when the young women have selected their post-16 course of study, those from across male-dominated pathways are the dominant voices. Furthermore, this chapter presents relevant data from those interviewed within the local labour market and those working at The Aspire Institute to add important context to the discussion. This chapter demonstrates how the structural arrangements and social actors within the

college are implicated in how future careers in male-dominated industry remain a plausible and viable possibility. The chapter draws out the complex tensions' women experience in wanting to fit in and be accepted as 'normal' in male-dominated spaces but simultaneously recognise themselves as out of the ordinary, possibly even being responsible for role-modelling change for future generations of women. Some young women, despite disrupting gendered conventions in their choice of qualification, frame the skills needed highly masculine careers in feminised terms. The data I present in this chapter demonstrates the possibility of women successfully navigating masculinised spaces through reframing gendered conventions, but comes with a risk of reinforcing gender stereotypes. However, these tensions are complicated within the chapter as the risk of retreating into gender essentialist or culturally gendered ideas of certain subjects continues which could undermine further efforts to tackle gendered patterns of participation.

Chapter 7 *Conclusion to the thesis:* In this chapter, I present the overall findings and contributions of the thesis. I also consider how these contributions have implications for social science and policy actors concerned with understanding gender in education and occupational contexts. This thesis is not intended to be a 'final word' on this issue, thus Chapter 7 details the potential for this research and its theoretical and empirical contributions to be a building block for future research across different qualifications, employment sectors and geographical contexts.

Chapter 2. Review of the Literature

2.1 Introduction

This chapter provides the intellectual context for my research. In addition to outlining theoretical frameworks, this chapter examines important empirical research, which has explored choice-making and/or experiences of gender atypical pathways that inform this work, situating such findings within Vocational Education and Training (VET) and male-dominated occupational sectors.

This chapter illuminates how this thesis addresses key sociological concerns to enhance understandings of ongoing gender segregation in VET. Firstly, to gender and choice-making in the field of the sociology of education. Secondly, within the sociology of education, it explores divergent male-dominated VET pathways, including construction and engineering, to examine the distinct experiences and strategies of women choosing and navigating these traditionally masculine domains. As such, I position my research design and contributions within this field.

The chapter is organised into four overarching sections.

Section 2.2 establishes how gender is conceptualised throughout this thesis as being socially constructed, normative and performative (Butler, 1990; West and Zimmerman, 1987). The section considers theoretical ideas about gender socialisation and how normative gendered values and dispositions are shaped. This forms an important underpinning to both how gender is understood in this thesis and how 'norms' are situated in the literature to enable the thesis to examine more about choices that are contrary to these.

In section 2.3 section I situate these conceptualisations of gender and associated norms within structures of educational (including school and college) settings, including patterns of subject participation and educational-based practices. I review literature that has explored higher education and academic pathways in STEM fields to understand how some scholars explain educational subjects and qualifications remaining highly gender-segregated and often proliferate essentialist views on gender (Archer et al., 2013; Dewitt et al., 2019; Francis et al., 2017). This

illuminates extant attention in empirical research on academic tracks and so demonstrates the value of this research in focusing on vocational qualifications as a response to calls to attend to the missing middle of sociology and youth studies (Irwin 2021, Roberts 2011;2015).

Section 2.4 outlines the VET context and explores how VET has been less attended to in sociological and educational literature compared to more academic tracks further demonstrating the value of this study. The section then explores extant literature that has explored gender in engineering and construction as vocational forms of learning and training.

Section 2.5 explores literature that examines choice-making as well as key social influences including parents, teachers, and arrangements within schools. As a crucial element of exploration in this thesis, this section starts by discussing theories of choice-making. A particular focus is Hodkinson and Sparkes' (1997) theory of careership and Bourdieusian concepts of habitus and forms of capital (1990). Hodkinson and Sparkes' model of careership and central concepts of pragmatic rationality acknowledges how choices are made by the individual within (sometimes limited) socio-cultural contexts – termed 'horizons for action'. These literatures shape how this thesis departs from choice-making as simply the outcome of individual orientations and structural arrangements but rather offers a more complex processual account of choice-making when this is within highly gendered contexts.

Whilst theories of choice-making often recognise gender as an influencing factor, there is less emphasis on the pervasive impact of agents and domains of socialisation that can shape the (im)possibility of highly gendered qualifications. As a development and expansion of Hodkinson and Sparkes' careership model (1997) with embedded Bourdieusian concepts, my study presents contextual explanations of choice-making and gender in a novel way. I present a lens through which I argue we can better understand the complexity of choices in highly gendered contexts. Understanding these choices as visible, plausible and viable, this approach enables a deeper analytical grasp that moves beyond essentialist categories in capturing the nuances of gendered dynamics and the reproduction of gendered patterns in education. This processual understanding enables us to see

more about the multiple interacting, influential social domains young women move through that are significant in making male-dominated pathways a possibility for some and remain out of view or unthinkable for others.

Finally, Section 2.6 situates gendered practices within highly gendered occupational spaces. Drawing upon literatures that attend to how women navigate male-dominated spaces, I demonstrate the need for this study to explore divergent masculine contexts. Throughout this chapter, I highlight the 'gaps' that exist within extant research and the puzzles that arise from analysis and review of the literature, shaping both the aims and objectives of this research, as well as the design of this study, to contribute towards a more comprehensive understanding of young women in male-dominated, vocational spaces.

2.2 Conceptualising gender and gender stereotypes

The first section of this chapter discusses the literature and theory which provide the conceptual and theoretical framework for the thesis' understanding of gender. These inform both how gender is distinguished from biological sex in this research, and understanding how gender shapes dominant narratives around the values, 'predispositions' and behaviours of men and women.

This thesis draws on literatures and theories that position gender as a multifaceted social construct that transcends biological distinctions between male and female (Pilcher and Whelehan, 2017). Gender socialisation theories, drawing on principles of social learning theory, suggest gender is learned, taught, and socially constructed (Holmes, 2007; Richardson, 2015). Key socialisation sites, such as the home (Oakley, 1972), education (Delamont 1990), and occupational sectors, perpetuate normative gender assumptions and reinforce gender expectations. As Ridgeway (2011) argues, these assumptions and stereotypes are produced and reinforced in these sites and describe the traits, attributes and roles of men and women. From an early age, individuals are taught and learn behaviours and attributes deemed appropriate for their gender – these in turn shape assumptions that boys are naturally more logical and rational, and girls more emotional and

expressive (Richardson, 2015; Holmes, 2007). Boys are encouraged to be assertive and competitive, where girls are encouraged to be nurturing and cooperative (Lindsay, 2020). As such, gender is shaped and reproduced across historical, cultural, and political domains (Holmes, 2007).

Gender role theories argue that these processes and domains of socialisation lead to the adoption of behaviours, attitudes and roles that align with societal norms (Eagley and Wood, 2012). These assumptions about normative gender performances reproduce stereotypes (Ridgeway, 2011). These are oversimplified beliefs about characteristics, attributes, and roles judged as appropriate based on perceived gender. These stereotypes are deeply embedded in societal norms and cultural practices, serving to maintain power relations and social hierarchies (Richardson, 2015). Gender stereotypes reproduce dominant cultural beliefs about how boys and girls and men and women are expected to behave and are echoed in long-standing gendered patterns of participation across the public and private spheres (Lindsay, 2020). Historically, gender stereotypes are rooted in patriarchal structures that assign distinct roles to men and women, frequently placing women in the private sphere of domestic work and caregiving, and men into labour market and economic productivity in the public sphere (Eagley and Wood, 2012). Despite some shifts, such as increased female participation in the workforce, gendered roles within the home remain resistant to change, with women continuing to perform caregiving tasks at disproportionately higher rates than men (Allen and Stevenson, 2023). Scholars argue that these gender stereotypes are then role-modelled and enacted on children, which in turn can shape persistent intergenerational gender expectations and behaviours (Perales et al., 2021).

Parents' roles in shaping the gender practices and beliefs of their children cannot be underestimated. Practices and processes in the home can conform to or disrupt gendered conventions shaping young people's views and enactment of gendered practices (Bem, 1993; Carroll, 2023). Both the actions of parents and the practical processes in the home act as important elements of young people's formative years (I discuss this in much greater depth later in the chapter). Francis (2010) draws upon the importance of play and toys from formative years as symbols that help explain how young children are socialised and how gendered cultural beliefs and

inequalities are reproduced. Socialisation practices in the home are argued to be crucial here and further implicate parents through their child's early years in shaping social gender views that either conform or disrupt the dominant norm – especially, as Francis points out, in the context of toys and play, as children do not purchase their own toys. This emphasises 'how these leisure resources themselves actively produce and promote gender difference' (Francis, 2010:340). Francis (2010) argues that girls' preference for dolls and boys for cars and motor vehicles shows that educational information and skills development can be accessed through toys and learning in the home - for boys this is likely to relate to technological and scientific knowledge and skill, whereas that accessed by girls may relate to care-giving. In this sense, it is not about the toys being purely pedagogically motivated and educational but rather what Francis terms 'educative'. Mechanisms of socialisation in the home reproduce gender differences and associated stereotypes; even when the toys and resources are not designed to be educational, the message of 'doing gender' is still being taught and learnt, reinforced by parents.

Whilst the home and families are key domains of socialisation when children are growing up, wider institutional practices and policies have also been found to reinforce gender stereotypes by rewarding conformity to gendered expectations and punishing deviations (Ridgeway, 2011). Schools, for example, are a crucial site of socialisation that young people move through and one that can reinforce often problematic gender stereotypes (Jackson, 2015; Skelton et al., 2007). Through practices that reinforce rather than destabilise gender norms, girls and boys are taught and learn acceptable displays of gender (McEntarfer, 2016; Renold, 2005). For example, scholars have argued this is evident in underlying teacher expectations for boys to demonstrate assertive behaviours and girls to be passive and compliant (Driessen, 2007). The 'policing' of gender norms amongst young people also acts to regulate and govern gendered norms, thus boys are not expected to display emotion and 'unmasculine behaviour' (Pascoe, 2011; Renold, 2005) and girls' displays of 'girly', (Renold, 2005) nice and 'good girl' (Reay, 2001) behaviours are recognised as displays of acceptable, normalised femininity. In the workplace, men may be rewarded for assertiveness, while women exhibiting the same behaviour are often labelled as 'bossy or aggressive' (Waller, 2016). This

can be especially heightened in arenas where there is a dominant gender, perpetuating and proliferating gender norms not only across generations but also across different social domains.

Gender socialisation theories provide a valuable framework to explain how men and women 'learn' gender and become gendered (Jackson, 2015). Gender role theories also offer explanatory context into the outcomes of these socialisations in the normative assumptions that surround the roles of men and women in society (Eagley, 1987). Across generations and social domains such as home, school and work, influenced by agents of socialisation such as parents, teachers and peers, gender becomes defined as the learning of culturally specific social roles considered appropriate (or not) for men or women. However, the scope of these theories does not fully capture the potentially fluid nature of gender across time and space, and also risks homogenising socialisation experiences by not accounting for variances such as differing home and family practices. These are highly relevant considerations for this research in how women experience, navigate and understand their gender when their educational and occupational choices do not conform to long-standing gendered patterns and trends.

In response to critiques that gender socialisation and gender role theories are too simplistic, reinforce binaries of gender roles as being either masculine or feminine, and have an underlying assumption that gender is an inherent innate quality, understanding gender as performative develops our understanding of gender outside of a rigid dichotomy that can challenge social, cultural, and psychological attributes ascribed by society (Butler, 2004). Framing gender in this way addresses the limitations of socialisation theories. Rather than being predetermined, gender is understood as a 'condition actively under construction' (Connell, 2009:5). Concurrently, gender is not unchanging and is also shaped by the social domains people move through (Richardson, 2015). Gender is an iterative process which makes it appear natural and fixed but is rather the unconscious repetition of norms that solidify gender identity over time and space.

Influential sociological works, such as West and Zimmerman's (1987) 'doing gender,' argue that gender is produced and reproduced through social interactions and institutional practices, which can act to sustain (or indeed challenge) gendered

inequalities across various spheres, including work, the family, and educational settings. West and Zimmerman's work usefully emphasises the processes of how gender is actively created and reinforced through social interaction rather than roles being fixed or part of an isolated learning process. Understanding gender in this way is especially relevant to this research; being concerned with women in highly gender-segregated spaces means conceptualising gender as an ongoing interactional process. This enables this research to engage with understanding gender atypical choices more holistically with an understanding of gender as influenced by multiple sites and agents of socialisation.

It is not only behaviours and values but also physical appearances and self-presentation that shape further ideas of appropriate displays of gender, and importantly act as visible expressions of gender (Jones, 2020). These displays of gender are also one way that challenges to conventional displays of gender are enacted. For girls or young women, the 'tomboy' and 'girly girl' are categorised against and in dichotomous relation to each other (Paechter and Clark, 2016). Positioned against the unmarked norms of masculinity via their appearance, such as clothing and hairstyle, 'femininity' is measured against the cultural norms of a 'masculine' appearance (Reay, 2005; Renold, 2004). This is often complicated by the social and institutional settings in which girls find themselves, as different social and cultural sites can either celebrate or stigmatise different 'tomboy'/'girlygirl' appearances and performances (Paechter and Clark, 2016). Categories and explanatory contexts of the 'tomboy' and 'girlygirl' relate to gender stereotypes more broadly and can be especially pronounced in highly gendered educational contexts. As such, these categories will be discussed in greater detail later in the chapter.

Whilst there are long-standing gendered stereotypes and dominant cultural beliefs that can act to reproduce patterns of gendered behaviours and choices, more recent research emphasises the increasingly flexible views of young people around gender roles (Allen et al., 2022; Renold, et al., 2017; Bragg et al., 2020). For instance, Allen et al. (2022) and Bragg et al. (2019) highlight generational shifts where young people articulate greater tolerance of gender diversity and disavow rigidly conceptualised gender binaries. Similarly, Renold et al. (2017) and their

exploration of young people's attitudes towards gender diversity also posit that younger people hold more progressive views on gender, gender roles and associated stereotypes. They posit that young people expressed less rigid and more tolerant views, especially around the equal treatment of boys and girls, and generally disavowed being bound to gender stereotypes. Echoing this, Bragg et al. (2020) argue that young people express more tolerant views generally regarding gendered issues. Their participants articulated a greater sense of a commitment to gender equality, referencing generational changes whereby they felt their views were more accepting and liberal than their parents or grandparents. Bragg et al. (2020:427) also suggest that young people hold much more flexible views on how boys and girls can 'do' gender, particularly without 'boxing' people into rigidly defined gender roles.

It is not only young people's own views that have been of interest, but they are also often situated by the media as progressive agents of social change (Allen et al., 2022), particularly in regard to challenging gendered inequalities. These studies are valuable in illuminating the shifting views of both young people themselves and how young people are perceived by others about their gendered assumptions, beliefs and roles in enacting social change. However, as I explore in greater detail in section 2.3, patterns of gendered educational and occupational segregation persist, suggesting a gap between attitudes and practical outcomes that is worthy of further exploration.

Generational progress in understanding and (re)shaping gender orders and possible social change is arguably not uncomplicated and without tensions (Allen et al., 2022). The empirical research discussed above may indicate altogether more egalitarian attitudes of young people. However, across the literature, this is often complicated for young people as the views of others can regulate and reinforce traditional gender binaries (Renold et al., 2017). As such, a paradox emerges; young people tend to express more tolerant and egalitarian views towards gender more generally, whilst social structures and cultural norms remain largely unchallenged and can act to bind people to gendered conventions. In turn, this emphasises a sense of both the possibility of change and enduring continuity in the assumptions, expectations and normative values associated with gender

performances (Renold et al., 2017). This leaves room for this study to explore how young women's navigation of masculinised educational and occupational spaces is impacted by their own and others' views on enduring gender stereotypes.

Scholars argue these normative assumptions can significantly influence the choices, behaviours, and actions of boys and girls, with gender playing a pivotal role in educational decisions and subsequent occupational outcomes (Bridges et al., 2020; Irving 2015; Jackson, 2015). Therefore, despite suggested cultural shifts in views on gender, or even more fluid views on the changing and more performative nature of gender, the implications of gender stereotypes can be profound, impacting individuals' opportunities, behaviours, and identities (Ridgeway, 2011, 2018). One explanation posited for this is 'cultural lag' - when material changes outpace cultural beliefs (Carroll, 2023; Ridgeway, 2009). For example, despite women's participation increasing in certain STEM fields, the stereotype that women are less mathematically capable, or ideologies of appropriate gender performances are incompatible with roles in science and technology fields, can discourage women from pursuing careers in these areas, perpetuating gender imbalances in STEM industries (Archer et al., 2013; Dewitt et al., 2019). Similarly, stereotypes around caregiving and nurturing can discourage boys and men from careers in nursing and early years teaching, perpetuating gender imbalances in health and social care industries (Chesters, 2021; JCQ, 2020; Rolfe, 2006). These literatures are valuable in shaping intellectual contexts for how deeply engrained gender beliefs are reinforced through socialisation and cultural arrangements reproducing existing inequalities (Ridgeway, 2009).

Here I have explored conceptualisations of gender including how this has been explained through socialisation theories and gender role theories. However, deploying a framework for gender as performative emphasises the socially constructed, interactional dynamic and cultural contexts that shape experiences and enactments of gender (Ridgeway, 2009; West and Zimmerman, 1987). Gender is conceptualised in this study as not fixed or inherent but rather socially constructed and (re)produced through social norms and maintained through repeated patterns and interactions. I turn now to exploring gendered patterns in education and the labour market as they paint a picture of the 'norm' and the

importance of the focus of this research in examining the exceptions, through young women who go against these trends.

2.3 Gendered patterns in education and work

A central concern of this research is to consider choices that represent the atypical; when young women's educational and occupational choices are contrary to long-standing patterns of participation. In the following discussion, I outline gendered patterns and trends in post-16 qualifications and occupational sectors, engaging with theoretical explanations that have contributed towards understandings of the gendering of subject choices. The purpose and value of the following section is twofold. Firstly, understanding current trends illuminates the context of this study; defining and understanding the 'typical' is crucial for any exploration of the atypical to demonstrate the patterns that have shaped the area of exploration for this thesis. Secondly, the literature has tended to focus on gendered patterning of academic pathways and on women in STEM, leaving a valuable space for greater exploration of qualifications that fall outside these routes.

Ward and Eden (2009) acknowledge that boys and girls are entitled to the same curriculum, yet gendered choices often persist (Archer et al., 2013). Within the UK, choices in education are marked by significant gender stereotyping (Osgood et al., 2006). Across levels and types of education, boys and girls remain concentrated in different subject areas (Archer et al., 2013; Colley, 2002; Eccles, 2011; JCQ, 2020). As I have outlined in the previous section, the perception of appropriate performances of gender roles and performances helps explain this phenomenon (e.g. Archer and Macrae, 1991; Francis, 2000; West and Zimmerman, 1987). Educational and sociological research consistently shows that certain subjects are perceived as masculine or feminine, as opposing, dichotomous concepts influencing gendered participation (Archer et al., 2013; Colley, 2002; Eccles, 2011; Polavieja and Platt, 2014). Associations with gendered traits and stereotypes lead several authors to argue certain subjects are framed as inherently 'masculine' or 'feminine'; for example, maths, science and technology and

English, humanities and languages respectively (Archer and Macrae, 1991; Arnot et al., 1999; Francis, 2000; Whitehead, 1996).

25 years ago, The Equal Opportunities Commission wrote: 'There are critical gender issues within mainstream education and training which affect and determine the extent of engagement and the post-school outcomes for girls' and boys' (EOC, 1999:211). As I have indicated in Chapter 1 and again here, in certain educational qualifications and careers, gendered patterns persist and, for some subjects, remain largely resistant to change. The perception of subjects and qualifications as highly gendered, and the consequential delineation of boys and girls into certain subjects, act as a so-called career 'pipeline', channelling boys and girls into different occupational sectors (Friedman, 2015). Crucially, the gendering of subjects can serve to disadvantage girls given the value placed on, and occupational earning potential linked to, inherently masculine subjects related to STEM fields. Authors have argued that, conversely, inherently feminine subjects such as the arts and humanities are devalued (Delamont, 1990) along with low earning trajectories in fields where women are overrepresented, such as the health and social care sector (Skeggs, 1988; Wood and Skeggs, 2020). As a result, these arguments can be taken as indicative of inherent power relations between the masculine and the feminine where in the dualism of gender and associated binaries, the feminine is subordinated to the masculine with power and dominance vested in the masculine (Francis et al., 2017; Paechter, 2006).

2.3.1 Gender and STEM

There have been many explanations for the permeating gendered patterns of subject preference and uptake in schools and colleges (Paechter, 2004). To illustrate this point, this section draws on literature that explores this positioning of subjects in highly gendered terms, and this has tended to focus on STEM subjects. STEM fields have received significant scholarly attention both for the enduring under-representation of women in certain fields but also for the changing gender configurations in others (Archer et al., 2007; Dewitt et al., 2018).

Long implicated in choices to follow STEM, and in particular engineering routes, are levels of maths confidence and self-efficacy. Maths remains a subject that attracts the attention of policymakers and scholars alike. Even when girls achieve well in maths, they report lower levels of self-efficacy and competence belief than their male counterparts (Campbell, 2021; Frome et al., 2006; Siani and Harris, 2023). There is also a strong association of women who aspire to or do follow engineering careers with having high levels of maths confidence (Broadley, 2015; Moote et al., 2020). As such, engineering qualifications, despite drives to address gender imbalances, remain closely related to girls' maths confidence and self-efficacy. This further implicates the past contexts of young women in how maths is both framed as a 'valuable' subject for future careers and how individual levels of maths confidence and enjoyment are embedded in post-16 choices and subsequent career possibilities.

Research has shown that, broadly speaking, boys are more likely to pursue STEM-related pathways, while girls often diverge from the STEM pipeline (Archer and DeWitt, 2015; Botcherby and Buckner, 2012; Eccles, 2015). However, participation rates vary within STEM, with biology attracting more female students, and the field of medicine now attracting more women than men (Botcherby and Buckner, 2012; DfE, 2019). Despite this change in gendered patterns of participation, this is complicated when scholars suggest that the subsequent feminisation of medicine results in a possible loss of prestige in the field, and gender stereotypes dominate parts of the medical profession as being associated with caring and nurturing rather than an academic and scientific profession (Kilminster et al., 2007; Pelley and Carnes, 2020). As such, women entering spaces traditionally occupied by men does not necessarily equate to a gender parity, but is complicated by societal perceptions that reinforce and reproduce dominant cultural beliefs and assumptions about the role of women. These insights, even within the STEM context, are revealing about perceptions of qualifications and careers when greater numbers of women undertake these and that gendered assumptions about the roles and capabilities of women remain in the foreground.

Despite empirical research suggesting evidence of a growing 'preference' amongst girls for subjects culturally coded as masculine, this does not always translate into actual choices for girls (Archer et al., 2013; Francis et al., 2003). This is particularly exemplified in the field of STEM. Echoing this, Ofsted (2011) found that although girls may enjoy STEM activities, their career aspirations may be more traditionally gendered. Archer et al. (2013) suggest this is due to the perceived incompatibility between STEM careers and constructions of a desirable femininity, a view exacerbated by other social inequalities, particularly among working-class girls. The polarising opposition between femininity and masculinity was especially evident in the ASPIRES project, where Archer et al. (2015) found heteronormative feminine ideals were seen as incompatible with science careers (Archer and DeWitt, 2015), with girls tending to aspire to traditionally gendered roles that align with societal constructions of femininity, such as caregiving or artistic professions (Archer et al., 2013; Butler, 1990). These trends are especially pronounced in working-class contexts, where care-oriented roles are more prevalent both domestically and in the labour market (Evans, 2009; Hamilton and Powers, 1990). This highlights how gender essentialism perpetuates gendered divisions of labour that can be further impacted by class-based inequalities. As discussed in section 2.2, empirical research has suggested young people hold more egalitarian views on gender. Despite this, the outcomes of choice in certain educational fields remain highly gendered and perceived in dichotomous gendered terms.

Whilst this thesis takes gender to be socially constructed, culturally relevant and contextual, gender identity relates to how someone makes sense of their own gender (Jones, 2020). As part of theoretical debates that engage with the gendered nature of subjects in education, understanding how 'values' and 'identity' are constructed in gendered terms in education is explored through social psychological approaches. Wegemer and Eccles (2019) suggest it is not gender itself that is responsible for differences in subject and career choices but rather that gendered psychological constructs are useful in explaining participation patterns. Operationalising expectancy-value theory (Eccles and Wigfield, 2002; Wigfield and Eccles, 2000) posits that choices are motivated by a combination of people's expectations for success and subjective task value in particular domains.

Engagement, effort and choice of activity (or subject) are most influenced by two underpinning beliefs - how well you expect to achieve and how much value, or importance, is placed on the activity, termed ‘subjective task value’. In understanding gendered choices within STEM, Eccles demonstrates that young women who aspire to a STEM career are more likely to follow a Health, Biological, and Medical Science (HBMS) route - evident in the growing numbers of women entering medical and allied professions (see Jefferson et al., 2015; Jerrim and Schoon 2014). Subjective task value is implicated as operating in gendered terrains in ideas of ‘attainment value’ and ‘utility value’. In other words, the link between the value of a task, activity or subject and one’s identity and how this can be used to fulfil a goal (Eccles, 2009). Where girls place ‘value’ or ‘importance’ in subject choice and subsequent career pathways speaks to a complex interconnection of personal and collective identities within the gendering of subject choices.

A gendered collective identity operates alongside personal identity, and the ‘value’ of certain subject choices as associated with gendered skills and occupational outcomes (Eccles, 2009). Skills and attributes such as ‘helping’ or’ caring’ are framed within value expectancy models as demonstrating ‘altruism’ (Wegemer and Eccles 2019). Segregation within the sciences highlights gender essentialist interconnections of young women's 'altruistic values' towards future career choices (Eccles and Wang, 2016:102). Where ‘value’ is placed on certain subjects and subsequent career pathways, girls remain concentrated in ‘caring’ and ‘nurturing’ professions as they are ‘compatible’ and congruent’ with dominant forms of femininity – providing a rationale for this continued preference of girls and young women towards traditionally gendered careers in ‘nurturing/caring professions’ (Archer et al., 2013:177 see also Arnot, 2002) with careers linked to HMBS (Eccles and Wang, 2016; Jerrim and Schoon, 2014). Eccles and Wang (2016:101) write, 'Choices are made within the context of a complex social reality'.

As theories within the field of social psychology, these works foreground individual dispositions and internal processes relating to gendered patterns in education and work and how ‘gendered traits’ are enacted within occupational arenas and educational subjects. Consequently, the complex and overlapping social contexts young people experience remain under explored in this literature. In

contrast, the sociological perspective this research takes seeks to deepen our understanding of gender in the education and occupational spaces as they are embedded within broader social arrangements and complex social realities. As such, exploring the role of social and cultural processes and structures alongside individual dispositions is a key concern of this research. As Francis et al. (2003: 438) write, 'Subject preference illustrates how preferences are not simply individualised choices but are socially embedded, and therefore remain circumscribed by structures such as gender, social class and ethnicity'. These arguments further underpin the aims of this research - especially focusing on qualifications that have highly gendered cultures and long-standing gendered patterns of participation and fall outside extant preoccupation within the literature on STEM fields.

Further located within the gendering of school subjects and post-16 qualifications are the associations with highly feminised skills including creativity and care. The overrepresentation of girls in certain subjects echoes cultural expectations that explain why girls often do not follow STEM and other male-dominated pathways. This then, in the inverse, explains why they do follow subjects and associated careers including the arts and health and social care. Social and cultural factors suggest that dominant forms of femininity are typically aligned to, and compatible with, creative expression and care giving (Archer, 2000; Moote et al., 2020; Skeggs, 1988). Thus, scholars argue gendered skills and attributes offer a further explanatory context for the concentration of girls and women into certain educational contexts and occupations associated with creativity and altruistic possibility.

Associations with educational qualifications and careers as inherently masculine as maths, engineering and technologically based subjects means they are often located as not aligning with altruistic, caring and creative expressions of femininity (Archer et al., 2013). However, more recent literature has suggested that some STEM qualifications, notably engineering, that have been historically framed in rigidly masculine terms overlook an opportunity to emphasise the possibility of this qualification and career to demonstrate care, contribution and creative thought (Cropely, 2016; Delahanty and Silverman, 2020; Sun, 2016). Lakin et al. (2021)

suggest the lack of women in engineering may not be a question of women's 'awareness' of opportunities, but that engineering remains conceived in narrowly defined, masculine terms. Drawing upon underpinning ideas that women and girls are more motivated in school subjects and careers that offer creative possibility and the opportunity to contribute to society, their works suggest STEM subjects such as engineering can offer altruistic opportunities as a career. As such, Lakin et al., suggest the opportunity and possibility to help others and contribute towards society that an engineering career can offer is more widely promoted to young women. This, however, must be examined within the context of how certain sectors within the labour market and colleges engage young women by considering more about what young women themselves view as motivating factors towards such careers.

Swan et al's. 2021 study explored the factors that motivated or acted as a potential barrier to girls and young women entering the field of engineering, surveying young women at a university open day who were interested in an engineering qualification as well as practising female engineers. In contrast to the work of Lakin et al. (2021), Swan et al. (2021) suggest their participants were less motivated by altruistic factors, including social responsibility and being able to contribute to society. However, regardless of enjoyment of maths and science, their findings indicated that the possibility to creatively problem-solve and be 'hands-on' was a highly motivating and influential factor for women who went on to pursue a career in engineering. The opportunity to seek creative solutions has been identified as an important factor in women's potential or actual identification with a career in engineering (Lakin et al., 2021). These literatures provide interesting and valuable gender and occupational specific context. A study conducted by the ONS (2018) that explored young people's aspirations and the specific factors that are important when young people are thinking about future careers revealed that factors such as an 'interesting job' and 'job security' were ranked as more important by young people (aged 16-21) than more altruistic factors such as 'a job that helps others' and 'contributing to society'. Income potential was also ranked lower in importance. The study, however, omits gender-segregated data and specific occupational aspirations and, as such, these specific factors and motivations remain worthy of further exploration to understand how potentially

influential factors such as job security, income and altruistic possibility are embedded within highly gendered contexts. How these factors were embedded into the design of the research is discussed in Chapter 3.

Empirical research into women in engineering careers often situate engineering within the long-standing perception of engineering as a pathway under the STEM umbrella, a highly academic subject and one associated with strong maths abilities (Lakin et al., 2020; Cowie et al., 2017). Insights from empirical research that suggest engineering offers young women creative and altruistic possibilities as a career illustrate the need and space for a deeper understanding of male-dominated qualifications through a gendered lens, focusing on young women's choices and experiences. Furthermore, Swan et al. (2010) suggest that schools have a crucial role in shaping perceptions of engineering and the influential role of different social actors such as fathers and teachers. Less explored in Swan et al.,'s study, and more broadly in the literature, are how these motivations may be implicated across different male-dominated sectors and, indeed, how exposure to practices across different social domains and opportunity structures influence choices to follow careers in engineering or other highly masculine sectors.

2.3.2 Gender and construction

Agapiou (2002) explored perceptions of women working in the Scottish construction industry. Male construction workers interviewed located women's feminised skills such as being 'tidier' and having creative skills, describing 'aptitudes of attention to detail, a sense of colour and design and finesse' (Agapiou, 2002:702) as attributes that make them valuable in the construction industry. Agapiou's research also identifies how these beliefs about gendered skills are rooted in biological assumptions of what 'naturally' separates men and women. These include physical strength, and an ability to 'use the tools' that renders women unsuitable for the more physically demanding aspects of construction including carpentry and brickwork. These perceptions reinforce ideas that construction and trades represent highly masculine cultures, evident in the physically demanding and 'dirty' nature of the work (Fielden et al., 2000).

Furthermore, Agapiou (2002) found that men in the construction industry suggest that it is 'not the place for women' as it is contrary to images of normative and feminised womanhood. I explore the cultures and practices of male-dominated workplaces in greater detail in section 2.5. Relevant here is that whilst men express levels of acceptance and may even articulate encouragement of women entering traditionally male-dominated spaces, the underlying narrative is that women remain perceived within normatively gendered terms, echoing debates that qualifications and careers are constructed within a feminine/masculine dichotomy but leaving us with a relatively thin understanding of how women themselves choose and experience these spaces. Further, we know less about if and how the environments and arrangements within engineering and different construction sectors, as examples of highly male-dominated and masculine qualifications, share similarities or divergences for women in these sectors.

This section has outlined the broad gendered patterns in education and some related occupational sectors, including some explanations for this in terms of appropriate and expected gendered performances and where perceived 'value' lies in learning and subject choice and is constructed in gendered terms. There has been substantial engagement in why girls (and boys) largely continue to follow the gender pipeline into subjects and careers, yet there has been less engagement with those who do not. Largely, explanations about why girls and boys continue to follow these certain pipelines fail to leave behind essentialist ideas about masculine and feminine spaces and do not sufficiently explain why and how some young women act contrary to these patterns. Focusing on the atypical allows this thesis to make a more nuanced analysis of choice-making more generally as essentialist ideas about gender risks further reinforcing gender binaries in overlooking important proximate influences and interactions that shape choice-making.

An important space remains to explore the different social domains of home, school and college as research consistently points to these as highly influential, suggesting further research attends to these as interacting spaces rather than focusing on them as separate, isolated spaces. The methodological approach of these studies also encompasses only young women who were already considering or working in male-dominated careers or draw on comparisons to their male

counterparts. Previous research's comparisons of the experiences and socialisation practices of girls with boys has been useful to contextualise some of the motivations of young women towards masculine spaces, but leaves a relatively thin understanding of how this specifically relates to different girls and young women and risks reinforcing gender binaries. A gap remains in our understanding of motivations towards different atypically gendered qualifications. This can be further bolstered through comparative explanations that can be gained from young women who ultimately followed gender normative pathways.

The next section of this chapter turns more specifically to VET. The following sections situate gender and gendered patterns within the specific arena of vocational learning and the occupational trajectories these lead to.

2.4 VET; the complexities, the tensions, and the ongoing gendered patterns

As I discussed in Chapter 1, construction, and engineering sectors are facing skills shortages compounded by pressing agendas for new housing and sustainable energy strategies. Vocational forms of learning have been increasingly cited within political rhetoric around 'levelling up' and are often located as central to addressing skills gaps, rising youth unemployment and growing inequalities (Avis et al., 2021; Hupkau, 2017; Newton and Winch, 2019). The section starts by briefly outlining the arguments of scholars who have called for greater attention to the 'missing middle' of youth and education, including young people on VET pathways, as an area of debate that this thesis contributes to. Whilst these literatures and empirical research demonstrate VET as under researched compared to HE paths and manifests complexities in young people's navigation in this area of education, the main focus of this thesis is how gendered patterns are reproduced within VET and the later part of this section outlines key arguments in this space.

2.4.1 Defining VET

VET encompasses a broad range of courses as Colley et al. (2003) write, which ranges from foundation to advanced level and general and broad occupational areas to specialised training. As Newton and Winch (2019) suggest, VET can often encompass many definitions, but vocational pathways focus on the bringing together of the theoretical and the practical in an 'authentic context'. This relates to how vocational learning emphasises work-based training or rather 'learning on the job'. Whilst VET may be a blanket term for a myriad of learning courses, one commonality is that VET relates to programs of learning linked to a workplace outcome or 'the acquisition of technical and knowledge to foster behavioural competence in the workplace' (Colley, 2003:471). VET, therefore, positions itself with tangible and often clearly defined pathways to associated employment sectors and is often linked to clear occupational trajectories within labour markets (Colley et al., 2003; Ward, 2017).

Nearly 30 years has passed since Benavot (1983) described VET as a means of 'training and integrating...working class youth into the economy'. An exploration of young people's perceived skills and aptitudes highlights that 'working-class learners have traditionally been associated with "practical" and vocational subject routes' whilst middle-class learners are 'academic' (Archer et al., 2013; 185). The literature has tended to emphasise how the trades have been associated with engaging working-class boys as a means to ensure some occupational security (Nixon, 2018). Where policy has engaged with vocational learning there still lacks a clear focus, and attention is often given to other routes, including traditional academic pathways or those who are NEET (Keep, 2015). Within extant scholarship, those on VET pathways are said to fall within the 'missing middle' - speaking to the relative lack of attention within education and youth studies to those who occupy the middle ground of the dichotomous positioning of young people; the advantaged/disadvantaged, sinkers/swimmers and the privileged/under privileged (Borzsely and Nixon, 2023; Irwin, 2021; Keep, 2012; Roberts, 2011, 2015; Roberts and Macdonald, 2013). Youth researchers emphasise the value of attending to this 'overlooked middle' and, in doing so, have highlighted the relative lack of attention to education to work transitions involving lower and mid-level qualifications (Brozsely and Nixon; 2023; Irwin, 2021) which are often the result of vocational pathways to work. These literatures illuminate the importance of

understanding more about this ‘invisible and unproblematic’ majority group (Brozsely and Nixon, 2022).

Adding to the often-complicated nature of VET (e.g The Sainsbury Report, 2016, The Wolf Report, 2011) is how vocational modes of learning are often subjugated within a dichotomous positing of the academic and the vocational in education (Brockmann 2013; Brockmann and Laurie, 2016). Government rhetoric often continues to position vocational routes, irrespective of the level of qualification, in a subjugated space compared to academic routes. For example, a 2017 Department for Education report that explored career choice-making amongst young people aged 16-19 separated post-16 routes into simply the ‘academic’ and the ‘technical’ (Hughes, 2017). All technical routes were considered together, including higher education levels 4 and 5 and apprenticeships at levels 2 - 5. Regardless of level or type of qualification, there remains a positioning of what is academic and, crucially, what is not. In this sense, qualifications that are vocationally oriented become a blanket term for practical and hands-on modes of learning with the emphasis being on skills rather than knowledge (Brockmann, 2012).

2.4.2 Gender and VET

Despite years of initiatives to address gendered (and classed) segregation within VET, gendered trends persist. These are especially pronounced when compared to other forms of education (Nieymer and Colley, 2015 see also FFT Datalab, 2021; Chesters, 2021; JCQ, 2020; Rolfe, 2006). Historical contexts of VET situate it as male-dominated and often focused on craft-based occupations including manual labour and ‘trades’ (Ward, 2018). Clarke and Winch (2007) argue that VET perpetuates social divisions, acting as a filter to include or exclude particular groups from certain occupations or industries and from acquiring a particular status in society. VET pathways remain linked to ‘typical’ formats associated with divisions of labour and essentialist gender ideologies within society. This is problematic for both labour market outcomes and how they arguably represent

persistently gendered ideologies (Clarke and Winch, 2007; Nieymer and Colley, 2015; Ward, 2018).

Where VET pathways of learning and associated occupations remain gender delineated, this is also representative of skills and attributes that are strongly gender stereotyped (Cameron et al., 1999; Chester, 2021; Rolfe, 2006). VET has clear links to occupational outcomes, and these are associated with high levels of gender segregation representative of stereotypes of how men and women should behave. Educational settings and labour markets reproduce societal expectations of appropriate gendered performances (Chesters, 2021). As learning pathways strongly associated with work-place focused learning, Ward (2018:3) argues that 'VET courses are also areas of the curriculum where specific performances of masculinity (and femininity) are on display'. Stereotypical performances of femininity and masculinity remain within VET and associated careers, where women remain concentrated in caring professions and men in 'manual' or skilled forms of labour (Rolfe, 2006). Niemeyer and Colley (2015:3) argue this is a 'complex mixture of individual choice, social orientations and institutional arrangements which sustain the general social division of labour between men and women.' Subsequently, gendered participation may transcend explanations rooted in individual identity and link to stereotypes associated with wider divisions of labour; pathways of VET remain largely resistant to change and are reflective of wider societal norms of expected roles of men and women (Chesters, 2021).

Despite these trends, there are students and learners who go against these trends and opt to follow a pathway that would be deemed atypical for their gender. A body of literature has explored men's aspirations to work in, and experiences of, occupations associated with being traditionally for women; for example 'service' and childcare (e.g. Chesters, 2021; Cross and Bagilhole, 2002; Rolfe, 2006; Ward, 2017). Whilst these works focus on boys and young men, they draw attention to gendered practices, stereotypes and consequential barriers that underpin understandings of how VET shapes and regulates (appropriate) performances of masculinity and femininity as 'linked to society's constant reproduction of gendered patterns' (Niemeyer and Colley 2015:2). If then VET is representative of wider societal norms and gendered ideals, further attention must be paid to those

who do go against such pervasive gendered patterns as an important element of understanding wider gendered processes. In turn, the focus of this thesis can offer a piece of the puzzle in how we might go about 'undermining cultural beliefs about gender appropriate behaviour' (Chesters, 2021:14).

Though less researched, there is important empirical research that has explored experiences of gender atypical VET programmes. For example, Thurtle et al. (1998) investigated the experiences of those who opted to follow gender atypical pathways in VET. The research relied upon a small-scale study of men in childcare programmes and, of particular interest within this study, women in vehicle engineering programmes. Here the authors found that students did not identify gender as a significant issue but did highlight 'intimidatory behaviour and gender stereotypes as barriers preventing full participation in the classroom' (1998:629). Problems of intimidating or harassing behaviours towards young women in male-dominated programmes were highlighted by Struthers and Strachan (2019) as a reason young womenwere less likely to pursue a trades qualification. These issues may not be unfounded – Ward (2018:233) presents a concerning picture of young men's negotiations with performances of masculinity within VET, and found behaviour that is often framed as 'banter' was linked to 'sexist humour' which Ward argues reinforces problematic links to male-dominated labour markets. Ward (2018) posits 'gendered examples' in the classroom and 'sexist language' frame interaction orders and acceptable displays of masculinity which go with young men to the workplace. Taking masculinity, like femininity, to be socially constituted rather than an expression of some inner gendered core identity, we can understand masculinity as a performance that requires repetition (Butler, 1997). The educational setting is a crucial site of socialisation in which cultures of masculinity are formed and reproduced (Connell, 2023). These 'lad cultures' can act to shape expectations for the workplace in highly male-centric occupations and so are highly relevant in the experiences of young women when they are in the minority in these spaces.

Educational institutions and some workplaces are particular arenas in which 'lad culture' is deemed to be particularly prominent (Nichols, 2018; Phipps and Young, 2015). In spaces where men have dominated, so too do culturally gendered norms

around masculinity and lad culture (Nichols, 2018; Phipps, 2018; Jordan 2022). Specifically in the context of male-dominated post-16 education settings, courses such as engineering and construction represent educational areas that remain perceived in highly masculinised terms (Bagilhole, 2002; Bridges et al., 2020, 2021; Naoum, 2020). Spatial contexts can enable boys and men to behave in particular ways, especially in settings where they represent the dominant group. Scholars have argued that this gives way to practices of 'everyday sexism' becoming embedded within everyday practices, with often problematic behaviours dismissed as banter and humour (Powell and Sang, 2015). This in turn is especially emphasised in highly masculinised educational and occupational arenas such as the trades, construction and engineering (Faulkner, 2009; Foley et al., 2022; Jones, 1992; Naoum et al., 2020). With empirical studies suggesting sexism and male-dominated cultures are still a feature of engineering careers (Swan et al., 2020), it is important to examine how these practices are experienced by young women.

Whilst spatial contexts are important for understanding the proliferation of masculine cultures, the focus of this work on education and anticipated expectations for work means also considering temporal arguments around 'lad cultures'. In the context of a rugby club, Nichols's (2018) research into lad culture suggests that as well as being spatially relevant there is also an important temporal context to laddish behaviours and cultures. Positing the notion of 'mischievous masculinities', Nichols argues this is a more nuanced framework to understand and ultimately challenge everyday sexism in highly masculine settings. As well as young men aged 18-40, Nichols's research included 'older' men up to the age of 80. The findings presented in Nichols's study in relation to older participants give insights into how lad culture and associated banter do not necessarily alter with age/time. Indeed cultures persist despite older men recognising they should 'know better' thus challenging ideas that laddism is a phase of masculinity, or a stage of the life course. Whilst Nichols's research is in a sports context, the age of men and the inference that they will grow out of laddish behaviours is important for the application to male-dominated sectors, including educational and occupational sectors where men are the gender majority. In the educational context of this research, these findings are especially relevant to our understanding of young women's interactions with teaching staff and those working in the labour market.

Given the highly gender-segregated nature of these occupations, this likely relates to male college staff and so the age-related elements of lad culture that Nichols explored will also be examined in this research to include not just perceptions of male peers, but also relevant male social actors within the educational context.

In Norway, Lorentzen and Vogt (2022) evidenced gendered occupational outcomes from vocational educational routes. Despite the comparatively more gender equal Norwegian context, they argue women have less favourable outcomes from their male-dominated qualifications than those in a gender majority. Men occupying the traditional space will earn more, experience lower levels of unemployment and experience greater labour market inclusion compared to women with the same qualifications. Gender segregated vocational routes remain a space that is complex for women to navigate as they are likely to experience more adverse work and welfare issues than men despite equal qualifications. Relatedly, research conducted in Germany, by Brockmann (2023), argued there are different reasons men and women withdraw from vocational qualifications when they are in a gender minority. Brockmann argues that women's decisions to drop out are embedded within a lack of social integration and issues of social conflicts with colleagues and superiors. This also relates to women leaving male-dominated vocational courses at a higher rate than men in female-dominated fields when women place significant value on these connections. These are explored in greater depth within VET and male-dominated workplaces in section 2.5. For now these literatures provide further insights into deeply embedded cultural barriers that appear persistent across different geographical contexts and with little change over time.

To summarise, this section has outlined some of the pervasive gendered patterns within VET. Highlighted across these literatures are the ways that women following gender segregated vocational trajectories can potentially expect less favourable outcomes and ongoing issues of masculine cultures in these spaces. Less clear in these literatures are the more specific arrangements and processes that influence young women to follow certain male-dominated and vocational qualifications. I next explore theoretical ideas and understandings of choice-making.

2.5 Understanding choice-making and social influences

Scholars have widely engaged with the significance of social influences on young people's educational and occupational pathways. Long-explored in sociological works, these influences give insight into how young people's educational and occupational pathways are shaped through, for example, parental values, practices and expectations (e.g. Archer et al., 2014; Carroll, 2023; Irwin, 2018; Irwin and Elley, 2013; Platt and Polavieja, 2014; Polavieja and Platt, 2014), by school and college contexts including teachers, and careers advisors (Abrahams, 2016; Archer et al., 2014; Reay 2010), and by influential significant others (Archer et al., 2014; Winterton and Irwin 2012). The importance of choice-making within this study brings focus not just to 'outcome' but the processes through which certain people, in certain contexts, embark upon an atypically gendered VET pathway. This section discusses Bourdieusian concepts of habitus, social and cultural capital and models and theories of choice-making, and how these are operationalised within this thesis. In the following discussion, I outline important influential social actors that can shape the educational and occupational pathways that young people and girls embark upon.

2.5.1 Bourdieusian frameworks

Understanding how individual values and dispositions are shaped and reproduced in sociological and educational literatures has long drawn upon Bourdieusian conceptualisations of habitus, field and forms of capital (Reay, 2019). Researchers have extensively drawn upon Bourdieu's concepts to explain various classed, gendered, and racialised patterns in education and occupational sectors (Archer and Hutchings, 2000; Ball, 2003; Bridges et al., 2021; Reay., 1998). Bourdieu's work is concerned with how structural inequalities are enacted through educational systems and practices that reproduce relations of privilege and oppression that often remain entrenched and resistant to change (Bourdieu and Passeron, 1990).

For Bourdieu, an individual's habitus is concerned with an individual's embodiment of social structures through a 'set of dispositions' reflecting the 'social conditions in which they were formed' (Power, 1999: 42). As such, the

habitus is a complex and multi-layered concept (Reay, 2004). Habitus, in this sense, recognises the histories of an individual as well as the collective and shared histories of a social group (Reay, 2004). The habitus is a 'complex interplay of past and present', implicating past contexts in current circumstances and possible future action (Reay 2004:434). The habitus acquired in the family is the basis of the structuring of school experiences (Bourdieu, 1972, cited in Bourdieu and Wacquant, 1992: 134). To understand how certain pathways and qualifications are judged as 'for me', Hodkinson and Sparkes (1997:34) note that 'the habitus influences not only the types of decisions made, but also the ways in which they are made', and scholars have suggested that young people will often express views towards the future situated within ideas of what they judge as appropriate for 'people like me' (Archer and Yamashita, 2003; Reay, 1998; 2001). This locates how the habitus can establish dispositions towards certain pathways, influenced by social interactions and wider social contexts.

For Bourdieu, the concept of 'field' is used as a spatial metaphor within sociological theory. They are structured social spaces within which various forms of formal and informal activity are regulated by specific norms. These norms govern the behaviours, interactions, and practices within distinct social spheres, such as family and home contexts and educational settings (Edgerton and Roberts, 2014). Fields are not isolated from one another; rather, they overlap and interact. Smaller fields, such as the family, are embedded within larger fields, such as educational or economic domains. While fields are 'semi-autonomous', they frequently share patterns and practices that define social dynamics across different spheres (Edgerton and Roberts, 2014: 195).

Forms of capital are also pivotal concepts in Bourdieu's writings. Cultural capital refers to 'knowledge, skills, and competence' (Laureau and Weininger: 2003:597). The accrual of forms of cultural capital can operate to reproduce advantage, and so lacking these also acts to proliferate educational inequalities (Reay, 2010). Whilst relevant knowledge and skills can be particularly important in highly gendered occupational contexts (discussed in section 2.5), reproductions of power are evident in who defines valued forms of cultural capital, which can also limit how these forms can be meaningfully deployed, especially by minority groups.

In workplaces, cultural capital translates into looking and sounding right; knowing how to fit in (Wulff et al., 2022). This occurs when an individual feels a 'natural occupant' and can become an accepted legitimate member of the space and the group (Bridges et al., 2022; Spain, 2000; Wulff et al., 2022). 'Knowing the right people and having some knowledge, understanding and experience of the working environment is the social capital that opens doorways to success' (Wulff et al., 2022:30). However, it is important that capital is translated into a meaningful form. For example, Allen (2013) suggests social capital is only convertible into 'real' capital if a young person is able to sustain relationships and operationalise social networks. This is what Bourdieu described as transforming 'all circumstantial relationships into lasting connections' (Bourdieu, 1986: 250). This renders practices such as a one-off workplace visit or careers talk for example as potentially useful but not a meaningful, deployable form of capital. As such, forms of social capital are undermined if they are tokenistic or short-lived, giving an advantage to groups who have sustained access to forms of capital. Traditionally, boys gain 'credit', often from a male relative, and obtain a 'head-start', interpreted as a type of 'guarantee' of their suitability for entering certain fields (Bourdieu, 1986: 243) - the more specific role of families and home contexts are discussed in greater depth later in this chapter. In the context of male-dominated arenas, there is a perceived advantage that boys and men have because of innate or natural abilities and skills (Agapiou, 2002), and that these are often related to access to forms of capital (Bridges et al., 2021). Later, I will argue that the concept of cultural capital can help us understand how specific forms of vocational resources are mobilised within atypical choice-making processes.

Social capital refers to networks of relationships that give way to opportunities, experiences and role models (Power, 1999; Wulff et al., 2022). The transfer of forms of 'capital' between parents and young people structures and (re)produces behaviours or values constituting the habitus. As analytic tools, Bourdieusian concepts help understand how gender and normative values and dispositions impact and are impacted by educational and occupational segregation. As Bourdieu theorised, capital is much 'more about exclusion than inclusion' (Bridges et al., 2021:374). Forms of capital contribute to understanding how privilege is accrued and held by the dominant group.

Bourdieusian concepts of habitus, social and cultural capital have long been deployed in educational research. Schooling acts as a crucial site that adds to young people's earlier socialisation through enacted patterns of practice (Bourdieu and Wacquant, 1992; Reay, 2010). School settings and practices in education can both reproduce inequalities and offer the possibility of transcending social conditions as, 'while habitus reflects the social position in which it was constructed, it also carries within it the genesis of new creative responses that are capable of transcending the social conditions in which it was produced' (Reay, 2004: 435). Through engagement with social actors and routines of practices enacted within school contexts, tendencies shaped through the habitus can be, on one hand confirmatory, or, on the other end of the continuum, transformed (Reay, 2004). Structures of education are often sutured in a complex and contradictory space, situated as 'either a key cause of social reproduction or a facilitator of social mobility' (Archer et al., 2023: 845).

Scholars have been critical of the notion that the habitus is an overly deterministic construct that leaves little room for individual agency, innovation, and change (Edgerton and Roberts, 2014). In the context of young people, the shaping of a habitus is not static or resistant to possible transformation or change as Allen posits that the 'habitus can provide conditions for the embodiment of new dispositions' (Allen, 2014:764). In doing so, Allen addresses how the habitus is often situated as a reproducer rather than a transformer of social action, as 'habitus can be seen to predispose rather than determine action, responsive to other social experiences as individuals move through different social fields (Allen, 2014:764). Allen demonstrates the potential for the malleability of the habitus and in doing so emphasises the importance of understanding 'how the individual is socially constituted' (Archer et al., 2012:884) and how 'habituses are permeable and responsive to what is going on around them' (Reay, 2004:434). Lee and Kramer highlight how the habitus 'is a fluid set of dispositions that are constantly changing as individuals go through different experiences and interact within and with new fields' (Lee and Kramer, 2013:20). Understandings of the habitus away from assumptions that it is unchangeably embedded from formative years (Lee and Kramer, 2013) illuminates how the habitus is concerned with 'an individual's internalization of possibility' (Horvat 2003:7). These insights

help develop a temporally sensitive account of choices to follow highly gendered qualifications later in life. Empirical research has explored how young people negotiate shifts in habitus as they move through different fields and, in particular, how those from working-class contexts navigate higher education (Lee and Kramer, 2013; Lehmann, 2014). Applying conceptualisations of the habitus to specific, highly gendered educational contexts and how the 'permeability 'of this may be shaped by contexts and social domains is a key area of exploration for this thesis.

2.5.2 Theories of choice-making

As an overarching theory of choice-making, rational choice theory, in its broadest definition, posits that people make choices based on an anticipation of potential outcomes and calculating which will be best for them (Abell, 2000; Scott 2000). However, assumptions around rational choice theory fall short of acknowledging more contextual influences around choice-making and, in particular for this thesis, how gender can impact the choices young women make. As such, this thesis aligns itself with scholars who have sought to engage with choice-making as firstly more related to career decision making, and secondly acknowledge the contexts in which these choices can be enabled or constrained.

More specifically in relation to career decision-making, scholars of youth have engaged with choice-making processes in education and labour market trajectories through the spectrum of structure/agency debates (e.g. Brannen and Nielsen, 2005; Evans, 2002:2007; Hodkinson et al., 2013; Nico and Caetano, 2021; Rudd and Evans, 1998). Hodkinson and Sparkes's (1997) work built on gaps they identified from previous literature(s) in which they address the problematic ways young people are positioned as either 'free agents' or the product of 'social determinism'. Whilst young people express meritocratic ideas relating to their effort and ability to their shape success or failure, they are simultaneously not unaware of the structures operating upon their group (Rudd and Evans, 1998). Individuals are situated within often messy and complex social contexts which shape choice-making processes (Evans, 2007; Hodkinson, 2009) whereby 'actions and events

and circumstances that lay beyond the control of the young person' can shape career progression, illuminating the value of understanding career choices and trajectories whilst being attuned to structural arrangements (Hodkinson, 2009:4).

However, Threadgold et al. (2021) argue that structure is what happens when inequalities are reproduced, and agentic actions produce a 'good outcome'. Notions of structural inequalities are often invoked as a response to agentic actions resulting in poor outcomes, for example when young people are working in poor wage and lowly qualified work in certain sectors. It remains less clear how choices that are contrary to gendered trends are situated within these frameworks. An exploration of 'atypical' choices must be cautious then of overstating agency whilst recognising that focusing on the exceptions and the decision to go against long-standing patterns, in the face of structural barriers, may also shine a light on abilities to exercise agency, which may be hidden when young people follow more 'conventional' pathways. This research understands choice-making in a more middle-ground sense, situating agency within external and social influences (Evans, 2007).

Hodkinson and Sparkes (1997) argued previous literature on career decisions was largely policy driven and lacked a sociological lens. As a result, career decision-making literatures, they posit, had tended to over emphasise either structure or agentic action in choice-making. Instead, Hodkinson and Sparkes suggest understanding career decision-making as 'pragmatically rational'; people make choices based on knowledge of occupations, socially proximate role models and visible opportunities. That is, 'career decisions can only be understood in terms of the life histories of those who make them' which also emphasises the significance of family background and culture, situating choice-making as context related and within (perceived) extant opportunity (Hodkinson and Sparkes, 1997:33). Through a sociological model of decision-making, Hodkinson and Sparkes (1997) suggest 'careership' as a theoretical framing that moves away from analysis and research with a focus on structural factors that mediate participation as they often 'imply a structurally deterministic viewpoint'. The authors further argue that understanding the present context of people is also crucial in understanding orientations towards their future.

Operationalising Bourdieusian concepts, Hodkinson et al. (1996) explain choices through understanding the habitus as structuring young people's 'horizons for action', as it 'enables the choice of some careers but prevents, or constraints, the choice of others' (Hodkinson et al., 2013:150). That is, young people's perceived reality of where opportunity lies, alongside subjective perceptions of what is appropriate. What can be *seen* can therefore be *chosen*. Habitus is used here to address the predisposition to certain behaviours and patterns (Bourdieu and Passeron, 1990) but also speaks to the ways in which the habitus does not predetermine outcomes and rather needs to be spatially and socially situated (e.g. Allen and Hollingworth 2013). These interactions between agentic and structural dialectics offer insights into why and how patterns in education may persist but also offer ways to engage with understanding gender-atypical educational choices. However, the processes and arrangements that bring qualifications and careers into someone's horizon for action are less explored in these works, including those outside normative gendered frameworks. Alongside this, if the habitus is taken as directional but linked to deeply engrained dispositions and norms, how the habitus is structured and influenced in atypically gendered educational choices is also a key area of examination for this thesis.

In a gendered context, through their model of careership, Hodkinson and Sparkes do acknowledge the significance of gendered dispositions that can make different careers a possibility; however, this is a factor that has been largely overlooked within their framework, especially as they post pragmatic rationality points to choices being 'neither technical rational nor irrational'. When situated alongside the evidence discussed in this chapter about pervasive legacies of gendered patterns in VET and barriers for women in male-dominated careers (this is addressed in section 2.6), notions of rationality linked to contextual factors in a model of careership obscures the processes behind choices especially those that are contrary to long standing trends.

If then, young people think about their futures within the context of current opportunities and resources available to them (Hodkinson and Sparkes, 1997), the importance of 'other' influences and biographies in influencing young people's choice-making should be considered. Evans' (2007:92) notion of 'bounded

agency' as 'socially situated agency influenced, but not determined by, environments …' illuminates how individual choices are shaped by position and context. As a concept, bounded agency can be used to underpin understanding past pathways and imagined futures as shaped by present contexts (Evans, 2002;2007). That is, recognising and engaging with the young person as situated within a myriad of complex social dynamics that help us understand how young people perceive and shape their choices within their personal horizons (Evans, 2007). These literatures draw on agency but remain pointed to the importance of contextual influences. Future orientations and choice-making of young people are implicated in present contexts and are shaped by past practices and 'traces of longstanding gender ideologies' (Brannen and Nilsen, 2005:420). These literatures speak to the importance of understanding past contexts of the individual, the structures they navigate, and the social landscapes that affect how they 'act' as they are implicated in present choices (Evans, 2007:93).

A need to situate individual agency within past, current and future structural contexts arises. Brannen and Nilsen's (2005) work is critical of the overemphasis of agency in the structure/agency debate and instead draws attention to social contexts in relation to time and space. Evans (2002:262) recognises the complex way agency operates, and how this is relational to people's 'frames for actions' and decisions. However, these 'boundaries and limits can change over time' and have 'structural foundations' - gender can mediate the choices young people feel they can make (Evans, 2002:262). For groups of young people, the ways they express understandings of their future orientations are implicated in 'present contexts'. Addressing the sociological structure/agency dynamic, Brannen and Nielsen (2005) attended to what they describe as the silent discourses that shape people's perceptions of their life course and choices, declaring that 'the structural side of life is more often expressed in the silences which punctuate narrative' (2005:423). The underlying structures of our lives are revealed in the unspoken social norms and cultural frameworks. Structural arrangements are then effectively revealed through what is left unsaid. These silences reflect the unspoken rules and assumptions that shape behaviours, interactions, and predispositions. In the context of gender norms, for example, what isn't discussed or acknowledged in a conversation can be revealing about societal expectations and the constraints that

people navigate. Applied to permeating patterns of occupational and educational gender segregation, to follow normative trends that do not challenge gendered conventions is expected and thus 'quieter' as action aligns with more normative outcomes.

Of course, the focus of this thesis is those who have gone 'against the grain' and so recognises arguments of how the habitus can embody new dispositions (Allen, 2014). Whilst agency can be, and is, exercised by individual actors, agency is often constricted and limited as individuals are a 'product of their social location' (p.885). Mcnulty Norton (2021:2) argues that 'choices that reproduce social patterns are held to reflect both stronger constraints and a "lack" of agency while deviation from understood "standard" biographies are interpreted as indicating a more authentic interiority or a greater personal will'. Similarly, Allen and Hollingworth (2013) urge caution about claims of transformation to the habitus without paying careful attention to a range of external factors that may 'close down' other potential educational and occupational pathways. Scholarly efforts to reconcile and find more of a middle ground for understanding choice-making within the structure /agency debate have left complex gaps in understanding agency in the context of atypical choices. Not least because they do not fully reveal influences on choice-making and the processes and contexts that may enable or disable certain choices. Recognising young people as socially situated exposed to different settings and other social actors I move now to exploring literature that has been more specifically concerned with the influence of home and school contexts.

2.5.3 The significance and influence of parents

As outlined earlier in this chapter, parents and associated socialisation practices in the home have been found to be important in shaping values, attitudes and predispositions towards gender ideologies (Perales, et al., 2021; Primeau, 2000; Van der Vleuten et al., 2018). Bourdieu (1977, 1990) suggested that individuals' social environment and how they grow up profoundly shape how they see themselves and what range of options, be they educational or occupational, they deem appropriate, or sometimes, just simply consider. Parents and home contexts

are an important social influence acting upon young people in shaping choices that can reinforce or indeed disrupt gendered patterns and trends in educational choices. This is a significant concern in this research for exploring how parents can enable, or act to undermine certain pathways in education and shape the perception of 'appropriate' occupational choices, particularly in gendered terms. The following discussion focuses on literatures that have explored the role of parents and their influence on educational trajectories.

Parents' influence on young people's engagement, achievement, and attitudes towards pathways through education and work can be profound (Archer et al., 2013; Eccles 2005, Chesters, 2021; Irwin and Elley, 2013; Platt and Polavieja, 2016). Polavieja and Platt (2014) explored the aspirations of young people under the assertion that boys and girls with sex-typical aspirations are significantly more likely to end up in sex-typical jobs. Their research was concerned with sex-typed preferences being based on behaviour role modelling, occupational imitation, and sex-based role learning of parents (see Bandura, 1977; Oakley, 2015). In terms of the parental socialisation factors and the influence on sex-typical occupational aspiration, Platt and Polavieja (2014) found parents' enactment of gender roles both inside and outside the home exerts significant influence on the degree of sex-typicality of their children's aspirations (see also Gutman and Akerman, 2009; Schoon, 2010). More specifically, Platt and Polavieja's research illuminates the process of homo-lineal sex learning whereby girls learn sex typicality from their mothers and boys from their fathers.

Understanding occupational role modelling in this way highlights gender specific connections between fathers and sons and mothers and daughters and are often emphasised in the literature (e.g Jacobs et al., 2017). More broadly, in the absence of more explicit contexts of occupational role modelling, literature has also indicated that mothers being in employment, as opposed to a 'stay at home carer' (Chesters, 2009), and a mother's time out of the labour force (Platt and Polavieja, 2016) is associated with young people holding less gender traditional attitudes. Furthermore, where fathers hold atypically gendered employment, young boys are more likely to also hold atypically gendered career aspirations (Chesters, 2021; Platt and Polavieja, 2016). However, there can be an important impact on

daughters and their disrupting gendered educational and occupational trends, especially where fathers hold less rigid gender ideals in the home (Jacobs et al., 2017). Gendered practices in the home that deviate from traditional norms emphasise the significant role of parents, particularly fathers, in making male-dominated educational and occupational choices accessible for some young women (Carroll, 2023; Swan et al., 2020). The transmission of various forms of social and cultural capital between parents and their children shapes behaviours and values, contributing to the development of the habitus which I will later argue are crucial for understanding how the viability and plausibility of gender atypical pathways are fostered from home contexts.

Some scholars have used empirical measurements of class as based on parents' levels of education, giving insights into the level of parent's qualifications and the impact on young people's aspirations and outcomes in gendered contexts (Chesters, 2021; Archer et al., 2013). Through a Bourdieusian lens, this is concerned with parents' abilities to deploy forms of 'capital' and the ways parents social and cultural capital can influence educational and occupational trajectories and choices. Parents' education both directly influences young people's exposures to certain careers, and speaks to parents' abilities to navigate systems, and types, of education (Archer et al., 2014; Irwin and Elley, 2013) and are often highly implicated in atypically gendered aspirations and outcomes, speaking to both the shaping of the habitus in the home context and parental ability to deploy forms of 'cultural capital'. Irwin and Elley (2013) examined parents' aspirations and hopes for their children's future occupations, also exploring how parents understood their role in shaping these futures across working, intermediate and middle-class contexts. Across most contexts, parents generally hoped for their children to do better than them; although this was more clearly linked to traditional academic routes for middle-class parents who 'typically envisaged as a good job for their children …one which requires a university education' (Irwin and Elley, 2013:116). As such, parents' views towards their child pursuing academic or vocational pathways are markedly different across class contexts (Irwin and Elley, 2013) which echoes broader literature around VET as associated with lower skilled, working-class forms of labour. This also foregrounds 'other' forms of social and cultural capital.

Falling outside academic tracks, VET pathways are commonly linked to the 'trades' and as such associated with working-class contexts and forms of labour (Ward, 2018), evident in the positioning of a 'trade' pathway as a more likely choice for working class young people. As Irwin and Elley (2011:118) note, in their study exploring parents' values and orientations to their children's education, vocational routes were discussed by parents, particularly between fathers and sons. As such, parents can shape the gendering of choice and appropriateness of certain learning pathways 'within classed frames of reference' (Irwin and Elley, 2013: 493). Further insights from Irwin and Elley's (2011) work suggest working-class parents remain 'hopeful' and recognise the importance of education in success, but with varying degrees of belief about their ability to influence this. In their study, parents framed trades routes study as a broad aspiration in some contexts, yet there remained a sense that when fathers had experience of trade jobs there could be a possibility of 'something a bit better' for their sons, citing how hard their son would have to work for their living. Irwin (2018b) highlights an interesting difference between more middle- and working-class parents with the former not seeing transitions at age 16 as significant as there was an 'academic ethos' that positioned A Levels/HE as an almost expected pathway. In working class contexts, Irwin identified a greater sense of parents accepting the 'relative autonomy' of their children to make choices about work and education. However, this autonomy of their child was accompanied by positive framing of vocational pathways either due to parents' own pathways or scepticism of job opportunities following HE pathways. Consequently, we understand less about how parents influence or are implicated in choices when it is young women who are following vocational and male-dominated pathways. There is then an important opportunity for this thesis to explore how young women perceive the role of their parents when they opt to embark on vocational forms of learning.

More specifically related to vocational pathways, Thurtle et al (1998) highlight how there is an awareness of the advantages to exposure of certain gendered skills through childhood. These exposures speak to 'informal' engagement facilitated in the home, with gendered skills that shape the possibility of following less gender-typical VET pathways. McIlwee and Robinson (1992: 89) suggest women, unlike

their male counterparts, often have a lack of ‘tinkering experience’ or informal engagement with tasks such as engine skills or technical experience. Eccles (2009:83) writes that participating in particular tasks will require a demonstration of the characteristics of the task, evident within Thurtle et al.,’s (1998:640) research where gender minority students articulated feelings that gender-typical students had ‘natural abilities’ and a ‘head start’. These literatures draw attention to the notion that those following educational and occupational pathways that are gender normative will then inherently possess greater skills and knowledge of their field, highlighting the processes and contexts in which gendered skills, predispositions and values are shaped throughout young people’s lives and across different social domains.

Further related to home contexts and trade careers, Lehamann and Taylor (2015), in the Canadian context, drew upon Bourdieu’s concept of habitus to posit the notion of trades related habitus. Their exploration of young people’s navigation of high school-based apprenticeships based on ‘trades’ qualifications, including those following pathways towards becoming an electrician or automotive technician. They suggest a habitus is fostered through the development of values, dispositions, and practices that shape ‘trades’ routes as a natural and expected course of action. A trades related habitus speaks not only to practical skills but also attitudes and beliefs aligned to the environment in a male-dominated field. Lehmann and Taylors’ (2015) research focused on undefined, manual trades apprenticeships, and argued that the cultivation of a trades habitus fostered dispositions, cultures and attuites that made routes into heavily male-dominated sectors a particular possibility for young women. Usefully Lehmann and Taylors’ notion of habitus related to manual trades has been applied more broadly to other, male-dominated sectors and occupations. For example, Altreriter (2020) noted similar findings among young women in their research into choices to follow engineering apprenticeships. This work further highlights the significance of a habitus that orients young women towards ‘hands-on’ and practical work that was inculcated through experiences and exposures in the home contexts that were less bound to normative gendered frameworks. These exchanges of hands-on knowledge and practical skills are traditionally conceived in father – son relationships and interactions whereby intergenerational transmissions of knowledge and hands-on

experience are shared and role modelled between male members of a family (Mellstrom, 2002; Van der Vleuten et al, 2018).

A familiarity with trades and an enjoyment of hobbies and tasks within the home, unbounded by normative gendered frameworks, can allow them to feel more able to follow certain male-dominated pathways (Altreiter 2020; Lehamnn and Taylor 2015; Swan et al., 2021). The significance of this familiarity is echoed by Swan et al (2021). As previously mentioned in this chapter, their participants indicated that being 'hands-on' played a crucial role in their later decision to become engineers. Significantly, this hands-on experience was also connected to 'practical home experiences'. Based in the Australian heavy trades industry, Carroll's (2023) research builds on these insights by highlighting the importance of practices and processes within the home environment as described by her participants. Carroll's claims are made against the backdrop of interviews with a number of men working in similar roles to her female participants. She argues that exposure to 'tools' and hobbies traditionally associated with boys and men, and facilitated by fathers, was an essential factor, acting as a form of cultural capital for many young women in pursuing careers in male-dominated sectors. Carroll's arguments demonstrate the importance of practices enacted in home contexts in unbounding women from traditional gendered conventions when women subsequently follow male-dominated pathways.

Informal engagement in the home context in tinkering and hobbies that are contrary to gender normative practices and processes can imbue young women with practical knowledge related to male-dominated occupations, cultivating a form of cultural capital which is located by scholars as important for successful navigation of male-dominated sectors (Carroll, 2023; Lehmann and Taylor 2015; Wulff et al., 2022). Practices and processes enacted in the home can foster skills and abilities that can shape the habitus and, in turn, orientations towards less typically gendered occupational sectors (Carroll, 2023). It remains less clear in the literature how home practices can be packaged as meaningful forms of cultural capital that are influential within the choice-making processes in gender-atypical contexts. As I later synthesise, and as an expansion of this literature, I will demonstrate the more specific home practices that foster the plausibility and viability of male-dominated

qualifications as the interrelational web of the habitus acting alongside accrued forms of social and cultural capital.

The findings of Lehmann and Taylor (2015) and Caroll (2023) echo broader literature, which suggests that a woman's sense of belonging in male-dominated fields is often linked to early engagement with, and understanding of, the skills, behaviours, and cultural characteristics of these highly masculine environments (Bridges et al., 2020). As such, the habitus is reflected in the naturalness with which these young people spoke about working in trades-related jobs. This naturalness was rooted in having worked manually from an early age, often supported by parents who themselves had worked in the trades, or who liked to do manual work at home (Lehmann and Taylor, 2015:613). This work is valuable in suggesting that parents' role in shaping dispositions towards trades-oriented qualifications leaves us with a relatively thin understanding of how this may differ across male-dominated careers or how this interacts with individual dispositions that align with gendered educational pathways. With a perception that exposure to masculine skills can make male-dominated qualifications a possible course of action, there is the risk of further explaining choices through simply socialisation practices and explanatory contexts are reduced to essentialist ideas of gender.

These literatures largely suggest that it is not sufficient for parents to express a verbal challenge to gender role ideologies; continued acts of (un)doing of gendered norms are a stronger predictor of a young person's attitude to divisions of labour (e.g Platt and Polavieja, 2016). The argument suggests that the actions of parents are as important, if not more so, than what they speak. The role of parents is significant in shaping and mediating choices but warrants further exploration of these contexts when they surround atypical choices, further highlighting a focus within this study concerning the role of parents and home contexts. Beyond the home context, there are also other 'socialisation agents', 'situational contexts' (Platt and Polavieja, 2014:55) and external forces, influences and structures that are indicated as significant in shaping young people's social contexts (Archer et al., 2012). As such, I now address other social influences including institutional settings, teaching staff and careers advisors.

2.5.4 Social actors in the secondary school and college context

In the following discussion, I address some of the contexts within schools and colleges that can influence young people's educational and occupational trajectories, including the role of teachers and structural arrangements such as careers advice and guidance.

Within school contexts, young people are exposed to several influences, including teachers. Attention on teacher recruitment initiatives has called into question the value of role model specific drives, under the pretext that 'like is good for like'; including gender and ethnically matched teaching (Carrington et al., 2007). Studies have pointed to some contention around the value of a gender-matched approach, with results not always suggesting this approach has a positive impact on student outcomes (Carrington et al., 2007; Francis et al., 2008). However, some accounts speak to the value of female role models and mentors in specific sectors such as engineering and trades (Bridges et al., 2021; Potter and Hill, 2009). In these contexts, female role models can act to imbue women with forms of social capital that can be crucial in women successfully assimilating into male-dominated spaces (Wulff et al., 2022). In the context of role modelling, gender-matched teachers may have a greater influence on the acquisition of social and cultural capital through behaviour and knowledge than being directly linked to attainment.

Archer et al. (2014:76) emphasise the crucial role of 'high-quality careers education alongside tailored advice and guidance', suggesting it 'might be particularly beneficial for those who do not otherwise enjoy privileged access to dominant forms of cultural and social capital'. Intersections of gender can be particularly salient within careers advice as further acting to 'close down' particular pathways. Abraham's (2016) exploration of students and their aspirations highlights the importance of careers advice and how, in the context of a school in an area of disadvantage, careers advisors can act as a tool through which students' aspirations are shaped to match perceived realistic outcomes. Or, as Abrahams (2016), drawing upon Bourdieusian concepts argues, careers advisors can shape 'appropriate' aspirations and in doing so ensure 'the habitus is attuned to the field' (Abrahams, 2016:165). As we have already seen, socialisation

practices in the home cam imbue young women with forms of social and cultural capital that have been crucial to their success in male-dominated fields. This underscores the value in this research of exploring further external interventions, such as careers advice and guidance and teachers, and their role undoing or reinforcing predisposed orientations towards highly gendered qualifications.

As social actors within schools, teachers are a crucial source of influence and guidance for young people (Archer., et al., 2014; Fuller, 2014). As Rogers and McGrath (2021) note, careers advice is more likely to be given by teaching staff rather than specialists/employers within the sector. They are also often reliant on drawing upon their own reference points as Fuller et al. (2014: 281) argue, 'teachers are an important source of guidance and direction for students, yet teachers lack confidence to do this outside of their sphere of familiarity'. This could be especially relevant where post-16 vocational qualifications are concerned. Robinson's (2019) concerns specifically address career advice associated with VET. Robinson (2019:33) suggests vocational pathways are often more complicated to navigate than academic routes and it remains unclear 'whether schools and colleges are sufficiently resourced to meet new minimum standards for careers guidance'. The idea of 'resource' here is somewhat ambiguous and will require some further exploration within this study as to how this speaks to both 'the people' – the careers advisors themselves and how staff are equipped/trained, or rather, the knowledge they have themselves, to give advice and support that either reinforces or challenges gendered stereotypes in education and labour markets.

Students will continue to receive careers advice, or even just guidance related to the occupational field they are entering when they are at college. Rogers and Mcgrath (2021:24) write, 'lecturers in Further Education…have often had a professional career before embarking on teaching, developments in technology and digital ways of working means their prior experience is soon out of date'. It is not necessarily their 'practical' or industry' knowledge this thesis seeks to examine further but rather how staff from industry may bring cultures and values of their workplaces into the education setting. The 'informal' exchange of careers advice between VET tutors and students can be understood as a key element of how students understand education to work transitions and the nature of workplaces.

Given the highly gender-segregated nature of the construction and engineering sectors, it is likely that many retired staff will be men. This situation calls for a closer examination of how teaching staff communicate advice and guidance about future careers to gender minority students.

2.6 Occupational cultures in highly gendered sectors

In the final section of this chapter, I outline cultures of highly gender-segregated, male-dominated workplaces. Given the clear links between vocational qualifications and the workplace (discussed in section 2.3), it is important to explore the cultures associated with these occupational areas that have been, and remain, long cited as a barrier to women's participation (Fielden et al., 2000). As such, it is useful to establish more about these cultures as a foundation upon which to understand more about the young women who can and do navigate these spaces. In situating this study within the broader context of highly gendered educational and occupational spaces, I aim to uncover more about how these constraints are navigated, resisted or redefined by women who do opt to go against gendered trends. This importantly shapes later arguments I make about how experiences at college shape workplace expectations, acting to continually foster the plausibility and viability of young women embarking on careers in engineering and construction.

Understanding long-documented barriers such as women's expectations and perceptions of highly masculine environments (Fielden et al., 2000; Bridges, 2020, 2021) is crucial for this thesis to understand the experiences of those who do go against the norm. Previous literatures have explored the ways gender is experienced by girls and women when occupying various learning and workplaces that have been typically male-dominated (e.g Agapiou, 2002; Allen, 2013; Bridges, 2024; Britton, 2017; Carroll, 2023; Puwar, 2004; Wulff, 2023). It is evident across these literatures, and in some cases irrespective of the industry itself, that when they are male-dominated, complexities relating to their gender permeate girls' and young women's experiences. Though this can vary in time and space, young

women's negotiations with gender in highly masculine occupational sectors are often complex and tend to rely on women complying with dominant cultures of the space (Carroll, 2023; Wulff et al., 2022). However, with empirical research focusing on separate male-dominated occupational spaces or qualifications , our knowledge about this remains bracketed into specific sectors. This approach leaves a fragmented understanding of these different but still highly male-dominated sectors. Identifying patterns or divergences in the processes and contexts that surround the choice to undertake these qualifications can potentially tell us more about how to go about either more specifically industry-targeted initiatives or a more holistic and shared approach to addressing gender segregation in these spaces.

The salience or significance of gender in different contexts, according to Ridgeway and Correll (2004:157), can vary continuously from being 'nearly negligible, to being a central focus'. As this research is focused upon girls on traditionally male-dominated courses, the setting for this research exemplifies what Ridgeway and Correll (2004) would argue is a context that makes gender 'effectively salient'. That is, a context where there is a difference in sex category and where there are strongly gender stereotyped roles. Bodies of empirical research have emphasised the idea that women in male-dominated environments face and experience pressure to ignore the appearance of gender, which can result in women being reluctant to label behaviours as sexist or discriminatory (Allen, 2013; Britton, 2017; Carroll, 2023; Puwar, 2004; Ridgeway, 2009). Britton's (2017) exploration of women occupying roles in male-dominated fields within academia is helpful here to unpick the salience of gender when women are in male-dominated contexts, in particular the episodic and momentary nature of gender in interactions. Britton argues that women often deny or minimise the importance of gender in interactions, thus the salience of their gender in the workplace occurs in moments when gender emerges from the background into the foreground. Thus, Britton argues, there is an episodic 'now you see it, now you don't' nature of gender suggesting that gender often becomes visible to actors as an intrusion into what appears as a gender-neutral context. Britton suggests the result is often that women largely dismiss instances of unequal or even sexist treatment as an individual moment rather than a broader reflection of inequalities and systemic gender discrimination (Britton, 2017). As

Britton argues, women are likely to individualise gender discrimination as a result of the actions of a few (perhaps temporarily) bad actors or perceive a focus on gender as a distraction or an exaggeration. Consequently, wider systemic gender inequalities are not labelled as such, and risk being reduced to isolated moments and individual actors, and is especially relevant to spaces where men and masculine culture dominate.

For women in male-dominated spaces, this highlights their gender as what sets them apart as outsiders in a male-dominated field (Britton, 2017). Being set apart as the 'other' or the 'outsider' as Puwar (2004) describes, presents a further tension for women in a gender minority status especially in relation to bringing attention to their position as a minority. Drawing attention to their gender can mean that if they succeed, their 'token status' (Kanter 1977) risks their success being seen as an exception. If they fail, women risk reinforcing stereotypes about their gender or having their gender used as a justification for their lack of success. This is inherently problematic for women who are both hailed as pioneers for social change and disrupting dominant occupational patterns whilst conversely wanting to simply fit in and be accepted and legitimate (Bridges et al, 2021; Carroll, 2023).

The tension and complexities for women entering and navigating male-dominated spaces are not only internalised processes but are often compounded and reinforced by the perceptions and assumptions of others. Puwar's (2004) exploration of experiences of women of colour occupying roles within academia and political structures usefully addresses and outlines some of these complexities and is arguably highly relevant to women in different gender minority contexts. As Puwar (2004) argues, when women occupy male-dominated spaces they are perceived as 'alien' bodies, present in a context that is not normally reserved for them, describing here, the disorientation of others; men, and others, do not expect girls and women's presence in such spaces. Puwar (2004) further argues that girls and women can be abnormalised when occupying spaces not reserved for them. This disorientation, Puwar asserts, can also call into question whether girls in this context are 'proper' and whether they 'can cut it'. This is also what creates a sense of disorientation amongst men and boys who are inherently perceived as the natural inhabitants of such spaces. Puwar's (2004) notion of 'super-surveillance' argues

that not only do women in male-dominated sectors have to work harder to convince people that they are capable, but they also almost must be 'crystal-clear perfect' in their job performances, as any imperfections are easily picked up (Puwar, 2004: 61). Similarly Folley et al. (2022:1686) in their examination of women working as pilots and automotive trades, identified how women find their status as a gender 'pathbreaker' leaves them susceptible to criticism from male colleagues who attribute any errors or failings to reflect the incompetence of all women. How this is experienced by young women entering male-dominated vocational sectors will then be a key area of exploration in this thesis.

The notion of having to 'prove themselves' was crucially implicated in how women felt they would fit in and be accepted in a male-dominated space in Agapiou's (2002) exploration of women in the Scottish construction industry. This meant that women felt they had to 'work harder' than their male counterparts. Highlighting the ongoing complexities women in male-dominated spaces experience, Fielden et al. (2000) also suggest that there is a perception that women are more reliable and produce higher quality work. There remains a notion of having to prove oneself, implying a deficit position and, concurrently, women face potentially higher expectations relating to certain (potentially gendered) skills. For women, there remains a constant and ongoing negotiation with justifying their presence in long male-dominated spaces. These notions reinforce ideas of who is proper and who is legitimate in different spaces such as trades and engineering and are concerned with dominant cultural beliefs and occupations which remain firmly imagined in highly masculine terms (Carroll, 2023).

Issues of discrimination, marginalisation, harassment and unequal treatment for women working in male-dominated occupations such as trades and engineering are widely documented in the literature (Agapiou, 2002; Bridges et al., 2021, 2023; Bagilhole, 2002, Wright, 2016), and these issues are cited as being directly related to these being highly masculinised spaces (Bagilhole, 2002; Bridges et al., 2020; Martin and Barnard, 2013; Whittock, 2000). This has led scholars to argue that women entering male-dominated spaces must also navigate the responses to their presence by the dominant group, men. Rather than challenging dominant cultural practices, one way women navigate and successfully assimilate into male-

dominated spaces such as engineering and construction, is to conform to the dominant cultural practices of the space (Carroll, 2023; Powell and Sang, 2015).

Successful assimilation into male-dominated spaces often comes through the ways women respond to dominant, masculine, cultural practices. This includes how they respond to 'banter' and 'humour' that is often rooted in sexist ideals (Powell and Sang, 2015). Challenging sexist banter or humour is especially pervasive for women when they are in male-dominated spaces. Foley et al. (2022) describe how women working as pilots and automotive tradespeople often experience behaviours from men that are sexist and belittling. This can often go largely unchallenged suggest this is owing to women's lack of vocabulary to condemn what they are experiencing as a form of harassment or a general reluctance to label behaviours as sexist and just 'suck it up' (Foley et al., 2022:1687). These narrow conceptualisations of sexual harassment can limit victims' ability to 'name and claim' (Charlesworth et al., 2011:147). Similarly, Britton (2017) argues that while women do experience gendered challenges in their careers in male-dominated sectors, they often downplay or deny the significance of gender. This denial is partially due to the context in which gender issues arise—often in individual interactions rather than in the more visible structures or cultures of organisations. As such, potentially systemic, sexist and masculine cultures are disavowed and instead individual issues are invoked as an explanation (Britton, 2017; Powell and Sang, 2015). The result is a failure to challenge cultures that are widely cited as a barrier to women's participation in male-dominated occupations. From this, it is evident that unequal treatment of women persists, but what remains less clear is how and if these expectations are articulated by young women at the start of their journeys towards male-dominated occupations, and the role of colleges and college staff in either challenging or reproducing the unequal treatment of women.

Wulff et al. (2022) argue that it is not necessarily women's ability to be fully complicit and unchallenging in male dominant spaces but rather those who 'redo' gender that can successfully navigate such spaces. Through a mixed methods exploration of the expression of tradeswomen in the Australian context, they argue women in these spaces use forms of gender capital to navigate and 'regender' the skilled trades. Extending Bourdieu's framework of forms of capital, Wulff et al.

(2022:39) argue that gender itself can act as a form of capital when women enter male-dominated spaces, through strategies that combine masculine and feminine gender capital. They state:

> *'They are tomboys, outperform their male colleagues, take pride and pleasure in their work, and employ competent work practices that accommodate size and strength differences. By working in ways that suit their desires, skills and bodies, they do gender differently'*

Wulff et al., here address another important feature of highly masculine spaces and biological essentialism that locates physical strength and size as a barrier to women's full participation in certain industries. Wulff et al., suggest feminine capital such as being clean or having attention to detail, balanced with masculine capital of proving their female body is just as capable, can work towards women's successful navigation of male-dominated sectors. This leads the authors to suggest certain strategies could be vital in supporting women in their navigation of highly masculine sectors through role models and mentors that can imbue women with strengthened forms of social capital and more robust investment in training that can build more meaningful forms of cultural capital. Also using the Bourdieusian concepts of social and cultural capital, Bridges et al.,'s (2022) exploration of women who work in the trades in Australia suggests the ability to accumulate and deploy forms of social and cultural capital is highly relevant to women's success in these sectors. Bridges et al., argue how, in the trade occupations, women can transfer and share forms of social capital through mentoring, networking, and informal support networks. Cultural capital accumulated through effective supervision, training and mentoring is also crucial in understanding women's success in male-dominated industry. On the inverse, in the German context of highly gender-delineated occupations, women leaving male-dominated vocational spaces relate this to hostile male working climates resulting in a lack of social integration (Beckmann, 2023).

These studies focused on women who were successfully navigating trades-related employment and Wulff et al. (2022) specifically suggest this could be bolstered with attention to those who are 'unsuccessful' in this pursuit. Whilst this research

does not focus on this specific aspect of the 'leaky pipeline in certain occupations' (i.e. those who embark on and then leave trade routes), the study does engage with young women who have pursued other male-dominated routes and more gender-typical pathways. This enables me to explore more about how these forms of capital are (or are not) accrued by women as they move through different social spaces exposed to the practices and processes of structural arrangements and influences of social actors. As such, a more systemic and theoretical analysis of the choices and experiences of young women navigating these spaces is crucial within the UK context. Focusing only on one sector or comparing to male counterparts leaves us with a less clear understanding of whether highly gendered and atypical choices are part of pushing back against constraints, or represent free choices in the absence of constraints (McNulty Norton, 2021).

Furthermore, whilst women may find ways to navigate male-dominated spaces, empirical research largely suggests masculine cultures prevail, acting to privilege men further (Carroll, 2023). These arguments suggest that structural and cultural practices across different male-dominated industries are crucial in understanding women's participation. Whilst valuable for this thesis, key gaps arise that this study seeks to address. Extant focus on specific occupational sectors means we know less about how experiences are comparable or divergent across male-dominated sectors such as engineering and construction and examining this could tell us much more about the practices and processes when women choose these routes to offer novel insights into the challenges and opportunities women face in their educational and career journeys.

2.7 Conclusion

To summarise, this chapter has provided a review of extant empirical research and theoretical literature that demonstrates the gap in understanding gender in vocational pathways which this research seeks to contribute towards. I have outlined how this thesis conceptualises gender and how through the reproduction of stereotypes expectations govern the behaviours and roles of men and women.

Understanding the stereotypes and expectations surrounding gender is essential for examining how patterns of participation influence forms of learning, as well as school subjects and qualifications. This analysis reveals the barriers that girls and women face when participating in subjects and careers traditionally viewed as masculine. It illustrates how these fields continue to be highly gender-segregated. These explanations are often based on essentialist views of gender and so reinforce ideas of 'jobs for boys' and 'jobs for girls'. What remains is a much thinner context to those who do disrupt these trends when extant research can largely explain women's under representation in certain fields rather than the contexts in which their participation is possible.

Academic literature has a long-standing focus on academic tracks and STEM qualifications. These literatures are useful in building a picture of some of the potential barriers women face which are arguably amplified within the highly gender-segregated VET arena. Exploring the theoretical concepts of Bourdieu helps us in understanding both long-standing patterns and inequalities but also acts as a means to understand how actions can be transformative. Explanatory contexts to choice-making illuminate the complex dynamic of individual contexts and social arrangements, however; across these bodies of work puzzles still arise around specific highly gendered, and atypical choices that this thesis seeks to address through a focus on gender and choice-making. Through examining these literatures, an important gap presents in understanding more about an under-researched group (those in the field of VET) as well as those who have made choices contrary to highly gendered trends as a means to contribute to debates around choice-making. Examining choice-making in this literature review builds a critique of assumptions around rational choice, in favour of acknowledging more contextual influences on choice-making and how gender can impact the choices young women make.

A body of contemporary research has explored young women in male-dominated sectors (e.g Bridges, 2022; Carroll, 2023; Wulff et al., 2022), largely in the Australian trades context, and has been important within this literature review in providing understandings of women's successful navigation of male-dominated space and the result of women's choices to follow careers in trades industries.

These literatures, however, highlight disconnects and fragmentation in the organisation between colleges and labour markets which can often create further and ongoing issues with addressing gendered employment patterns. An important space remains in tracing a deeper understanding of how the choices and experiences of women are structured across different social contexts, exploring divergent male-dominated careers such as engineering and construction within the UK college context.

Chapter 3. Methodology

3.1 Introduction

This thesis is principally guided by the phenomenon of young women's persistent under-representation in certain educational and occupational sectors. As the literature review in Chapter 2 explored, existing literature and empirical research have tended to have a preoccupation with gendered choice-making within traditional higher education routes. The works has also largely focused on understanding the barriers to women's participation in male-dominated fields. When women's navigation of male-dominated spaces is in the spotlight, it has tended to be in the workplace, focusing on one occupational sector. This thesis seeks to add to this body of literature by exploring the choice-making and experiences of young women across different types and levels of highly masculine and male-dominated qualifications. In this chapter, I provide an overview of the tools and practical steps I used to explore processes of choice-making and the experiences of young women who *do* follow male-dominated, vocational pathways within Further Education (FE).

The chapter is organised as follows; after offering an outline of the philosophical assumptions that underpin this research, I discuss the key design features of this study. I then outline the practical tasks involved in the data collection for this research including sampling, recruitment of participants and the use of semi-structured interviews. I present the analytic approach that informed the discussion of the data that I present in Chapters 4, 5 and 6. I address the ethical considerations of this study; these are considered broadly within the context of research ethics, and more personally as I explain the position I occupied during the processes of fieldwork and data collection. For clarity, this chapter is organised so that the focus and detail of each of these sections are on the interviews I conducted with the young women, including those from both male-dominated and gender-typical pathways. In the final section (3.8 Supplementary interviews*),* I provide an overview of the process of sampling, recruitment, and data collection I conducted with labour market informants and college staff.

I indicated in Chapter 1 that I was employed by The Aspire Institute where I conducted my fieldwork as a lecturer in Higher Education (HE). In the interests of providing a fully transparent account of my fieldwork, I consider this throughout the chapter and draw upon the insider/outsider debate (Greene, 2014; Thompson and Gunter, 2011) within methodological literatures to explain the implications of this at the different stages of the fieldwork. This is especially relevant to understanding the selection of the specific FE college, the recruitment of participants and how I used my local geographical knowledge during interviews. My position gave me certain advantages in terms of access but also raised important ethical and moral considerations that I navigated throughout the research process. These points are flagged throughout the chapter where relevant and then discussed in more detail in section 3.7.1.

3.2 Epistemological position

The nature of reality, or the ontological position this research takes, proposes the social world is comprised of 'relationalities and connectedness' (Mason, 2018:5) between actors, and between actors and structures. This constructivist ontological position informed the epistemological position of the research; that is, how these ontological properties can be evidenced (Mason, 2018). Epistemologically, this research adopts an interpretivist position that centres on the subjective nature of social action and situates this problem within a unique context (Bryman, 2016; Cohen et al., 2007). The research questions guiding this study reflect the focus on the subjective narratives and experiences of the young women, which necessitates methodological choices aligned with this philosophical approach (Denzin and Lincoln, 2011). The phenomena this study explores are the choices and experiences of women in certain male-dominated spaces, and exploring instances of commonality 'in prevailing forms of experience in particular times and places' was a key direction for the design of this research (Mcintosh and Wright 2018:463).

Ontologically and epistemologically this research was concerned with subjective realities and, as such, both the overarching research questions posed by this thesis and, as I discuss later in the chapter, questions asked during interviews were 'situational rather than abstract' (Mason, 2018:112) as they seek to uncover contextual, situated knowledge of young people's experiences and 'choices'. This shifts the rich descriptions of lived experiences to engage with broader social explanations for why and how the young women came to embark upon their chosen pathway. Through the strategic and pragmatic plans that I discuss in this chapter, the data collected allowed rich descriptions to move into novel understandings and explanations around the nuanced processes of choice-making.

3.3 Setting up the study; context of The Aspire Institute and Thornfield

The fieldwork for this research was carried out at one further education college site located in Thornfield, a coastal town in the northeast of England. The choice to base the fieldwork at this site was strategic as it was practical, and in the following section I address the value and relevance of conducting fieldwork at this site. The ethical and moral implications will be discussed later in this chapter.

As indicated in the introduction to the thesis and explained below, The Aspire Institute is highly representative of other locations and college settings with respect to their typical patterns of gendered participation. As such, it provides a location where the claims made in this research can be highly relevant to broader educational settings in different geographical contexts. My access to this site was highly advantageous given that data was due to be collected in a recently post-pandemic context, which had impacted external researchers gaining access to educational settings with many Covid prevention measures still in place at the time. Being an employee provided me with flexible and somewhat unrestricted opportunities to carry out the fieldwork. The decision to conduct the fieldwork at a single college did define the scope of this study, which resulted in certain limitations. These limitations are particularly reflected on in this chapter and in the conclusion to the thesis as a basis for future opportunities that come from this

research. The emphasis in this thesis is not on geographical comparison, but the selection of one fieldwork site hones the analysis in this study more specifically towards how we can better understand the practices and processes that surround choices that are contrary to gendered patterns.

The Aspire Institute in Thornfield has, like other towns, been subject to declining regional industry - in this case, fishing, but has also experienced recent and upcoming significant industry and government investment in renewable and offshore energy. The Aspire Institute has established links to sectors in the local labour market and is especially working with large global companies based in the region that offer significant opportunities in engineering. The Skills Advisory Panel (SAP) for the region identified gaps in skills from a range of levels and types of qualification and, along with literature and data about gendered subjects, informed the refinement of the research design as to which programmes and qualifications to include in this study. This approach also offers broader application of the research findings to the field of VET as the sectors explored in this thesis also link to key agendas nationally and locally.

The Aspire Institute offers largely vocational subjects across varying levels and types of qualifications. College data for the 23/24 academic year shows students generally opted for typically gendered subjects; in brickwork, females accounted for approximately 4% of the student population, and in Childcare Studies males accounted for around 3% of the student population. Student population by programme at The Aspire Institute is representative of national gendered trends within FE and VET, especially on courses and qualifications that are highly gender segregated (see Table 1). The student demographics at The Aspire Institute are representative of the local area, with a predominantly white British population.

Table 1 Percentage of female students overall and in respective qualifications for year 23/24 at The Aspire Institute

Qualification	% of female students
Brickwork	4.3
Construction Management	5.5
Carpentry	8.3
Engineering	9.4
Hairdressing and Beauty Therapy	83.6
Childcare	96.8
The Aspire Institute Overall	48.4

Before commencing fieldwork in 2022, I emailed two gatekeepers: the principal of the specific campus and the Chief Executive Officer (CEO) of the overarching college group. I explained the nature of my PhD research and an overview of my intentions for the fieldwork. Following an informal meeting with both, I received verbal support and active encouragement for the proposed research. Following the ethical approval process, the principal of The Aspire Institute confirmed in writing they were satisfied with the fieldwork to commence pending full ethical approval from the University of Leeds. Both gatekeepers from the college were encouraging and supportive of the proposed fieldwork, offering access to appropriate college data and support by connecting me with relevant teaching staff where needed. Following initial contact and obtaining gatekeeping approval, access to participants at the college was straightforward and proceeded well.

3.4 Design of the research

With the fieldwork being carried out at one site, honing the research analysis on internal comparisons was a crucial design choice. The interviews that were carried out with young women from male-dominated qualifications (n=17) were the focal point of the design and analysis. These were drawn from different male-dominated sectors rather than only engineering or construction to help this study shed light more broadly on gendered educational and career choices by exploring any divergences or similarities that preceded choices to follow these routes.

Being able to make more generalisable theoretical claims about the processes and practices that surround choices and experiences of male-dominated qualifications also informed the inclusion of a comparative group made up of a smaller number (n=5) of young women who had followed more gender-typical qualifications. This included young women studying childcare, hairdressing and beauty therapy qualifications, offering the opportunity for internal comparative insights and understandings with the focal group of those on male-dominated pathways. As a sub-sample, these young women were purposively included for their one element of similarity; they had followed a pathway that conformed to gendered patterns and norms. The inclusion of a small group of young women on gender-typical routes was a crucial design choice of this study to foreground the practices, processes and experiences that relate to their gender. This approach was intended to illuminate a more nuanced processual account of choice-making of gendered qualifications that are not marked by gendered differences.

Drawing upon Lewis (2003:50), I found the value of a using a comparative approach in qualitative research was in '*understanding rather than measuring difference'*. The accounts of those following typically female qualifications provided an important backdrop from which shared patterns and contrasts could be made. This meant exploring similarities and divergences in the choice-making processes that led them to highly gendered post-16 qualifications. This approach was implemented to give greater analytical purchase to the claims made in this thesis, relating to understanding those who had followed male-dominated routes and how, if at all, this was different to those on gender-typical qualifications. Previous empirical research has utilised comparative groups to examine choices and experiences of non-traditionally gendered pathways. These comparisons have

compared the experiences of males and females in male-dominated sectors (Carroll, 2023; Kolmos et al., 2013), the experiences of men following female-dominated routes (Chesters; 2021), the differences when boys follow typically female pathways and girls follow typically male pathways (Fuller et al., 2005; Thurtle et al., 1998) and cross country comparative case studies (Kim and Kim, 2003; Kim and Kurz, 2001). These literatures illuminate the value of a comparative approach that informed elements of this research.

Using a comparative group has, however, been met with some scepticism (Bryman, 2012). The primary concern relates to the risk of decontextualisation, and 'the risk of losing the complexity and uniqueness of the cases under investigation' (Palmburger and Gringrich, 2014:97). However, qualitative comparative studies have proven that if a comparison is handled carefully and if the sample is kept low, decontextualisation can be prevented or at least minimised (Palmberger and Gringrich, 2014). This research addresses the risk of oversimplifying the complex experiences of those who choose gender-typical routes, by drawing upon experiences of the 'expected' and, with the arguments of existing literatures in this field, I was able to gain a better understanding of the circumstances when girls pursue male-dominated pathways.

Whilst the research design used young women's atypically gendered choices of college courses as the starting and continued focal point, the research was also oriented 'to the processes which shape them and give them salience' (Irwin, 2005: 25). This study was therefore also concerned with understanding *'*processes that inherently involve others' (McIntosh and Wright, 2019: 462). For this study, that concerned some potentially important influential social actors including college tutors and those recruiting in key labour market sectors. I discuss the rationale for carrying out interviews with these related social actors, comprised of college staff and labour market informants (n=10) related to the male-dominated qualifications, in section 3.8.

Those on traditionally male courses are the dominant accounts presented throughout the analysis in Chapters 4, 5 and 6. Data from interviews with those on typically female courses feature in Chapter 4 (Home life, the family and growing

up) and Chapter 5 (School life and the influences on post-16 choice-making) as this provides important comparative detail and explanation of choice-making around the processes that fostered choices to either conform to or circumvent traditional gender conventions. Chapter 6 (Navigating college and expectations for working in male-dominated industries) foregrounds the accounts of those on male-dominated courses and draws on interview data with college tutors, college support staff and relevant labour market informants to illuminate the backdrop upon which college experiences and expectations for the workplace are structured.

As part of a fully transparent account of my research design and fieldwork plans, I had originally intended to interview some of the parents of the young women who participated in this study. This was driven by the literature that has broadly pointed to the significance of parents in the educational and occupational trajectories of young people. I had anticipated that the voices of parents could potentially yield crucial contributions towards understanding the wider social contexts of the young women, however, this became difficult to achieve.

With the first few young women, I discussed my interest in interviewing their parent(s). I followed this up after their interview with an email to enquire as to the possibility of meeting their parent(s) to take part in an interview. It became clear early in the process of conducting interviews that I would need to reconsider this intention as either my emails were not replied to, or it was indicated that parents were too busy to take part. Through both a reluctance of participants and access difficulties I proceeded with only speaking to the young women themselves.

The nature of qualitative research, and in particular the approach to the sign of research and sampling is an iterative process (Mason, 2018) and it was clear this element of my intended research design required me to think reflexively and needed to be reconsidered. I reflected on the process of carrying out research and how my research was a reflexive process, shaped and initially based largely on extant literature and empirical research, through to the development of explanations from my data as Mason (2018:113) posits:

'Your theoretical position at the beginning of your research will come out of y our
reading of existing research, other literature, and possibly some preliminary research or observation of your own. But as you go on, your theory and developing explanation themselves will be informed by your analysis of your own
data'.

Braun and Clarke (2021: 201) similarly argue that 'data collection… are inescapably situated and subjective,and cannot be determined (wholly) in advance of analyses'. Through the early stages of carrying out interviews, transcribing, and data familiarisation, I felt, reflecting also on the access issues, that the voices of parents, though perhaps potentially interesting, were not analytically necessary within the context of this study. As I discuss in the analytical chapters that follow, the voices of the young women are the focal point. Parents are crucial in shaping the values and predispositions of young women and, I will argue, remain deeply implicated in educational and occupational choices. However, it is the young women's perceptions of their parents that are foregrounded in this study.

In the rest of this chapter, I provide detail around the research setting, the practical steps in the process of data collection and the ethical considerations raised within this research.

3.5 Design to data collection; sampling, recruitment, and data collection.

The following sections outline the practical steps taken within the fieldwork process and data collection.

3.5.1 Sampling

Mason (2018:55) suggests sampling in qualitative research is as 'strategic as it is practical'. As such, sampling is a key element of the analytical approach, and this section outlines how the selection of participants was designed to align with the research aims whilst also being reasonable and pragmatic. Recognising my role as working within The Aspire Institute setting, the sampling was drawn from a convenience sample with all college staff and young women working or studying at The Aspire Institute. Purposive sampling means the identification and selection of participants for rich data collection, in relation to research aims and questions (Mason, 2018; Patton, 2002). The first part of the sampling process was identifying the specific programmes and qualifications from which participants would be selected. This was based on qualifications that have been long documented in educational data and empirical research as heavily gender segregated.

The prioritised programmes represented different 'levels' and types of male-dominated VET study and included higher/middle and lower-level VET qualifications. Firstly, *engineering* programmes: These included apprenticeships, BTEC and T-Level qualifications. These pathways are often represented as 'higher or middle-level' qualifications and, crucially, a sector with significant government investment, reported rising labour opportunities and often included with attention to improving the rates of women through national interventions such as Women into STEM. Second*, construction:* These pathways are an umbrella term for a number of qualifications and occupations including higher level construction management and other trades-related qualifications. These include BTEC and apprenticeship-based qualifications that are aligned to highly practical skills and often fall outside initiatives to drive gender diversity. Finally, *gender-typical*: young women were selected from heavily female-dominated qualifications including T Levels in childcare, and BTEC qualifications in hairdressing and beauty therapy.

Research participants were purposively and opportunistically sampled (Punch, 2000) within the context of my research questions and aims of the study, however, who specifically participated was not within my complete control. By this, I mean I had certain sampling criteria, but the final sample was mediated by gatekeepers, students' availability and, of course, if there were any female students at all on a

particular programme of study. For this research, the important elements were that they were female and undertaking an engineering or construction-related qualification. I did not add other prerequisites including GCSE results, socio-economic context, or family context in an attempt to capture a range of backgrounds and student demographics. These details were discussed during interviews but did not shape the profile of the sample. It is important to note that the sample was entirely white British and whilst ethnicity is extremely relevant in educational outcomes, this was representative of the town of Thornfield in which this research was conducted (ONS, 2019; 2021). This is also a point I return to in the conclusion of the thesis as an opportunity for future research.

I had planned to interview a sample size of around 20 students from male-dominated and 5 from gender-typical qualifications. Malterud et al. (2015:2) support having an idea of sample size in mind as '…an approximation of sample size is necessary for planning, while the adequacy of the final sample size must be continuously evaluated during the research process'. Initially, this number was based on the need to balance the practicalities of PhD fieldwork with the need to yield sufficient data (Mason, 2015; Stroh, 2000). As my data collection progressed, I was influenced by what Braun and Clarke (2022) and Malterud et al. (2016) suggest is important in determining sample size in qualitative research – information power. The elements that contribute to information power, according to Malterud et al. (2016:2), include (a) study aim, (b) sample specificity, (c) use of established theory, (d) quality of dialogue, and (e) analysis strategy.

Considering these elements and the primary aim of my study, which explores the choices and experiences of those pursuing male-dominated vocational courses, it makes sense that this group constituted the largest portion of the sample. The sample specificity was addressed through considering what programmes and qualifications students would be sampled from. The use of established theory, as demonstrated in Chapter 2, underpins this research – namely my engagement with literature in the field of sociology and education including gender, Bourdieusian concepts, and theories of choice-making. This means that a 'smaller' sample size is still likely to contribute to extant knowledge. The quality of dialogue could only be established during the process of fieldwork and, as a researcher, I could reflect

on the depth and quality of interviews as I was carrying them out, during transcription and in the initial phase of reflexive thematic analysis. Using a thematic analysis ensured the subsequent depth and quality of the analysis would support a sample size in line with that used in this research. For these reasons, the sample size was judged to be sufficiently specific enough in its focus but varied across demographics and course of study to capture enough knowledge and data to offer novel insights to the field.

3.5.2 Recruitment

Having made strategic decisions about the programmes of interest for this study, in the following section I describe the practical steps involved in the recruitment of participants for this study.

Recognising the age of the participants (16-19) and the setting of an educational establishment, power imbalances cannot be fully negated in educational research involving young women/youth; however, building rapport, trust and addressing power imbalances was a key consideration throughout the research process as I was aware that the young women may not have considered or thought about their choices in this way previously (Brooks et al., 2014; Te Riele and Brooks, 2012 The young women were approached with these important considerations in mind, which will be discussed in the next section.

Greene (2014) suggests one advantage when a researcher occupies a position with the setting or organisation in which they are researching relates to access. In this case, the access for the fieldwork was arguably made simpler by my employed role, giving me access to contacts within the ‘social group’. Throughout the fieldwork process, the ability to access all participants was simplified compared to being an external researcher.

For those on male-dominated qualifications, I contacted relevant course leaders and was made aware of teaching groups that contained female students undertaking

qualifications related to the recruitment plan. Where needed, I was given contact details for the relevant teaching staff. Initially this was without specifying the level of study for example, it was later in the fieldwork process that I made more specific requests for learners on different levels of study where possible to address potential gaps in my sample. I approached specific teaching staff to explain my research and the possibility of talking to some of their female students. I was introduced to students by different college staff sometimes during break times or just outside of classrooms during lessons where this was appropriate and did not disturb learning. I informed participants that I had permission from The Aspire Institute to carry out research relating to their choice of qualification and their experience of college, before asking them to meet again in a location away from the rest of their student group. As they were in the minority, I was aware that this process could make them feel 'othered' by their peers, therefore I kept this stage brief, yet welcoming.

The young women on female-dominated routes represented the majority of those undertaking courses such as hairdressing, beauty therapy and childcare. The recruitment process for these participants involved me making initial contact via email with the teaching staff of the programmes. I then visited several different teaching sessions, and I talked to whole groups about the research and gave information sheets containing my contact details. Through this process, I was able to identify students interested in taking part in the research. I found that several students from the gender-typical qualifications were interested in participating and ultimately selected them at random.

During my initial meetings with all participants, I discussed the purpose and intentions of the research and gave them a physical information sheet to ensure full clarity about their potential participation and the intentions of the research (informed consent is discussed in greater detail in section 3.7). I considered early in the recruitment process the importance of my work identification lanyard and how this clearly signifies me to all students as a member of staff. This may have significant implications for power dynamics and could undermine students' ability to provide informed consent as pressure to participate may arise from the student/teacher power dynamic (Brooks et al., 2014). I decided to wear a University of Leeds lanyard during these meetings to clearly identify my role at

that point as a doctoral researcher. In the interests of ensuring full transparency, all participants were made aware that I worked in the HE provision, and I assured them of confidentiality pursuant to safeguarding procedures.

I made a note of their student email addresses and interviews were arranged for between 1 – 4 days following the initial meeting. I did not conduct any interviews immediately following an initial meeting as it was an important aspect of the ethical considerations of the research to ensure that participants had full autonomy over their participation and to aid this, giving them information in a timely manner could ensure they could make an informed decision about their participation. This was with the British Educational Research Association (BERA, 2024) definition of informed consent in mind as 'the condition in which participants understand and agree to their participation without any duress, prior to the research getting underway'. This was also a step to mitigate power relations that related to my employed role and ensure students were not participating because of pressure relating to me being a staff member. Decisions to participate were made by the participants independently of my physical presence. I emailed students to confirm the date and time as a reminder, which was at their request and meant I could confirm the location we were meeting.

Given my role working at the Aspire Institute I was able to offer flexibility on the time and place of interviews and was able to conduct them to suit participants as I had full access to the college site so did not need any additional prior approval for my presence ahead of any interviews. I could also offer different settings for interviews, whether that be over a coffee in the catering spaces or in a smaller room for privacy. This was a privileged position to be in throughout the research as I could offer flexibility and autonomy to my participants in a way that may have been more difficult if I was an external researcher at The Aspire Institute. The tables below detail the participants who took part in the interviews. The names used are pseudonyms.

Table 2 Participants from gender-typical qualifications

Name	Course of Study	Level of Study
Leah	Childcare	Level 2
Emily	Childcare	Level 2
Maisie	Beauty Therapy	Level 3
Poppy	Beauty Therapy	Level 2
Ruby	Beauty Therapy	Level 2

Table 3 Participants from construction qualifications

Name	Course of Study	Level of Study
Abi	Construction Management	HNC
Elena	Brickwork	Level 1
Katy	Carpentry	Level 3
Libby	Construction Management	HNC
Molly	Construction Management	HNC
Sam	Brickwork	Level 2
Sophie	Plumbing	Year 1 Apprenticeship
Beth	Brickwork	Level 1

Table 4 Participants from engineering qualifications

Name	Course of study	Level of Study
Bella	Mechanical Engineering	HNC Mechanical Engineering
Ella	Mechanical and Electrical Engineering	Level 2
Eve	Mechanical Engineering	HNC
Izzy	Mechanical Engineering	Level 3

Lucie	Engineering/Fabrication and Welding	Year 1 Apprenticeship
Paige	Mechanical Engineering	HNC
Tyla	Mechanical Engineering	Level 3
Charlie	Engineering	Year 1 Apprenticeship
Martha	Engineering	Year 1 Apprenticeship

3.5.3 Data collection

With each of the young women, I gave different options for locations of the interview to ensure they were comfortable and felt autonomy over the research process. This could either be in a campus coffee shop or a quiet room (I always had a room pre-booked ahead of time in case this was their preference or had changed their mind about the location of the interview). Once we were established at the interview location, I explained again about what would happen, checked if there were any further questions before I started voice recording and asking for verbal consent. I made participants aware during this that they would be kept anonymous, and they would be assigned a pseudonym. Some participants chose their own pseudonyms and others asked me to assign one for them (detailed in Tables 2,3 and 4). The interviews ranged from between 60-75 minutes. Though notetaking during interviews can be valuable to refer to afterwards (Mason, 2018), I decided not to take any notes during the interviews to be able to fully listen to the participants and immerse myself in the interview without being distracted.

Qualitative semi-structured interviews were used with all participants, aligning to the aims of this study through yielding knowledge from multiple vantage points (Ormston et al., 2014). Using a semi-structured approach allowed interviews to be guided by themes generated from interpretive engagement with the literature (Braun and Clarke, 2020), whilst still allowing for freedom in the dialogue between researcher and participant (Cohen et al., 2007). The philosophical assumptions of this research shaped the design of an interview schedule (see Appendix A) which was intended to prompt participants to think about specific situational experiences

such as describing the classroom environment or recalling events such as their first day at college. It was crucial to remain flexible and allow new questions, or to ask questions in slightly different ways because of the participants' answers (Ruslin et al., 2022). The interview schedules provided research themes to guide questioning; however, I remained flexible during interviews and being able to 'think on my feet' (Mason, 2018) was important to ensure interviews flowed and participants felt they could share their experiences. The schedules were separated into broad themes including asking about the area they lived in, their home life, school contexts and college experiences. Having an interview schedule meant I had some set questions that I could ask, though I largely used these as a guide rather than as a rigidly defined list.

Questions were asked that could take rich descriptive accounts towards explanations and understandings of young people's experiences and choices (Mason, 2018:112). This approach allowed knowledge to be constructed, rather than excavated, through a series of closed or scale-measured questions that could impose knowledge and restrict responses (Cohen et al, 2007; Harris and Goodall, 2007; Mason, 2018). In sum, Webb and Webb's (1932:130) description of interviews as a 'conversation with a purpose' captures the essence of semi-structured interviews and how, through the use of interview schedules and a flexible approach, they were conceptualised in this research.

I found that some participants were initially fairly quiet and gave short one-word responses to open questions. In these cases, I would often revisit questions later in the interview when they appeared more relaxed and comfortable with the conversation, having established greater rapport with the participants. Mason (2018:162) posits that 'to achieve data which are comparable in key ways, far from giving everyone standardised questions, in a standardised form you may well need to ask different questions of your different interviews – precisely so that you can generate situated knowledge with all of your interviewees'. This meant that whilst the form and order of questions may differ from interview to interview, the core thread of the interviews remained constant.

My knowledge of the local area and educational setting more generally was advantageous at times during interviews. This is why Greene (2014) suggests insider knowledge can be beneficial through the ability to orientate to the research environment. For example, during interviews when participants talked about their secondary schools or areas they live, I knew of the schools and the areas. This certainly helped build rapport as I could share with participants small pieces of information that revealed my familiarity with the locale, such as *'I know someone who went to that school'* or '*a friend of mine lives in that area*'. I found this to be especially helpful with the young women who initially appeared nervous. This was not to compromise the ethics of the study by sharing overly personal or potentially intrusive information but rather embracing a conversational approach through an 'interactional exchange of dialogue' (Mason, 2018:156) which would help participants feel more at ease.

An important thread of this research was understanding young women's choices to follow different pathways and as such what motivated the possibility of their chosen qualification. As part of the interviews with young women, I wanted to uncover some of the factors that were important to them in their chosen career path and how this related to what they had opted to do at college. Instead of asking this as a single question, for example, '*what motivated you to do engineering/plumbing/childcare etc*?', I decided to be 'epistemologically playful' which refers to the 'practice [of] different ways of investigating the social world (Mason: 2018:166). I did this by using different tools to gather information from participants beyond just the format of interview questions and answers. As such, I drew upon a study completed by the ONS (see Chapter 2) which explored young people's career aspirations and measured the specific aspects of future careers that were important to them (ONS, 2018). Towards the end of their interviews, I asked all the young women to order these factors from most to least important to them when thinking about their choice of qualification and future career. Each was printed on a small piece of paper so the participants could lay them out in order (e.g Figure 1 below).

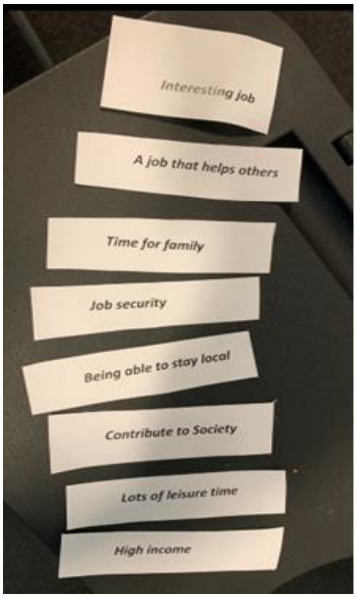

Figure 1 Example of list of factors that were important to the participants from a qualification/career.

Having all students complete the same task enabled clearer comparisons to be made between responses and helped prompt deeper discussion of what was important to them in their educational and occupational choices. I did ask students if there were any missing from the list that were important to them to ensure they felt anything missing could be added. In doing so I was making space to go beyond my interview schedule and enable a sense of power and autonomy for the participants. Whilst I did photograph and take note of the 'order' of the lists for my notes, I did not conduct any analysis on these data that would be more aligned to a quantitative approach. Rather, these 'lists' created a talking point in the interviews with the aim of allowing the young women to reflect on how they perceived their chosen qualifications aligned with these values or motivators.

3.6 Transcription to analysis

In the following section, I outline the approach to analysis and how patterns and divergences were identified from across the participant interviews. Alongside recognising the gender-segregated nature of the qualifications, this study's sampling and methodological approach was a key component of the analytical

process whereby understanding experiences and choice-making was also compared across levels and types of VET pathways. The analytical approach recognises that a study concerned with only girls cannot make claims of what may be uniquely gendered for girls and young women per se. Rather, the contributions of the research are further bolstered in understanding how gender may be implicated in choice-making and experiences by drawing the sample from across different qualifications and levels of study.

Once interviews were complete, audio recordings were transcribed. There are benefits to the use of digital software to assist in the analysis of qualitative data (Bryman and Burgess, 1994). These advantages largely relate to practical elements of research including data storage and management, and I adopted the use of NVivo for this purpose. However, I also decided that to be both fully immersed with my data and be able to establish distance that could enable appreciation of the bigger picture (Bazeley, 2007), I would initially engage with reading printed copies of my transcript data. I then used NVivo to store and organise my data during the process of analysis. As an iterative, back-and-forth process I often returned to the printed copies throughout the analysis of the data as this meant I could engage on a deep level with the data whilst continuing to view these within a broader context. As such, reflexivity was a crucial part of the analytical processes.

For analysis of my data, I followed guidance from Braun and Clarke's Thematic Analysis (TA) to capture patterns across qualitative datasets (Braun and Clarke, 2017; 2019; 2020). This was an interpretive approach to coding and theme development to identify patterns and stories of shared meaning. Braun and Clarke (2022:6) detail five phases to the process of TA to 'work with and make sense of data'. (1) Data familiarisation; (2) Data coding; (3) Initial theme generation; (4) Theme development; (5) Theme refining, defining, and naming. These phases have been noted across versions of TA; however, recognising the value this research places on the subjective and situated nature of qualitative research aligns with Braun and Clarke's (2022) framework of reflexive TA. Engaging with the steps of TA involved a deep engagement with the data through reading transcripts. In generating descriptive codes, codes and then themes were generated by my interpretative engagement with the data. As Braun and Clarke (2022:230) reiterate,

themes are *emergent* in the sense that in the processes of generating themes they are actively produced by myself as the researcher to unite large portions of data. This process was guided by the research questions but also through the process of analysis and initial code generation. As I stated at the start of this chapter, there is a linear flow to the chapter's organisation, but the actual order and content of interviews were an iterative process. As such, the early analysis shaped interviews that were still occurring. Whilst the core areas of the interviews remained the same, the ones that focused on the central phenomenon of my research (Creswell, 2013) such as school, family contexts, going to college, other areas were added such as classroom relationships and others were not omitted entirely but rather given less time and focus during the interviews. These practices were all key parts of the knowledge production being a reflexive process during the processes of analysis (Mason, 2018). I now address the stages of TA as set out by Braun and Clarke (2022) and how this was carried out within my study.

During the initial phase of familiarisation, I engaged with my data as a reader and listener with my digital transcripts and audio playbacks (Braun and Clarke, 20022). During the phases of data familiarisation, I reread transcripts and recorded some notes including writing very short overviews about the participants including, for example, their level of study and qualification, their home contexts, and the school they attended. This detail was subsequently moved into an Excel spreadsheet to provide me with an 'at a glance' overview of my participants (See Appendix E). This data would also be useful later in my analysis and writing up in identifying some key patterns relating to family dynamics and siblings for example. During this initial phase, I highlighted 'particularly interesting or intriguing' elements with my data such as the hobbies and clubs the young women talked about or how they described their own appearance (Braun and Clarke, 2022:43). This process of familiarisation was about identifying *possible* patterns across the dataset, paying attention to the divergences and shared meaning between different participants. This meant asking myself questions including how participants are making sense of the world around them and what is revealed in their accounts (Braun and Clarke, 2022). During this phase, I drew upon Braun and Clarke's (2022) suggestion that familiarisation with my data and the notes I made did not necessarily need to provide a full account of my data but rather was about me getting a 'lay of the land'

(2022:49) so I could move to the more systematic process of coding my data. With the notes I had made about my whole data set, including some initial thoughts about the broad patterns and divergences across the data, I moved to the phase of coding.

Braun and Clarke (2022:53) emphasise that coding is about the process of exploring diversity and patterning of meaning from the dataset and identifying this as a systematic process. This meant that the data I had highlighted in the initial phase as being intriguing or interesting was organised in a more rigorous way, particularly in relation to my research questions. The processes of coding data were also not based on frequency but rather on content and context. Text was coded in NVivo at both a latent and semantic level (Braun and Clarke, 2022). Semantic codes capture the explicit meaning and capture the language or meaning, while my participants' latent codes focus on the implicit meaning and can be abstracted from the obvious content. Through the process of coding my data, I was able to draw out divergences and commonalities between my participants. For example, a semantic code relating to 'being a tomboy' was closely related to a more latent code of 'disavowing a feminine identity' as some participants clearly described their identity in these terms and others implied this through a rejection of traditionally feminine interests and displays of gender. Further examples of how I developed codes into themes and refined and labelled these related to my research questions is offered in Appendix F.

Contradictions became an important element of my analysis, and ultimately the findings that I discuss from this research. As Braun and Clarke (2022:107) usefully posit, the task with thematic analysis is not about telling 'a singular uniform story' but rather to convey patterns of meaning evident in my data that related to my research questions. This became particularly clear with young women on male-dominated courses through the generation of themes. For example, I labelled a particular theme relating to college experiences around 'a desire to fit in and be normalised in a man's world'. In apparent contradiction to this, another theme was 'role modelling for other women and younger generations'. These themes initially appeared in tension with each other and at times were articulated not only by the same participant but within one response. As part of the process of analysis, these

were reconciled as crucial findings that are not necessarily in dichotomy with each other but are themselves a feature of the complex world of my participants.

Throughout the process of analysis and organisation of the data, it also became apparent that there was a seemingly logical and temporal flow that could be used in the presentation and discussion of my findings. The content and discussion within interviews did not always follow a temporal flow through the young women's lives but organising the data into overarching categories of home/school/college traced a flow through the processes of choice-making and experiences that addressed each of these social domains as separate but deeply interwoven spaces. It was during the process of analysis and in conversation with existing literature that I conceptualised choice-making as *visible, plausible,* and *viable*. This framework was therefore not imposed upon the data but was part of an organic engagement with the data I generated for this thesis and a thematical analysis of this data. The framework is introduced and explained at the start of Chapter 4 and interwoven into the presentation of the data in Chapters 4, 5 and 6. Decisions around how to present the analysis chapters that follow were shaped by both the organisation of data and my conceptual framing of choice-making. Initially I had considered I would present choice-making and then experiences, but the process of analysis and generating themes allowed me to see how addressing the spaces of home/school/college provided a clearer temporal flow along with a way to narrate how choices and experiences overlap and impact upon each other.

3.7 Ethics and researcher positionality

Educational research is inherently imbued with philosophical, methodological and ethical negotiations (Burgess, 2005; Hamilton and Corbet-Whittier, 2012; Wellington, 2015). There are potential complex power relations between a researcher and participants, whether that be teaching staff or students/learners, and also the potential for findings to be unfavourable for policy and setting (O'Donoghue and Punch, 2003). These negotiations become more complex when situated within the role and personal context of the researcher. Because of this, it

was important I was continually reflexive as I was both a researcher and employee of the setting in which I was carrying out fieldwork.

The following section addresses some of the ethical considerations and moral obligations that were raised and considered during the fieldwork. After discussing in more detail the implications of my position as an employee at the site of my fieldwork, I move to the more specific ethical considerations during this study such as informed consent, researcher/participant power dynamics in research and issues of anonymity and confidentiality (BERA, 2024; Te Riele and Brooks, 2013).

3.7.1 Researcher positionality: Navigating the Insider/outsider status

As I have already introduced, the fieldwork site for this research was a large further and higher education college. At the time of data collection and fieldwork, I was employed to work in the HE department of the provider, making me an insider due to the role I hold as an educator within an educational setting. Drawing upon the insider/outsider debate (Greene, 2014; Thompson and Gunter, 2011) within methodological literatures, I was part of the overarching group, employed as a lecturer in higher education, an insider but an outsider to the specific context of FE. I have already considered throughout this chapter some of the specific implications of this and the benefits including my access to the site and participants. I have also discussed how my knowledge of the local area was important during interviews. I recognise the value of this in allowing a relatively straightforward process for the collection of data. My employed position also comes with certain symbology of my position including my lanyard, email address and connection with other staff. This marks me as an insider to the institute whilst trying to be an outside researcher. As a result, I had to consider reflexively about my position throughout the research process. In the following section, I reflect on how I navigated this position as I believe this is important to both underpin this research as a rigorous and ethically sound study and offer transparency about the research and data collection process.

Dwyer and Buckle (2009) offer some useful commentary on the insider/outsider position in qualitative research that helped me navigate this. They suggest rather than the insider/outsider being dichotomous, attention should be given to the 'space between'. This 'space' is where researchers can be both insider and outsider rather than either/or. This draws further parallels to the sometimes-paradoxical position of the qualitative researcher; that they are to be 'in tune' with social systems and meanings whilst acknowledging their own biases, assumptions, and preconceptions (Maykut and Moorehouse, 1994). Kerstetter (2012:99) suggests there is a need to move beyond a rigid dichotomy of outsider/insider and instead emphasises 'the relative nature of researchers' identities, depending on the specific research context'. As such I found my position to be better conceptualised as a continuum rather than a simple dichotomy of insider/outsider (Greene, 2014; Naples; 2003). A researcher who has an additional role in fieldwork institutions can yield important and rich data, and Humphrey (2013:582) suggests the need to be 'risk-aware rather than risk-averse'. However, this does indeed prompt questions about a researcher's positionality, including their position in relation to the community they intend to study (Naples, 2003). Kerstetter's work considers the issue of 'community' and the benefits and drawbacks of being an outsider to the community that the researcher is exploring. In this sense, issues of education, class and social position give the researcher not just the position of 'outsider', but a *privileged* outsider. It is this privilege and difference that, in terms of student participants, reinforces a power dynamic that I remained aware of throughout the fieldwork process.

I came to see and have already outlined some of the benefits to my relative 'insiderness' (Naples, 1996) within the 'community' I was researching. I considered that these could be broadly understood in three areas: access, knowledge and interaction (Greene, 2014). The ability to have an already established level of trust with staff of The Aspire Institute due to my access enabled me to proceed well with interviews. My initial conversations with staff were also a means to ensure they were themselves aware of the nature of the research and so staff could feel comfortable in directing me towards potential students. Similarly, my knowledge of The Aspire Institute and the local area was advantageous for approaching labour market informants and being able to have conversations with

all participants about the town. I considered this to be part of the practice of reflexivity throughout the research through active engagement with my own perceptions (Greene, 2014).

Maintaining a reflexive approach to the fieldwork also meant being aware of potential issues relating to my position during the research process. I used various practical tools to address potential imbalances of power (Greene, 2014) for example, through a robust ethical framework and carefully considered methodological choices, such as the way I approached participants, the location of interviews and the use of my University of Leeds student lanyard. It was also an important consideration that as a lecturer in a higher education setting within the school of Sociology and Education, these young women were unlikely to ever become students of mine.

Greene (2014) also highlights issues that an insider researcher may experience pertaining to confidentiality, power, and bias. One example is becoming aware of confidential information about colleagues. Whilst I did not work directly with any staff members that I interviewed or have a relationship with them prior to the research we did share a place of employment and so we were, to some degree, known to each other. Many of the interviews I conducted with young women involved them talking about specific members of staff. Unless this related to a safeguarding issue (one instance is discussed in the following section) this was kept confidential, and all data anonymised. This was crucial in maintaining an impartiality about my data and reflecting on my position as a 'researcher' rather than an 'informant'.

This discussion intended to offer transparency about my position as a researcher in the context of this project and how this shaped both advantages and considerations along the data collection journey. There were, of course, other ethical considerations relating more to specific ethical frameworks and guidance and they are addressed in greater detail in the following section.

3.7.2 Ethical and moral considerations

Full ethical approval was obtained from the University of Leeds[4]. Whilst the previous section discussed issues relating to researcher positionality and the implications of this, the following section outlines how ethical guidelines were an embedded and considered part of this project. Te Riele and Brooks (2013:421) suggest that a 'prescriptive approach can be particularly problematic when conducting research with young people' and whilst this was important in terms of a reflexive and flexible approach to fieldwork and data collection, ensuring a robust approach to ethical guidelines was an essential element of this research, especially involving a youth and young adult population.

Informed consent is located as central to ethical practice in social science research (BERA, 2024; Brookes et al., 2014; Heath et al., 2007). I was acutely aware that many of the introductions to students were coming through those acting as gatekeepers such as teachers and support staff at The Aspire Institute. As such, I paid particular attention to possible power imbalances and inadvertent pressures to participate that might arise due to the student participants' subordinated position in the teacher/student hierarchy. Everyone taking part was over the age of 16 and could provide informed consent without needing parental approval (Brookes et al., 2014; Heath et al., 2007). Part of gaining informed consent included, making sure participants were aware of what was expected of them, which would be to take part in an interview with me. Informed consent, however, also means that participation is voluntary and, as such, the ability for participants to decline or withdraw is essential (Brookes et al., 2014). To ensure these principles were upheld in this research, I clearly communicated that taking part in the research would have no impact on their course nor would their tutor or other staff be made aware if they did (or did not) decide to participate. After an initial discussion, one student declined to participate – this gave me reassurance that I was giving clear information, and that consent was being obtained voluntarily for those who ultimately did take part in the research.

[4] Approved 25/1/2022 AREA 21-068

Information sheets were given in good time before any interviews, and verbal consent was obtained at the start of interviews from all participants (see Appendix D). Having outlined information about the research verbally, the information sheets included written information about participants' right to withdraw, the risk of any potential harm and the process of data storage. Webster et al. (2014) address the complexities in assuring full anonymity and this requires an ongoing process whereby the researcher honours the trust of participants. Identifying data such as school names and the names of peers was removed or anonymised (Webster et al., 2014). Participants were aware that the college that served as the base for the fieldwork was going to be referred to as 'The Aspire Institute'. All participant data was anonymised during transcription and stored securely in my University of Leeds OneDrive folders.

I undertake full safeguarding training every year as part of my job role and, as such, I am aware of safeguarding processes pertaining to The Aspire Institute and research more broadly. In researching people under the age of 18, assurances of confidentiality can be complex (Goredema – Braid, 2010). As I evidence in my verbal consent statements (Appendix D), the young women were made aware that confidentiality would be waived in the case of any disclosure of risks of harm to themselves or others pursuant to safeguarding procedures in education. A crucial moment during the fieldwork data collection was when a young woman disclosed a serious safeguarding concern prompting quick and responsive action from myself. This situation perhaps foregrounded my insider/outsider position like no other during the fieldwork. This experience resonates with arguments that in youth research, ethics require the research and researcher to take a much more situated approach, in which importance is placed on 'making judgements based on the specifics of the given context' (Te Riele and Brooks, 2013:423). With the participants' awareness and support, the disclosure was reported to the relevant safeguarding officer. At their request, I followed up on the outcome of this by keeping in touch with the participant. I agreed with the participant that the data detailing this would be removed from her transcript, given the scope of the study, but that I would reflect on the disclosure in the writing up of the thesis. The participant expressed her relief at having made the disclosure as before our meeting she had not felt able to do so. It was of course a difficult and challenging

experience. I felt a sense of privilege that the young woman trusted me, and I could help by reporting what she felt unable to. There were some other moments that, whilst not strictly safeguarding related, were important for me morally as someone working in education. This included one participant talking about how she found processing words difficult and could not always keep up in classes. After a discussion with her following the interview, I acted on generating a referral for dyslexia screening. These were important ethical and moral moments and found these particularly related to my insider status.

3.8 The supplementary interviews: college staff and local labour market informants

In this final section, I provide an overview of the process of data collection including labour market informants and college staff. These interviews focused more on the processes and context of The Aspire Institute, particular programmes taught at the college and labour market insights. An exploration of choices made at an individual level link to broader social and labour contexts (Irwin, 2005). This is particularly salient to this research given the clear trajectories of VET to jobs and labour market sectors. A key concern for this research was to situate individual choices as entangled with wider processes in the college and local labour markets (Archer and Leathwood, 2003; Irwin, 2005). These interviews were intended to build context and background to the practices and processes that surround the young women's educational choices and experiences. As such, these interviews and accounts are not as prevalent in the analytical chapters. However, just because these accounts feature less than those of the young women, does not mean these did not add vital knowledge and context to my understanding of their respective sectors and practices of teaching and student engagement.

These participants acted as contextual and supplementary interviews. As I had planned, I began the fieldwork by conducting interviews with college staff. This plan was twofold; firstly, to orient myself in the 'real world' context of further education and, secondly, these staff were key in connecting me with young women

to interview as well as signposting me to employers in the local area. By giving staff insights into the research early in the fieldwork, I was also aiming to make them feel comfortable with asking their students about participating and gaining staff investment. These were employers that had potentially either had input into elements of curriculum design or were simply related to the fields of interest in this study. Including members of The Aspire Institute teaching staff from programmes of interest was an important design choice in this study as they were poised to give insights into college contexts (Thurtle et al., 1998; Ward, 2018). The inclusion of careers advisors gave pertinent context to The Aspire Institute environment and structure. These interviews developed my own knowledge of the relevant sectors but also presented important insights from which claims can be made about what these social actors within a college setting believe is happening compared with what the young women I interviewed *actually* experience. These insights have been significant in shaping recommendations for the further education sector resulting from this research, outlined in Chapter 7. A total of 5 college staff and 5 labour market informants were interviewed, see Tables 5 and 6 below:

Table 5 Participants from The Aspire Institute

Participant Pseudonym	**Job role**
Ben	Curriculum Lead Construction
Mark	Engineering Tutor
Georgie	Engineering/ Fabrication and Welding Tutor
Vicky	Skills and employability trainer for engineering students
Kim	Primary and Secondary Schools Liaison Officer

Table 6 Participants from relevant labour market sectors

Participant Pseudonym	**Job role/ description**
Maxine	Lead for gender diversifying initiatives in STEM and related fields
Emma	National renewables company executive with an interest in the Humber region
Jo	Offshore energy company (Global company with significant regional presence)
Sarah	Renewable energy product manufacturer
Laura	Oil refinery engineer

The college staff interviewed were selected using a convenience and purposive sampling approach (Patton, 2002). This meant drawing from the college staff teams and identifying the members of teaching staff associated with the subjects of interest for this research who are 'information rich' within the context of this research (Patton, 2002). The two gatekeepers from The Aspire Institute - the Principal and CEO – permitted staff members to be involved in the research. Staff were aware of this approval and support but importantly consent to participate remained fully within the autonomy of the staff themselves. These interviews focused on contextualising the institutional setting, including recruitment initiatives, employment opportunity advice and guidance and teachers and staff understandings and experiences of young girls following an atypically gendered pathway.

Some staff members were emailed directly either through gatekeepers sharing details or through signposting from other colleagues. In this respect, my insider position was advantageous as part of what Greene (2014) describes as 'interaction' and knowing how to approach individuals. This was especially beneficial for both setting up and conducting interviews with teachers and staff of The Aspire Institute. According to Greene (2014), researchers with an 'insider' position have already overcome a significant barrier to building trust and rapport.. I was, in this sense, an accepted member of their community through our shared employer (Dwyer and Buckle, 2009). Although I did not personally know any of the staff I interviewed before fieldwork commenced, the introduction through a gatekeeper or other mutual colleagues established a trust that I may not have had if I was an outside researcher.

Sampling for the group of labour market informants was also purposive as these participants were linked to the VET courses of interest within this study. These participants also come as the result of signposting and sometimes introductions from college teams. I would email the contacts I had been given to introduce myself and the research I was conducting. Two participants, however, came as a result of my own online searches for women in STEM events and the organiser of these. I contacted the company involved via email and received a response that they would be keen to support the research however they could, including the main organiser participating in an interview. The accounts of those outside the college and involved in the local labour market were included to offer context on the 'outsiders' view of both the college and the young people coming through its training and learning processes, and what labour markets look like for recruiters in the face of evident skills gaps and evolving VET policy.

The interviews with college staff and labour market informants were oriented towards participants' understandings of processes in The Aspire Institute including recruitment practices and classroom contexts. I devised interview schedules for these participants (see Appendix B and C respectively) covering core areas of exploration that were designed with my research questions in mind. These semi-structured interviews also followed a flexible format, allowing the dialogue to flow whilst keeping aligned with the purpose of the interview (Mason, 2018).

I commenced the process of fieldwork by carrying out interviews with two of The Aspire Institute staff. Firstly, the engineering support staff member and then the Aspire Institute's school's liaison officer. The rest of the interviews were concurrent with student interviews throughout the fieldwork process. As with the young women I interviewed, each participant in this group was emailed the research information sheet prior to the interview taking place and consent was verbally obtained at the start of every interview. The interviews were voice recorded. Three interviews with labour market informants took place online. The remaining interviews took place at The Aspire Institute. Though there can be epistemological and ontological properties to online interviewing (Mason, 2018), in this instance it was only used as a practical solution to their busy schedules. Given that the Covid-19 pandemic rapidly accelerated the use of virtual spaces for meetings of both a formal and informal nature, this context was not especially extraordinary for any of the participants, though I did remain aware that the use of technology required knowledge of navigating this (Mason, 2018). These interviews ranged from between 60-90 minutes. It was unsurprising, given the age and professional status of the participants, that these interviews involved far less direct questioning and were more focused on prompting areas for them to talk about.

To address issues of anonymity, The Aspire Institute staff were assigned pseudonyms. They were made aware their overall job role would be included in any description of them. The labour market informants were also assigned pseudonyms and were made aware that their company would not be referred to by name, but their job role and overall context of their industry would be where it was relevant to do so.

Interestingly, there were parts of some of these interviews where the participants asked me questions. Across the labour market informants, there was a sense of a genuine interest in this research and ultimately what I could reveal about the issues of gendered participation. Where this was appropriate, this became a discussion and a 'balance between talking and listening' (Mason, 2018:126). This evokes quite clearly Webb and Webb's (1932) notion that this was a 'conversation with a

purpose'. In two instances, I have since met with the participants to observe initiatives in their field and how the findings from this thesis could possibly assist. I return to this point in the conclusion of the thesis in Chapter 7 as this has been important in shaping future avenues and initiatives that have arisen as a result of this study.

3.9 Conclusion

The design of this research was guided by the literature and the theoretical underpinnings of this research set out in Chapter 2. This chapter has set out the design and methodological approach to the research. A qualitative interview-based approach emphasises understanding of the subjective meanings and social constructions of the participants' realities. Semi-structured interviews with different groups of participants were a valuable means of exploring the practices and processes when young women follow male-dominated routes. A small comparative group was included to give depth to the analytic foci of the research. By using semi-structured interviews, I engaged with the research in an iterative and flexible way, guided by a core thread of questions and themes that meant I was able to engage with my participants effectively and in ways that meant I could uncover crucial insights into past and current contexts, as well as expectations for the future. Through the inclusion of those working at The Aspire Institute and from labour market sectors of interest to the study, I was able to build important context to the young women's accounts. Remaining aware of ethical and moral issues throughout the research process was essential. This was especially pertinent given the insider/outsider space I navigated during the research and reflecting on this position throughout the process ensured an ethically sound, strategically considered approach to data collection. Using thematic analysis to analyse the data generated from interviews was part of a robust framework to identify themes and patterns in the data and in the context of the research questions and the findings that I present in the subsequent chapters. I now move to presenting the analytical chapters of the thesis.

Chapter 4. Home life, the family and growing up

4.1 Introduction

Extant literature has long understood parents and the home to be an important mechanism and site of influence, shaping gender ideologies and impacting the later educational and career pathways of young people (Archer et al., 2014; Carroll, 2023; Chesters, 2021; Primeau, 2000). Influences relating to later educational and employment possibilities within the home can take many forms, whether based on parental occupational role modelling, emotional and practical support or skills development (Barnes et al., 2021). These can shape what makes different educational pathways feel possible and realistic for young people (Barnes et al., 2021; Carroll, 2023; Jacobs et al., 2017). For these reasons, the home context is a crucial piece of the puzzle in understanding young women's chosen education and career pathways. This is particularly important when these choices either confirm or disrupt trends in education and employment that fall into highly gendered categories. This opening analysis chapter is an exploration of the young women's home lives, including the family and the practices and processes they experienced growing up.

As I detailed in Chapter 3, through the analysis of interview data and synthesising existing literature I propose a conceptual framework for understanding choice-making that I apply to explore and explain choice-making throughout the analytical chapters of this thesis. Hodkinson and Sparkes's (1997, 2009) work is highly valuable in pointing to the importance of the individual as socially situated and influenced, yet the aggregated construction of pragmatic rationality and careership may obscure the more specific processes and unique contributions of different social domains in enabling choices that are contrary to gendered trends. Synthesising this literature, and in recognition of concerns about overstating agentic action, I propose an examination of choice-making in highly gendered contexts can be understood through the lens of choices as *visible, plausible,* and *viable*. That is; Visible - *can I see it?* Knowledge of different careers and information about possible qualifications and occupations through for example, careers advice or knowledge exchanges in the home. Plausible - *is this for me?* Qualifications and employment sectors need to be compatible with constructions of gender implicating the

formation of the habitus in and across different contexts. Viable – *do I have the skills to do this*? The young women perceive they have the appropriate skills and abilities to follow this pathway.

Through framing the practices and processes about what makes different pathways, *visible, plausible* and *viable* I explain the structural arrangements and individual dispositions involved in the young women's choice-making processes. More effectively, I demonstrate how, when layered and synthesised, taking choices as visible, plausible and viable deepens our understanding of choice-making. This approach also examines the relevance of different social domains and influential social actors. In presenting the layering effect of choice-making in this way, I aim to avoid making simplistic claims as to why girls do *no*t follow male-dominated routes in favour of highlighting the complexities and nuances of social and cultural practices that have enabled choices outside normative gendered trends. To expand how this approach is operationalised in this research:

- *Visible*; a qualification, course or career that is within the view of possibility, often enabled through formal and informal knowledge exchanges within culturally embedded contexts of home and school. Courses of action are taken and can be influenced by awareness of labour market opportunity.

- *Plausible*; a qualification or course of action is compatible and appropriate within their own gendered frames of reference. Gendered values and dispositions, or the habitus, align with the gendered occupational context.

- *Viable*; the young women feel able, through their perceived abilities and skills to follow a certain pathway or qualification. The viability of careers also relates to social actors such as teachers and parents in aligning skills to career and post-16 outcomes through the accrual of forms of social and cultural capital.

This framework allows for a nuanced and more processual exploration of highly gendered choices that remain attuned to the influence of past contexts within current choices, as well as examining influential structural arrangements and social actors. This framework will be applied in the analytical chapters as a tool to explain the data

in this study and offer clear insights into the wider processes of gender, choice-making and experiences in education. Through this lens, I seek to offer a novel perspective on choices that represent the exception but also expand our understanding of gender within wider social processes. The value in this approach is that it recognises the influences of highly gendered contexts on choice-making, including how social actors and structural arrangements shape possible courses of action.

I apply these three concepts throughout this chapter as a key part of this research towards understanding more about the choices of women who follow male-dominated vocational qualifications. The chapter contributes to understanding the role of family and how processes in the home shape the visibility, plausibility and viability of male-dominated qualifications. As I will go on to demonstrate in Chapters 5 and 6, visibility, plausibility and viability are also highly relevant in expanding our understanding of the role of schools and colleges in young women's post-16 choices. This conceptual framework is also applied to the accounts of the home life of some of the young women who followed more typically gendered qualifications. By doing this I demonstrate the divergent experiences and processes from home contexts that shape choices to highly follow gender-segregated educational and occupational pathways, offering a more comprehensive and processual account of choice-making in gendered contexts.

Presenting the accounts of women undertaking male-dominated qualifications and those on more gender-typical pathways enables me to tease out the comparative and divergent home contexts that fostered a culture that enabled young women to circumvent traditional gender norms and the choice for the young women to pursue male-dominated pathways. This is not to say young women would have chosen an alternative and possibly male-dominated pathway, but rather I argue how the visibility, plausibility and viability of their chosen qualification was, in part, related to how home contexts predisposed these young women to have chosen a normatively gendered route.

This chapter foregrounds the importance of home environments in the absence of patterns of parental occupational role modelling, and the value of informal exchanges of traditionally gendered skills. This is related to how fathers, in particular, imbue

young women skills that act as meaningful forms of cultural capital. Viable possibilities are shaped through exposure to practices in the home that are typically reserved for boys. I will also argue that tinkering with tools and participating in hobbies that have long been associated with boys predisposes young women to educational choices outside normative gendered conventions through fostering a trades and vocational habitus (Carroll, 2023; Lehmann and Taylor, 2015).

The habitus creates dispositions to understand the world, and hence shapes actions to behave, in certain ways (Reay, 2004). Hodkinson and Sparkes (1997: 33) have explained habitus as encapsulating 'the ways in which a person's beliefs, ideas and preferences are individually subjective but also influenced by the objective social networks and cultural traditions in which that person lives'. Through informal exchanges of practical skills associated with boys, young women can be oriented towards following male-dominated, practical pathways, echoing with a sense of a manual trades' habitus (Lehmann and Taylor, 2015). Exposures in the home to less gender normative conventions, through informal exchanges of knowledge and values, is a significant factor in making male-dominated qualifications plausible for young women as they see these careers as compatible with a habitus less structured by rigidly defined gendered norms.

As I will also demonstrate in this chapter, a 'trades' habitus can be conceptualised as being concerned with dispositions and skills operating as forms of cultural capital that are deployable across different practically focused qualifications within masculine spaces. This can also align young women to careers in engineering, which is important in challenging preconceptions of engineering as a rigidly academic subject (Lakin et al., 2020). This also demonstrates the importance of the overlapping and iterative nature of the viable and plausible framing of choice-making in this thesis.

How young women perceive their parents' encouragement and engagement in their educational and career choices is discussed. This highlights divergences in parental motivations for those on engineering and lower-level trades-related construction courses. Those following brickwork and other trades foregrounded their parents' encouragement towards a qualification that brought them enjoyment and happiness.

Conversely, the parents of those following engineering and higher-level construction qualifications suggested their parents prioritised their financial security and high earning potential. Parental pride, however, is an overarching theme to all those on male-dominated routes. Even if the qualification was at the same 'level', qualifications in hair and beauty are framed as easy or less favourable to heavily male-dominated equivalent level qualifications. However, as this chapter demonstrates, skills, hobbies and interests, even when practised by young women, can often remain inextricably connected to a normative gender binary.

4.2 Overviews of the family contexts

Table 7 below briefly summarises the current pathway and noted hobbies and interests of the young women featured in this chapter. The occupations of their parents are also included. The information presented in this table was taken from interview data and illustrates some important patterns that are introduced here and then discussed where relevant throughout this chapter. All the young women from gender-typical pathways lived in two-parent families, with parents whose occupations or roles in the home largely conform to normative gendered patterns. Apart from three participants, the young women from construction and engineering routes were from two-parent homes[5] with no examples of parents that work in occupations or have roles in the home that are contrary to gendered trends. Across the 17 young women from trades and engineering pathways, there are 5 with fathers who work in jobs relating to trades, engineering or a form of skilled labour. The contextual information presented here relates to literature that places importance on the role of parents in the home in constructing a gendered identity that can shape how young people judge what is appropriate for education and employment routes (Archer et al., 2018; Davis and Greenstein, 2009). Thus, practices and processes within the home, including distribution of domestic labour, parent's occupations and exchanges of knowledge and skills, can have a profound impact on a young person's choices and attainment (Carroll, 2023; Desforges and Abouchaar, 2003; Jacobs et al., 2017; Polavieja and Platt 2014; Van der Vlueten et al., 2018). This is highly relevant to

[5] Some of the fathers here are stepfathers, they have only been included in this table if they are living with and present in the young women's life.

research that is concerned with understanding how, why and in what contexts certain choices are made relating to education and employment trends. As such, the remarks of Francis et al. (2003: 438) who posit 'job choice and subject preference illustrate how preferences are not simply individualised choices, but are socially embedded, and therefore remain circumscribed by structures such as gender…' further illuminate the importance of understanding gender within individual contexts as socially constituted arrangements.

If then, school subject and educational preference are circumscribed by gender through associated normative gendered ideologies, how gendered practices and values are shaped in the home context is a crucial piece of the puzzle presented in this thesis. In the following discussion I address the relationships between home environments and the shaping of the young women's values, predispositions, and tendencies towards (and away from) certain educational and employment practices. Following the table presented below, I turn to explore the young women's accounts and start by outlining the ways the young women reflected on their home contexts and experiences growing up. From this I demonstrate how the foundations for the visibility, viability and plausibility of the young women's chosen qualifications are laid out and shaped within the home context.

Table 7 Family Contexts

Participant	Course Of Study	Mothers' Occupation	Fathers' Occupation	Notable Hobbies and Interests
Leah	Childcare	Childcare	IT	Helping mum at nursery/ online gaming and streaming
Emily	Childcare	Stay at home parent	Farmer	Helping on the farm driving tractors, helping with new-born animals
Maisie	Hair/Beauty	Unemployed	Refuse collector	Makeup
Poppy	Beauty	Long-term sick leave	Painter and decorator	Skincare
Ruby	Beauty	Stay at home parent	Factory owner	Skincare/makeup
	Construction			
Abi	Construction Management	Teaching assistant	Offshore on the Rigs	Watching 'Grand Designs'
Elena	Brickwork	Hair/beauty	Absent	Building Lego
Libby	Construction Management	Retail assistant	Site caretaker/handyman	Martial arts
Molly	Construction Management	Admin assistant	Mechanic	
Sam	Brickwork	Admin assistant	Absent	
Sophie	Plumbing	Ice-skating teacher	Plumbing company owner	Motorbikes and rock concerts

Beth	Brickwork	Stay at home parent	DJ	Building with Dad, notably a squirrel enclosure and aviary
	Engineering			
Bella	Engineering	Retail assistant	Maintenance engineer	
Ella	Engineering	Retail assistant	Stepdad – Packaging factory	
Eve	Engineering	Unemployed	Absent	RAF cadets
Lucie	Fabrication And Welding	Retail assistant	Depot manager	Rugby
Martha	Engineering	Cleaner	Police Officer	Building jumps for the horses with dad
Paige	Engineering	Waitress	Grandad - mechanic	
Tyla	Engineering	Long-term sick leave	Truck driver	Woodwork

4.3 The foundations of visible, plausible and viable career possibilities

The notion of what is natural and a sense of 'always wanting' to do something was apparent across a significant number of interviews and was not unique to any group of participants, including those studying engineering, construction, or gender-typical qualifications. To start, To start I will demonstrate these shared patterns of meaning identified in this study between all the young women relating to a sense of naturalness in what they felt they had 'always wanted to do'. The habitus cultivated within the home shaped the plausibility towards undertaking either a male-dominated qualification or gender-typical qualification for different young women. Following this section, I also discuss further similarities across participants through their sense of a practical orientation and having 'hands-on' skills. From this I argue what makes male-dominated routes a possibility when home processes are part of unbinding women from normative gendered conventions.

Sophie, a plumbing apprentice explained her sense of always wanting to do the qualification she was undertaking:

> *It's what I've always, I've always kind of wanted to do in life. I've always been really interested in it. So it just feels natural to me doing this rather than something else.* ***(Sophie, Plumbing apprentice)***

Evoking their past self and earlier life experiences forms a crucial element of the young women's accounts when thinking through their journey to their current context. This was also a feature of young women from more gender-typical pathways. For example, Ruby, a beauty therapy student, had a strong sense of her own dispositions, dismissing other options at college. Another beauty therapy student, Poppy, recalled 'always' loving beauty therapy:

> *I know what I want to do. I always knew when I was little I wanted to work in a salon. And my mum was like, 'Are you sure? You can like try other stuff'. I'm just like, yeah.* ***(Ruby, Beauty Therapy)***

> *I guess, you know, I've kind of always loved to do Beauty Therapy stuff and stuff like that.* ***(Poppy, Beauty Therapy)***

The perspectives shared by Ruby and Poppy indicate that their current context is deeply rooted in their longstanding desire to pursue beauty therapy. The construction of always 'knowing' in their responses illuminates both the long-term visibility of a career that is also aligned to a plausible possibility within their own gendered perceptions. Ruby's parents, particularly her mother, encouraged her to consider alternatives but the pathway Ruby chose was linked to a sense of what she felt came naturally and linked her past contexts to her current choices. Within the shaping of the habitus 'one cannot move simply and mechanically from knowledge of the conditions of production to knowledge of the products…' (Bourdieu, 1990b: 87). In other words, as Ruby's account suggests, even with the possibility of alternative action suggested by her mother, Ruby's experiences and reflections of what she enjoyed growing up shaped predispositions and an orientation towards a specific area in education and employment. An expected and visible trajectory embeds the interests and predispositions of the young women into their post-16 choices.

Tracing past contexts to their current qualifications and future employment trajectories illuminates patterns of familiar interests rooted within the home that make visible and shape plausible and viable later educational and career choices. This was echoed across participants irrespective of their chosen post-16 qualification. This familiarity and individual expectation of their trajectory were recalled within highly gendered framings and shaped by wider socialisation practices. This is where patterns of divergence emerge between those on male-dominated and more gender-normative pathways. The foundations laid within home contexts shape choices that are less bounded by normative gendered assumptions. Whilst a sense of the habitus embedded within past interests is implicated with the majority of participants' current choices, how this relates to gendered choices is highly relevant to the practices in the home that either conform to or disrupt gendered practices.

The notion of a trades related habitus within Lehmann and Taylor's (2015) work is highly relevant here as a concept towards understanding how the plausibility of choosing male-dominated pathways is shaped from home contexts but can be

extended further by this study through applying this conceptualisation outside of trades qualifications. These findings can be situated alongside other works that have usefully considered Lehmann and Taylor's work into understanding habitus, and a trades related habitus more broadly, in other, male-dominated sectors and occupations. For example, Altreiter's (2020) exploration of orientations towards apprenticeships rather than further education pathways across classed contexts. Altreiter locates the orientations of young women in engineering sectors within the contexts of a practically focused, hands-on (trades) habitus that enables the possibility of a career in engineering. Echoing these works, I find that a familiarity with trades and associated hobbies and tasks within the home, unbounded by normative gendered frameworks, can provide women with a greater sense of being able to plausibly follow male-associated pathways (Altreiter, 2020; Lehamann and Taylor, 2015; Swan et al., 2021). The orientation towards gendered pathways can then be explained through an exposure to more traditionally 'masculine' hobbies and interests, which I address more specifically later in this chapter.

Engineering, unlike some construction-related qualifications routes, may marry greater connections between the academic, as a subject under the STEM umbrella, with the practical or vocational. These tensions are more greatly experienced and articulated by students through their educational contexts and are addressed in Chapter 5, but here it is important to acknowledge the practical engagement with being hands-on that was crucially identified in preceding choices to follow engineering that has been cited in other studies (Swan et al., 2020).

The ways young women in this study, from pathways including engineering and construction management, talked about an orientation towards practically focused and male-dominant sectors are represented in the following comments. These are from across different sectors and levels of study, shaping a commonality in a sense of naturalness for entering a career dominated by men:

> *Whenever I tell anybody about this, they think it's so strange. I've always wanted to go into architecture.* ***(Abi, Construction Management)***

When I was choosing my options, I definitely knew that I wanted to do engineering, even in college. I knew in year nine. ***(Paige, Engineering)***

…it's just brickwork and I guess I always wanted to do it. ***(Beth, Brickwork)***

Illustrated here are how the young women following male-dominated routes expressed a naturalness for them to have followed their chosen pathway through of sense of 'always wanting to do something'. The notion of the 'possible self' was embedded within past contexts that served to shape a more specific trades habitus (Lehmann and Taylor, 2015; Swan et al., 2021; Taylor et al., 2015). The young women from male-dominated pathways were not unaware of the perception of others, that their presence or interest in these subjects/pathways was 'unnatural', or, as Abi notes above, 'strange'. I will address this in greater depth in Chapter 6. For now, I draw attention to the articulation of the construction of a habitus, shaping the plausibility of a male-dominated route.

Fundamental and overarching patterns across participants are evident through how the visibility of possible careers is further made plausible through the individual dispositions of the habitus related to home processes. A sense of naturalness amongst the majority of the young women indicates following a 'pragmatically rational' trajectory in education and employment (Hodkinson and Sparkes, 1997). Along with this, a sense of an inevitability in their orientation towards certain educational pathways, these contexts need situating within the social contexts in which they occurred as 'dispositions are inevitably reflective of the social context in which they were acquired' (Reay, 204:435). It is important, therefore, to understand more about the young women's home contexts by examining the processes and practices that shaped the perceptions of appropriate and plausible pathways for the young women. Given their educational choices and outcomes were highly divergent in gendered terms, the rest of the chapter attends to demonstrating the patterns of difference in the home contexts and early experiences of the young women. These contexts illuminate the important home contexts that made male-dominated routes plausible and viable for some, and implausible for others.

4.4 The role and influence of parents

Young people experience and are exposed to several influences growing up that shape and act to (re)structure the habitus; enabling 'transformative and constraining courses of action' (Reay, 2004:433). Literature often places emphasis on more gender-specific connections between fathers and sons, and mothers and daughters (e.g. Jacobs et al., 2017). Literature has also indicated that mothers in employment, as opposed to a 'stay at home carer' (Chesters, 2023), and mothers having less time out of the labour force are associated with young people holding less gender traditional attitudes (Platt and Polavieja, 2016). This can more specifically impact daughters, especially where fathers hold less rigid gender ideals in the home (Jacobs et al., 2017).

A discussion concerning the influence of parents does, by its nature, infer the role of parents as active, involved and salient in the lives of young people. Across literature, when the narratives and accounts of parents themselves are foregrounded, there is a consensus that parents are engaged and interested in their children's education and employment trajectories, acknowledging however that there are different levels and varying mechanisms of involvement across different contexts (Barnes, 2020; Desforges and Abouchaar, 2003; Devine, 2004; Irwin and Elley, 2013). In the following section I outline the young women's perspectives on their parents' role in shaping their potential career options, particularly through discussion about post-16 educational choices.

Understanding the form of their parent's discussions relating to their later education and employment from the young women's perspectives is an important element of developing an explaining how and why young women embody and enact certain values relating to their educational orientations. The following section highlights the significance of positive conversations with parents with male-dominated qualifications. This also reveals how young women following different male-dominated paths articulate what was important to their parents about their education and career choices. For example, engineering students felt financial gain was a priority for their parents, and those on trades routes felt enjoyment and happiness was more important. Common to all the young women is that following male-dominated

routes evoked a sense of pride from their parents that is directly related to their disruption of gendered trends. In this sense, the parents frame the importance of their gender as transcending level and type of qualification. Further highlighting the value of positive parent engagement in atypical choices, I will show next that gender-conforming girls recounted parental disinterest in contrast to girls on atypical pathways where parents expressed pride.

It was a common pattern amongst the young women from typically female qualifications for them to articulate a sense of their parents being disinterested and disengaged with their future educational and occupational trajectories. On the surface, young women who followed highly gendered pathways of childcare and hair and beauty suggested they felt their parents were almost ambivalent about their post-16 choices. Choosing *something* was more important than *what* they chose. In essence, parents were prioritising outcomes vis-a-vis employment rather than a particular pathway to that outcome. Poppy, a beauty therapy student, recalled thinking about discussing career options with her parents when she was younger:

> *I can't really remember much from my parents. I don't really remember many conversations about that, to be honest.* ***(Poppy, Beauty Therapy)***

Similarly, Maisie, a hair and beauty student, reflects on how she perceived her father's interest in discussing education and career options:

> ***Maisie:*** *My dad is just like, whatever. He still supports me and everything, he wants me to go to college and stuff though.*
>
> ***Int:*** *So, your dad, do you think he is less interested?*
>
> ***Maisie****: Yeh*
>
> ***Int:*** *Why?*
>
> ***Maisie****: Perhaps didn't matter what it was.*

Ruby, a beauty student, also noted she felt her parents were 'probably happy' with what she was doing at college, qualifying this by saying 'as long as I'm working'. A significant body of research demonstrates that parents are, broadly speaking, interested and invested in their children's futures (Irwin and Elley, 2013; Reay, 2005; Vincent and Ball, 2007; Jacobs et al., 2017; Lareau, 2018). The accounts of Poppy and Maisie suggest they perceived ambivalence, indifference, and lack of interest from their parents regarding the possibilities of later education and employment. For these young women, they ultimately followed a path in education that conformed to normative gendered trends and was aligned to predispositions evident through their hobbies growing up. Ruby and Poppy both talked about activities they enjoyed growing up. Their responses and reflections exemplify the link between normatively gendered interests that connect past contexts to current circumstances. Early engagement in gendered practices and hobbies encouraged and supported by family members meant that dispositions were shaped, and foundations were laid in the home context. Poppy and Ruby both had parents in normatively gendered roles, including stay-at-home mothers who had been out of the workforce for a number of years:

> *I used to go to Nan's house quite often. And we just used to do arts and crafts and stuff, she would get us really cute girly stuff for our hair and nails, I guess. So, I think that's mainly why I chose it [beauty therapy]. I used to have a little summer house in my backyard and my friends used to put like makeup, and give them facials, from when I was like five I would love to do like my family's nails and stuff and do their makeup. So I just enjoyed it from when I was little.* ***(Ruby, Beauty Therapy)***

> *When I started to grow up a little bit, maybe around 13 I was really into skincare. And I used to do like massages on my friends and stuff. So, I guess, you know, I've kind of always loved to do Beauty Therapy stuff and stuff like that.* ***(Poppy, Beauty Therapy)***

The young women's childhood hobbies, interests and parents' occupations shaped 'forms of dispositions' (Bourdieu, 1990a) that reinforced a pattern of expected outcomes and so made possibly rendered conversations about future careers redundant. From these accounts I suggest it was not ambivalence or disinterest the

young women experienced, but rather the quietness of the normative nature of their choice. Of course, a perception from the young women that their parents were less engaged in discussing possible education and occupational trajectories that are generally within expected and normative terms cannot be claimed to be unique to girls or an issue of gender as such. However, this does underpin important understandings that are demonstrated later in this chapter in how young women who *did* follow routes to male-dominated sectors place significant importance on their parents in being actively engaged in making such a pathway both visible and plausible.

When non-traditionally gendered qualifications and careers were discussed by the young women following gender-typical routes, there was a range of perceived parental and familial responses and views. The following account from Emily, a childcare student, about her enjoyment and aspiration to work on the family farm, reflects a bounded gender framework created by her parents in which her choices became constrained. Emily's father was a farmer, and her mother was a stay-at-home parent who worked with disabled children in her free time. The possibility of a career that disrupted normative gendered assumptions was rendered an implausible course of action:

> ***Emily**: I enjoy being with the cows, being on a tractor, doing anything, anything on the farm.*
>
> ***Int:** Does your dad like you helping?*
>
> ***Emily:** He enjoys me helping with the calves. Feeding them , looking after the sick ones and stuff like that. I think it's because, the person that we have that feeds them is old, and he doesn't do it properly anymore. So, I sort of researched everything, made notes, knew what to do, looked at everything, looked at the cost. And I was just like, okay, I want to do this. Give me a chance to prove that I can look after these. So, I suppose that's how it, I showed a real interest in it, and showed him that I was interested and wanted*

to do it… he knows I love it. He knows I enjoy it. He's just very against the idea of me doing it.

Int: *Why?*

Emily: *I think driving tractors doing anything that's more male based. Because my granddad, had the farm before, and he's very old school with like, no women should be working on a farm. Things like that. Not just on a farm just in general [about women]. So I think dad's sort of got that in him a bit.*

Structured perceptions of appropriately gendered and thus plausible career and educational pathways are foregrounded in Emily's reflections. Emily's account is also interesting as it reflects her father's views as a much more overt, in her words, 'old school' take on gender roles than was common to hear from the other young women from highly female pathways. Whilst this strong gender stereotyped opinion was somewhat unique in its nature, it is worth considering the context of Emily's upbringing to contextualise a crucial difference in her experiences from other participants. This context also illuminates the factors that could have further constrained Emily, despite her expressing such a strong preference for a different pathway to the one she ultimately followed. She had aspired to work on the family farm and study agriculture, she recalled:

Emily: *I'd have loved to study agriculture…*

Int: *What did your dad say?*

Emily*: He said you don't want to be going into agriculture. You don't know anything about it. And you're doing childcare so stick with that.*

Emily came from a financially affluent family. Her parents paid for her and her two older siblings to attend boarding school. Neither of her parents had high levels of formal education. Emily's interview revealed how her extended family and 'friends of the family' either did not need to work due to long-established financial security or were 'business owners'. There was a great sense from Emily that her parents,

notably her father, had a greater amount of control over her educational and career choices than any other participant. In the context of family wealth, Emily recognised that money would never be a concern; her father prioritised more appropriately gendered outcomes over other factors. For Emily, this came in the form of her pursuing a qualification in childcare. The relative autonomy of Emily was constrained and as such she followed closely, albeit reluctantly, her parent's suggestions – working on the farm was considered by her father as 'male-based' and inappropriate for her to consider as a career option.

Parents' role in shaping perceptions of appropriate pathways for daughters was often more subtle and embedded in what young women felt their parents might think rather than overt resistance. Having described herself as 'creative', beauty therapy student Poppy and I talked about courses such as engineering and construction as routes to alternative careers that could use creative skills. This included her thinking about what her parents may have thought about her using creative skills in less obviously gendered pathways.

> **Int:** *So you said that you were quite into sort of creative things. Did you ever or did anyone ever talk to you about using those skills for engineering? Or brickwork for example?*
>
> ***Poppy**: No.*
>
> ***Int:** Do you think that you'd find that interesting?*
>
> ***Poppy**: Yeah. I think, you know, making new things or building things. That would be really good. Because, I mean, that is I feel like that is where the money is at. And I guess that's mainly like a course for boys, as well. As not many girls choose engineering and stuff like that, I don't know any.*
>
> ***Int:** What do you think your parents would have said if you'd gone back and gone, I'm going to do engineering or bricklaying or construction?*
>
> ***Poppy**: Maybe they would have thought that would be silly.*

Int: *Why do you think they'd've thought it was silly?*

Poppy*: Probably doesn't seem like something I should be doing. I should be doing it [beauty therapy].*

Int: *Should?*

Poppy: *Yeh I like beauty, and skincare and makeup so something like that would just not be for me*

The possibility of a career in engineering or construction, despite having considered that this could have been 'interesting' and potentially aligned with creative skills (e,g Lakin et al., 2021) was largely undermined by Poppy's perception that her parents would have considered this as 'silly'. Beauty therapy was the plausible choice. Poppy also identified the possibility of a career like engineering being a financially savvy choice of career (later during her interview Poppy also listed a high income as very important for her in her future career). Despite this, dominant notions of gendered compatibility with appropriate future employment, shaped by a family-influenced habitus renders a 'boys' course an implausible practice. Francis' (2002) argument that girls need to be informed concerning the current and developing patterns of job availability and skill shortage remains an important assertation within addressing gender segregation in different occupations. However, 'the fact that there are jobs for girls in engineering is irrelevant if a young woman does not perceive engineering as an appropriate career' (Hodkinson and Sparkes, 1997:35). Despite a correct[6] awareness of earning potential and recognising the potential use of creativity in engineering (Cropley, 2016), parental perceptions can concomitantly mean normative gendered pathways remain the most plausible and, in some instances, unspoken option. Of course, these are the accounts of the young women and not their parents directly, but it is the *perception* of the young women that is most relevant here. The culture, values and predispositions shaped within the home through parents and family contexts have a profound impact that even when they are not verbalised,

[6] UK Government figures show the average salary for beauty therapists is £23,400. The average salary for engineers and construction workers is £36,000 and £31,000 respectively.

normative gender conventions and orientations towards education and career are constructed and enacted.

Possibilities of choice are bounded and ultimately 'circumscribed by an internalized framework that makes some possibilities inconceivable, others improbable and a limited range acceptable' (Reay, 2004: 435). In the accounts I presented above, the young women ultimately followed a path that was proximally role-modelled, namely through familial figures and, not least, mothers. Emily's mother ran a riding school for disabled children in her spare time; Poppy talked of a family friend who owns a beauty salon. In this sense, career possibilities and choices are made within 'horizons for actions'; 'habitus and the opportunity structures of the labour market both influence horizons for action and are inter-related, for perceptions of what might be available and appropriate affect decisions, and opportunities are simultaneously subjective and objective' (Hodkinson and Sparkes, 1997:34). Drawing on proximate reference points to shape objectively viable and subjectively plausible career possibilities in line with young women's perceived skills and attributes is related to processes within the home context. The alignment of skills and attributes to appropriate careers options expands our understanding of proximate reference points as also influenced by parents' perceptions of their daughter's innate (and highly gendered) strengths and skills.

For young women from male-dominated trades routes, parents were likely to discuss their enjoyment and interest over factors such as earnings. Happiness was placed in the foreground of these conversations. Beth, another brickwork student, felt that her mum wanted her to do 'whatever she enjoyed and liked'. Elena also felt that her choice of pathway was, for her, a sense of what she would enjoy and make her happy:

> ***Elena:*** *She just kind of says, do what makes you happy? Is this the job you want to do?*
>
> ***Int:*** *What kinds of things do you talk about?*

> ***Elena:*** *It is mostly about what will make me happy – she is happy for me to choose whatever.*

Unlike the young women from more traditionally gendered routes, Elena's career possibilities were not circumscribed within a normatively gendered frame of reference. What would make her 'happy' and what she would enjoy were most important. Sam, a brickwork student who felt she was creative and arty, was also oriented towards opportunity structures unbounded by normative gendered patterns:

> *They [her mother and brother] said I can use art skills in bricklaying as well, like on decorative walls and that and I thought that would be interesting. So I started thinking about it. And then my granddad said he used to do some bricklaying and he used to really, really enjoy it.* ***(Sam, Brickwork)***

Being creative and having an enjoyment of the arts are strongly associated within gendered constructions as being inherently feminine (Francis 2000; Moote et al., 2020). As I presented earlier in this chapter, the young women from across all the different gendered qualifications had embedded their choices within a sense of what they felt was natural and authentic (Lehmann and Taylor, 2015). The data presented demonstrates the sense of how the habitus can enable the choice of certain pathways, and they suggest 'young apprentices with a family back-ground in trades and/or knowledge of the workplace culture of the trades are more likely to ... enter with a feel for the game' (Taylor et al., 2015:94). As an expansion of this, I suggest it is not just occupational role modelling and direct imitation that can foster these dispositions, but the sense of a 'feel' for the game, or habitus, cultivated through more informal exchanges and exposure to less gender conventional practices that also orientate young women towards gendered qualifications.

For example, when Sam was faced with limited advice from school, she found that support and encouragement from her family opened the possibility of incorporating creativity into the highly masculine sphere of brickwork. Values, skills and reference points from the home context interlink and overlap influencing perceptions of plausible and visible opportunities which shape processes of transformation, demonstrating the malleability and r(e)structuring of the habitus. Sam's account further illuminates how the 'habitus can provide conditions for the embodiment of

new dispositions' (Allen, 2014:764). Parental support, encouragement, and perceptions of parents (and grandparents) holding more gender liberal attitudes in the absence of role-modelling, can have a significant and profound impact in making pathways that deviate from gendered norms a possibility. This is a stark contrast to beauty student Poppy, who dismissed and discounted the possibility of using her creativity in a field such as engineering or construction. Sam's interview reveals that although she recalled her mother and grandfather's influence in a more temporally specific sense, the influences and values within her context had, for a long time, fostered a culture that did not conform to normative gender frameworks.

Liberal attitudes, parental support and vocalised encouragement were largely echoed across the accounts of young women from male-dominated routes. However, more specific patterns of divergence between trades and higher-level construction and engineering routes emerge, with parents viewing different elements of these careers as advantageous for their daughters. Students from engineering and higher-level construction qualifications considered their parents focused more on their academic skills and potential, often anchored against future earnings, than from trade-related pathways. This was exemplified by Bella, Izzy and Ella, all engineering students:

> *As soon as I talked to my mum about doing engineering, like in my family as well, they absolutely loved the idea. Money wise*. (***Izzy, Mechanical Engineering***)

> **Ella**: [*My mum] has got a strong view on me doing engineering. She wants me to do engineering... she was like, I do not want you to be like me. My mum was 16 when she was pregnant with me , she was I don't want you to end up where I am. Now. I don't want you to end up in a shop. Working like 8 in the morning till 2 in the afternoon when school finishes. She was like I don't want you to do that. I want you to do a good job and want you to have your own house. Want you to have your own car. I want you to do this…*
>
> ***Int:*** *And why does engineering get you those?*

Ella: *The money side.*

Everyone I speak to [in my family] says it's really good and that I should get into it because it's where the money's at. They think I'll make good money. ***(Bella, Engineering)***

Echoing other research, these examples reveal how young women express their parents' desire for them to do better than they did (Allen and Osgood, 2009; McLeod, 2013). These ambitions are constructed within the parents' own biographies, with patterns linked to economic potential and perception of labour market opportunity. Tyla and Ella described living in a context of quite significant material disadvantage. Ella's mother was a teenager when Ella was born and has subsequently worked a series of low-skilled, low-paid retail jobs. Tyla, Izzy and Ella placed particular value on home ownership with secure, well-paid employment being the means to achieve this. Lucie, an engineering student, specifically fabrication and welding, provides an example of how parents can construct a perception of appropriate routes based on potential earnings, coupled with a dismissal of qualifications perceived as 'lower level' or 'easier' that crucially are not bounded to normative gendered frameworks:

Lucie: *They said do anything but hair and beauty or bricklaying.*

Int: *Okay, why not hair and beauty and bricklaying?*

Lucie*: Because they are courses that you don't really need to do like your whole three years of college, you can do them on night courses and get your qualification in a year. So, they said that they'd rather just pay for me to do that if I wanted to do that. Maybe bricklaying, if you do want to do that as a course then obviously go for it, get an apprenticeship, whatever but they said hair and beauty, we know that you only want to do it just for like a side thing.*

Initially coupling bricklaying and hair and beauty together and later suggesting bricklaying could be acceptable via an apprenticeship, Lucie's recollections

demonstrate her parents' desire for her to 'do better' was not restricted within normative gendered frameworks. As such, the plausibility and viability of choices are not just evident in gendered terms but implicated in levels of qualification anchored against the perception of employment security and earning potential.

The possibility of male-dominated careers highlights a sense of family pride that is directly associated with careers that disrupt normative gendered patterns. The accounts I present in the following discussion relate to the young women thinking about how their parents and family feel about the course they ultimately chose. I present this data here as it illustrates how the attitudes of parents and the values enacted in the home demonstrate more liberal attitudes of parents that fostered the plausibility of male-dominated routes. A sense of pride was also directly contrasted with hairdressing and beauty therapy careers that were notably devalued by the young women's families. For example, Ella and Eve, both engineering students recalled:

> ***Int:*** *What did your friends and family think about you considering engineering?*
>
> ***Ella****: My nana especially is proud. They're proud. She's proud that I'm actually doing something that's going to benefit my life not hair and beauty like my sister…, and now she's working in care houses. I don't want you to do that. I want you to be successful. I want you to be the successful one in the family.*
>
> ***Int:*** *So what does your mum think about you doing engineering?*
>
> ***Eve:*** *She's proud?*
>
> ***Int:*** *Yeah?*
>
> ***Eve****: I like to think so, yeah. More so than if I've done hair and beauty. I think so.*

Int: *What do you think the difference is?*

Eve: *I don't know, but I think my mum saw hair and beauty is like an easy way out.*

The prevailing idea in these accounts is that their family's pride could have been different if they had followed a pathway more typically occupied by women, and so the defiance of gendered expectations is fostered and foregrounded from within home and family contexts. Eve and Ella were both on higher-level engineering courses so an evocation pride could relate to the greater academic prestige associated with these qualifications. However, pride was commonly related to the resistance of gendered norms alongside the possibility of a good career. Paige, an engineering student, recalled:

Int: *What did your mum think?*

Paig*e She's just, she was proud that I was actually doing something because she didn't go to university or anything. And she's obviously proud I'm doing like a male-dominated industry, or subject whatever.*

I think they [her mum and dad] are probably more proud of me because like there's obviously more barriers for a girl to be involved in engineering. They are very open minded though. ***(Charlie, Engineering****)*

Paige, on an engineering pathway, felt her mother's pride was not just concerned with the level of their qualification and potential academic attainment but also directly related this to her following a male-dominated pathway. Charlie also recognised her parents' pride at potential barriers she had (or would still have to) overcome as well as having 'open minded' parents. Family pride was a significant feature for other young women, even when they were following relatively low-level qualifications. For example, Elena, undertaking Level 1 Brickwork spoke of her mother's pride as being related to her defiance of gendered patterns:

Int: *So what do your friends and family think about the course that you chose?*

Elena: *They're pretty proud of me going onto this kind of course.*
Int: *What do you mean by this kind of course?*

Elena: … *they're proud because I'm on a course with more boys on it.*

A sense of parents' pride at their daughter's choice of pathway was felt in divergent ways, notably relating to potential income for those on engineering routes, or more simply relating to the disruption of gendered trends for those on trades routes. However, the common emphasis being on the very fact their daughter was considering entering a male-dominated sector was more significant of a factor than the level and type of qualification. This sense of parental pride in defying gendered expectations further speaks to the significance of parents holding more liberal attitudes towards gender roles. A feeling of their parent's pride was a palpable element of the way the young women considered how their parents felt about them following a male-dominated route and was a highly important factor in shaping the plausibility of the young women's trajectories.

This section has introduced the role of parents more broadly in terms of how career and educational possibilities are discussed and how parents of those on male-dominated routes may discuss different factors such as income or enjoyment of the subject. The overarching sense of parents and family pride points to the importance of home contexts that are less bounded to normative gendered frameworks and illustrate more liberal parental attitudes to gendered conventions in education and career pathways. Parental support also acts to engender greater confidence and, as a result, gender atypical qualifications become more plausible.

4.5 Hobbies, interests, and tinkering; informal exchanges of (gendered) skills and knowledge

This chapter has thus far discussed the role of parents more broadly in shaping perceptions of appropriate education and career pathways. The attitudes and values

of parents can shape the habitus of young women, acting to make gendered qualifications viable and plausible for *some*. Home experiences have so far highlighted a number of shared patterns between the young women irrespective of whether they are on a male-dominated course or a more gender-typical one. This is useful in demonstrating the importance of situating the young women's past home contexts as influential on their current choices. It also lays the foundations for understanding what this study has revealed about the home practices and processes that separate the young women who *do* go on to follow qualifications dominated by men. In this section I address this. The majority of the participants following engineering or construction qualifications did not have a parent working in a closely matched and related industry. There was just one example of matched occupational role-modelling where one participant had a father who owned a plumbing company and had gone on to undertake a plumbing apprenticeship. In the absence of patterns of occupational and proximate role modelling, the following section highlights how home contexts fostered the viability of male-dominated qualifications through the exchanges and acquisition of traditionally masculine forms of practical knowledge and skills.

Career and educational choices less constrained by gendered thought and practice can also be enabled through hobbies, tinkering and alternative forms of interaction in the home (Lehmann and Taylor, 2015; Swan et al., 2021). I also demonstrate here how the plausibility of such qualifications was inculcated through values unbounded by a normative gendered framework through which skills fostered and learnt in the home could later become important forms of cultural capital. However, this was not as straightforward as framing these as simply the young women accruing masculine forms of capital that were identified by Wulff et al. (2022). Skills, hobbies, and interests often remain complexly and inextricably caught up in gendered conventions. Even in families that disrupt normative patterns, tasks and hobbies remain coded in gendered terms, illuminating the importance of tinkering and hobbies that concurrently highlight wider pervasive gendered perceptions.

Lehamann and Taylor (2015) crucially argued that a familiarity and naturalness of working with 'tools' through observation and socialisation in the home was a significant factor enabling young women to enter sectors dominated by men.

Fostering of trade habitus gave the young women in Lehmann and Taylor's study a 'feel for the game' and a sense of readiness to enter and feel part of male-dominated industries. McIlwee & Robinson (1992: 89) suggest women, unlike their male counterparts, often have a lack of 'tinkering experience' or informal engagement with tasks such as engine skills or technical experience. Technical experience has a long-standing and deeply entrenched association with men and masculinity (Bray, 2007). Thurtle et al.'s (1998:640) study highlighted how students on gender-atypical pathways, including women undertaking automotive qualifications, reported their gender-typical counterparts to have 'natural abilities' and as such would have a 'head start'. Relating to young people and gendered patterns of intergenerational occupational imitation in engineering routes, Jacobs et al. (2017) demonstrated the importance of the home setting for learning 'tricks of the trade' through observation and participation in both skills and parents 'sharing stories and knowledge of the field' (2017:4). More recently, Carroll (2023) highlighted the importance of the home context in shaping an openness to practices and processes that serve to disrupt normatively gendered employment trends in adulthood. For these reasons, tinkering, hobbies and observation in the home are crucially important in explaining non-normative pathways.

A review of the literature in Chapter 2 set out how traditional gender conventions shape and inform perceived appropriate performances of gender for men and women. These performances are enacted and displayed through various internal and external processes and practices. One such example is in how tasks, hobbies and skills become associated with appropriate performances of gender, evident in childhood and youth in objects like toys with skills like building, construction, the arts and creativity assigned a boy/girl status respectively (Francis, 2010). Paige, an engineering student, recalled a specific enjoyment of playing with the toy, Lego. She said:

> *I loved Lego…It was just the step by step. You've done one step you do the next step? And it just comes together, and you get the final thing, whatever you make.* ***(Paige, Engineering)***

Lego as a brand has notably worked to challenge gender stereotypes (see Reich et al., 2018), however, there remains a dominant perception that certain toys and hobbies

associated with building and construction are highly gendered (Francis, 2010). Paige did not frame Lego in an explicitly gendered way, but referred to this in terms of construction and the implication of rationality and logic being important to the process, which have long been inherently framed as masculine skills and attributes (Davis and Hines, 2020; King et al., 2021; Holmes, 2007; Nelson, 2005). The association of skills, hobbies and pastimes that are framed in gendered terms are valuable in tracing both pathways that are enabled in atypically gendered terms and in understanding how these interests are located within a gendered framework. These include sports, especially football, and linking this to a strong disassociation with being a 'girly girl'. During our interview, Molly, a construction management student, did not recall any significant hobbies or interests growing up, but she clearly recalled what she did not enjoy, saying:

> *I've never been like a really girly girl or...I don't know. I've always been more like football. Not makeup… (**Molly, Construction Management)***

Illuminated here is the association of hobbies and interests within clearly defined and gendered terms. The young women recall their younger selves and their interests growing up in direct opposition to dominant and normative frameworks of femininity and in doing so demonstrate the 'undermining and downplaying of femininity' (Barnard et al., 2012: 201). I draw attention to Paige and Molly as these reflections highlight the importance of hobbies and childhood enjoyment as they relate to objects and skills that destabilise gendered norms, facilitated and enabled within the home (Pink, 2020). Framing hobbies in gendered terms and linking these to a rejection of a 'girly' identity was common for the young women on male-dominated routes. For example, Eve, an engineering student, explained how she had been a member of an RAF cadet group for a number of years. During the interview she explained how her cadet squadron at the time consisted of over 40 male members and five females. She recalled her interest in sports and her passion for the cadets:

> *Cadets is, like, a massive part of my life. And I do, like, so much through cadets so for me, I've done loads of stuff, like, flown in planes and been with pilots and stuff… I was always doing sports. But my family, they would always say that I've never been like, really particularly girly. (**Eve, Engineering)***

Her engagement with cadets as a hobby where boys/men are in the majority (MoD,2023) alongside her suggestion that her family do not see her as girly, positions these hobbies within a masculine space in a gendered framework. Despite not explicitly labelling cadets in gendered terms, the perception is that it is not framed in a neutrally gendered domain with her reference to significant gender segregation. The interplay between past home biographies and present contexts illuminates how hobbies and skills are placed within a normative gendered framework and, even when girls are involved in these, they are framed in opposition to a girly identity. The habitus is oriented towards practical, masculinised tasks and reflect reproductions in home contexts that structure the plausibility of following male-dominated routes.

4.5.1 Fathers of young women; sharing knowledge and their role in the home

Many of the young women on male-dominated routes discussed their past enjoyment and through these discussions it was clear that fathers had a particularly important role in fostering these skills and interests. These findings move the explanatory contexts of the home beyond linear occupational role modelling and implicate the value of informal exchanges of traditionally gendered skills fostered by fathers in the home context. Bella and Martha both engineering students, and Beth, a brickwork student, recalled building tasks in the homes, associated with their fathers:

> *Well, I don't know if you count this as like, engineering, but whenever they ordered a new piece of furniture, for example, I'd always be like, Oh, dad can I help you build this? (**Bella, Engineering)***

> *We [Martha and her father] were always building things for the horses you know, definitely jumps and always using different tools and stuff **(Martha, Engineering)***

> ***Beth****: I just like fixing and building stuff, I helped my dad build a squirrel house. We built them an aviary in the garden.*
>
> ***Int:*** *Do you build things together often?*
>
> ***Beth:*** *We've built a few things before, so he does DJing so we built this thing in the garden for him to put his decks in. It's a massive wood thing*

Like many of the girls from male-dominated pathways, Beth and Bella also discussed these in terms of a rejection of 'girly' hobbies and interests. The fostering of practical skills relates quite distinctly to the father who worked as a site caretaker and handyman as Libby a construction management student said:

> *Well, my dad, I've always been around him, like bringing the drawings home from like work. So, I've always been used to looking at them and looking at them with my dad and he always used to like, pretend to be like architects and that was really fun. So, I've always just had an interest in that because I've grown up with it from my dad. And then obviously his friends as well, then I used to go to work with my dad. Like, if my mum's at work, obviously, you can't be left alone so go with him. And I'd see him at work. I was like, this looks quite interesting. (**Libby, Construction Management)***

The role of fathers in shaping less gender-typical aspirations is a significant pattern across young women who did follow male-dominated routes but in more complex ways than seen in examples of occupational role modelling. The importance of these interactions and experiences consolidates and provides a broader scope to some of the notable findings within Carroll's (2023) exploration of the choices and experiences of women in heavy, male-dominated industries in Australia. Upon examining the importance of early socialisation practices in the home, Carroll's work pays attention to hobbies and tinkering and argues that disrupted gendered practices relate to 'quality and meaningful' experiences with fathers, notably that growing up in homes unbounded by gender conventions open later possibilities less constricted by normative gender expectations and patterns. These interactions and experiences through either observation of job roles or exchanges of traditionally masculine skills

can serve to imbue women with forms of social and cultural capital that have been implicated in women's successful assimilation into male-dominated sectors (Bridges et al., 2021; Wulff et al., 2022).

Fathers feature importantly in the accounts of those on male-dominated routes in this study - not just for engaging daughters in practices traditionally undertaken by boys but also how they occupied roles and carried out domestic labour in the home (Jacobs et al., 2017). For example, Tyla, an engineering student, did raise her father's job as a truck driver as important in how this enabled her to be exposed to skills and tinkering at home. She described her father's role in the division of labour in the home:

> *Just like he'll cook tea and stuff, he'll do the washing; hang the washing out; hoover. He'll do everything in the house. Like we all take turns. There's no gender roles as such in our house. We all do our own thing.* ***(Tyla, Engineering)***

Predispositions shaped by cultural practices and processes in the home were reinforced and became a prominent narrative in shaping orientations towards future career options. Non-conforming gender roles in the home also serve to significantly influence orientations towards male-dominated industry. Childhood experiences, as they relate to early socialisation practices, implicate the normative values on display in the home, and they can act to make less gender-conventional educational choices plausible and viable. These contexts can imbue in young women meaningful forms of cultural capital and foster a gendered identity and skills outside of normative gendered frameworks. These sustained interactions in the home illuminate the critical influence of not just what parents say and do but foregrounds the importance of the substantiative quality and meaning behind this when young women go on to follow male-dominated qualifications.

The ability to operationalise skills and experiences into meaningful forms of cultural capital in the context of educational choices outside of conventional gender patterns is undermined when they are short-lived (Allen, 2013). Ruby, a beauty therapy student whose father was a factory owner and her mother a stay-at-home caregiver

to her and her two siblings, described non-normative informal gendered practices in the home. Her mother engaged in and suggested hobbies, interests and skills that challenge normative gendered conventions:

> *When I was younger, she used to be like doing something new every week, she wanted to be something else like bricklaying, she would just find a course for fun but my dad wouldn't pay for it because he said it's gonna be something else next week. I'm not paying for it. She's like, please let me do it. But she just likes building and stuff. We've obviously had like them little summer houses like the wooden ones. She just builds everything. I did speak to her about the bricklaying course and she said it sounded fun and she wanted to do it with me.* ***(Ruby, Beauty Therapy)***

Ruby's account offers crucial insights that emphasise the *meaning*, and *quality* of the informal exchanges and tinkering, skills and hobbies in the home. On the surface, Ruby's mother is described in non-normative gendered terms; herself enjoying hobbies and carrying out stereotypically male-associated skills. Crucially undermining this is that the financial means of gaining these skills is still heavily reliant on her father to fund, as he occupies the traditional role of breadwinner in the home. Notions of 'fun' and the perception that her mother would find 'something new every week' further undermine the quality and meaning of this exchange into something more sporadic, with the inference that these skills are for fun rather than to be adopted into dialogue or deployed as forms of cultural capital towards possible alternative, viable, career choices.

4.5.2 Siblings

Across the participants I interviewed from male-dominated qualifications only three participants had male siblings they lived with and, where this was the case, the siblings were much older or younger. In Carroll's (2023) examination of the home practices and processes that later enabled women to join male-dominated heavy industry, she argues a correlation exists between the absence of brothers or male

siblings and women having been more likely to have engaged in non-gender normative practices in the home. Similar patterns were found in this study, for example, Abi discussed her family consisting of her and one female sibling:

> *Because he doesn't have any boys. It's just me and my sister. So, I'm the one that always helps him like with doing things around the house. Like we concreted the patio the other morning and did stuff like that. So, I always help him do that and put down like paving slabs and everything. But he has once mentioned it to me [working on the rigs]. I said I don't think it'd be sort of my thing, and then he left it, he said if you ever change your mind.* ***(Abi, Construction Management)***

Abi here directly associates her father's engagement with her in terms of gendered practices in the home to the absence of a male sibling. Whilst Abi was unique in her explicit framing of this, only three participants from male-dominated pathways had male siblings that they lived with and, where this was the case, the siblings were not similarly aged. In the home, the girls possibly occupied a surrogate son position. Despite suggesting a more liberal family context less bounded to conventionally gendered values, whereby Abi could engage in tasks traditionally undertaken by boys, tasks are still framed as gendered and seen as a disruption of the norm. That is, family contexts that are arguably less bounded by conventionally ascribed gender roles, tasks and hobbies are framed as appropriate for boys and girls rather than framed in neutral terms – to disrupt normative gendered conventions in the home is to not be gender unaware. These patterns of gender awareness continue to permeate educational and occupational perceptions as I will demonstrate in Chapters 5 and 6. This is crucially evident within the homes where there *are* brothers and present male siblings in the home. Preoccupations with academic ability or expectations are linked to appropriate gender performances and ultimately serve to shape a greater plausibility of male-dominated careers. Hobbies and interests can foster a habitus and act as forms of cultural capital, creating a propensity towards male-dominated routes but concurrently reinforcing gender binaries. Processes and practices in the home context remain articulated within highly gendered frames of reference. An enjoyment and tendency towards 'being practical' and 'not being academic' are underpinning elements that can make manual work and trades employment a viable possibility.

Tyla's account below depicts a distinction within her family on the positioning of her and her younger brother as academic/not academic and the activities she felt she engaged in because of this:

> *My dad at the minute likes to build stuff out of wood all the time and sell them and stuff like that. Like it's just I don't know I come from a more practical-based family. But my little brother is like my grandparents and my granddad like A level students. Like proper brainy, he's really smart – he's got the brains so I help him [her father]… my cousins are older than me. I'm like in the middle of all my cousins. But they always told my dad that Uncle John, will you come look at a car with me and whatever. So my dad's always gone and done that... I've always like stood around and watched and like, I've been into it a lot. I just enjoy understanding the way things work. That's why I chose mechanical but yeah, with electrical, it's wires, and I get it to a certain extent.* ***(Tyla, Engineering)***

Through her informal engagement and observation of cars in her early years, Tyla highlights the complexities of the structuring of the habitus, that within the same family contexts appropriate and possible employment trajectories remain anchored against a dichotomous perception of the academic/practical (Archer et al., 2012; Brockmann, 2012; Brockmann and Laurie, 2016). Tyla considers her family to be a more practical family, but it was her brother being 'brainy' or academic that Tyla raised in relation to her being able to help her father with woodworking. Her practical orientation, and the fact she deemed herself less academic than her brother, aligned. Thus, her interests and subsequent choice of pathway were plausible and viable for her but, like Abi, remain complexly related to either the absence of a male sibling or a 'practically oriented' male sibling. These accounts imply that the natural occupants of these spaces are men and boys. Not only this, but strongly gendered ideas about tasks and hobbies remain. This was articulated by Sam, a brickwork student who was living with her mum and had a close relationship with her grandfather. She described the perception of flipped gender roles with her older brother, who was studying veterinary nursing. This was reconciled by her mother and grandfather as them both following routes compatible with their alternative displays of gender:

My brother is probably the feminine one in a relationship. He's very picky with things - he doesn't like lifting things. He doesn't like getting his hands dirty like me, but he's really bad. He hates it. He doesn't like doing PE, he doesn't like doing anything: walking, exercising, he's a bit of a .... [my mum] always knew that I wasn't a girly girl. Like she always knew that I wanted to do something that was different to everybody else. So she wasn't that shocked that I chose bricklaying. ***(Sam, Bricklaying)***

4.5.3 The ongoing assumption of gendered skills

As I have demonstrated so far, the viability and plausibility of undertaking male-dominated qualifications can be traced back and located within the young women's past contexts. The ways gender roles are enacted in the home were especially notable and this is because they contradicted gendered norms, which by the nature of these being foregrounded suggests the young women themselves recognised these as outside of the status quo. However, even when homes are less bounded to normative gender conventions, it remains that boys still would have a natural advantage or head start in certain sectors. Women's assumption of who possessed gendered cultural and social capital was evident in some of the young women in Thurtle et al.'s (1998) research and is echoed in this study. For example, engineering student Paige recognised the limitations that a lack of engagement with tinkering in the home could bring when she reflected on how she felt before starting college:

Paige*: I worried I'm not good enough to be like in the class with all boys? I'd feel a lot of pressure because I would be the only girl. There'll be a lot of pressure with like a bunch of boys. Like they, most of them probably know about cars and engines and things like that . I don't know anything.*

Int: *Why do you think they know about cars and engines?*

Paige: *Because most boys are interested in stuff like that as they're growing up. Like my cousin likes cars and things like that. Obviously I wasn't*

> *interested in cars as such growing up. So I think it'd be a lot of pressure because I feel like I wouldn't know as much as them.*

Paige's reflections demonstrate an awareness of the disadvantage that she could face compared to her male counterparts with the taken-for-granted assumptions framed by a gendered habitus, that boys would have been more likely exposed to skills, attitudes and beliefs that would enable them to 'fit in'. The implication is that there is a naturalness that men possess to work in highly masculine occupational arenas. The findings here resonate with Agapiou's (2002) exploration of the attitudes relating to gender within the Scottish construction industry. Having an 'innate ability to use the tools' lends itself to a natural understanding of building and marked the women as unsuitable for trades such as carpentry and bricklaying (Agapiou, 2002: 701). Demonstrating that, despite the progress of gender equality in some areas, underlying pervasive assumptions about who naturally belongs in certain spheres and how home context inculcates boys with the skills to occupy these spaces persist.

The accounts of Paige, and following this, Bella, speak to ways skills and knowledge are valued and packaged as forms of (gendered) cultural capital (Wulff et al., 2022). Cultural capital is the acquisition of appropriate language, behaviour, norms and values and translates into being able to acquire and enact 'the basic elements of the legitimate culture' evident across accounts of the young women I interviewed (Bourdieu, 1984: 70). The data here also echoes what Reay (2004) suggests in that Bourdieu's understanding of cultural capital is underlaid by habitus as attributes and assets are acquired or inherited through sociocultural backgrounds and contexts. Lacking meaningful forms of cultural capital through family connections was in the foreground of Paige's account. The value of cultural capital and the significance of lacking this, can be explained by Bridges et al. (2021) as offering young women 'cultural legitimacy' in circumventing traditional resistance to gender inclusion in male-dominated occupations. This demonstrates the layering effect of outside influences and individual orientations in the ongoing negotiation of the viability and plausibility of male-dominated qualifications. Similarly, Bella, discussed earlier in this chapter, recalled helping her father build furniture and dismissed other, feminised hobbies growing up. Bella also noted:

> *I think I was just interested in like, like using tools and, you know, being hands on rather than being sat in front of a screen* ***(Bella, Engineering)***

This positions Bella with skills and knowledge that acted to make more masculine qualifications a viable possibility. However, when faced with being asked to offer specific examples for a personal statement, she considered her gender was what resulted in a lack of accruing forms of cultural capital growing up:

> *We had a lesson on personal statements and how to write them and a few of the lads were saying they have worked on motorcycles, have worked on cars. I just thought Oh, I haven't done any of this. And I think it's because they might have someone in their family that already knows how to work with bikes, for example. So they've inadvertently got more experience, because they are a man.* ***(Bella, Engineering)***

Paige discussed later in her interview that she had been able to study engineering as a subject all through her secondary school education and Bella clearly recalled building and 'using tools' growing up. Despite this, value was placed on potential informal learning, suggesting a distinctly innate and natural gendered advantage for boys in later contexts. The perception for boys to have more natural or instinctive interest in certain objects and skills prevails. Whilst some of the young women, such as Bella, have home contexts that have shaped the plausibility and viability of their following a male-dominated qualification, the dominant perception that boys will still be at an advantage suggests that knowledge transmitted within the home can remain mediated by normative gender conventions. The perception that non-discursive knowledge is gained through a family background in male-dominated sectors through informal exchanges that privileges and advantage boys, prevails.

Home environments that encourage young women and engage them in processes and practices contrary to gendered norms lay the foundations of a platform from which young women can be enabled to make plausible and viable choices less constrained by normative gender ideologies. However, these remain complexly entangled within perceptions of who remains the more natural and expected occupations of highly gendered arenas. It is for these reasons the engagement in, or absence of, tinkering

or hobbies can have profound importance as they relate to the young women's gendered choices and later experiences; the home environment and the nuanced ways gendered practices are embodied and thus enabled a plausible and viable possibility of disrupting dominant gender discourse in education and employment.

4.6 Conclusion

Exploring and explaining choices as visible, viable and plausible demonstrates how family interactions and contexts have a profound impact and influence on the choices young women make, especially within highly gendered contexts. Whilst some young women found careers made visible from home contexts in the absence of patterns of clear occupational role modelling, this chapter has revealed how home interactions and environments are emphasised in the viability and plausibility of male-dominated qualifications. The fostering of skills contrary to gendered norms was clearly articulated by some of the young women, highlighting how past experiences become complexly related to present contexts, cultivating a habitus that makes later education and employment possibilities in masculine spaces plausible. In expressing an interest and encouragement along with a sense of pride towards their daughters' qualifications, parents foster environments which serve to unbound women from educational career choices within normative gendered frameworks. The idea of parents having more liberal attitudes towards gender roles and career expectations is an important feature in shaping male routes as plausible for young women.

This sense of what comes naturally is evident across all of the young women, irrespective of the gendered nature of the qualification they went on to follow. As such, the home and the family remain a crucial site of exposure to practices and processes that relate to the shaping of gendered ideals. This chapter has offered insights that expand understanding of transfers of knowledge and skills within the home, demonstrating the importance of interactions in the home that can make male-dominated routes viable. The findings presented in this chapter move the explanatory contexts offered by this thesis beyond linear parental occupational role modelling and implicate the value of informal exchanges of traditionally gendered skills fostered by

fathers in the home context. As such, this chapter expands our understanding of home contexts when conventional occupational role modelling alone cannot explain choices that are outside normative gendered conventions. In this sense, what parents say and do and the roles they enact in the home all serve to shape young women's sense of plausible possibilities that either conform to, or disrupt, conventional gendered assumptions.

Conversely, even when male-dominated careers are visible to young women through an awareness of earning potential and the possibility of using highly gendered skills such as creativity in alternative gendered sectors, it is irrelevant when careers are constructed in such highly gendered terms from with the home and, thus, they are judged implausible. A complex interplay of values, predispositions and socialisation in the home, enacted through parents, serves to unbound young women from normative gender choices in education and later employment. Parents' role in atypical choices is also important in ways where occupational role modelling was not present. A sense of parental pride evoked as a response to the atypically gendered nature of their choice fostered a confidence towards male-dominated qualifications making this a plausible possibility. Conversely, a perception that male-dominated careers were bound only to masculine conceptions can render these implausible choices as home contexts shape early values that can render gender normative qualifications a more thinkable course of action.

Fathers and their meaningful engagement with their daughters in informal exchanges of knowledge and skills that are traditionally reserved for boys are significantly implicated. These activities fostered young women's interests in non-gendered skills and a sense of familiarity with the tools that could act as forms of social and cultural capital and contribute towards the viability and plausibility of careers in male-dominated spaces, such as engineering and construction. The practices in the home fostered dispositions and encouraged skills that made these qualifications (and careers) a viable course of action for some young women. However, young women, despite their engagement in more masculine activities, still recognised that boys may have a natural advantage from home – college contexts as they are more likely to have engaged in tasks associated with their later career choices. This is especially relevant given the pattern of the absence of similar-age male siblings when such practices in the home occurred. That the young women perceived their father's engagement was the likely result of an absence of a brother or male sibling continues to demonstrate

hobbies and interests are connected to clearly defined and gendered spaces. This suggests that even when young women engage in hobbies and interests embedded within traditionally male gender roles, they are not the natural or expected occupants of these spaces.

The foundations laid within home contexts have a long-lasting and powerful influence on the young women, but there are also important influences from other social actors and structural contexts (Archer et al., 2014; Ball and Vincent, 1998). The home is just one mechanism and site of socialisation; 'the habitus acquired in the family is at the basis of the structuring of school experiences' (Bourdieu, 1972, cited in Bourdieu & Wacquant, 1992: 134), which brings the attention in Chapter 5 to exploring the educational and school contexts implicated in the post-16 choices of the young women.

Chapter 5. School life and the influences on post-16 choice-making

5.1 Introduction

The previous chapter outlined the home contexts and family lives of the young women. In the chapter, I illuminated the powerful shaping of the young women's habitus through processes and arrangements within the home. I demonstrated the significance of how these practices can cultivate the plausibility of male-dominated education and career choices for some and make these implausible and unthinkable for others. Home contexts, however, are just one piece of the puzzle. As Reay (1998:582) argues, 'career choice-making needs to be analysed in relation to all the influencing fields within which students are differentially positioned'. Following the educational journey of the young women, this chapter engages with the young women's accounts of their secondary school contexts and perceptions of opportunity during their pre-16 education. Whilst there is a chronological flow to the analysis chapters in this thesis, it is essential to recognise from the outset of this chapter that the young women's experiences of home and school contexts overlap and interweave.

Data are presented in this chapter from participants' retrospective accounts of school experiences. This highlights the processes and practices they recalled from being at school that shaped the visibility, plausibility and viability of male-dominated routes. Bourdieusian concepts of habitus and forms of capital accrued and fostered within school contexts (Bourdieu and Wacquant, 1992; Reay 2004) are embedded within my analytic framing. Vocational curriculums and extra curricula clubs act as forms of cultural capital through the acquisition of knowledge, skills and competencies. Social capital is provided through relationships with influential teachers and establishing networks through schools-based careers events. Together these contribute towards the visibility and importantly the viability of male-dominated qualifications. Tomboy identities are often evoked in relation to an enjoyment of typically masculine school subjects engendering confidence about the plausibility of following male-dominated qualifications. Home experiences and school contexts, together, influence how young women experience the plausibility and viability of pursuing male-dominated qualifications.

Previous research has suggested different, complex and, at times, overlapping contexts serve to shut down and act as barriers to girls choosing male-dominated pathways and school subjects. These barriers include a lack of awareness and understanding (e.g Bennett et al., 2013), a lack of self-belief relating to (particularly maths) competencies (e.g Pennington et al., 2021) and perceptions of what are appropriately gendered subject options (Archer et al., 2013; Moote et al., 2020). This chapter contributes deeper insights and complexities to these understandings. The value of early exposure to vocational subjects during secondary school and being motivated towards practical subjects with 'hands-on' modes of learning, whilst concurrently evoking an identity that rejects 'girly' forms of femininity, are key indicators towards young women's propensities to follow male-dominated routes. This chapter also addresses maths skills and abilities. Maths has long been cited as a crucial part of following engineering careers and literature has cited maths skills as a notable factor in women's later engagement in engineering careers. The data I present here challenges rigid ideas of the academic/vocational divide in favour of how an enjoyment of maths supported by female maths teachers is married to a sense of being more practically oriented, alongside a rebuttable of a typically feminine identity.

Throughout this chapter, I demonstrate how young women's engendered assumptions relating to school and career possibilities are reinforced through cultural practices in education. The perception of subjects and post-16 qualifications remain within highly gendered practices and assumptions. These embedded assumptions highlight complex contradictions for the young women who, irrespective of their chosen pathway, all unequivocally recognise that gender *should not* constrain possible courses of action, whilst concurrently placing school subjects and career preferences in highly gender-delineated terms.

As with the previous chapter, the narratives and accounts of the young women are the foregrounded voices in this chapter. An important element of this thesis is synthesising the accounts of social actors that can give broader contexts to the young women's choice-making. As such, this chapter also presents data from some of the career's advisors, college tutors and those from the local labour market. In this

chapter I examine young women's school experiences; opportunities of vocationally orientated curriculums in secondary schools; the influence of social actors; careers advice and guidance and the role of open events and recruitment practices from the local labour market. Ahead of Chapter 6, this chapter presents the pre-college contexts of the young women ultimately demonstrating the role of schools and associated social actors in shaping, for some, the ability to make more comprehensively informed choices about their post-16 pathway.

5.2 School subject options and opportunity

In this section I focus on subject opportunities and curriculum offerings in secondary schools and argue that vocational curriculums in secondary schools, including offering subjects such as engineering, are very important influences on both the visibility and viability of women following male-dominated post-16 qualifications.

Whilst boys and girls have an entitlement to the same curriculum, their subject preferences often remain highly gendered (Archer et al., 2013; Ward and Eden, 2009). The pipeline from school subjects to career choices is, in turn, highly gender-delineated (Moote and Archer 2018; Chesters, 2022). This 'entitlement' is not experienced equally, as schools, even within a local area, can have significantly varied curriculum offerings. In the local area, this ranges from secondary schools that offer only a core national curriculum at Key Stage 3 and Key Stage 4[7], through to secondary schools that offer highly vocational KS4 (and equivalent) pathways. The subjects and qualifications of interest in this thesis are vocationally oriented, and representative of pathways of learning. The associated occupations remain highly gender delineated, where skills and attributes are strongly gender stereotyped, such as being caring and nurturing or being (physically) strong and logical (Cameron et al., 1999; Chester, 2022; Rolfe, 2006; Ellemers, 2018).

As well as the core national curriculum, from September 2022 secondary schools in England and Wales could offer a broader, more vocationally oriented curriculum at

[7] Key stage 3 is generally studied in school years 7,8 and 9 and Ley stage 4 is generally GCSE level studied in school years 10 and 11.

KS3 and then KS4 with GCSE subjects such as engineering, photography, travel and tourism and health and social care. The participants in this study attended different schools across the region with only one attending a boarding school outside of the local area. All the schools offered a compulsory curriculum through to KS4. Though the complexities surrounding this will be examined through the chapter, the vast majority of the young women who followed male-dominated routes post-16 attended a secondary school that offered vocational subjects during their secondary school education. Where a vocational subject was not offered, young women on male-dominated qualifications oriented towards more 'practical' subjects at GCSE such as art, design and Design Technologies. However, as the later part of this chapter argues, a preference for art and being 'creative' was deployed in highly divergent terms by the young women who went on to gender-typical courses, compared to those who followed onto male-dominated qualifications and careers. All, barring one of the young women on gender-typical pathways, attended a secondary school with an academically focused curriculum that had no vocational subjects on offer. This pattern in the contexts of the participants' curriculum and subject offerings suggests the range and type of subjects offered at secondary school were important in understanding their post-16 choices.

For gender atypical choices broader curriculums can, of course, make male-dominated pathways visible. Whilst this is an interesting insight into secondary school offerings, this alone does not fully expand our understanding of these gender 'exceptional' choices. Rather, I suggest that they are more likely to be seen as plausible by young women when home life supports pursuits typically associated with boys. The acquisition of 'institutionalised cultural capital' (Reay, 2019) through completing qualifications at school further contributes to shaping the viability of possible careers.

Bella, an engineering student, had the option of taking engineering as a subject from Year 7. Bella, introduced in Chapter 4, had expressed an interest in the 'tools' particularly enabled by her father through 'tinkering' experiences in the home. She drew upon these experiences when presented with the possibility of engineering at secondary school:

Int: *So, when could you start doing engineering at school?*

Bella: *I think we did it in year seven. You did three optional subjects in year seven. It was like a taster sort of thing. So do three different subjects. Then you got to choose which to do from year 8. And then at [school] I did engineering as well, which was actually better than my previous school.*

Int: *So why engineering over those?*

Bella: *I think I was just interested in like, like using tools and, you know, being hands-on rather than being sat in front of a screen.*

Bella attended a local KS4 provision, where young people can attend from ages 14-16, offering a range of vocational qualifications alongside a core curriculum of maths and English. Offering a vocational curriculum including more specific subjects such as engineering clearly had a role in making male-dominated routes a viable career option. Similarly, Paige's account below directly attributes being able to learn engineering as a subject at school with her later post-16 choice of engineering. Some of Paige's home experiences were introduced in Chapter 4, with her discussing her enjoyment of building and the logical processes associated with building Lego in particular. Paige also related this to the design and building processes in engineering:

Paige: *So we chose our options in year 9 but we did it [engineering] all through the five years, but we've got to choose options in year nine to do 10/11.*

Int: *And what if you hadn't done engineering? Do you know what the other options were?*

Paige: *Yeah, it was. I could have done Sports Studies. iMedia*[8]*, business but they didn't interest me.*

Int: *So why engineering then?*

[8] iMedia is a subject teaching the use of ICT in the creative media sector.

> ***Paige:*** *I think because I did it in year seven. And I can't remember what it was we made. It was really, really simple. It was a bookstand like to hold books up. I don't know what it was I just enjoyed making them because you went from the process of coming up with the design, drawing it on to the design and then actually making it and then like taking pictures of it. So you're showing each step. And I think I just enjoyed that. Like showing that you could actually make it physically from your drawings.*

The importance of school subject opportunity in making careers visible and then a viable possibility is further implicated when thinking about the career aspirations or dreams that the young women may have had. For example, Paige went on to explain:

> ***Int:*** *When you were younger, what did you want to be when you grew up?*
>
> ***Paige****: A vet.*
>
> ***Int:*** *What changed that?*
>
> ***Paige:*** *Secondary School actually, doing engineering as a subject. Otherwise I wouldn't know what to do. Because I don't think I would have got the grades to become a midwife because of my science and my English so you know, I got quite lucky in secondary school I went to because they actually did engineering.*

The gluing together of visible career options, with hobbies including design skills and building with toys when she was younger, made engineering a plausible and viable pathway. Furthermore, these accounts highlight the significance of exposure to, and possibility of following, vocationally oriented subjects during secondary school. The possibility of not just a traditional, academically focused curriculum offering and the availability of wider extra-curricular clubs at secondary school also highlights how secondary schools can bolster the possibility of male-dominated routes at the post-16 transition.

Libby, as we saw in Chapter 4, considered her choice to study construction management at college was influenced by exposure to skills and tasks associated with her father's occupation as a caretaker and general handyman for a stately home. The layering effect of visible possibilities from her father's career, along with a habitus with less gendered dispositions alos supported by her father, means that when Libby's secondary school did not offer vocational and technical subjects at KS3 or KS4, the clubs that she attended during her school lunch times were important in contributing to the viability of her construction management qualification. She recalled:

> *I used to go to the technology one where we like build different stuff. And I built hedgehog cars for my teacher's hedgehog. (**Libby, Construction Management)***

The habitus and forms of cultural capital accrued through both a vocational curriculum offering and extra-curricular clubs during secondary school can have an important impact on the viability of male-dominated routes. From the school setting, vocational secondary school subjects and extra-curricular opportunities within and outside school can be important forms of cultural capital. This was not only exemplified in Paige and Libby's accounts above but also in Lucie's, a fabrication and welding student, discussed below. Paige and Lucie both attended a local secondary school offering vocational KS4 subjects. The school also has a key focus on broader curriculum subjects, in particular engineering. Lucie's hobbies already disrupted gendered norms as she had played rugby throughout school and her parents raised concerns about the level of qualification she pursued at college, specifically referencing beauty therapy and bricklaying, coupled together as 'lower level' qualifications, demonstrating her parents' views about Lucie's possible career options were less bounded by normative gender conventions. Lucie, in the absence of careers advice guidance and work experience, drew only upon her enjoyment of engineering at school:

> ***Lucie:** Oh I enrolled at college and heard my results at the same time, cause that was when I enrolled. But other than that, that was the first time I've been in the college. And then my first day in the workshop was my first day.*

Int: *So, you didn't come along to any open events over the summer or anything like that to come and talk about anything you could do?*

Lucie: *No, I just turned up to enrol.*

Int: *So how did you know this was what you wanted to do?*

Lucie*: Cause I always, I enjoyed engineering at school but then I knew that it [engineering at college] was going to be different outside of school and I'd enjoy it more.*

Bridges et al. (2021) have highlighted the role of cultural capital as pivotal in women's successful assimilation into male-dominated sectors, focusing on women's experiences when working in the trades sector. The data presented here demonstrates how this is also significantly implicated within precollege contexts. For some of the young women above, as I documented in Chapter 4, their experiences of 'tinkering' in the home had already predisposed the young women towards practical and male-orientated subjects and, for others, practices and values in the home had shaped plausible possibilities that were less bounded to normative gendered action. Subject opportunities in school further supported this and made visible and viable male-dominated routes.

In this section I have argued how exposure to vocational school subjects can act not only to make visible certain courses of action at the post-16 transition but also how school subjects can act as a form of cultural capital that serves to underpin the viability of male-dominated qualifications through aligning skills and interests towards post-16 pathways that lay outside normative gendered patterns. With vocational and practical means of learning comes associations of being in opposition to academic forms of learning. I address how the young women expressed an orientation towards 'the practical' in the following section.

5.3 The academic and the practical; the continued dichotomy

As this research focuses on young women following practical and vocational qualifications, the continued and pervasive dichotomous positioning of qualifications within the academic/practical divide is a key point of exploration in this thesis (Brockmann and Laurie, 2016; Colley et al., 2003). The findings I presented in Chapter 4 strongly inferred a sense of the practical and being 'hands-on' amongst the participants of this study in their hobbies and interests. I address in greater depth the practical/academic dichotomy at this point in the thesis, as it was clear for the young women that the sense of being 'practical' was highly relevant to their secondary school opportunities and experiences. Being practically oriented was not surprising given all the pathways of interest in this study are vocational post-16 routes.

To begin this section, I present data that demonstrates how all the young women, from both male-dominated and gender-typical qualifications, aligned to a practically oriented identity that linked to their choice of a vocational post-16 pathway. These findings largely echo and confirm broader literature in this area (Brockmann and Laurie, 2016). Whilst useful for understanding more generally about orientations towards vocational learning and how the young women consider themselves to have a more practical and vocational identity, the academic/vocational division is not itself explanatory in understanding gendered choices. The articulation of a practical identity is highly relevant to atypically gendered choices in how the academic/vocational dichotomy is discussed by young women undertaking engineering and higher-level construction qualifications. As qualifications, these have been considered to have more of an academic focus and rigour compared to trades qualifications. The findings discussed in this section expand our understanding of the dichotomous positioning of 'the academic' and 'the vocational' of certain subjects within a gendered context. The section discusses how school settings are a site where orientations towards types of learning shape later choices to follow gender-atypical qualifications away from rigid ideas of engineering and higher-level construction as academic subjects, with young women drawing more on a sense of vocational or practical identity.

A move from rigidly defined academic divisions is evidenced in this section but is particularly related to maths and the viability of careers such as engineering and

higher-level construction careers compared to trades and more gender-typical routes. To illustrate this point, the section outlines how maths self-efficacy and enjoyment play a pivotal role in making such routes viable for some young women. This finding particularly locates the role of social actors, such as female maths teachers, as crucial to illuminating the possibility of a career such as engineering.

Whilst the vast majority of young women in this study undertaking male-dominated qualifications identified as being more practically oriented, this was not without its complexities. The young women who were undertaking lower-level trades and gender-typical qualifications all considered themselves to be highly vocationally motivated. This was, however, located strongly in opposition to any semblance of academic ability or intelligence, irrespective of their level of study. This is illustrated across the following interview excerpts from young women who were qualifying to be beauty therapists and one a carpenter:

> *Maybe I'm intelligent in different areas, but I just don't think I'm that bright. I've not got a good memory at all.* ***(Maisie, Beauty Therapy)***

> *No, no. I just like both practical and, you know, learning. I wasn't dead academic.* ***(Poppy, Beauty Therapy)***

> *Well, I'm not academically gifted…That's why I always found being in a classroom less entertaining and my attention would go, whereas if I'm doing something with my hands, I'm much more happy and much more attentive.* ***(Katy, Carpentry, Level 3)***

Who is academic and therefore, 'intelligent' is positioned in dichotomy to a practical ability. This was seen across gender-typical and trades routes, echoing extant literature and congruent with ideas of working-class routes being less academically able (Ward, 2018). As a further example, Lucie, a fabrication and welding student, is seen in the quote below to distance herself from being academic in favour of seeing herself as practically orientated. This exemplifies how working-class forms of labour

are powerfully and persistently shaped, further dichotomising the academic in polar opposition with the practical (Brockmann and Laurie, 2016):

> ***Int:*** *Would you describe yourself as an academic person?*
>
> ***Lucie:*** *No*
>
> ***Int:*** *So, what do you think that means then [being academic]?*
>
> ***Lucie:*** *I prefer more practical. I don't like sitting down doing work.*

The excerpts above come from participants who followed qualifications such as beauty therapy, carpentry and fabrication and welding - all long associated with working-class forms of labour (Avis and Atkins, 2017; Ward, 2018). The young women presented above strongly identified with learning more effectively through practical skills and, in turn, being 'not academic'. Sophie, a plumbing apprentice, had previously started her A-Levels in maths, biology and English literature. Despite having attended a secondary school that offered highly vocational pathways, she initially attended a more traditional 6th form setting before attending The Aspire Institute. Sophie explained part of this change was motivated by the fact that she identified more with 'hands-on' forms of learning:

> *I'm more of a hands-on learner rather than sitting in a classroom listening and being told stuff, it just doesn't go in, I get bored. And then I'm not interested. We was doing practical and I learned better doing stuff hands-on and actually doing stuff rather than listening.* ***(Sophie, Plumbing Apprentice)***

Modes of practical learning were also emphasised by Katy, a carpentry student:

> *Well, I'm not academically gifted. I would say I find being in a classroom incredibly boring and being taught something like that I just can't wrap around… but if I'm doing something practical where I'm actually doing it, I understand it a lot more and actually enjoy it. That's why I always found being in a classroom less entertaining and my attention would go, whereas if I'm*

> *doing something with my hands, I'm much more happy and much more attentive.* **(Katy, Carpentry)**

These accounts suggest that a perception of being 'practical', as opposed to academic, places an emphasis on an individual's sense of their practical skills and an identity of being a practical learner and contributes to the viability of certain qualifications. The mode of learning transcends the level of qualification and, consequently, some qualifications remain largely informed by the academic-vocational divide (Brockmann, 2012; Brockmann and Laurie, 2016). Data here strongly resonates with Brockmann and Laurie's (2016) assertions that the category of 'vocational' is constructed within an identity that is in opposition to being academic and reinforced through social contexts.

For the young women following engineering and higher-level construction pathways, this sense of the vocational and academic presents in an altogether more complex space. Engineering and higher-level construction management students echoed a strong sense of being practical, but unlike those on more trades and gender-typical routes, they self-identified with having a strong maths ability. This sense of a maths ability was located alongside the importance of key social actors, especially secondary school maths teachers, rather than a unification of the practical and the academic. This comes with a strong rebuttal of being 'academic' and offers a deeper and more nuanced understanding of this division, particularly in the context of understanding choice-making amongst those who follow particular pathways that are contrary to gendered trends.

A common pattern across the young women on atypical qualifications was how school contexts, and the possibility of engaging in vocational subjects, bolstered an orientation towards practical subjects and qualifications and notably more male-dominated spheres of engineering and other trades-related subjects such as design technology. Even though certain school subjects are available, young women may still be less likely to choose them if their home environments and other influences have already shaped their views to see traditional gendered pathways as the most viable and plausible options by the time they enter secondary school.

Under the STEM umbrella, engineering is often associated with academic rigour. Whilst there was a common perception across all participants of their 'practical' rather than 'academic' preference and ability, the differentiating factor between the young women on higher level construction/engineering routes from those on trades and gender-typical routes was particularly centred around their maths ability. Despite a gendered perception of subjects like maths as inherently masculine (Mendick, 2003; 2016), these students exhibited high levels of maths confidence and enjoyment, which they attribute to their school contexts. This aligns with broader research suggesting that women pursuing engineering tend to have greater math self-efficacy compared to those on non-engineering tracks (Broadley, 2015; Moote et al., 2020). In the following section, I demonstrate how the perceptions of maths ability and enjoyment of the subject shape a plausibility and viability of engineering and higher-level construction educational and career pathways. This is also useful for highlighting the divergences across male-dominated choices. These divergent constructions of skills show why the viability of engineering is fostered for some, and brickwork for others.

The young women in this study following engineering routes generally echoed long-standing arguments in the literature relating to higher levels of maths self-confidence and efficacy (Bennet et al., 2014; Smeding, 2012; Swan et al., 2021). The data I present here suggests similar patterns identified in Moote and colleagues' (2019) work, who suggest aspiring female engineering students have higher levels of maths self-confidence compared to those not on engineering pathways. For example, engineering students Bella and Paige, when asked about subjects they enjoyed at school, talked about maths at secondary school. The following responses are highly representative of the views of girls on engineering routes:

> ***Int:*** *So what kind of subjects did you enjoy at school?*
>
> ***Bella****: Um, I'd say maths is a big one. I've always liked maths…the engineering teachers at school, they was, amazing. They actually made me want to carry on doing maths and engineering, because they actually helped you with anything.*

Int: *What subjects did you enjoy at school?*

Paige: *Obviously maths, and engineering, because I got to do engineering in Secondary School, that's the one route. That's one of the reasons why I wanted to do engineering.*

Int: *So why 'obviously maths'? Why have you said obviously?*

Paige: *I don't know. I've always enjoyed maths even through primary school. I love maths. And here, we do a maths unit. So it's like, I've done maths all the way through primary school, secondary school, and always loved it all of that.*

Int: *Are you good at it?*

Paige*: I was alright, you have to do it in your GCSE. I got a six in maths. Yeah. And then I got fives in English and Science. And then I chose to do engineering, which I got a merit in.*

A specific sense of a stronger maths ability being a common pattern amongst young women following engineering qualifications is itself not necessarily a surprising theme for young women aspiring to be engineers. Maths is firmly located as central to what motivates and can enable a subsequent career in engineering (Harris et al., 2015; Swan et al., 2021). More notably, this study finds that, for these young women, it is not just a sense they are capable at maths but that this is coupled with distancing themselves from being more broadly academically capable. Instead, the young women point specifically towards their maths ability being linked with an orientation towards a practically focused qualification and career. In this sense a vocational or trades habitus (Carroll, 2023; Colley et al., 2003; Lehman and Taylor 2015), one that orientates the individual towards a practical qualification and career, attunes the habitus to the field and is also highly relevant to the viability of career choices for some young women. Though literatures have located a habitus in this sense to more

manual trades qualifications (Lehamnn and Taylor, 2015) or heavy industry (Carroll, 2023), the data I present here suggests this is also evident within subjects that have been traditionally framed in much more academic terms such as engineering. For example, Tyla explained:

> ***Tyla:*** *I'm not very academic, I'm more practical which is why I chose engineering. But I did well in art, and photography. They were my favourite subjects. I did textiles. I don't know why I ever chose that. I love art and photography, the hands-on stuff. I didn't mind PE either. That was alright. I like maths. I do like that.*
>
> ***Int:*** *Are you good at maths?*
>
> ***Tyla:*** *Yeah. I passed maths. I enjoyed maths and obviously engineering is quite maths-based. Yeah, so that's a good thing. If you hate maths don't go into engineering maths.*

Eve, also an engineering student, echoed the sentiment of not being academic. Notably, her qualification, a HNC, is a Level 4 qualification in Mechanical Engineering, she recalled:

> ***Eve:*** *When I moved school, maths became my favourite subject. Then I knew that I wanted to take that path with a career***.**
>
> ***Int:*** *Would you describe yourself as academic?*
>
> ***Eve:*** *No.*
>
> ***Int:*** *Okay. Why?*
>
> ***Eve:*** *I don't know… I'm more practical. I'm a visual learner. I have to see stuff and have an example of everything before I can go off and do it on my own. And I'm absolutely rubbish at typing up assignments.*

Eve rejected a sense of being academic despite undertaking a Level 4 equivalent qualification; foregrounding specifically her enjoyment of maths that aligned a practical orientation to a career choice in engineering. Similarly, engineering student Tyla aligned herself with a greater sense of a practical identity along with an enjoyment of maths, but both illustrate a firm rebuttable of a traditionally academic orientation, which has been typically associated with engineering. These findings offer an expansion of understanding the motivations of young women following engineering qualifications and associated high levels of academic self-efficacy and confidence (Swan et al., 2021. Maths self-efficacy is important but takes on meaning in relation to prior desires or expectations about pursuing engineering or (some) construction. Furthermore, it moves our understanding of what influences the viability of engineering to include more practical and hands-on orientations away from narrowly conceived ideas of engineering as a purely academic field.

Interestingly, when the GCSE results of all the participants are considered, the only students who had failed their maths GCSE were the three brickwork students[9]. On balance, all other participants, irrespective of following a gender traditional pathway, engineering or a trades and construction qualification, averaged passes and high passes of grades 4, 5 and 6 [10] in core subjects at GCSE, including maths. However, it was common that the young women on gender traditional routes, despite having similar outcomes in subjects such as maths, did not recognise their ability and saw little value in maths compared to those who went onto engineering or higher-level construction qualifications. Illuminated within these contexts then is the significance of wider influences in foregrounding a value of maths and relates to fostering the viability of a potential career in engineering. I next explore the particular role of schoolteachers.

5.4 The role of teachers

[9] Sam, Brickwork has since gone on to pass her GCSE maths. She had failed maths when she left school but passed at college

[10] ‘4 is the equivalent of a "standard pass" and 5 for a "strong pass". 4/5/6 grades would be the equivalent of the previous C/B grade.

With relatively similar GCSE results in subjects such as maths, a crucial element of difference between participant groups from their school contexts was how often the choice to follow an engineering or construction management route was associated with specific maths teachers. As such, the evidence, and subsequent arguments I present here, highlight the role of teachers, and specifically maths teachers, as a significant influence in non-traditionally gendered post-16 choices. The young women following male-dominated routes to engineering and higher-level construction qualifications demonstrate how the habitus is oriented through the deployment of forms of capital that encourage and influence participation in maths and related subjects (e,g. Archer et al., 2014), aligning not just the plausibility of male-dominated routes but, importantly, the viability of them. For example, Abi, Eve and Tyla all reflected not only on their enjoyment of maths but, more specifically, on the role of their maths teacher:

> *They were all really good, to be fair, but I mean, my maths teacher, she was really good at teaching maths. She really understood that, to get it in your head, you've got to be able to do it over and over again, like repeating the process to ensure it's stuck in your brain. So I think she was really good at teaching. She understood that what we needed to understand to get to the grades.* ***(Abi, Construction Management)***

> *She was lovely. She was like a mum. It was great. She just anything I needed. She just took the time to like, understand, because I used to get really frustrated. And she'd sit me down or she'd like come in at lunch and we'll talk through it. And it was just that extra support.* ***(Eve, Engineering)***

> *Yeah, my maths teacher, her husband's something to do with [a local engineering firm]. Well, she gave up her dinners and I gave up mine and we did tests together. She was the one person because I knew I needed my maths. She was really supportive in that. I don't really know who else because I didn't really I don't know the others very well. I feel like some teachers you click with more than others.* ***(Tyla, Engineering)***

Abi, following a construction management pathway rather than engineering like Eve and Tyla, had aspired to become an architect. This is notable as a career requiring a significant maths element and a still male-dominated occupation. The pattern of female maths teachers featured in the accounts of the young women who went onto engineering and higher-level construction routes is represented in the comments above. The three young women's accounts, along with Ella and Izzy's discussed below, all foreground the positive role played by their maths (and engineering) teachers. They were all female teachers, and the young women often drew upon highly feminised traits in the teachers in being 'like a mum', supportive and caring. Extant literature has considered the impact of teachers' gender on pupils' attainment and outcomes but with a tendency to look at primary age settings, male pupil underachievement, and under-representation of male teachers (Carrington et al., 2007; Hitchings et al., 2008; Skelton et al., 2008). Literature has suggested that teachers' gender cannot be fully located as a significant influence on student attainment (Carrington et al., 2007; Francis et al., 2008). The data here are not presented as a challenge to this, but rather that this suggests a greater level of complexity around the gender of teachers beyond student attainment, and that there is a crucial element in understanding atypically gendered trajectories of young women being facilitated and supported by female teachers in visible roles relating to maths and engineering during secondary education. The ways young women locate their maths teachers within a highly gendered framework of caring and nurturing, whilst concurrently placing value on their knowledge and guidance towards male-dominated spaces, is an interesting and important finding in relation to the role of teachers.

As Fuller et al. (2014: 281) argue, 'teachers are an important source of guidance and direction for students, yet teachers lack confidence to do this outside of their sphere of familiarity'. I find similar patterns of teachers' own knowledge of industry that act as forms of social and cultural capital in making qualifications sometimes visible and then viable for young women. However, these speak to highly localised and individual processes rather than demonstrating systemic and structural approaches in education to address gender imbalances in post-16 qualifications. For example, Ella

raised how she felt her engineering teacher at school played in role in highlighting the potential value of an engineering career:

> *It was the engineering teacher at the time, it was a female teacher. I think she did a little bit of engineering at school and college. The teacher finally said, if you do this, and look what you could get out of it, look at the nice things you could get or whatever. And I think that kind of just took a turn in my head. And I was like, right, I need to stick with it.* ***(Ella, Engineering)***

Ella's account demonstrates a further example of teachers' roles in shaping the possibility of a future, male-dominated career and the way she articulates this as pivotal turning point (Hodkinson and Sparkes, 1997). The patterns and processes that precede this 'turn' illuminate Ella's exposure to engineering through secondary school. Ella described when she was growing up feeling distant from 'girly' hobbies and interests. The resulting plausibility of an engineering career was highly embedded within the context of previous patterns and routines that predisposed her to male-dominated post-16 pathways.

Whilst a number of the young women who did follow engineering routes had the possibility of studying engineering at various stages of secondary school (addressed in section 5.2), this was not the case for all of the young women I interviewed. Due to personal reasons, in year 9 Eve moved from a secondary school with a vocational curriculum offering to one with only a traditional subject offering. As detailed in Chapter 4, Eve had enjoyed air cadets since being a young teenager, a hobby she described as being heavily dominated by boys. She and her friend were the only two females in her squadron. Eve said:

> *The subjects I chose were statistics because again, I really liked maths, graphic design and business. I didn't choose business, I chose ICT but then they changed the thing to business and I actually really enjoyed it. But they didn't have photography, or any kind of creative subjects other than graphic design. And graphic design was my favourite subject next to maths. So, I enjoyed it for that purpose. But I really wanted, more, kind of like [that*

> *school] offer like an engineering subject, I would have loved that in school but my [previous school] didn't have anything like that. (**Eve, Engineering)***

Despite not having the option to follow engineering at school, and recognising that she would have found this beneficial, there is a clear sense of an enjoyment in maths and related subjects in Eve's account. It was also highly relevant to her school context that Eve became motivated to become an engineer in the RAF, with a notable reference to maths and, specifically, a maths teacher. Despite feeling she had 'no idea' about what she wanted to do in terms of her career, the compatibility of a habitus largely shaped outside the school context along with an interest and engagement in air cadets, coupled with a maths teacher that encouraged and supported her enjoyment of the subject concurrently made plausible and viable a male-dominated qualification in engineering.

> *I've never, I literally had no interest in engineering or maths before [secondary school] really and then it was just kind of when your teachers say 'oh, start thinking about what you want to do'. And I had no idea. And then, actually, I looked into the RAF and that and it was just everything fit perfectly with cadets and everything I wanted to do. And I just kind of ran with it. **(Eve, Engineering)***

Habitus here can be seen to *predispose* rather than determine action, 'responsive to other social experiences as individuals move through different social fields' (Allen, 2014:764). An engineering career was already visible for Eve through her time at air cadets and her brother-in-law's career with the RAF as an aircraft technician. For other young women, such as Izzy, it was an enjoyment of maths, enabled in the school context by a maths teacher, that foregrounded the possibility of an engineering route:

> ***Int:** So what did you enjoy at school?*
>
> ***Izzy:** Maths, and physics – the ones nobody enjoys.*
>
> ***Int:** Did you think about engineering before this?*

Izzy: *It was a lot to do with her [my maths teacher]. She knew I was into maths and knew I wanted to be rich. So yeah, she must have just put two and two together and just pushed it really. We went to [a local engineering company] loads of times, she always took us to induction days. She used to take us all the time. Her husband was the engineer. That's why she was so into it.*

Int: *Was your enjoyment of maths and physics important in what you were choosing to do at college?*

Izzy: *Yes, definitely, because I knew that engineering is very maths and physics based so that had a big influence on the decision. The other influence was money – that was huge.*

In this exchange, Izzy places value on the teacher who, for her, pieced 'two and two' together to join her enjoyment of maths with a desire for a good income to a career in engineering. Accruing meaningful and sustained forms of social and cultural capital, through the husband of her maths teacher, played an instrumental role in making post-16 opportunities not previously considered visible to Izzy. This aligned with her enjoyment of maths and her desire to earn a high salary, demonstrating how 'new information is constantly absorbed within the existing schematic framework, causing refinement and modification to the habitus and the horizon for action' (Hodkinson and Sparkes, 1997:35). As such, social actors, notably maths teachers, can play a pivotal role in shaping and making more clearly visible male-dominated career options. It was, however, the crucial role of teachers in aligning skills such as maths or an already present interest in STEM subjects that made engineering a viable possibility.

In this section I have demonstrated how career possibilities that are made viable and plausible, enabled by social actors and structural school arrangements, remain strongly embedded within the routines and culture preceding this. This is significant in understanding the processes through which young women are unbounded from normative gendered practice. Eve was one of the only young women to attend a

secondary school that did not have a vocational offering and only a traditional school curriculum, highlighting that the spheres and interwoven influences inside and outside the school context are so crucial in making career routes that fall outside normative gendered patterns a possible course of action. With school subjects, especially vocational curriculums that foster a practical orientation, located as important in the processes of understanding choices to follow male-dominated routes, the next section explores how these subjects remain embedded with highly gendered frameworks.

5.5 School subjects and embedded gendered assumptions: The 'girly girl' and the 'tomboy'

When the young women following male-dominated courses talked about school subjects and preferences it was not only a sense of the practical, but they also raised this alongside deeply embedded gendered assumptions about different subjects and qualifications. Every young woman recognised the highly gendered spaces that subjects such as engineering, Design Technology and beauty therapy occupy. All young women who opted to study engineering or a similar subject at school expected to be in a gender minority, if not the only girl in the room. Importantly, these embedded assumptions also manifested in the rationale for choosing such subjects - a choice or preference of a subject such as engineering was representative of their position as not being, in their words, a 'girly girl'. Whilst a preference and orientation towards typically masculine subjects is represented by the young women as an act of freedom to choose irrespective of their gender and is interwoven with a rejection of traditionally gendered stereotypes, the young women's perception of these subjects remains firmly within a gender binary of male and female assigned spaces. An assertion of not being a 'girly girl' and rebutting dominant ideals of femininity concurrently aligns with a sense of wanting to become and feel legitimate in male-dominated spaces, enabling the young women to 'fit' within gendered assumptions of future employment sectors (Bridges et al., 2021).

As an example, despite a strong and continued assertion during her interview that ‘anyone’ can do engineering, Ella’s choice to study engineering in secondary school was also related to gendered assumptions about the subject and herself:

> ***Ella****: I picked it in my options in Year 8, anyone can do it. And I was really into it. So, you're in year eight, and you're presented with making options.*
>
> ***Int:*** *Why engineering?*
>
> ***Ella:*** *It was like, I wasn’t a girly girl. But I like I wasn't bothered about my hair. Like, I'm not bothered about my makeup. I'm not bothered about it was like something different and I might try it to see where it gets me in the future. Because if you do engineering and get bigger options and wider range, so yeah.*
>
> ***Int:*** *So you thought I'll try it and I’m not a ‘girly girl.’ Do you think that matters?*
>
> ***Ella****: No, anyone can be an engineer, whoever can be an engineer, but I was the only girl. I knew I would be.*

Ella’s account exemplifies how highly relevant the continued contradictions and tensions of freedom and choice surrounding the post-feminist rhetoric of young women remain. They are free and able to do whatever they choose whilst simultaneously recognising there are subjects and career paths where girls/women more ‘naturally’ belong (or do not). With the availability of school subjects, Ella’s possible courses of action were broadened in ways that made a male-dominated career a possibility. Evidently, there is a notion that engineering could be for ‘whoever’ whilst positioning the female space as the expected minority. Imagined careers were not bounded by normative gendered conventions but simultaneously recognised who has dominated and continues to dominate these spaces.

Interviews with the young women suggest that their sense of being ‘practical’ and ‘hands-on’ is situated alongside a disavowal of forms of femininity; that to be practical and hands-on is strongly correlated with a rejection of being a ‘girly girl’.

Aligning to the marked norms of masculinity via their appearances, such as through clothing and hairstyle, their 'femininity' is measured against the cultural norms of a 'masculine' appearance (Reay, 2005; Renold, 2005). For example, Molly and Sam repudiated forms and performances of femininity:

> *I've never been a really girly girl... I've always been more like football. Not makeup. I wear makeup but I won't drench myself in it. (**Molly, Construction Management**)*

> *To me a girly girl is someone that likes pink, wears dresses, makeup nails, cries if they get their hair frizzy or something. So, to me, I'm not a girly girl. **(Sam, Brickwork)***

To quote Sophie, a plumbing apprentice seen below, the notion of being a 'tomboy' was a common theme across the young women from all the male-dominated routes. This indicates a further factor that is shaping the plausibility of their qualification; aligning with an identity that is judged as compatible with pursuing a qualification in a male-dominated sector:

> ***Sophie:** So, I'm a little bit of a tomboy. So, I've always been friends with boys over girls.*
>
> ***Int:** What does it mean to be a tomboy?*
>
> ***Sophie:** I don't even know. Just like, I'm just me - I just get on with boys.*

Sophie recalled that through secondary school she had always been friends with boys more than girls, citing this as key to feeling more comfortable with the possibility of being in a gender minority when she would move on to college as a plumbing apprentice. Similarly to Sophie, Katy, a carpentry student, when thinking about choosing woodwork as a subject at school, drew upon her sense of being practical, but her distinction between the academic and practical raised highly gendered contexts to her perceived framing of this identity:

> ***Int:*** *So, you've said a few times, not academic, there are other practical courses so why not those?*
>
> ***Katy****: I had very little interest in anything else - I'm not a glamorous person, I guess I always felt kind of an outsider for most of my life based on my looks. I'm not like the typical image of a girl like I don't do dresses, don't do heels.*

Evident in Katy's response is both a sense of being a 'worker rather than a learner' (Brockmann and Laurie, 2016:13) coupled with 'the undermining and downplaying of femininity' (Barnard et al., 2012:10). The rejection of being a 'girly girl' is highly relevant when male-dominated pathways are followed (Barnard et al., 2012). Focusing on STEM and engineering-associated pathways, Archer et al. (2016) argue these routes are often judged by young women and girls as incompatible with 'their constructions of desirable/intelligible femininity' (Archer et el. 2013: 178). Young women who follow a STEM or male-dominated route articulate an identity that is a rejection of a 'girly' femininity. Engineering student Tyla, demonstrates this:

> ***Tyla:*** *Now, I've always been like, I guess you'd say a tomboy, from a young age. I can be a really girly girl.*
>
> ***Int:*** *What do you mean 'girly girl?'*
>
> ***Tyla:*** *Oh, I can get dressed up, I can do my makeup. I can go to a family meal and be all like prim and proper and whatever else. But I'll quite happily get dirty and do my own thing. I've grown up with boy cousins. So I've grown up around boys, so we always play fight and stuff. I don't know like making mud pies or whatever. I was always the dirty one, I always got dirty, I wasn't bothered. Stuff doesn't bother me.*

Tyla demonstrates that the identity and presentation of being a tomboy may be more fitting in certain social and cultural fields than others. This forms an important sense of appropriate gendered performances amongst the young women who followed male-dominated and vocational routes. The notion of being a 'tomboy' is, however, not without complexity and will be returned to in Chapter 6 where I show how tomboy identities are constructed and maintained in multiple ways by the young

women on male-dominated qualifications during their time at college as they are strongly determined, and often regulated, by the social and institutional settings in which girls find themselves (Paechter and Clark, 2007:353).

This section has highlighted the importance of the young women's sense of gendered performances. The plausibility of male-dominated pathways is structured through the perception of appropriate performances and outward negotiations with displays of gender. However, remaining attuned to the wider social influences of social actors and processes in schools in shaping the visibility and viability of post-16 possibilities highlights the role of careers advice and guidance, which I address next.

5.6 Careers advice, work experience and open events

Though not a focal point of this study, this research echoes evidence established elsewhere regarding the impact of the Covid-19 pandemic on systems and structures in secondary education (see Cullinane and Montacute, 2020; Timmins, 2021). The young women who participated in this study were largely in the final year of their GCSEs during the period 2020/21. As a result, the pandemic provided a backdrop to the final years of the participants' secondary school education and, subsequently, impacted their access to careers advice and guidance during the approach to their post-16 school transition. Archer et al. (2014:76), like others, argue for the importance and value of 'high-quality careers education' (see also DfE, 2023). The introduction of The Gatsby Benchmarks in 2014 provided a non-statutory framework for schools to support their legal requirement to provide an independent careers programme for young people aged 11-16. However, school offerings of careers advice and guidance are often subject to long-standing scrutiny within extant literature, even outside the context of a global pandemic, often being critical of the quality, consistency and scope of this advice and guidance in schools (Archer, 2014; Fuller et al., 2014; Hughes, 2017), demonstrating how processes within schools reproduce broader inequalities and perpetuate classed and gendered patterns (Abrahams, 2016; Moote and Archer 2018).

In the context of the careers advice and guidance the participants in this study received and had access to, there were differing accounts of the advice they felt they received. Even when there were forms of advice and guidance available, there was often little value placed on this by the young women from gender-typical pathways for opening options and possibilities at the secondary school to college transition. For those on male-dominated routes, advice and guidance often acted as a confirmatory practice rather than a transformative process in terms of their subsequent post-16 pathway.

The events of the pandemic may explain some of the limitations in careers advice and guidance the participants broadly experienced. Indeed, participants themselves suggested this was likely a significant factor in disrupting potential access to careers advice and guidance. Some young women could recall important and impactful careers advice, guidance, and specific open events from the local further education college they ultimately attended and specific labour market employers. The young women who attached meaning and importance to these events were all from male-dominated routes, including trades, construction, and engineering routes. Recruitment practices and initiatives can illuminate and make visible male-dominated routes. However, as with other practices and processes presented in this chapter, open events, careers guidance and advice connected an already cultivated predisposition towards practical skills for engineering students.

None of the young women from gender-typical pathways could recall any pertinent or meaningful careers advice, and when they could call recall some advice and guidance, it aligned with their already visible frames of reference. This is evidenced in in Maisie's account below. Maisie was unsure about what to study at college and felt the careers advice she received was scant as such post-16 choices remained gendered and embedded within fields of possible and available choices significantly circumscribed by gendered terms of reference. Maisie and Poppy, both beauty therapy students, recalled limited or non-existent access to careers advice:

> *The careers advisor that came in to school was from hairdressing. They would just search the college websites and ask if you're interested in anything*

– if you didn't know they would just sort of put you on something. ***(Maisie, Beauty Therapy)***

It [careers advice] would have been helpful. You know if someone came and spoke about it. Maybe I would have been able to be passionate about something and got inspirations. So I guess beauty was just what I enjoyed so sort of did that. ***(Poppy, Beauty Therapy)***

When asked about the potential value in having had access to careers advice and guidance that could have explored how she could use her practical skills in other ways, such as with building or making things, Poppy reflected:

Poppy*: I think, you know, making new things or building things, that would be really good. Because, I mean, that is I feel like that is where the money is at. And I guess that's mainly a course for boys, as well. As not many girls choose engineering and stuff like that, I don't know any.*

Int: *Why do you think it's mainly for boys?*

Poppy: *I don't know. I guess the same way being a beauty therapist is for girls, kind of which I don't think it should be.*

Despite recognising a gendered bias and associated stereotypes that Poppy felt should not bind boys and girls to certain subjects and careers, her choice remained mediated by gender and circumscribed by the perception of what were viable and plausible opportunities for her. Not having any proximate reference points to draw upon, and lacking careers advice, meant post-16 transitions occurred within the only reference point available; a past hobby and interest in her subsequently chosen field. Despite recognising that 'building and making things' could offer the potential to find inspiration from alternative possibilities, along with financial benefits, the foregrounded issue is that male-dominated routes are often 'narrowly constructed' in gendered terms (Lakin et al., 2020; Swan et al., 2019). When the values and predispositions from the home context are bounded to normative gendered

conventions and schools offer limited subject availability or careers advice and guidance, some post-16 possibilities are incompatible with some young women's gendered ideologies and are beyond the scope of plausible action, further rendering any possibility of using their skills in male-dominated spaces unviable.

A lack of awareness about possible options speaks to non-decision-making when the possibility of choice is removed (Bachrach and Barataz, 1963). In the accounts above, the structuring of the habitus coupled with (limited) access to forms of social and cultural capital through careers advice and guidance can limit even the potential of action and choice in careers that disrupt normative gender patterns. Careers such as engineering, despite aligning with skills such as building or being potentially financially rewarding, remain outside the scope of visible opportunity. Even when young women's habitus is less bounded to normative gendered action, an absence of careers advice and guidance as a means to open different pathways to young women can leave post-16 pathways invisible. For example, childcare student Emily recalled the limited careers advice she accessed at secondary school:

> ***Int:*** *So, [your secondary school] had an A-level provision, what was the careers advice like about those options after you turned 16?*
>
> ***Emily****: There wasn't much. Everyone else's plan was to stay, do A Levels. They [her teachers] wanted me to stay and do A-levels. But it was too hard. I couldn't, I wouldn't have been able to cope with that. I came home [from boarding school] and it was about a month before the end of the applying stage for here [The Aspire Institute] and I literally just clicked on childcare and said I'll do this.*
>
> ***Int:*** *Were there things you weren't going to do?*
>
> ***Emily****: All like, the engineering and stuff that was a definite no. I think at the time it was because I thought that's a male course. I'm not gonna go on it. I didn't know anything about it. So, I thought I'd look a bit stupid. Yeah, that's probably why I didn't choose them. Yeah, that's them all really.*

Emily's secondary school experience at a private boarding school, though anomalous in the participant context of this research, limited her visible options even though her aspirations to work on the family farm (detailed in Chapter 4) were individually less bounded to a normative gender framework. The limited careers advice Emily received was highly oriented to an A-level progression. Assumptions about engineering being a pathway appropriate for men, coupled with a lack of understanding or awareness of other possibilities, render other options out of view and invisible. This is, of course, not to assume that even with advice and guidance a different pathway would have been a possibility for Emily. Emily, as shown in Chapter 4, was significantly influenced by her parents to follow a highly gender-normative pathway of childcare when she was unsure about her post-16 pathway, with her focal aspiration growing up being to work on the family farm. When thinking about her post-16 transition, options were 'ruled out' and were not made 'from a large menu of alternatives' (Hodkinson and Sparkes, 1997:42). A continued, permeating perception of gendered pathways, interacting with other structural factors, continued to both close down certain pathways and perpetuate stereotypes about who certain courses are appropriate for.

Young women from trades and engineering routes were more likely to recall either some form of careers advice and guidance, a teacher with knowledge of a related industry or employer engagement with their school. The structuring of the habitus here is linked directly to students' ability to access and deploy social capital (Reay, 1998) as a significant element of what shapes the viability and visibility of post-16 options. Tyla, an engineering student, did recall limited careers advice, which she attributed to the pandemic, but was able to compensate for this through access to forms of knowledge gained through access to informal advice, namely via family networks. She said:

> ***Int:*** *So what about careers advice?*
>
> ***Tyla****: I think I've gotten it [careers advice] once in the whole time at school. We were in this little freezing-cold hut. But because I knew what I wanted to do, she didn't really know what to say to me. She gave me a few leaflets but I never wanted to do anything else.*

Int: *So what about work experience? Did you ever do work experience?*

Tyla: *Because of COVID and that we didn't, but we got a choice of three projects. And that was going to be classed as our work experience. So I did health and hygiene qualification, because obviously, in engineering, you go into, say, for an apprenticeship at a chicken factory. I'd need for health and hygiene to work in a place like that. If you work in any factory, or anything with food, you have got to have that.*

Int: *So how did you know that?*

Tyla: *My cousin's a welder, he's a fab and welder and he worked all over. But he went to a chicken factory, and I knew we have to have it. My dad also knew that. So my mum and dad were like, wow, that's a really good thing.*

There has been an increasing focus on the provision and types of information when students are choosing and considering post-16 and higher education routes. Ball and Vincent (1998: 380) describe 'cold knowledge', as '"official" knowledge ... normally constructed specifically for public dissemination'. This includes institution-produced materials, such as prospectuses and websites. Yet scholars have highlighted that 'hot knowledge', that is, knowledge acquired through informed social networks based on direct experience (Ball and Vincent 1998), is trusted and valued more highly in educational decision-making (Slack et al., 2014). However, the value of gluing together both 'hot and 'cold' knowledge is evident in Tyla's account above. The information about a possible qualification that could aid in her post-16 choices was obtained through familial connections and, as such, applied to the 'cold knowledge' disseminated with her school's careers advice session even in the restricted context of the pandemic. Exchanges of knowledge shared with the young women act as a form of cultural capital that serves to advantage young women during secondary school and also shaped possible work experience placements. This was even more pronounced in some accounts given the context of the pandemic significantly limited opportunities for many young people. Abi, a construction management student, recalled a careers fair that drew upon her interest and ability in maths and aligned

this to accounting, a career that exists in a relatively gender-equal sphere[11]. It was, however, the possibility of work experience enabled through family contexts, that brought together her skills and attributes into a plausible and visible and, importantly, male-dominated career option:

> ***Abi:*** *There was this lady at the careers fair that said about accounting, I thought I'm alright, maths, it does sound quite interesting, even though they say accounting is one of the most boring jobs, but numbers - I understand them… But then once I got this work experience in the architects firm, it confirmed what I wanted to do….*
>
> ***Int:*** *So how did you come across that? Did you have to find that yourself as well?*
>
> ***Abi****: You see, my dad knows somebody that works there, and my dad told them she's tried looking for work experience by herself and different things, but there's not much would you mind just having her for a few days and just coming around to have a look? From there they offered me a job two days a week – my dad said they wouldn't have offered me it if they didn't think I was okay.*

Deploying forms of cultural and social capital in this instance powerfully aligned the possibility of a qualification in construction management with, as I showed earlier, Abi's enjoyment of maths. Whilst forms of capital can offer women in male-dominated spaces cultural legitimacy (Bridges et al., 2021), Abi made specific reference to the fact that her father assured her that she had achieved the job offer herself, placing value on her meritocratic efforts whilst she concurrently recognised the social capital that had enabled this possibility. In this sense, the possibility of accessing forms of social capital becomes enmeshed with not just the visibility of future careers but the viability, where skills and perceived abilities are affiliated with career possibilities.

[11] Figures from the ONS (2023) for gender splits in the finance industry show 45.6% of charted accountants are female. This is a high as 69.5% women when looking at payroll and wages roles.

In this section I have demonstrated how open events and work experience possibilities can, in some cases, contribute to fostering the viability of routes that align skills and attributes to different career options. However, as a specific arrangement in schools, I have found young women consider careers education to be lacking in general, and so familial networks and access to informal careers education and experience were significantly implicated in fostering the viability of male-dominated qualifications especially. Moreover, this was more likely to be related to engineering and higher-level construction routes. As a result, issues remain over the recruitment practices of other highly gendered spaces such as trades routes, with widely cited skills gaps across related sectors, which are likely to be exacerbated in coming years. Unlike trades routes, engineering has been subject to intense interventions to address gender imbalances in recent years, and the promotion of women into engineering has been subject to policy and academic attention. I address next the complexities of such drives and gender-inclusive initiatives the young women experienced during their time at secondary school.

5.7 Recruitment practices and initiatives to tackle gender inequalities: the tensions and the contradictions

In this section I address the initiatives within and related to school contexts that seek to address gender imbalances, as they relate to engineering in particular. Whilst the targeting of certain sectors with events such as Women into Engineering Days or Women into STEM seeks to close gender gaps and challenge stereotypes, as the Women into STEM initiative claims, 'The Women in STEM campaign is an initiative to showcase the different opportunities for women in the STEM sector, whilst also trying to bridge the stereotypes of STEM subjects' (Women into STEM, 2024). This is not without tensions and, in some instances, social actors in the school and labour market sector can reproduce gendered inequalities through a narrowed focus on gendered skills as they link to careers that may reproduce, rather than challenge, patterns of exclusion and inequalities.

Highly reflective of current policy agendas around skills shortages across the engineering sector, engineering students were more likely than other participants to

recall participating in recruitment and events for careers advice, such as Women into STEM. For example:

> *I'd actually say those events [Women into STEM Days] was quite important. Because there was one I went to it was at the town hall, it was basically this room in the town hall. And there was different stalls all set up all around. And each one told you a bit about their company, where the training is the sort of usual thing. And the fact that they was looking at offering more women the opportunity to work for them.* ***(Bella, Engineering)***

> *Oh, yeah, I went to an engineering event once, a girls in engineering day, because one of my tutors, her husband was an engineer. So she used to have, a good network with engineers and stuff. So she, she took us to me and my friend - to a girls and engineering event. (****Izzy, Engineering)***

Whilst events targeting young women during their time at school had a role in the choice-making process of a gender-atypical qualification, the way young women are selected for these events work counter to initiatives to widen access and diversify recruitment. Kim, a school's liaison for The Aspire Institute, talked about Women into STEM initiatives being run by the college the young women ultimately attended. Her job role entailed working with local schools from primary age to secondary to give careers talks and guidance in schools, relating to the colleges offering. We discussed events such as Women into STEM and other 'course taster' days:

> ***Int:*** *How do you identify the girls that would take part in these taster days in women in engineering days?*

> ***Kim:*** *So the women and engineering sort of identifying the girls, it's not going to be up to me. What we'll be doing is when it's sort of all arranged in place, we'll be sending out an email to local Thornfield schools just because of the scale of the day. It has to only really be local at the moment. So it'll be local Thornfield schools, and we'll say to them. If you could bring 10 females who are interested in the area, and it sounds not particularly, well there's no really nice way to say it, we're basically getting girls who are likely to go into it.*

Problematic notions of 'who is likely' to go into certain fields indicates forms careers advice and events have the potential to perpetuate patterns of exclusion even when they are serving to be gender inclusive. This practice can reinforce limited options, leaving young women without access to knowledge of other possible pathways. Kim's account, as a school's liaison, also highlights some of the disconnect and fragmentation of recruitment systems between schools, colleges and labour market sectors. There is significant investment in the region in which this research has been conducted, specifically in routes associated with wind and renewable energy, so this fragmented relationship could be further problematic for addressing gender initiatives in the local context. Emma, who occupied a senior role with a trade association called Renewable UK, an organisation set up by renewables companies to support policy intentions to be able to develop and deploy renewables in the UK, explained the industry had a target to have 30% women employed across the sector by 2030. Jo, a stakeholder advisor for a global renewable energy company with significant growth in the Humber region talked about her role in addressing the gender recruitment target in the industry within the local area. I asked her about how young women and girls were identified to take part in school projects she was involved with:

> *It is mix whatever the school sort of wants to do. … The girls that might be interested in engineering, or sort of hands-on practical sort of or science sort of route or that kind of thing. The schools are quite conscious that the groups are mixed as well, that it's not* like *all the high achievers or the low achievers. It's just a mixed group. Or they'll even look at things like free school meals and stuff like that... So they sort of make that decision, because they know the students really well.* **(Jo, Industry Stakeholder Advisor, Renewable Energy)**

Of course, the role of teachers here is highlighted as pivotal in identifying potential young women to attend recruitment events, however, this remains largely focused upon those who have already shown an interest in the engineering sector. The accounts above strongly indicate that even when stakeholders from colleges and industry are seeking to address gender imbalances, this is not necessarily going beyond those who are already considering and aware of career options when they lay

beyond normative gendered patterns. Focusing on those already interested in engineering specifically serves to potentially exclude young women who have either not attended a school that offers this as a subject at GCSE (or equivalent) or, as Chapter 4 demonstrated, Emily and Poppy had deemed engineering or other male-dominated qualifications implausible owing to deeply engrained gendered assumptions about who typically occupies spaces in those sectors.

Evident in the accounts above are the roles of school staff in selecting who attends gender diversifying events and initiatives. Maxine, who led on Women into Manufacturing and Engineering initiatives in the region, talked about how young women are invited to the events they organise along with various stakeholders and labour market representatives. Her account illuminates how dominant discourses around maths form a key narrative at such events:

> *So for the schools, we invite students right from primary school. So what we've worked out is that actually, if the child at primary school does not like maths, or they dont get on with maths don't love maths, then well, by the time they get to secondary school, they gotta use maths in biology, or chemistry. If they're not good at it, or they don't enjoy it, they won't follow the STEM route….So I think that the teachers are very smart about how they work out who to bring. So yeah, the child might not realise that it'll be interesting because the teacher knows.* ***(Maxine, Organiser for gender diversifying initiatives in STEM and related fields)***

The idea that young women being 'good at' maths relates to future STEM careers (Moote et al., 2019) is echoed here by those involved with recruitment initiatives for engineering. The data and arguments I present in this chapter largely do not challenge these assertions. I have, however, revealed some greater complexities around this. Maths enjoyment and recognition of ability was deeply connected to social actors, in particular secondary school teachers, positively engaging with participants. As demonstrated by the young women's data in this chapter, GCSE maths results were not significantly different between young women on engineering and those on gender-traditional routes. It was more an enjoyment of the subject along with seeing the value of maths, cited against an influential (often female) maths teacher, that

distinguished engineering students from other routes. However, what is highlighted in Maxine's account above is how the value of maths is disseminated by those from the labour market, aiming to make male-dominated routes visible and viable for young women. This chapter has demonstrated how largely the young women who see value in maths are also those already interested in a STEM-related pathway and, as such, young women who fall outside this may continue to perceive certain routes outside the viability and visibility of their post-16 choices.

The young women interviewed for this thesis who did follow engineering routes had participated in some form of a Women into STEM Day, or Women in Engineering as they had already expressed an interest in following this potential career route in some form. Fundamentally, young women have already identified the plausibility of a pathway such as engineering before the events. As such, these events can act in a largely confirmatory way for those already interested and open to the possibility of a male-dominated route, rather than transformative for those who had not considered, or were aware of, such pathways. A reliance on teachers to know students' interests and abilities to link these to career possibilities suggests those working in colleges or related labour market sectors have an important role in addressing gender gaps. This does, for some young women, illuminate the viability of skills or interests in alignment with male-dominated careers, but implicit here is also the reliance on teachers' own knowledge and awareness of career possibilities that lay outside normative gendered patterns. As Fuller et al. (2014: 281) argue, 'teachers are an important source of guidance and direction for students, yet teachers lack confidence to do this outside of their sphere of familiarity'. When local labour markets are reliant on teachers to identify potential students for events targeting improved gender diversity, the scope of inclusive practices is limited. As demonstrated in section 5.2, it was teachers' own knowledge of industries, such as engineering, through their own spousal or family connections that was foregrounded in the guidance the young women received.

However, even those with industry knowledge, such as engineering tutors, often draw upon their own frames of reference about who can appropriately follow such qualifications. For example, below is an excerpt from an interview with Mark, an

engineering tutor at The Aspire Institute. Mark talked about his approach to identifying the 'right person' at open events:

> I *guess we just do open events for them to see what they are doing here. One of the things I do, I ask them about their hobbies or interests - it is the key question. As soon as I say something about their hobbies and they say, fixing my bike or I like servicing the car with my dad I go and so when you're listening to them that's something you want to hear. You might ask if they ever built Meccano kits or Lego kits, sort of those are the key things to me that tell me they are probably technically minded. 'How good are you at maths?' and that sort of thing, 'can you use a calculator?' That tells you a lot, you're gonna probably get the right person on your course.* (**Mark, Engineering tutor)**

The focus here in terms of student recruitment and career advice and guidance in asking potential students 'how good' they are at maths may be problematic when situated within extant literature that reports girls as less likely than boys to report high levels of maths confidence (Campbell, 2021; Siani and Harris, 2023). In section 5.3 I demonstrated how young women who did follow engineering routes post-16 and higher-level construction pathways reported higher levels of maths confidence than others, and in Chapter 4 I documented the importance of hobbies and interests aligned to 'tinkering' and building skills. Young women are also less likely than men to accurately report their maths ability, as seen across most of the trades students and gender-typical students in this study who reported similar GCSE outcomes to those on engineering routes. As such, a recruitment approach that narrows the scope of skills, interests and abilities may, in turn, exclude young women who have not recognised both the value of 'creative' skills more broadly in male-dominated routes and fail to accurately perceive and report their achievements in subjects such as maths.

The possibility of being creative and innovative can serve as a key drive for women to enter engineering careers (Swan et al., 2021). When skills are discussed with young women in the context of 'building' and being 'technically minded' by college teams, the scope of their recruitment advice and guidance is potentially narrowed further. This approach captures those whose habitus and forms of capital acquired in the

home and school context already align with the possibility of male-dominated careers. If highly gendered skills such as being creative and caring (Wegemer and Eccles 2019) remain absent, or outside the knowledge dissemination as part of the advice and guidance young women receive, pathways to male-dominated routes may remain implausible for some. Narrowed focuses render male-dominated post-16 qualifications and careers as being framed by some young girls as a 'masculine' subject, thus incompatible with constructions of femininity as girly and caring (Archer et al., 2016). However, constructions of gendered skills and attributes that can shape the viability of post-16 transitions have the possibility of being framed outside of narrow gendered stereotypes. For young women who *did* follow male-dominated post-16 routes, skills relating to creativity were more broadly aligned to careers such as bricklaying and engineering, but this was anchored against external reference points. This included drawing on wider advice and guidance, alongside values and practices from the home context that had already served to disrupt normative gendered conventions.

5.8 Gendered constructions of care, creativity, and social responsibility

In the final section of this chapter, I demonstrate how the young women on male-dominated routes, despite having articulated a strong disavowal of conventional forms of femininity, draw upon highly feminised attributes of care, creativity, and social responsibility as motivations for their post-16 choices. The section offers evidence that illuminates the application of feminised skills towards qualifications and careers traditionally stereotyped within highly masculine contexts, contributing towards further understanding the practices and processes that make differing, and highly gendered pathways plausible and viable. The section focuses on the accounts of the young women as they articulated their motivations for following their respective pathways.

Literatures commonly cite female-dominated routes as 'compatible' and 'congruent' for women with dominant forms of femininity, illuminating the continued preference of girls and young women towards traditionally gendered careers in 'nurturing/caring professions' (Archer et al., 2013:177 - see also Arnot, 2002 and Francis et al., 2017). As outlined in Chapter 3, during interview, all participants were asked what was important to them when choosing their post-16 pathway. It is not unexpected that the

young women in this study pursuing childcare or beauty services foregrounded being creative, caring or nurturing as important motivators. However, students on engineering and trades and construction management routes also often placed gendered skills and attributes in the foreground of their rationales. The motivations of young women pursuing post-16 qualifications provide invaluable insight into the articulation of gendered practices in male-dominated careers. This includes how trades students evoke qualities of care and creativity, and how social responsibility is emphasised for young women on engineering pathways.

The girls' accounts from gender-typical pathways aligned their school to college pathways within dominant constructions of appropriately gendered careers and skills, highlighting a gendered collective identity alongside a personal identity which foregrounded the 'value' of certain subject choices as associated with gendered skills and occupational outcomes (Eccles, 2009). Skills and attributes such as 'helping' or' caring' are framed within value expectancy models as demonstrating 'altruism' (Wegemer and Eccles, 2019). In the context of beauty therapy, Ruby explained that one of the most important aspirations for her career was to be able to 'help others'. In her account she explained how beauty therapy aligned with this:

> *It makes people happy and things like back problems I start massaging them probably helping, I won't say cure, but it helps people with problems like that.* ***(Ruby, Beauty Therapy)***

For Poppy, who valued contributing to society and helping others, beauty therapy enabled her to achieve this:

> *People could be stressed out or they could have a bad week or something like that. And you know, it's probably nice for them just to talk to someone. You do a treatment for them, which can also make them feel better.* ***(Poppy, Beauty Therapy)***

Leah, studying childcare, talked about her own role in making other people feel good and considered that childcare was fitting to her values:

*Think it's like I really enjoy helping others and making others happy. Like, it doesn't matter if I'm upset or something, I'm going to make sure that other person is okay and just helping others just seems to be what I do.***. *(Leah, Childcare)***

These young women's accounts demonstrate some of their motivations for their post-16 qualification with a continued tendency to provide care for others. As young women following a pathway operating in a highly gendered sphere, the accounts presented here represent strong gendered ideas echoing extant literature of culturally feminised work (Francis et al., 2003; Guy and Newman, 2004). In section 5.2 of this chapter I outlined the role of school subject opportunity and the ways secondary school subjects offer the means for deploying social and cultural capital that can, in some instances, situate male-dominated routes as viable and plausible. Maisie's account below is highly reflective of other young women on male-dominated routes who considered they were not just practical (see section 5.3) but also creative. She had immediately dismissed the possibility of choosing engineering at school:

Int: *How helpful was it being able to choose beauty at school?*

Maisie: *Yeah. I don't think I would have really considered it or anything without doing it at school.*

Int: *Were there any other subjects you could have chosen?*

Maisie*: Yeah, there was like food tech. I wish I could have done because that seemed really fun. There was like engineering. I definitely wouldn't want to do that.*

Int: *Why?*

Maisie*: That's just not my thing. I don't know. I'm kind of a more creative type.*

Int: *Is engineering not, you know, creative in terms of making things?*

> ***Maisie:*** *I don't know - I'm just not interested in it as much as everything else. You always get told you can do what you want to do, but in life I just kind of did what I liked.*

Maisie had the option to study broad and varied vocational subjects at GCSE, the only student from a gender-typical pathway that had this option at secondary school. During our interview Maisie recalled that school subject opportunity strongly aligned to her subsequent post-16 pathway. As I demonstrated in Chapter 4, Maisie's hobbies and interests growing up featured within normative gendered terms, particularly involving highly feminised interests such as an interest in makeup skills. Familial points of reference included a stay-at-home-mother and a father who worked in refuse collection. Skills and associated school subjects are constructed and perceived within normative gendered frameworks of the 'creative', coupled with drawing upon past reference points of hobbies and interests (Francis 2000; Francis et al., 2003). Post-16 choices were drawn upon through exposure to subjects at KS4 whilst being perceived synonymously with creativity in highly gendered contexts. A habitus shaped in the home and school context is implicated in shaping perceptions of appropriate educational and career choices in gendered terms. Maisie could have studied other practical and vocationally focused subjects, including engineering. Instead, beauty therapy aligned with normative gendered frameworks, shaped in the home, and reinforced through later school options. In these instances, simply 'opening up' or, indeed, already having pathways 'open to all', can do little to challenge perceptions of the highly gendered nature of certain subjects (e.g. JCQ, 2020; Francis, 2000, Francis et al., 2003; DeWitt et al., 2013) as a habitus cultivated in the home can act to underpin powerful values that continue, even when opportunities arise and are visible through school subjects. As such, the plausibility of pathways is highly dependent on compatibility and congruence of how perceived gendered skills and interests are applied to labour market sectors.

The contrast of 'creativity' being deployed in alternative gendered spaces was articulated by brickwork student, Sam, and Molly, a construction management student. In both instances it was the influence of wider social actors from home and school contexts that illuminated the possible transference and relevance of skills into alternative, male-dominated sectors:

They said I can use art skills in bricklaying as well, like on decorative walls and that and I thought that would be interesting. ***(Sam, Brickwork)***

Molly: *I just got to be with my mum and the woman at the door asked me what I wanted to do, and I said it was between interior design, which was the art part, and then architecture. So she took me into art and then she rang Matt and asked him to come find me. So Matt chased me around the college, and then brought me into one of the rooms in the construction block and just explained everything to me. And then I picked that instead.*

Int: *So what was your first thought when he said construction, what did you think about that?*

Molly: *No. It was for boys. That was my first thought. And then he just kind of explained that that would be the easier route. And if I went through art then I might not get the outcome I wanted in the end. And so I just decided to trust him and go for it.*

As demonstrated in section 5.4, both Sam and Molly had articulated a rejection of culturally normative forms of femininity and associated displays of being a 'girly' girl. The plausibility of a male-dominated route post-16 was emphasised through constructions of creativity in a challenge to traditional associations of trades and construction with masculinity, especially given that femininity is typically aligned with creative expression (Archer, 2000; Moote et al., 2020).

For the young women from engineering routes, notions of care, creativity and social responsibility featured just as importantly. Moote et al. (2020), in their exploration of engineering and science aspirations, presented findings that suggest aspiring female engineers were less likely to be motivated by a desire to help other people through their future careers. In contrast, the data I present here of young women who did follow engineering and associated routes such as fabrication and welding, suggest they do place value on contributing to society and helping others alongside a potentially high income. These findings resonate more closely with Swan et al.

(2020), whose research into the identities of engineers shows female engineers have more altruistic career goals and motivations than men. For example, Eve, an engineering student placed value on the future and her role in contributing to this:

> *I'd like to contribute to society, obviously. Renewable energy is like the future. So engineering is getting bigger with new companies and everything. So that's for society.* ***(Eve, Engineering)***

Paige, also an engineering student, drew on helping future generations and the importance of clean and new industry. The deeply entrenched gendered values evident here illuminate how highly feminised traits including being caring, and her imagined future as a mother played a significant role in shaping an orientation towards engineering:

> ***Int:*** *So what was the most important part of choosing engineering?*
>
> ***Paige:*** *A job that helps others. My mum's always taught me to be caring for everybody. She's always told me for that, because she's always worked in like the hospitality or she was in a care home for a little bit. So always helping people. So I've just been brought up to do that, really. So I'll feel like that's really important. Be able to teach my children to help people.*
>
> ***Int:*** *Why does engineering let you help people?*
>
> ***Paige:*** *Well, obviously, if it's renewable energy, all obviously fossil fuels are running out. So it's like a new kind of energy that will help future generations.*

The accounts here demonstrate the potential value in engineering being (re)framed as an altruistic STEM choice as a development of gendered constructions of engineering away from a purely masculine context. This echoes the work of Lakin et al. (2020) and their arguments around the importance of engineering lessons or activities directed at recruiting young people into engineering in promoting the 'altruistic opportunities' (p.35). This may be particularly relevant as a means to tackle permeating patterns of under representations of women. Young women following engineering pathways were also largely aware and motivated by the altruistic

opportunities engineering would give them and *did* place value and importance on altruism.

Associations of engineering with feminised traits of caring and social responsibility were not unique to engineering routes and were also commonly articulated by those from trades and construction-related routes. Abi, a construction management student, felt her potential future role could satisfy her desire for a role that could both 'help others' and 'contribute to society'. She said:

> *I think that contributing to society in a way with architecture, you sort of help people not just get a house, but get somewhere to stay with their family to ensure that they are safe and you can design different things based on budgets and help build whatever is required for them.* ***(Abi, Construction Management)***

Similarly, Katy, a carpentry student, invoked a palpable sense of social responsibility and caring for both others and the environment when thinking about how a potential career in carpentry aligned with her most important career value of 'helping others':

> *I've always had a sense of helping my fellow man, especially doing a construction job. With such a sustainable source such as timber, some people can say, well, how's that helping other people by taking the trees off the planet and whatnot. But the way I want to do it is I don't want to just be taking from the earth, I want to also be giving to it, so for every tree 'I'm taking down I want to be giving that to someone who's giving that to charity, who are going to plant more trees. I want to be doing it sustainably. I'm not just being reckless with it. I'm actually trying to help as well.* ***(Katy, Carpentry)***

Helping others and a sense of caring was important across other trades routes. Sam and Beth, both brickwork students, expressed that helping others was an important factor when thinking about their future employment opportunities, and more important than financial motivation:

> *I'd like to help others, so like say you've got some elderly people that didn't have money I could just do it for them. I'd say it's okay.* ***(Sam, Brickwork)***

> *[It was important] to have a job that helps others, brickwork builds people houses and stuff. Gives them somewhere to live.* ***(Beth, Brickwork)***

Sophie, a plumbing apprentice, talked about how 'helping people' was an important factor for her and this was more directly aligned to her being in a gender minority as a 'female plumber'. Her role in helping others was articulated in making women feel comfortable with her presence in their homes.

> *Because I can go which will make someone else feel more comfortable in their own home rather than just, you know, being uncomfortable with men.* ***(Sophie, Plumbing)***

Whilst the accounts above all raise divergent rationales and contexts to the notions of 'help' and 'care', in this section I have demonstrated how a sense of altruism features commonly across participants irrespective of level or type of qualification. As such, this reframing is implicated in engendering confidence about the plausibility of certain qualifications. As we saw in Chapter 4, some participants on gender-typical pathways firmly framed engineering and other highly masculine qualifications firmly as 'jobs for boys' and incompatible with their own sense of appropriate gendered action. For the young women who did engineering and construction, they articulated care and social responsibility as important values and skills that are firmly aligned with their qualifications. Whilst there is already a sense that women possess different, innate skills to men (Agapiou, 2002) that could advantage them in male-dominated industries, such as being clean or creative, this is not necessarily the panacea to recruitment diversity in the sectors. Sang and Powell (2015) argue recommendations that women's (perceived) differing skills can be brought into sectors such as engineering and construction only act to reinforce rather than disrupt the gendered nature of these industries. However, the young women in this study illuminate the importance of these motivating factors in a more nuanced space. The enjoyment of masculine skills and tinkering and aligning to a tomboy identity, whilst also articulating highly feminised motivations, are important contexts shaping the viability and plausibility of male-dominated qualifications. Consequently, I suggest this indicates a more complex space around these motivations that are not about de-gendering professions or reinforcing them in a masculine space, but rather the young women are navigating their space within their own dispositions and social contexts.

These accounts offer important insights into not only the processes that enabled their pathway towards a male-dominated career, but also important contexts to how processes of recruitment may serve to exclude and render implausible male-dominated routes for some young women when the plausibility and viability of pathways are aligned to a sense of identity and skills relevant to sectors outside normatively gendered patterning. When gendered values remain so deeply entrenched and, for some, these are compatible and articulated as important in male-dominated contexts, for others, they remain only plausibly applied to highly feminised labour market contexts without wider stakeholders illuminating broader career possibilities.

5.9 Conclusion

This chapter has emphasised the role schools and associated social actors can play in shaping young women's choice-making processes in the post-16 transition to highly gendered qualifications. The visibility, viability and plausibility of pathways are structured and reinforced by the practices and arrangements in schools, serving to make male-dominated qualifications a possibility for some young women. The chapter has also demonstrated the layering effect of cultural social contexts as the women move between different social fields of school and home. The differing possibilities of school subjects can have a profound impact on post-16 pathways, serving to make career possibilities visible. With a government focus on addressing skills gaps in some of the sectors engaged with in this research, this could be a crucial piece of the puzzle in addressing pervasive gendered patterns. Teachers, especially female maths teachers, were a particularly powerful source of information, acting as a form of cultural capital towards the viability of, particularly engineering, careers. These are important new insights to deepen our understanding of more specific contexts for gender-matched teaching. However, teachers in schools may have limited knowledge of possible courses of action that lay outside their spheres of familiarity; instead they may draw upon their own, narrowly constructed frames of reference (Fuller et al., 2014) about the skills and abilities important in male-dominated careers.

Recruitment practices targeting women during their time at school that seek to tackle gender gaps have been identified as helpful for some in aligning their skills and interests with viable career choices. However, these practices can also act to perpetuate patterns of exclusion if knowledge dissemination from those in positions such as schools' liaisons and college tutors remains circumscribed by narrowed gendered framings, along with a fragmented approach as to who is identified as potential participants in gender diversifying and careers guidance events targeting those at secondary school. These events act in a confirmatory sense rather than a transformatory way. Forms of social capital gained through a one-off careers event cannot be deployed in a meaningful way and, instead, longer-term, ongoing practices such as home contexts and daily interactions with social actors and subject choices are further emphasised in fostering the viability and plausibility of male-dominated post-16 choices.

The plausibility of male-dominated routes is crucially indicated within young women's disavowals of forms of femininity, instead leaning into tomboy identities that are deployed when they rationalise their pursuit of school subjects traditionally occupied by boys and men. The factors that are important to young women reveal important insights into the constructions of highly feminised skills and attributes applied to male-dominated sectors. The ability to be creative or care for others outside of normatively gendered spaces was an important element in shaping both the viability and plausibility of male-dominated careers, speaking to possible opportunities in the practice of recruiting more women into various male-dominated sectors – whilst they are still at secondary school. Young women are also exposed to varying careers advice and careers open day opportunities. This chapter also argues that these events act in a largely confirmatory way. Though useful at times in illuminating the viability of male-dominated pathways through aligning skills to careers, they often capture women already predisposed to choosing such qualifications. For some, then, careers outside normative gendered conventions will remain invisible. However, deeply engrained gender norms and limited access to careers advice can continue to restrict young women's choices and even when they do follow male-dominated routes, school contexts can act in ways that still frame subjects and qualifications in masculine terms.

Moving on from school contexts, and following the temporal structure of this thesis, in the next chapter I discuss the post -16 college experiences of the young women.

Chapter 6. Navigating college and expectations for working in male-dominated industries

6.1 Introduction

Whilst existing literature has long been concerned with barriers to women's participation across various male-dominated sectors, literature has also explored the ways gender shapes the experiences of girls and women when they do occupy educational and occupational spaces that have been typically male-dominated (e.g Puwar, 2004; Allen, 2013; Bridges, 2020; Carroll, 2023). Vocational modes of learning have clear trajectories to often highly gendered occupational sectors and are also usually obtained in Further Education (FE) college settings. These college courses and qualifications are often cited as being reflective of broader, socially constructed norms about men and women's roles and behaviours (Colley et al., 2003). As such, college settings and learning environments are crucial sites where gendered orders and ideologies of practice are established, reinforced, and played out (Colley, 2002). This final empirical chapter examines how being in a gender minority is navigated and experienced at college when young women follow traditionally male-dominated post-16 qualifications.

Whilst recent years have seen steadily increased female participation in engineering and across *some* parts of the construction industry, women remain chronically underrepresented in these sectors. Increases in participation are often attributed to both policy developments responding to the need to increase STEM and trades skills more generally, and efforts by organisations to promote the inclusion of women across roles where they remain underrepresented. However, promoting inclusion and increasing numbers of women does not address the environments the young women face when they do pursue male-dominated qualifications and careers. There remains issues and barriers to women's participation, with a number of scholars demonstrating how girls and young women continue to face hostility, discrimination, and non-inclusive behaviours in the classroom and workplace across different sectors and geographical settings (Carroll, 2023; Foley et al., 2022; Mackrill, 1994; Thurtle

et al., 1998; Turner et al., 2021). This chapter examines these concerns within a UK college setting.

The voices of those on typically gendered courses has been an important comparative thread through Chapters 4 and 5 where I demonstrated how the practices and processes in home and school settings were crucially implicated in sometimes divergent but more commonly shared ways between the groups of young women, depending on their *choice* to follow a typically or atypically gendered pathway. In this chapter I focus on the *experiential* element of the thesis foci, as such the emphasis is on those undertaking male-dominated routes. The opening section (6.2) draws upon the voices of those of gender-typical routes for the final time to demonstrate how quickly expectations relating to their gender dissipate for those on typically gendered courses. Thereafter, the focus moves to the experiences and perspectives of those on male-dominated courses, alongside data from school staff and labour market informants.

As I will show, how young women navigate and experience being in a gender minority at college informs how they envisage and expect their gender to shape experiences of working in male-dominated industries after completing college. This chapter builds from Chapters 4 and 5, where I explored the choice-making processes and practices from the young women's pre-16 contexts and I demonstrated how the construction of the visibility, viability and plausibility of male-dominated routes can help us in explaining the processes and practices involved when young women are choosing to pursue their post-16 pathways. This chapter focuses on the post-16 context; as such, the *visibility* of their pathways is already implicit in that the focus is on the young women's reflections when they have chosen their college course.

A more central concern for this chapter is to demonstrate the complexities in structuring the continued *plausibility and viability* of choices to continue onto male-dominated careers following college. The evidence I present suggests that the plausibility of continuing to follow a male-dominated career is related to how the young women shape and make sense of their own gendered performances in the college classroom and carve out their own space in a male-dominated environment.

I argue that, in enacting behaviours that conform to the normative gendered culture of that space, the plausibility of male-dominated careers is an ongoing process within the post-16 setting. Through their experiences and interactions in gendered spaces, their expectations are shared for their future careers that often emphasise how gendered inequalities will follow them beyond college that are often foregrounded over their completion of formal qualifications. This illustrates how the viability of male careers is continually navigated and negotiated.

I will also demonstrate how the young women's expectations of working in a highly male-dominated industry are influenced by their college experiences and interactions with social actors, including college staff and male peers. These experiences highlight how their perception of transitioning from their course to a career is often underscored by dominant gender norms in highly gendered fields. For the women to envisage their future careers in male-dominated sectors as plausible and viable, they must not only complete, and excel, in their qualifications but also conform to the behavioural expectations of their environment. I show how gendered norms around masculinity and lad culture (Nichols, 2018; Phipps, 2018; Jordan et al., 2022) remain the dominant culture in male-dominated spaces. Even when such spaces are occupied by women, inequalities remain.

The chapter reveals complexities and tensions in the highly masculine environment young women experience at college, which they anticipate will follow them into their future employment. A paradoxical relationship exists between them wanting to fit in and be legitimate - often by denying the importance of their gender, whilst concurrently evoking their own sense of responsibility in representing women in sectors where men have dominated. Interview data from college staff and labour market informants are also presented throughout this chapter as I demonstrate their role in shaping both the young women's experiences and career expectations. I show how tutors, college teams and social actors from the wider labour market, despite unanimously supporting gender diversity in their respective industries, simultaneously maintain and reproduce normative gendered assumptions about who the 'natural' occupants are of these sectors. These assumptions act to reinforce the gendered frames of reference deployed by the young women that shape the (im)plausible and un(viable) choice of male-dominated careers.

The chapter proceeds as follows. First, the chapter examines the young women's expectations when they were starting their college courses. I then address some of the early interactions and first encounters the young women had with male peers and tutors, which acted to further reinforce their minority status. The chapter then moves to their ongoing navigation of college and addresses issues of sexism and inequalities in the classroom. Finally, I outline the women's expectations and anticipated futures for working in male-dominated sectors. Despite common rhetoric of inclusivity and equality articulated by college teaching staff and labour market informants, the young women remained cynical about gender diversity initiatives and largely accepted (and expected) that sexism and inequalities, in some form, would follow them to their workplaces. These expectations are not unfounded and echo bodies of extant empirical research into male-dominated workplaces (Bridges et al., 2020; Carroll, 2023; Fielden, 2000; Powell and Sang, 2015; Powell et al., 2006). This study then consolidates the importance of the role of college settings when women are in the minority in shaping experiences as part of potential initiatives to address ongoing gender segregation in these fields and speak to wider issues with ongoing gender inequalities.

6.2 The culture of vocational programmes and dominant cultural beliefs. 'A bunch of bitchy girls' or women's solidarity?

To start, I will outline the young women's reflections on their expectations for starting college from both those on gender-typical and male-dominated courses. These expectations across highly gendered segregated courses provide important context for the later sections in understanding how gender is shaped and behaviours are enacted in masculine spaces. Assumptions of who naturally belongs in highly gendered spaces are perpetuated and reproduced - irrespective of being in a gender minority or majority.

Unsurprisingly, all the young women I interviewed were aware of the highly gendered nature of their chosen qualification, and gendered stereotypes were highly

relevant to their expectations of starting college. These were articulated in divergent ways depending on whether the young women were entering a gender minority or majority space. Importantly, young women entering male-dominated spaces were apprehensive about being potentially the lone girl in their group and, when there was one, expressed a sense of relief at seeing another girl on their course. Those following gender-typical qualifications in hair and beauty pathways were equally apprehensive but for different reasons. The highly gendered nature of their qualification was aligned to assumptions that these spaces would bring 'bitchy' girls and a potentially challenging environment. Whilst these apprehensions manifest differently, they demonstrate the foregrounding of gender in the expectations for all the young women when starting college. For the young women on gender-typical pathways, however, this would just as quickly dissipate into the background. As I show, for those on male-dominated routes, although sometimes articulated in episodic terms, gender would remain foregrounded, salient, and central to many of their college experiences.

The highly gendered educational context of all the young women's qualifications was, as Ridgeway and Correll (2004) argue, one that makes gender 'effectively salient' and where there are strongly gender stereotyped roles. Gender stereotypes permeated expectations about starting college regardless of their qualification being gender-typical or male-dominated. Given that '… gender stereotypes implicitly shape behaviour and judgment…gender is culturally defined as relevant to the situation' (Ridgeway, 2009:151), the relevant situation within the context of this study relates to whether the women were to be in the minority or majority. Young women on typically gendered qualifications expressed concern and apprehension about other women related to stereotypes of the highly feminised space they were entering. How the young women perceived themselves and how gender featured in their reflections relates to the plausibility of their course within judgements relating to their own gendered frames of reference. In the gender-typical spaces of hair and beauty, the stereotyped roles relate strongly to the occupational cultures associated with their qualification (Colley et al., 2003; Hall et al., 2007). These strongly stereotyped roles and assumptions were negatively framed, as evidenced in the quotes below from Ruby, Poppy and Maisie, all beauty therapy students:

Int: *What kind of people were you expecting [on your college course]?*

***Ruby**: I was expecting them all to be a bunch of bitchy girls. I feel like unless they're friends with your friends or people you know, that's usually how they are. So I just thought a full group of girls is not going to go down well.*

***Int:** What kinds of people were you expecting?*

***Poppy:** Not very nice people. Because my sister did beauty and she was telling me how it you know, everybody's, like, bitchy, and not very nice and stuff like that. So I was kind of expecting that…I was really nervous and stuff.*

***Int:** So, before you started, what did you think people who did beauty would be like?*

***Maisie:** To be honest though my own opinions went out the window after the first day because I though everyone's gonna be really bitchy and mean.*

The presence of other women prompted feelings of unease and apprehension. Tropes and stereotypes associated with hostility between women in hairdressing and beauty-related qualifications were attached to prevailing cultures of dominant gender beliefs (Ridgeway, 2004; Harness, 2022). For the young women starting college on gender-typical qualifications, an awareness of their gender, and other women, was most profound just before starting college. However, this then almost immediately dissipated and became less problematic than expected, highlighted in Maisie's excerpt above; a shared sentiment across the participants on a gender-typical pathway. For those on gender-typical courses then, being in an all-female environment created a sense of shared experiences, related to the predominantly homogenous gendered context. For example, Leah, a childcare student, despite being apprehensive at the start of college, found that a predominantly female environment was a source of support:

…you all like, understand, if you're all female, it helps… it's kind of like a little community. And it's, really nice. ***(Leah, Childcare)***

These accounts highlight the role of shared experiences and mutual understandings related to their gender. Gender was foregrounded in their early expectations of college with negative connotations relating to women and was a stark difference to those entering male-dominated spaces where the dominance of men and masculinised cultures was deemed problematic.

The expectations of starting college for those undertaking male-dominated qualifications highlighted initial assumptions about the potential supportive role of other women and, with it, the possible value of other women as supportive and enriching to their experience. In contrast to the initial assumptions of those on a gender-typical pathway, the possibility of other women being in their class was foregrounded as a source of relief, and potential solidarity, as we see in the following quotes from Sophie, a plumbing apprentice, and Ella, an engineering student:

> ***Sophie**: I came in here [the college] and it was like kind of an inset day. You meet the tutors, and I didn't know anybody. I was the only girl.*
>
> ***Int:** Were you expecting to be the only girl?*
>
> ***Sophie:** Yeah, I was hoping I wasn't. I was hoping that there was at least one girl so I wasn't on my own.*

> *I think if it was more girls, it'd be so much easier because you can get like, I'm not saying if you get along with girls easy, but you have more of a conversation with a girl and with a boy you can never talk about certain things. Whereas girls you can talk about everything and anything.* ***(Ella, Engineering)***

This was a shared sentiment across all those on different levels and qualifications in male-dominated routes. Katy, a carpentry student, said:

Int: *What were you expecting the group to be like? That first day you came in?*

Katy: *I expected males. Quite literally, for the first 30 seconds, until the other girl on my course arrived, I just saw all boys, and then I was relieved… I mean, we didn't really talk much. We had our own separate things, but it was nice to know that I wasn't like the only one and I had someone at least who could somewhat understand.*

Katy's response here is highly reflective of the other young women who found relief in seeing another woman and, in particular, foregrounded this as associated with a shared experience and understanding. In Katy's account, even without an established friendship or relationship, the sense of shared understanding was implicit because of the commonality that connected them by being the only women in the group. Whilst women are not a homogenous group, extant literature has demonstrated that in male-dominated occupations notable shared experiences relate directly to their gender (Bagilhole, 2002; Bridges et al., 2020). All the young women following male-dominated routes were (correctly) aware and fully expected to be in a minority, if not the lone women in the room. This was echoed across accounts of those recalling their anticipation of following a male-dominated pathway, drawing upon embedded cultural beliefs of those who normally occupy such spaces. In citing a desire towards wanting to see another female, the young women were predominantly placing value on informal supportive networks – being bounded together through their common ground. For example, Elena, a brickwork student, reflected on the expectations she had when she started college and directly referenced her apprehension of being the lone female and the sense of 'luck' she felt when there was another woman.

Elena*: I thought there might be one or two girls. On the first day, I felt like weird in case I was the only girl on there, I was worried but luckily Beth was there.*

Int: *So it mattered more that there was one other person?*

> ***Elena**: Yeah very, I just didn't want to be on my own. I'm friends with Beth [the only other girl on the course], we don't really hang around with the boys – they are nice but I just spend my time with her…we met on the course – we are the only girls so I think that's why we have spent time together… I'm glad she's doing the course. I didn't want to be the only one.*

Elena notes that the shared identity and experience of being a minority in a male-dominated space bounded her and Beth into a friendship. The ways the young women in this study placed value on potential female friendships and informal networks resonates strongly with Bridges et al.'s (2021) exploration into the factors that contribute towards women being successful in navigating male-dominated occupations. Echoed in the data I present here from the college setting, Bridges et al.'s work suggests that informal networks between women in the workplace can imbue them with forms of cultural capital, acting as a crucial component in their successful navigation of the male-dominated trades sector. The young women I interviewed were, of course, still at college and were yet to formally enter male-dominated occupations; however, my research extends Bridges et al.'s findings and reveals how these networks are valued *prior* to commencing employment. Even from college, before full immersion into the workplace, the young women's responses suggest they recognise how social capital carries value and that 'membership of a network provides access to the collectively owned capital available within it which can then be mobilised to an individual's advantage' (Fuller, 2014:6). The advantage noted here relates to how forms of social capital through establishing informal networks can provide women with a sense of support and encouragement, which is an important factor for women not just entering, but viably remaining, in male-dominated careers (Bridges et al., 2021; Wulff et al., 2022) Not only this, Wulff et al. (2022:30) argue social capital 'bleeds into' cultural capital as these relationships can help individuals understand the norms and behaviours appropriate to a given situation, and so the value of networks and support during college is also inherently related to structuring the ongoing plausibility of male-dominated careers following college. The compatibility of the young women's own gendered expectations in masculine spaces can come through networks that possess collectively acquired forms of capital. This further highlights the need for attention to a collaborative, coordinated approach between colleges and the labour market. This relates to the importance of early assumptions from the college

context about the importance of fostering relationships and networks that can later act to keep women within male-dominated occupational sectors.

This section has demonstrated how embedded gendered assumptions are evident among the young women when starting college. It is not surprising that the young women were aware of the highly gendered nature of the course they were embarking upon, however, the perception of other women is highly contextually relevant. Gender in and of itself does not change; the context does, and when women are in the minority, there is, in a sense, a solidarity and an anticipation of a shared experience that only other women offer. This solidarity and informal network of other women can help affirm decisions and reinforce the plausibility of continuing towards male-dominated occupations. The young women from male-dominated courses desire for a shared connection were, for many, powerfully reinforced not only by the culture of women's potentially shared experiences but also by evoking apprehensions about dominant cultures in male centric sectors and qualifications. When women do occupy qualifications and industries that have long been dominated by men, there is importance in how social actors including labour market, college staff and male peers respond to their presence. As such, in the following section, I address the role of social actors in reinforcing the salience of gender for the young women on male-dominated qualifications.

6.3 Early encounters with college staff and the labour market

As already stated, the young women from across construction and engineering qualifications were profoundly aware and expected to be in a gender minority at college. As I showed in section 6.2, the young women on typically gendered routes had assumptions about other women on their course centred on stereotypes around occupational cultures. However, their gender was only significant or salient for them in a briefly episodic moment upon starting college, and these were based on their own expectations and importantly did not necessarily consider other people's perceptions about their presence relating to their gender. Conversely, as I show in the following section, the young women from across the male-dominated qualifications were highly aware of their gender as they started college with the sense that social

actors, including college staff, and the young men on their course, were disoriented and at times confused by their presence. Married to their own expectations, their presence as being the other, or 'out of the ordinary,' was reinforced through first and early encounters and how they felt others perceived them.

For the young women on male-dominated courses, their interactions with others, including the young men on their programme and their tutors, impacted their negotiations with being in a gender minority during their college experiences. They felt their presence was perceived as 'out of the ordinary' and 'unusual' because of their gender. This was exemplified quite clearly by Izzy, an engineering student, on remembering how she felt on her first day and how she felt others saw her and the one other young woman in her class:

> *Well, when I first joined, I remember that it was literally just me and Chloe in that class. And I feel like people were maybe a little bit confused at us being there.* ***(Izzy, Engineering)***

This sense of disorientation and confusion at their arrival was not confined to college-based settings only. Ella, an engineering student, attended her first work experience event very early on in her time at college. This was at an industry day hosted by a large regional engineering trainer. She recalled there being surprise at her presence despite being part of an engineering student group visit. She said:

> ***Ella:*** *Well, at first they [the engineers] didn't realise that I was actually there to learn. And they thought I was someone else. I was like, no, I'm here to learn. So they got me my overalls.*
>
> ***Int:*** *What did they think you were there for?*
>
> ***Ella:*** *I don't know, they just asked who I was. And when the teacher said, 'oh, she's part of the engineering group'. And they were surprised, because they don't get many girls into the industry, and then the staff were perfectly fine that they didn't say nothing. They just treated me like everyone else.*

Ella attributed a sense of surprise at her presence at an engineering industry day as her gender marked her as being unusual and out of the ordinary. These findings echo Puwar's (2004) arguments that when women occupy male-dominated spaces, they are perceived as 'alien' bodies as they present in a context and setting that is not normally reserved for them, describing here the disorientation of others. The young women's perceptions and experiences in this study suggest that men and others are not expecting girls and women's presence in such spaces, acting to reinforce gendered cultural beliefs and shaping early encounters with those working in their planned future careers. This is an important example of how gender is foregrounded into banal interactions and the embedded assumptions of other social actors are unveiled as to who they expect normally works in certain sectors. These expectations speak to the labour market's own construction of who plausibly follows careers in their sectors – men. Social actors in engineering sectors maintain expectations of who 'naturally' or 'legitimately' occupies spaces, which operates within highly normative gendered frames of reference.

Ella's account above presents an almost immediate dismissal of the interaction with her then being treated 'just the same,' retreating from labelling systemic inequalities such as the underrepresentation of women. Whilst this suggests a temporary and episodic disorientation (Puwar, 2004), which Ella felt was quickly remedied, some initial encounters signal the start of ongoing patterns of unequal and exclusionary practices. The presence of young women in traditionally masculine and male-dominated spaces as unexpected or not the norm was also highlighted by Sam, a brickwork student. Her account is revealing about the initial and then ongoing use of gendered language in classrooms, illuminating the intrusion of gender into everyday practices and processes for women on male-dominated college courses:

> *When we first started, we went on a tour and they [the college tutors] said to the group 'the library's up there if you want to go pick up any smart girls', and then they looked at me and added 'or boys' so I don't think they do expect there to be many girls. Because when we do a group thing, they say 'Come on, gents'. And then they're looking at me and 'oh and ladies' it is like they forget that they've got a girl on the course. They clearly don't have a lot of*

> *girls even throughout the years because they're always like talking as if it's like just the boys… (**Sam, Bricklaying)***

Sam's experiences here are reflective of others in how initial encounters foregrounded them as an 'abnormal' presence. In doing so, social actors - in this instance, her college tutor - reveal assumptions that remain circumscribed by dominant gendered cultural beliefs. However, this did not dissipate or change, and the tutor's language remained male-centric. For the tutors, the presence of girls and young women is unexpected and out of the norm in that context. In a similar context of women in male-dominated spaces, Britton (2017) describes how gender can become foregrounded and acts as an 'intrusion' into what should otherwise be a gender-neutral context. The perception among the young women in this study is that tutors expect and are accustomed to male-only groups leaves the implicit message that young women are outsiders to this space and are abnormalised when occupying a space not typically reserved for them (Puwar, 2004). Dominant gendered beliefs are ubiquitous and become engrained in everyday classroom practices and processes. Even when these initial encounters are framed as a 'shock' or potentially only a temporary disorientation, they act to reinforce dominant beliefs of certain sectors as highly masculine and male-dominated spaces. Elena, for example, recalled enrolling at college to undertake brickwork and her first encounter with a college tutor:

> *On the day I was getting my badge and sorting out stuff for college, the tutor was there, and he said to me that it'll be easy for me to get onto courses and jobs and stuff because I'm a girl…there's not many girls on it. **(Elena, Brickwork)***

Seemingly positive discrimination practices formed a significant part of Elena's first encounter with her tutor. I return to positive discrimination and the issues that surround this in section 6.8, but here, I want to draw attention to how a first encounter with a male tutor placed the focus not on her potential skills but rather that she would have it 'easier' simply because she is a girl. The interaction placed Elena's gender firmly in the foreground of her first encounter. This minimises long documented barriers women face to working in the construction industry and highlights also how

social actors, such as college staff, locate it as an advantage which can downplay and obscure continued gender discrimination and disadvantage women may face. These experiences, when situated alongside the view of a male tutor, highlight how claims of 'gender blindness' from teaching staff translates into the young women experiencing a 'default male' environment. Ben, a curriculum lead, who also taught across different construction and trades qualifications, said about his students:

> *...they're a student 'learning a thing'. It doesn't matter if they're male/female.* ***(Ben Curriculum Lead, Construction)***

Claims that suggest all learners are equal and that gender does not matter do not result in women feeling equally accepted and can create experiences that leave young women feeling othered by their minority position.

In this section, I have demonstrated that during their initial encounters, often with men – both peers and staff - the young women feel a sense of how these men are not expecting girls and women's presence in such spaces, and so dominant gendered cultural beliefs are reinforced. Through this, a gender order is maintained in terms of who remains the dominant group in particular settings. Crucially, these encounters are contrary to teaching staff's messages that students' gender does not matter where male-centric language or possible positive discrimination practices are front and centre in meeting young women starting on male-dominated courses. Everyday college and occupational practices and processes, such as addressing learners or welcoming students to work experience, are permeated by gendered frames of reference. The foregrounding of gender in their initial encounters is a common experience for these young women that sets a tone for their college journey, whereby gender remains salient to their experiences and their expectations. As I explore next, young women's presence in male-dominated spaces does not act to challenge or change environments. Rather, the onus is on the young women to adapt to the space and conform to the dominant cultures within these.

6.4 Navigating being in a gender minority; physical strength and innate skills

Having explored some of the initial encounters and first interactions the women had upon starting at college, the following sections address the ongoing classroom experiences the young women recalled during our interviews. This offers important insights into how gender plays an integral role in shaping how young women regulate and manage their own behaviour in the classroom when they are in the minority. I start by setting out how the girls discuss gender as foregrounded within their classroom interactions in 'episodic' and 'momentary terms' (Britton, 2017). The salience or significance of gender in different contexts, according to Ridgeway and Correll (2004:157), can vary continuously from being 'nearly negligible, to being a central focus'. The way the young women in this study sometimes consider their gender only important in brief moments can be contextualised by understanding that women often deny or minimise the importance of gender in interactions often to negate unwanted, negative attention (Britton, 2017). As I show, this is often rooted in biological assumptions around strength and innate abilities associated with boys and men (Agapiou, 2002), which, without careful navigation by the young women, could render a male-dominated career implausible and unviable.

The young women, irrespective of their qualification in engineering or construction, experienced gender in contradictory, complex and nuanced ways in the classroom. The young women, at times, formidably dismiss their gender as unimportant or even irrelevant to certain settings or interactions. It was common for the young women to express that 'it doesn't matter' that they are a girl doing an engineering or a construction course in attempts to normalise their position, but instantaneously, and at times concurrently, articulate various examples of interactions that foreground their gender as particularly salient. This ranged from subtle, or nearly negligible, to overt sexism. For example:

> *We are just the same as the men. Obviously, they [the men/boys] don't say this. I think they thought I was just gonna have the same strength as them. There was this pipe, and I carried it with him, but oh my god, it was so heavy.* ***(Lucie, Engineering, Fabrication and Welding)***

There is an interesting contradiction highlighted in Lucie's account. Lucie opens by asserting that working and carrying out tasks in industry is about being 'the same' as the men. In doing so, she frames the work tasks of her chosen industry in gender neutral terms. However, Lucie immediately highlights the physicality that marked her as being different. Women are 'the same' – conversely and concurrently, they are not. Gender becomes visible to actors in an intrusion into what appears as a gender-neutral context in this case. Practical learning may, on the surface, appear to be gender neutral; however, in highly gendered sectors where skills and abilities relating to the viability of someone's success relates in part to physical strength (Agapiou, 2002; Fielden et al., 2000), any sense of gender neutrality is undermined by an assertion of biological differences. This point was also exemplified by Sam, a brickwork student:

> *Like they [the tutors and other boys on the course] do sometimes single me out as being like a young girl, you know, 'might as well give her a hand' as if I can't lift as much as they can or stuff like that. I think sometimes it's just to be polite. Sometimes I think it's just their reaction like, 'Oh, she's a girl she might not be able to lift it'. But I don't know. That's just how they are.* ***(Sam, Brickwork)***

Being a woman in a male-dominated context foregrounds biological difference. In this sense, masculine capabilities are naturalised as innate properties, rather than being skills that are acquired (Powell and Sang, 2015). Even in possession of 'qualifications' or skills, women's viability of following these careers, can be undermined by broader assumptions about natural capabilities. Simultaneously, these interactions are dismissed as an individual moment rather than a broader reflection of inequalities and assumptions about the abilities of women (Britton, 2017; Powell and Sang, 2015). Elena, a brickwork student, further illuminates this in the following extract:

> ***Elena****: They just treat us [herself and Beth] like one of the lads, we act like one of the boys anyway. We are just like the boys, we aren't girlyish ... getting your nails, hair and nails done they [the boys] just treat me as they do now. So I'm just like one of them. Well sometimes they try and help me – with the wheelbarrow and stuff. I mostly get help from the boys.*

Int: *Do you ask for it?*

Elena*: They just do it.*

Int: *Why?*

Elena*: I don't know – maybe they just think I need help.*

Here I wish to draw attention to the contrasting and often opposing ways Elena's discusses her gender. In this exchange Elena situates herself (and her peer Beth) as 'one of the boys'. In doing so, she neutralises the salience of her gender and, in turn, makes herself 'one of the lads' whilst also experiencing moments where her gender is brought to the foreground when others, namely the boys, perceive she needs help. The extent then to which the boys actually see her as one of the lads is brought into question. Following this, Elena went on to ponder that the boys would 'never offer help' to the other boys. In doing so, Elena's demonstrates a reluctance to label gendered inequalities. The boys' behaviour is framed as 'helping' rather than as a moment that highlights her difference, and possible weakness, because of her gender. Barnard et al. (2012) noted that the young male engineering students they interviewed implied that when there are female engineers in their group, it is a desirable trait that they are not 'girly girls'. This suggests the actions and behaviours of the young women are preferable when they undermine and downplay dominant assumptions associated with femininity (Barnard et al., 2012). Elena's account here then further illustrates notions of tomboy and girlygirl labels that are raised in attempts to 'fit in' and 'be one of the lads' in the classroom setting and conform to the codes of the dominant culture.

The disorientation of tutors and the unnatural presence of female learners also presents in tutors heightened awareness when they do have girls in their classes. This focus can further emphasise the girls' sense of being out of place or abnormal, which relates to gender stereotypes and potentially sexist attitudes within this context. Katy a carpentry student recalled:

> *I think the tutors were different with me. They took the mick out of everyone, but he never took the mick out on me. I don't know why. I did say, like, 'you can take a shot dude, I'm not gonna cry'. It was like odd. He said, 'it's just not something I'm comfortable with'. I think it was because of like the nature of people who had worked with him originally, he wasn't kind of used to working with females.* ***(Katy, Carpentry)***

In Katy's response, her sense that she is treated differently because of her gender, albeit with the potentially good intentions of the tutor, foregrounds who is 'proper' and questions whether, as a woman, they 'can cut it' within the dominated culture of the space (Puwar, 2004). A sense of disorientation amongst men and boys, who are the natural inhabitants of these contexts, speaks to the plausibility of young women and is not only shaped by how young women perceive themselves but also by how they are treated and responded to by those in the dominant position. Not only this, the exclusion of Katy from forms of banter and humour maintains her status as the other, or outsider. The refence to crying here also draws on a sense that women themselves realise the stereotypes associated with this; in this case, being potentially more emotional (Jones, 2020).

The section has highlighted that despite what appears as gender-neutral, ongoing classroom interactions reveal how the responses of others remain far from gender neutral. Assumptions around innate masculine capacities including physical strength often underpin these interactions. These interactions and assumptions illustrate women's tensions and dilemmas of wanting to 'fit in' and 'be the same' whilst conversely being 'the other' in these spaces, marking the young women as different. These differences can also give way to experiences of inequalities and sexist behaviour. I address these next.

6.5 Navigating being in a gender minority; inequalities, sexism and low expectations.

Flynn et al. (1991:459) argued that women on engineering courses are not always treated as equal by other male students but that 'institutional constraints mitigate against overt demonstrations of sexism or misogyny'. Over 30 years later, literature widely sites issues of everyday sexism and inequalities still being experienced by women in male-dominated spaces (Carroll, 2023; Bridges et al., 2020; Powell and Sang, 2015). Education settings are just one example of a site where behaviours associated with 'lad cultures' and masculinity are constructed and reproduced (Francis, 1999; Jackson, 2002; Mac an Ghaill, 1994; Phipps, 2015) and have also been identified specifically amongst male engineering students (Danielsson et al., 2019). These so-called lad cultures have become synonymous with gender inequalities related to misogyny and sexist behaviours and attitudes (Jordan et al., 2022; Nichols, 2018; Phipps et al., 2018). In this section, I explore more explicit examples of sexism and inequalities encountered by participants – from both staff and male students. I also demonstrate how the young women often retreat from labelling behaviours as sexist in favour of deploying explanations of 'banter' and humour in the classroom. These responses demonstrate how institutional arrangements and social actors such as college tutors often fail to mitigate, and sometimes reinforce, deeply engrained cultures and attitudes.

As I explored in sections 6.3 and 6.4 early encounters set the tone for continued patterns about the unusual, unexpected presence of young women. These all serve to highlight how there are assumptions about the abilities and capabilities, or the viability and plausibility of men and women occupying certain spaces, that are deeply rooted in conventional gendered norms and stereotypes. The young women were aware of this and expressed how gender stereotypes were routinely deployed by the dominant group to scrutinise their skills and abilities, questioning the viability of their presence on the course. For example, Ella and Izzy, both engineering students, stated:

> *In the workshop, it's more, 'I didn't know you could do that'. Or 'Why are you doing that?' 'Do you not know how to do it?' I'm like, no, I know how to do it. And the shock that I know how to like use a screwdriver, but it's not rocket science.* ***(Ella, Engineering)***

Izzy: *I used to feel like people would think that because we are both blonde and both like big characters, I'm pretty sure they would think that we would be failing straight away or getting kicked off.*

Int: *Who made you feel like that?*

Izzy: *The tutors – it just felt like being stereotyped, you can feel it caught you when you've been stereotyped? I definitely felt like that. Yeah – it was mainly from tutors. I mean, they're old school over there, so I did feel that a little bit, but now I don't at all. I feel like it's been a bit more normalised now, this was three years ago. Maybe I've proved myself.*

Both Ella and Izzy's accounts offer insights into how stereotyping and (low) expectations are dominated by gendered assumptions. These assumptions highlight examples of sexist and unequal treatment of young women as their abilities are called into question. For both Ella and Izzy, similarly to other young women on male-dominated courses, their experiences were related not just to their male peers but also to college teaching staff. These accounts are reflective of broader literature that suggests women continue to face unequal treatment and discrimination in careers such as the trades and engineering (Bridges et al., 2021). The data here shows how this is embedded with the VET context as young women encounter men of different ages enacting gendered assumptions, sexist jokes and assumptions about their gender. This echoes with the 'suck it up' approach of women in Foley et al.'s study (Foley et al., 2022:1687), and this approach is often based on a fear of retaliation by men. These accounts reveal how unequal practices, gender inequalities, and sexism remain the ongoing accepted and dominant narrative in male-dominated spaces.

The accounts so far suggest a reluctance or retreat by the young women to label these behaviours and encounters as the result of sexism. Molly, a construction management student, recalled similar experiences but was unique in labelling the boys' jokes as sexist:

> *Some days are more difficult than others. They [the boys in the class] make sexist jokes … But they're not that bad. Like you can laugh, sometimes you'd prefer not to. But it's mainly just like little digs, like why don't you do hair and beauty, why are you in here? We don't want you here or something like that.* ***(Molly, Construction Management)***

Molly, however, like the other young women, quickly dismisses these jokes as not being 'that bad', instead deploying a 'just get on with it' attitude. Molly went on to explain that her response to these 'jokes' is to '*just look at them and go okay'* rather than involve a tutor or college staff member. As such, the notion that institutional constraints mitigate against overt demonstrations of sexism or misogyny (Flynn et al., 1991) fails to address sexism that is rooted in the everyday practices of the learning environment. The examples of young women explaining the behaviour of the young men in their group as rooted in humour and jokes spanned across qualifications and levels of study, for example:

> *They're [the boys] are nice, and they act like lads act around a girl like flirty or whatever, but I'll just take that on the chin, and they know when the lines to stop. They know when to stop when it's too far. And I'll just laugh it off. Because I think it's a joke like I get that's a joke…that's their way of banter towards me.* ***(Ella, Engineering)***

> *It's just how they [the boys] are, there's always banter – like jokes about sex and stuff - that's just how it is.* ***(Izzy, Engineering)***

> *I think some of the boys have made some rude comments to the other two girls because they're a bit more involved with the boys. Things about the way they dress… I mean, boys will be boys.* ***(Abi, Construction Management)***

The jokes and humour described in the accounts above are widely reflective of the experiences of young women undertaking male-dominated qualifications. Descriptions of humour and banter were often rooted in the young women's physical

appearances. Sexualised comments were embedded within narratives of 'boys will be boys' that the young women largely accepted as part of the culture of the industry they were following. This relative acceptance of sexism as humour or jokes reflects the young women's assimilation into the dominant masculine culture of their respective fields (Miller, 2002). Citing Bourdieu's notion of habitus, Powell and Sang (2015) argue this is related to the process of the values and dispositions embedded in the engineering and construction 'field', and that this field is intrinsically male, and women respond accordingly. As the plausibility of their future careers is inherently related to a compatibility of their careers within gendered terms, the actions of either failing to challenge or accepting sexist humour and banter forms part of the plausible construction of their male-dominated choice of career.

Conversely, participants would attribute and minimise the behaviours of the boys as (im)maturity, suggesting they felt that the lad culture experienced in these settings could have a temporal expiration, for example:

> *I know it's a bit stereotypical, but like boys tend to be a lot more immature than girls and they like, not pick on you, but like they'll do stuff to try and wind you up in that way.* ***(Bella, Engineering)***

> *I'd say the girls talk a lot about other stuff like we aren't having burping competitions and talking about boys and stuff, we are more like, you know, the girls are more mature.* ***(Sam, Brickwork)***

These responses share interesting parallels to Nichols' (2018) work around lad culture and laddism in a sporting setting with what they term 'mischievous masculinities'. Nichols' concept more broadly draws on life course perspectives around men and masculinity to explore cultures in male-dominated, hyper-masculine settings. Although the young women commonly referred to these behaviours as manifestations of immaturity associated with lad culture, their responses were more complex. As I will demonstrate later in the chapter, the young women understood that these cultures could, and likely would, persist.

However, interactions that could be described as unequal or sexist did not just occur with other, similarly aged male students, they also involved tutors and college teams. This contradicted expectations that men's attitudes may change as they get older. Nichols' (2018) work illustrates that whilst lad culture is often framed in a specific temporal sense of 'young' men, lad culture permeates attitudes and contexts even as men get older. Nichols' male participants suggested that aging means, as men, they 'should know better' and brings with it an awareness of masculine cultures but with little impetuous from them to affect change. My interviews with some of the college tutors revealed important patterns whereby male tutors were more likely to have a 'rose-tinted' view of potential sexist behaviours in their classrooms and perceive they themselves enacted an equal treatment of boys and girls. In contrast, the female staff, including those working in college support teams and tutors, were far more acutely aware of potential issues embedded in gendered cultures. This is powerfully illustrated in the responses of Aspire Institute staff Mark and Ben, who taught in the construction and engineering departments and had both previously worked in the industry of their respective fields. They described their perception of altogether more harmonious and equitable relationships and interactions between the learners:

> ***Int:*** *How do you see those interactions between the male and female learners?*
>
> ***Mark:*** *Generally, it's pretty good. It certainly is in lessons I'm involved in. What you do tend to see happen is the girls do bunch together when they first come in.*
>
> ***Ben:*** *They [the girls] seem to hold their own as good as anybody. You always get the odd quiet and a shy, quiet one. But you get that with boys as well. It's not unusual., There is some conflict. I don't think that's a male/ female thing. I think that's just different opinions and characters. But I don't particularly see notable conflict between boys and girls directly.*

Engineering tutor Ben did, however, acknowledge that sexist behaviours were likely to happen, but did not see this as big problem as he went on to explain:

> *I'm sure it does happen, obviously. But I wouldn't consider it to be a big problem that I noticed is that prevalent in class really, it's got to happen though.* ***(Ben, Curriculum Lead, Construction)***

As men, Ben and Mark have occupied the dominant group in their fields of engineering and construction, respectively, and their insights are limited and circumscribed by their own experiential frames of reference. These attitudes place the onus on the women to adapt, and not to challenge and change the dominant male-centric culture. Actions that are framed as a supportive stance to prepare the women for work is a failure or an inability to enforce any cultural change. Georgie, an engineering tutor, recalled having a young woman on her programme and how the male tutors approached this. As a woman herself who had experience working in the fabrication and welding industry, Georgie's account highlights that rather than male tutors addressing problematic cultures in the classroom and workplace, their role instead is driven by a need to 'test' women's preparedness for the masculine context of the working environment through sometimes hostile approaches. Georgie said:

> *The young girl that we did have [last year] she was either singled out, and she was on her own a lot…I remember her coming to this taster before, she's not going to come back…[I thought] I know they [the male tutors] give her a hard time. Actually, I wasn't there. I was off actually. But they give her a hard time, so much so that she got really upset, which I thought was a bit cruel. To test her, I don't really agree with it, I get why they did it. They did it to make sure she can cope with it, because it can be hard with the boys. But I just thought was a bit sad that she did get reduced to a degree.* ***(Georgie, Engineering/Fabrication and Welding Tutor)***

The wider implication for young women is that ongoing gender discrimination is not only unchallenged, but also tolerated. The plausibility of their choice remains under scrutiny and negotiation. Vicky, a skills and employability trainer at The Aspire Institute for engineering students, recalled how she would approach a young women student ahead of going out into industry:

> *…if I was sending a student, a girl student, out into an employer that I know would be like full of banter, inside, I would probably be a bit more concerned how they would get on and perhaps not making it too obvious, but, I would probably check in with them a little bit more, probably 'cause I have to do checks anyway. But if I saw them like around the college I would probably say more, go up to them and say 'oh, how is your placement going?'* ***(Vicky, Skills and Employability Trainer for engineering students)***

As a member of support staff for the young women on engineering routes, Vicky's approach appears a deeply rational and pragmatic one where she largely sees her own role as preparing women for industry and the practices within, deploying 'softer' approaches than Georgie's account above suggests of her male colleagues. Still though, these actions do not serve to challenge potentially toxic and problematic cultures.

This section has outlined examples of unequal and sexist experiences that the young women often dismiss. As a result, broader gender inequalities manifested through sexist jokes and comments are minimised as forms of banter and humour. This approach serves to delegitimise sexism, thereby framing "lad cultures" as a contextually and temporally specific phenomena. Further, when situated within the comments of tutors and college staff, these accounts suggest permeating and expectations of ongoing patterns of inequalities and discrimination relating to dominant gendered cultures. The young women largely drew upon the (im)maturity of their male peers as a significant element of the classroom interactions they experienced. However, as I later argue in this chapter, the young women also largely anticipated cultures of inequalities, sexism, and low expectations to follow them into the workplace and, as such, envisaged and plausible futures continue to be shaped within current contexts.

6.6 Navigating being in a gender minority; complicity with the dominant culture

The previous section outlined some of the ways the young women described their classroom experiences as they related to broader patterns of inequalities, low expectations, and, at times, sexist behaviours. In this section, I address the different, sometimes contradictory ways the young women responded to the social actors they encountered along their college journeys, often through compliance with the dominant gendered culture. The young women largely expressed that keeping quiet and not challenging behaviours was a crucial element to navigating their way through this highly masculine and male-dominated space. Mackrill (1994) found that female students on a motor vehicle programme were often subject to unequal treatment by tutors and their peers, with subsequent literatures also suggesting women in male-dominated environments face hostility and inequalities, but alongside this comes the pressure to ignore the appearance of gender (Britton, 2017; Carroll, 2023; Puwar, 2004; Ridgeway, 2009). This sense of ignoring gender was expressed by the young women here, but this was often framed in terms of individual responses to instances of gendered inequalities or sexism; disavowing structural issues and responding to issues in an individualised way rather than as a collective 'female issue'.

The response of 'keeping your head down' and 'keeping quiet' as a young woman on a male-dominated qualification was met with conflicting thoughts by the participants. Some of the participants used this response to not draw attention to themselves:

> *They're [the boys] alright with me. They talk to me just the same as everyone else. I don't really talk to them that much. I've never had a comment about being the only girl. Maybe because they don't really say much. So, if I was like being dead cocky and like, they might say something. I think they probably do think it, but because I don't really like to say much. And when I do talk to them, I'm nice.* ***(Lucie, Fabrication and Welding)***

Lucie's account highlights issues of classroom participation have previously been identified by Thurtle et al. (1998). The authors found that 'students did not identify gender as a significant issue' but did highlight 'intimidatory behaviour ... preventing full participation in the classroom' (1998:629). More recent research in the Australian context continues to echo these concerns and argues that gender inequalities in the vocational classroom act to further proliferate ongoing gender segregation in the

trades (Bridges et al., 2024). These issues are also evident in this study, suggesting women's participation in vocational, male-dominated spaces remains unequal and shaped by the gender minority status. Here, Lucie starts by setting out that the boys in her group have never passed comment on her being the only girl. She goes on to attribute this to her being quiet and that being 'cocky' could invite 'comments'. The possibility of unwelcome behaviours or comments is dealt with by Lucie by being quiet and being 'nice'. Niceness, as a form of conventional femininity (Paechter et al., 2016), is deployed to avoid conflict and unwanted attention on her as the lone female.

Similarly, evoking a sense of the 'nice girl' and through quiet compliance, construction management student Molly considered her life would be made easier. The approach here to minimise unwanted commentary from the boys was to keep quiet and not challenge the status quo of the group, stating:

> *If you try and get along with the boys and do the things that they like, your life is so much easier on that course.* ***(Molly, Construction Management)***

Not only are the girls aware of their own behaviours in the classroom in a male-dominated setting but they also show an awareness of how other girls behave. For example, during her interview, Molly discussed Abi, a fellow construction management student who was also a participant in this research. Molly said:

> *I think if you're more out there, they're more likely to say something. Like, no one will make comments to Abi cause she's always got her head down doing something.* ***(Molly, Construction Management)***

In Molly's account, rather than focusing upon and raising issues with the boys who make the 'comments', she suggests that in being quiet and studious, Abi mitigates (unwanted) 'comments' from the boys. A perception of Abi's apparent invisibility in this context is related to her not challenging normative gendered culture in the male-dominated context. The responsibility to mitigate adverse behaviour from the boys is firmly on the shoulders of the young women. However, perceptions of the appropriate actions of other women in male-dominated spaces are complicated, as quiet

complicity is not always framed as the panacea to occupying a gender minority space. Engineering student Tyla also discussed a fellow engineering student and how there could be problems with her success working in industry and ability to secure an apprenticeship due to her quiet demeanour. The suggestion from Tyla was that being quiet and complicit may not necessarily fit with the dominant gendered cultural practices in the engineering industry, whilst simultaneously recognising that reacting to behaviours can also further proliferate problems:

> ***Tyla****: There's a girl on my course who's looking for an apprenticeship, and I think she's a bit annoyed - Because as I got one sooner she's still looking. I think she's a bit annoyed at that…But she's very, you know, like quiet and timid. And I think she's got to find her voice. I think she's more academic than practical as well. You've got to find your voice because men will always be men, always be gobby and boisterous and whatever else.*
>
> ***Int:*** *So, what do you suggest?*
>
> ***Tyla:*** *Like, just let it go over your head, just don't even retaliate. Because sometimes the more you react the boys will do it more and more and more just to get a reaction. So, if you like, leave it and decide to just leave it they get bored because you're not giving it out.*

Tyla's account powerfully illustrates the conflict and tension in how women assimilate into highly masculine spaces. A careful balancing act of not being too quiet and finding your voice, but at the same time, ignorance and keeping quiet is the tool to diffuse male humor and banter. Successful assimilation does then rest upon women being complicit in their domination (Powell and Sang, 2015). These responses all form part of the ongoing structuring of male-dominated careers remaining plausible in future college-to-workplace transitions. This account of 'men being men' and 'boys being boys' further places the young women as centrally responsible for the comments and behaviours their presence can prompt from their peers and was powerfully and directly articulated by Eve, an engineering student:

> ***Eve**: A girl starting now, I think she'd probably leave because you need to have the experience of being there the whole time to know how the boys have acted from the beginning in that environment.*
>
> ***Int:** So, is the problem the environment or the girl?*
>
> ***Eve**: Girl, it is the girl because if the girl wasn't there, they would all get along with their work. They wouldn't constantly be like, making comments or looking at the girls all the time.*

As seen in Eve's account, and across others in this section, young women are placed in a subjugated position that is navigated by some through deploying niceness and quietness as techniques that they consider will make their journey through male-dominated spaces less challenging. The perception again that the cultures of the classroom are perforated by gendered practices prevails; to challenge these is to risk unwanted attention.

Being in a gender minority, it was not just important to get on but also to achieve and to further validate the viability of their place in their chosen sector. As such, it is not enough to simply be a young woman in a male-dominated space, this comes with the pressure to prove yourself and legitimise your space in a male-centric arena. I address these tensions and dilemmas next.

6.7 Plausible and viable careers; the burden of representation and expectations for working in a male-dominated industry

Both outward and internalised questions of capability were broadly apparent across participant responses, especially in terms of the girls having to prove themselves as equal to their male counterparts. However, this stance of being 'just as' capable was at times met with a conflicting awareness of how their gender does make them different, meaning that the young women felt they had even more to prove the viability of their space to their male counterparts and tutors. Wanting to be 'the same'

as their male counterparts emphasises the extent to which occupational spaces are predominantly conceptualised in masculine terms. Here, the plausibility of working in a male-dominated sector was permeated by a need to prove people - often men - wrong. This highlights the powerful ways that the notion of role-modelling gender diversity was a driving factor in their career choices but came with the burden of feeling that this meant they acted to represent all women. For example, Tyla, Paige and Sam exemplify a commonality with other participants about proving their capabilities:

> *For girls, we can do things just as well as men do them and your gender doesn't stop you from being capable of doing whatever you want to do in life. For men, I think it's just to prove to them that we're not, like, here to clean the house and have the babies and look after the family. We can do just as good a job as whatever they do. And I think that's what it is.* ***(Tyla, Engineering)***

> *Well, obviously, for my little sister in the future it some other subjects or whatever, will still be male-dominated as well. So, I feel like I want to teach her or show her that females can be in a male-dominated industry. It don't matter if it's male-dominated. Just prove them wrong. Prove them wrong.* ***(Paige, Engineering)***

> *I'm just trying to prove a point that girls can do it. I'd say it was proving it for the girls everywhere.* ***(Sam, Brickwork)***

Tyla, Paige and Sam also powerfully recognise their role in breaking the mould and disrupting long-standing gendered patterns of participation in their fields. In disrupting gendered trends, women can become hailed as what Carroll (2023:160) terms the 'modern day super woman.' They are imbued with symbolic capital, speaking to their reputation as being competent and respectable in their field (Bourdieu, 1984). However, in breaking gendered conventions, women are also precariously placed as representing 'all women'. Puwar's (2004) notion of 'super-

surveillance' suggests that not only do women in male-dominated spaces have to work harder to convince people that they are capable, but they must also almost be 'crystal-clear perfect' in their job performances, as any imperfections are easily noticed (Puwar, 2004: 61). This precariousness, Britton (2017) notes, can be found in the successes of women in gender minority spaces marking them as individually exceptional, but failures are representative of a collective group 'confirming stereotypes about their gender' (p9). I found similar patterns in the young women I interviewed. Plumbing apprentice, Sophie, provides a particularly interesting example of this:

> *Well, when we had the exam the other week, before the exam, I said to some of the lads, I was like, if I fail, I'm gonna be so embarrassed only because I'm the only girl. I feel like I have more points to prove than, say, you do because you're a lad. He said I didn't, but I knew I did. By being a girl doing a man's job, I feel like I have more of a point to prove. I ended up passing [the exam].* ***(Sophie, Plumbing Apprentice)***

Here, Sophie talks about her own capabilities but also frames this in terms of it being her responsibility to show that girls can do as well as boys as she represents the only girl on the course. Women's performances in male-dominated arenas are always 'highly visible and under constant surveillance' (Carroll, 2023:157). This 'burden of representation' demonstrates the precarious situation of women in the minority and that the most 'minor of mistakes could be taken as evidence of incompetence' (Puwar, 2004:62). As we saw in Chapter 4, a perception of their parent's pride was directly related to some young women's choice of qualification as a disruption to gendered norms. Whilst Chapter 4 demonstrated how a sense of parental pride was framed as a positive and important influence around gender atypical choices, this is also relevant to constructing a burdensome sense of gender representation. The social domains women move through can both positively influence and concurrently reinforce a sense of the responsibility and burden of representation. The sense of failure or incompetence being related to gender can also act to shape classroom interactions for fear of being judged as incompetent. For example, Abi said:

> *You can go speak to the boys because it's not like you're separated, but it's a bit like you don't want to go ask them because then they'll look at you differently…Like maybe I don't get it because I'm a girl. (**Abi, Construction Management)***

Although these experiences are shaped in the college domain, they heavily influence how young women construct expectations for their journey to working in their respective industries in the future. Young women's expectations for their careers following their college course offer important insights into wider gendered practices and how dominant cultures of masculine practice are anticipated to continue. This occurred despite a broad sense that issues of sexism or inequalities were related to maturity and a temporally specific lad culture within the college and among young male peers (see section 6.5). This demonstrates how their chosen sectors remain embedded within cultural beliefs around 'jobs for men,' further reproducing patterns of gendered inequalities.

All of the young women I interviewed, except one, were preparing to go to work in the industry they were studying at college. There was a smaller number who would be continuing at college to the next level of study. Engineering student Izzy was the only young woman from any male-dominated route who, at the time of the interview, explained that she would not be carrying on with her course of study into employment and was changing career path completely to a degree in marketing. Though her narrative was not representative of other women I interviewed, there are important insights into how the ongoing and continued construction of gendered identities relate to the (im)plausibility of women remaining in certain industries. Izzy's motivation to follow a career in engineering was largely financial; she was good at maths at school, and a teacher suggested engineering as a means to achieve a high income through her maths abilities, and so this was framed as a viable career option. She planned, however, to study a marketing degree after her engineering course finished, as she explained:

> ***Izzy:** I just love maths and physics. But I don't want to be in engineering – I think, also the thought of doing a nine to five, all day, every day, for the rest of my life, I'm just trying to dodge that now.*

Int: *Is that what engineering is, though? Is engineering nine to five?*

Izzy: *No, not necessarily like a nine to five. But just like stuck in that routine where I don't like my job because I don't feel like I would like it if it was a practical job and just being stuck in that routine for the rest of my life. I'm just trying to avoid as much as I can.*

Of course, young people's trajectories through education and work are not always linear processes, and changes throughout the life course are not necessarily unexpected (Hodkinson, et al., 2013). However, Izzy's move away from engineering reveals that gender and associated cultures of practice in the industry were the motivating factors for this choice. Izzy explained she was going to go into marketing, an environment she said that had 'hardly any men':

Int: *How do you feel about going into an environment that's now mostly women?*

Izzy: *I can't wait, I prefer it, to be honest, because I'm sick of sleezy, immature boys.*

Int: *Do you think that has played any part in you not wanting to do engineering?*

Izzy: *Oh, yeah, because I don't want to be surrounded by like, gross old men all the time too.*

As we saw in Chapter 5, Izzy had enjoyed maths from a young age, and through her teacher's influence, engineering became a visible and viable career choice. Izzy had not recalled any hobbies or interests related to masculinised practical skills and was unique in considering herself to be 'girly'. Her account exemplifies an incompatibility between the habitus and field. In other words, the plausibility of a career in engineering after college was incompatible with her own gendered frames of reference. This was outside a space that she was comfortable to join, previously identified in the literature

as ‘habitus dislocation [that] occurs when young people without prior experience in manual labour have to adjust to the norms and culture…’ (Lehmann and Taylor, 2015:617). Colley et al. (2020) argue that the ‘acquisition and possession of characteristics’ is powerfully implicated in the processes of young women’s success in male-dominated industries. Past experiences can then predispose young people towards certain routes but crucially remain linked to successful outcomes in vocational pathways (Colley, 2020). Izzy’s account demonstrates that the cultures of certain male-dominated spaces are still a barrier for some young women and contribute to them falling away from the education-to-work pipeline. Relatedly, women are more likely than men to drop out of gender atypical vocational pathways, and can be linked to a lack of social integration (Beckmann, 2023). Izzy’s lack of acceptance of the dominant cultures and the absence of experiences in the home through hobbies and tinkering suggest that past experiences and educational contexts are highly relevant to the continuation of women in male-dominated vocational careers. It is required that not only do women not challenge the normative and dominant gender but must also accept the cultures within masculinised spaces. Without these cultivated predispositions, continuing into a male-dominated career in engineering was rendered an implausible career. This illustrates how male-dominated industries continue to be strongly influenced by gendered cultural practices and processes. Izzy’s account serves as an example of how the visibility, viability and plausibility of male-dominated careers are interacting and co-constructed factors that are all crucially implicated within ongoing choice-making processes.

For the young women planning to work in industry following completion of their qualification, their expectations for this drew heavily on how other people would judge the plausibility of them being there. Low expectations of women’s potential skills and abilities places emphasis not necessarily on formal qualifications themselves, but young women remain concerned about how those in the labour market consider these jobs can plausibly be carried out by women. For example, Paige explained how she felt she might be judged for her gender despite obtaining an equal qualification to her male counterparts:

> ***Paige:*** *I think I might get judged. Well, I might, but I haven't worked in the industry.*

Int: *What do you think they'd be judging you on?*

Paige: *Just if you're good enough, because obviously, they are used to a certain person, like males obviously, and hopefully there will be more females when I start to work in the industry, like properly work in the industry.*

Paige's account is indicative of others I interviewed. Being 'good enough' is related specifically to normative gendered beliefs about men rather than formal qualifications. These responses echo wider social and cultural values around expectations and stereotypes relating to men and women (Nieymer and Colley, 2015). The plausibility of working in male-dominated industries is articulated within gendered frames of reference about dominant gendered cultures that the young women largely sought to comply with, rather than disrupt. In doing so, the young women were carving out a space and a way of being that enables them to feel legitimate within masculine cultures. Plumbing apprentice Sophie said:

Sophie: *When I got to people's houses, they say, 'Oh I wasn't expecting a girl today' and I think 'that's the third time I've heard that today'.*

Int: *Why do you think people are not expecting a girl?*

Sophie*: Because it's a man's job. Typically, it's a man's job. Even going into the merchants, I hardly ever see girls doing stuff. Because it's hard labour. Like, it is difficult. It is very taxing. And after a week of work, I'm exhausted. Like carrying heavy stuff, tools. That's just typically a man's thing.*

Int: *So, do you think it's a man's job?*

Sophie*: Yeah, yeah. Yeah.*

Int: *Even though you're doing it, you still think it's a man's job?*

> ***Sophie:*** *Well, yes and no. I just see it as my job. But then when people when I talk to new people and tell them I have a plumbing apprenticeship, they're always really shocked, like really shocked. I'm like, what, what did you expect me to do? I was actually out with my dad one time, and I was speaking to one of his friends when I was there was like, 'Oh what do you do?' I said, 'What do you think I do?' They said I look like I work in a call centre. I was like – 'do you know who put the heating in here?' I was so offended… Just the fact that it is how it's always been, like it's known as being a man's job. I think that's it... I've heard a lot of sexist comments. Not necessarily from customers, but from like, other trades and stuff.*

This excerpt from Sophie's interviews is revealing about deeply engrained wider cultural beliefs and practices. The expectations of 'others' firmly reinforce traditional stereotypical archetypes of these occupations. That Sophie still labels her plumbing job as a 'man's job' and faces surprise and sexism from customers and other trades confirms ongoing patterns of inequalities and societal expectations about how men and women should behave and, importantly, the sectors that they are presumed to occupy. Despite being a plumber and a woman, this space remains framed in masculine terms. These accounts demonstrate that the viability of young women following male-dominated qualifications is not necessarily in the foreground of others' expectations but rather remains reflective of wider societal attitudes. With such emphasis on the perceptions of others and the construction of who remains dominant in these sectors, the next section explores how the young women reflected on labour market gender diversity initiatives.

6.8 The rhetoric of increasing female participation; driving diversity or ticking boxes?

The key context to this thesis is that women remain chronically underrepresented in certain educational and employment sectors, specifically engineering, trades and construction routes. Both at a government level and local corporate level, there is an awareness of this trend, and patterns of participation have driven a number of

initiatives to promote inclusion and gender diversity (Smith and White 2021). I introduced events such as Women into STEM at the end of Chapter 5 as they applied specifically to the targeted recruitment of young women during their time at secondary school. The final section of this chapter discusses the complexities of gender diversifying initiatives more broadly. Here, I show how the young women are aware of the possible advantages of positive discrimination practices in gaining employment, whilst simultaneously remaining cynical about these. As practices, these can undermine the young women's value and individual successes as corporate messages are often perceived as organisations wanting to improve their own self-image rather than reflecting genuine desires to achieve gender inclusive spaces.

Where there are drives to address greater diversity in recruitment into certain sectors, questions persist over how these practices can ultimately be undermined by placing a spotlight on women as different and reinforcing assumptions of positive discrimination practices (Smith et al., 2023). There is evidence of gender-based quotas being effective at increasing the participation of underrepresented groups (women-only short lists used by the UK Labour party, for example, see Norris, 1996). As I outlined in Chapter 5, the renewables industry has set a target to employ 30% women across the industry by 2030. The data and arguments I present here reinforce the findings of other empirical studies (e.g. Carroll, 2023; Smith et al., 2023) that although initiatives and events aimed at addressing the underrepresentation of women might contribute to their quantitative inclusion, such measures inadvertently perpetuate narratives that undermine women's legitimacy in male-dominated arenas. Moreover, these measures fail to confront the entrenched systemic and cultural barriers women are presented with in these domains (Carroll, 2023; Smith et al., 2023).

The young women following male-dominated routes were aware of having a possible advantage because of their gender and how this could support company and sector initiatives to address gendered patterns of participation. This was felt commonly across young women on engineering routes in particular and is unsurprising given significant attention to addressing gendered imbalances through 'Women into Engineering'. For example, Tyla and Charlie's responses are highly reflective of other young women following engineering routes:

> *Some places I feel like maybe it's a 'tick in the box' kind of thing… so I think in engineering, there's been more of a push to get girls into it, so maybe I thought how I've got a bit more of a chance now.* ***(Charlie, Engineering)***

> *I do know that I had a stronger advantage being a woman in the industry because they need more women in the industry. When they get a woman in the industry, it makes them look good, and I get that, I totally get that. They wouldn't have chosen me if they didn't think I had potential, though. What I needed are my qualifications and obviously I've worked for them qualifications.* ***(Tyla, Engineering)***

Charlie's recognition that gender diversifying initiatives could be beneficial for securing her a place in industry was balanced with seeing this as a tick in a box exercise. Tyla emphasis on corporate rhetoric aimed at promoting women's inclusion is perceived primarily as a strategy designed to enhance the company's own image. Like other women I interviewed, Tyla was critically considering the motivations of companies in their actions to address gender diversity. This resulted in distrust and scepticism of gender inclusive recruitment practices. However, Tyla's response also highlights the complexities and nuances discussed by other young women when they considered gender diversifying initiatives; whilst qualifications and capabilities are raised as a necessary and important part of their expectations and the viability of securing employment, their gender and positive discrimination can simultaneously undermine individual skills and capabilities. For example, Lucie described that the company she was working at part time after completing her work experience there saw her as an 'investment':

> ***Lucie:*** *In that industry [engineering] if you go for interview, it's most likely to be more men. If obviously, you're not good, they're not going to take you just because you're a woman… but if there's a man that's good, and a woman that's good, they're going to choose the woman because it makes their company look good.*

Int: *How do you know that?*

Lucie*: They [the company] said that I was an investment into the company. Because they don't have any women in it. So, they said it was a good investment.*

For Lucie, her appointment at a fabrication and welding company was not wholly due to her competencies, as when all is equal between men and women in respect of qualifications, gender can be a tie-breaking factor. Lucie does place value on being 'good' with this implicitly referring to her skills and qualifications being a necessary part of her success, but that concurrently her being framed as a strategic 'investment' suggests she is valued more for her gender than her skills. Whilst there is the possible suggestion that Lucie's company was being transparent in their recruitment practices and foregrounds a motivation to address gender diversity, the risk is that messages that women represent tokenism and practices and values are not embedded in industry cultures but rather driven by external appearances. This sentiment was also evident in the interviews with some of the support staff at The Aspire Institute who worked with young people to secure employment and training during and after their course. For example, Vicky, an employability trainer at The Aspire Institute, explained:

I was sitting in with the interviews. Because they were coming into our college, I had to sit in with them, and they all did quite well. I do agree that the girl did really well as well. They said yeah, they really liked her and everything and then when I went back into the office, I said, oh, I think that probably one of the ones that will get picked is the girl yeah - I said maybe she'll get it because she's a girl. ***(Vicky, Skills and Employability Trainer for engineering students)***

There were examples where, despite acknowledging possible positive discrimination in potentially helping them secure employment, the young women felt their gender and the embedded gendered assumptions about their skills could still act as a barrier to employment and full acceptance in a male-dominated occupation.

> *I don't know if this is me being right, or anything, but now, I'll just say it, but I feel like some companies do it to make themselves look better rather than actually wanting it sort of thing. So, like, they'll say, 'do a women into engineering day and say we want more women working for us'. Well, then a woman will go for the role, and they will pick a man over them. [being a woman in engineering] it's further pushing that equality sort of thing, where like, just because a man can do something doesn't mean a woman can't do that same thing. So, I'd say it does matter for, like, encouraging other women to think the same in the same way and make men more open-minded. Because I know like, in some cases, there are a lot of sexist monsters about.* ***(Bella, Engineering)***

I draw attention to Bella's response as, despite recognising the possibility that being a woman could be advantageous because companies' recruitment practices may positively reflect on their image, this was not uncomplicated or without tensions. Bella's explanation for why a company may still employ a man over a woman was related to the practices and cultures embedded from long-standing assumed gendered norms. As I detailed in Chapter 4, Bella was exposed to non-gender normative skills and tinkering from her home context but also considered that these typically give men and boys an advantage in following highly masculine occupations. Interestingly, Bella had previously placed value on her attendance at the Women into STEM event but remained cynical about general corporate rhetoric around female participation. This message was met commonly with trepidation by the young women. Initiatives to drive diversity result in the young women feeling cynical about corporate motivations (Carroll, 2023). In turn, an implicit concern is that gender-based quotas for example, like has been adopted in the renewables industry, can undermine the woman's space as being less legitimate inferring they are less capable than their male counterparts reliant on such initiatives rather than standing on their own merit (Powell and Sang, 2015).

As students in engineering, there is little surprise that the participants above who echoed the views of other engineering students I interviewed, were aware of industry strides to address equality and diversity and recruit more women. Perhaps more surprising is that this was also articulated by some of the young women on different

construction-related qualifications. Despite these pathways falling outside several national government and local initiatives, the young women on construction pathways did have a sense that the industry was keen to drive the participation of women. In section 6.5, we saw how brickwork student Elena's first encounter with her college tutors was being told it would be 'easy' for her to get a job because the industry needs more women. However, the motivations of this as a genuine move towards more gender equal spaces in the trades were met with equal trepidation and scepticism as those on engineering routes. Like Bella above, Abi and Molly - both construction management students - talked about 'box ticking' and corporate image as motivations for gender diversifying practices:

> ***Int:*** *Why do you think they [construction companies] want more women?*
>
> ***Abi:*** *Because in a way, they want to put a tick in a box, I think, because they want to be seen as that company hires females.*
>
> *They want more women in the construction industry because there's barely any in it. I think they do it for their image*. **(Molly, Construction)**

Elena recalled being told about employment prospects following completion of her Level 1 brickwork qualification:

> *They said [the tutors] they need girls to be on the course ... apparently, somebody needs to sort them [the boys/men] all out. Just tell them that they need to start doing it properly. It kind of gets us to show off our skills - because boys aren't as good as us.* ***(Elena, Brickwork)***

The tutor Elena spoke to had previously emphasised the underrepresentation of women in the trades sector, with the assertion that it would be 'easy' for her to secure employment undermining any of her potential individual merits and skills. The suggestion instead is that the only value in the college and employment context would be because of the skills that are innate to her gender - packing forms of feminine capital into masculine spaces (Wulff et al., 2020). The implicit message that women

are needed to rectify the men or ‘sort them out’ suggests that women's competence is shaped by men's incompetence, rather than recognising women based on their own merits and achievements. This notion also suggests that their male counterparts can be average or subpar without their occupational positions being questioned. Efforts to increase women's participation in male-dominated industries often require women to adapt to and fit into pre-existing environments. The young women are not necessarily free to write a new ‘script,’ and the data I present here expands ideas that women are a ‘tool through which to bring social change whilst adopting a social position constructed in masculine terms’ (Puwar, 2004:93).

The sense that it remains the burden of women to ‘fix the environment’ and adapt to it prevails. Access to fundamental facilities such as toilets and appropriate, correctly fitting PPE can be significantly limited and highlights how male-centric certain spaces remain. Toilets have been a contemporary feature of feminist critique (Plaskow, 2008) and when there is limited access to decent bathroom facilities, this has been translated by some scholars as a denial of basic human rights (Eirich, 2023). I draw attention in this section to toilet facilities, however, I contend that toilet facilities are symbolically representative of a far more systemic pattern of exclusion. For the women already working in more established fields such as fabrication and welding and oil refineries, access to facilitates shaped a significant part of their working experiences. Lucie, a fabrication and welding student working part-time alongside gaining her qualifications at college, discussed access to toilets at her workplace:

> ***Lucie**: They [her male co-workers] did tell me about one of their toilets has been taken away and given to me, apparently, there was a little bit of a debate before I went, that they [the men] wanted to keep that toilet and I used the one that was in the office.*
>
> ***Int:** So, before that they didn’t have a women's toilet?*
>
> ***Lucie:** They do but it's in the office because there's only one woman, she's but she's in the office so they don't class her as, being like me, they just say I'm the only girl.*

> *...I don't even use a toilet at work so it just sits there. That's what I said to them. I don't mind the men using it cause I don't actually use it, I only use it to go and wash my hands.*

Laura, who worked in what she described as 'old' engineering on oil refineries in the local area, had previously studied at The Aspire Institute. Her insights here, specifically about the lack of toilets, demonstrate patterns of powerful messages of who naturally and appropriately belongs in these spaces, Laura recalled:

> *I couldn't even go to the toilet on site, there wasn't a woman's toilet on site. I had to walk two miles back to the village. So go off site, clock out. So potentially, I could have been docked wages just for using the toilet.* ***(Laura, Oil refinery engineer)***

Oil refineries represent an established occupational setting that have highly gendered patterns of participation and as Laura shows demonstrate continue to have practical arrangements that exclude women. Based in much young industry and one that has very clear gender diversity targets, Charlie, an engineering apprentice working on wind turbines talked about not having access to toilets and the different impact this had on men and women:

> *Men can just go. They don't have periods or things like that. So that's kind of a big deal for women, I think, because you need somewhere where you can go like cause waiting an hour [for a boat]. That's not ideal.* ***(Charlie, Engineering)***

This issue was recognised by Emma, a national renewables policy advisor and Jo, a stakeholder advisor for a renewable energy company:

> *So, you know, travelling out to a turbine, and then being there is not very convenient for somethings. Lots of things that you know because it's all specialist clothing and clothing that has not been designed for women. It's all in the male shape. So recognising some of those things and saying, okay, that's stuff that we need to do we need to provide toilet facilities and washing*

facilities, because that's just what it should be for everybody anyway. So, recognising some of those things as kind of structural failures, probably not even thought about in a great level of detail, things that need to be improved. ***(Emma, National Renewable Energy Company Executive)***

*Like 50% of our population is women. So we need to make sure that we have women, and all the way through I think women bring something different. [a woman apprentice] said recently that she's picking up on things like female PPE and sanitary bins on boats. (****Jo, Stakeholder for regional Renewables and Wind Energy Company)***

Some revealing comparisons across the accounts of Laura, Emma and Jo relate to their specific labour market sectors. As an industry, the renewables sector Emma and Jo work in is a younger, more dynamic field that is rapidly advancing and innovating. Their accounts suggest that cultural and societal expectations, even in younger engineering-based occupations, already reflect those in established settings such as oil refineries - as seen in Laura's excerpt above. When traditional assumptions of masculine occupations are evident in newer industries, the renewables sector, having clearly defined gender recruitment targets, faces the reality that the culture and arrangements within the sector are already misaligned to recruitment efforts. As such, efforts to recruit women are perfunctory if accommodating for women's presence in reality is either poorly considered or non-existent.

6.9 Conclusion

This chapter has explored the experiences of young women on male-dominated courses during their time at a further education college. Gender is especially foregrounded in all the young women's expectations for starting college. For those on gender -typical pathways, concerns around gendered stereotypes and tropes relating to female-dominated industries quickly dissipate. For those on male-dominated courses, gender is foregrounded and salient to many of their college experiences. The previous chapters highlighted some of the divergent practices and

processes underpinning the choices to follow the different types of male-dominated qualifications. This chapter has demonstrated that in the experience of being a woman in a male-centric space transcends level or type of qualification and foregrounds gender throughout the college context. The gender segregation on these courses represents patterns that are embedded deeply in the young women's assumptions about starting college and shape expectations of being either the lone female or, at best, potentially being amongst one or two other women. Women then place significant value on informal relations with other women that bound the women through a shared minority position. These findings extend research into male-dominated occupations that has shown the importance of informal networks in the workplace (Bridges, 2021) by highlighting their value for young women from within college settings.

This chapter has also demonstrated that institutional arrangements fail to tackle ongoing and ever-present systemic inequalities and is evident in how the young women dismiss the inequalities they experience as the result of their male peers' immaturity and their responsibility for being the alien body in that space. This reinforces the idea that it is the responsibility of the young women to conform to the dominant culture to succeed. However, whilst immaturity is deployed by the women to minimise and excuse the boys' behaviours, inferring an age-related context and that the boys would 'grow out' of these behaviours, the expectation that inequalities will also follow them to their workplace remains. Additionally, despite engineering being subject to greater interventions and attention to address greater gender diversity, the young women's experiences are largely shared, irrespective of level and type of qualification. Masculine-dominant cultures of practice prevail across qualifications and levels of study.

Powerful tensions exist for the young women between wanting to represent women and be role models for future women, and a disruption of gendered patterns that conflict deeply with wanting to fit in, be accepted and simply get on. This also creates a sense of pressure on the women with any potential failures echoing across the reputations of all women as their space continues to be considered as out of the ordinary. The plausibility of continuing to their respective workplaces is then significantly shaped from within the college setting. Gendered frames of reference

and gendered assumptions are enacted, reproduced, and reinforced during college through interactions with social actors and everyday processes that serve to continue cultures of practice that do not disrupt normative patterns, even when young women do follow male-dominated pathways.

While young women are aware of gender diversity initiatives in industries like engineering, many remain cynical about the motivations for these, often framed as superficial attempts to improve corporate image rather than address genuine cultural change. The concern that these diversity efforts might undermine their achievements, as they fear being seen as token hires rather than being valued for their skills, is reinforced through interactions with college staff who continue to see women as out of the norm and valuable as tools through which to bring 'social change whilst adopting a social position constructed in "masculine terms"' (Puwar, 2004:93). In many young women recognise their potential in pioneering social change as a woman in a male-dominated space. However, they must almost continuously act to prove the viability of their space as mistakes can be taken as indicative of the skills and capabilities of all women.

Gender is a central factor in how the young women imagine their future careers, with many anticipating challenges relating to being judged or stereotyped in the workplace. Women recognise the male-dominated culture of their chosen industries and the dominant cultures of practice they will experience. This is coupled with the anticipation that inequalities and low expectations may follow them into their future. Despite this, most participants intended to continue their pathways to working in industry. The expectation that sexism would follow them to the workplace is not unfounded as this has been a long-cited barrier to women's participation. When this is considered alongside the data in this chapter from teaching staff themselves and how they prepare women for the cultures that they will face in industry, this research reveals how structural arrangements continue to fail to tackle issues of systemic sexism. As a result, tensions are highlighted in young women framing lad behaviours as temporally specific, implying an expiration with aging, alongside an acceptance that these behaviours are likely to continue. This further demonstrates how even in subverting some gendered norms, others are often simultaneously reinforced, and inequalities are reproduced. When college experiences are considered alongside

those within the home and school, the choice to continue onto related careers can be effectively conceptualised as viable and plausible as ongoing iterative processes.

Chapter 7. Conclusion

7.1 Introduction

Based at a Further Education (FE) college on the east coast of England, this qualitative, interview-based study has been an exploration of young women who have chosen to undertake atypically gendered VET – namely engineering and construction qualifications. They represent male-dominated qualifications, in highly masculine occupational sectors, that have appeared resistant to significant change in gendered participation. With growing skills gaps, implicated in pressing UK political agendas, engineering and construction sectors report urgent needs to expand and diversify their recruitment efforts. To contribute to our understanding of these labour market patterns, this study explored the processes that precede this. The value in this research of having explored the phases of the women's lives and presenting the experiences within home, school and college as distinct, but overlapping domains, mean the findings and the recommendations informed by these can be made relevant to each of these spaces. These insights contribute to a more comprehensive understanding of the factors and processes within these domains that have influence upon young women and have illuminated the complex, multifaceted nature of gender roles across highly masculine labour market sectors. Whilst the focus has been on those undertaking atypically gendered qualifications, this thesis demonstrates that in examining 'exceptions' or those who make choices contrary to gendered trends, I have offered a novel lens on wider choice-making processes and revealed more about the complex contexts that enable these choices.

In this chapter, I discuss the research findings as they relate to the questions posed at the start of this thesis. I then outline the original contributions of this study. Following this I present the implications of the research findings and the potential policy and practical recommendations that arise from this study. As a result of reflecting on the limitations of this study, I discuss future research opportunities as a development of this study and ongoing engagement with this area.

The following questions guided the research design and analysis:

1. Why do some girls undertake male-dominated vocational qualifications and how is this experienced and understood by these young people?

2. How can we understand choice-making by women on male-dominated pathways and what factors and social processes inform these choices?

3. What is the role of an FE college and its teaching and support teams in shaping experiences and choices of girls on male-dominated pathways?

The research questions were designed to address important puzzles that still arose from a critical engagement with extant literature and empirical research about why and how some girls follow pathways that are contrary to long-standing gendered trends. In Chapter 2 I demonstrated the theoretical influences and empirical research that have informed this study. There has been a long preoccupation with STEM qualifications emphasising higher level, academic tracks. When more vocational or practical qualifications and occupations are in the spotlight, literature has tended to focus on engineering or construction (and the trades) and so they are often bracketed into separate entities (Barnard et al., 2012; Carroll, 2023; Swan et al., 2021; Wulff et al., 2022). Empirical research has also highlighted the differences between boys and girls when they follow pathways contrary to gendered tends and the barriers to gender atypical participation (Barnard et al., 2010; Thurtle, 1998). As a result, we had a picture about some of the orientations towards, and experiences of, specific masculine domains or academic tracks, but remained with gaps in our understanding about any patterns and divergences in the practices and processes that surround atypical choices of different male-dominated vocational sectors. The inclusion of a small comparative group who followed gender-typical routes, supported the analytic foci of this thesis to be able to highlight the experiences of those on male-dominated routes, not in comparison to their male counterparts, but rather how young women of the same gender experience different processes that make male-dominated routes, (in)visible, (im)plausible and (un)viable.

7.2 Framing choices as visible, plausible, and viable

In response to previous policy-based explanations of career decision making that Hodkinson and Sparkes (1997; 2007) argued had overly emphasised either structural arrangements or individual agency, they posited a sociological model of careership to usefully point to a more middle-ground approach to reconcile agentic action within structural contexts. Furthermore, Bourdieusian concepts, such as habitus, and social and cultural capital, were operationalised within the careership model as way to explain that values and predispositions are shaped and embodied into schemes for practice (Bourdieu et al., 1977). This approach, however, told us less about the processes that underpin and shape these dispositions towards possible courses of action, particularly within less gender-typical choices. In Chapter 2, I addressed the limitations within existing theoretical frameworks around choice-making; by synthesizing these literatures I posited a framework for a more effective conceptualisation of choice-making as *visible*, *plausible*, and *viable*. The framework was designed to elucidate the factors that influence choice-making whilst holding structure and agency in the same analytic frame. From this I was able to analyse the separate, but often overlapping, factors and processes that influence choices and reveal patterns that may otherwise remain hidden. Through this I have presented a more processual understanding that shines a light on choice-making and gendered pathways. This has also contributed a clarification of complex processes relating to gender and choice-making within wider social processes.

This *visibility* of qualifications (and subsequent careers) is about a qualification or occupation that is within the view of possibility, often enabled through formal and informal knowledge exchanges within culturally embedded contexts of home and school. This also means understanding not just *what* courses of action are in view, but *how* they have come to be visible. Courses of action taken can be influenced by an awareness of labour market opportunity. I have found that labour market awareness often relies on explicit interactions with social actors within home and school settings.

The *plausibility* of pathways means that an awareness of career opportunities and possibilities must be aligned to dispositions that relate to highly gender-segregated sectors. I have found that the processes relating to structuring this plausibility are often more subtlety embedded within encounters and processes in home and school. This is related to the shaping of a habitus less restricted to normative gender conventions. This does not mean to say young women embody dispositions and are gender unaware, on the contrary. Young women remain highly aware of normative gendered conventions but are plausibly aligned to more male-dominated, masculinised qualifications through less gender restrictive values or tomboy identities.

The *viability* of pathways is about understanding how skills and interests can be aligned to different qualifications. Home and school environments can unbind young women from normative gender frameworks. The choice to undertake a qualification in a highly masculine domain may then be plausible, but skills and abilities must also be aligned to these careers to make them a viable one. An important element of this framing is concerned with Bourdieu's concepts of social and cultural capital and, crucially, how these can be deployed into meaningful forms. In an analytical this was concerned with highlighting not just *what* and *if* social and cultural capital was related to choice-making, but the processes of *how* these are accrued and the meaning behind these for young women in male-dominated spaces. This has in turn revealed the importance of interactions with social actors and the ongoing interplay between attaining formal qualifications, and perceptions of those in the labour market about who *normally* occupies spaces in engineering and construction sectors. Women are often having to constantly prove the viability of their space.

The value my framing of choices as visible, plausible, and viable, has enabled me to demonstrate the interacting, sometimes complementary, sometimes contradictory factors that contribute to explaining deeper nuances of choice-making. Choices are a complex, overlapping interplay of not just individual dispositions shaped through social and cultural structures and arrangements, but also processes that are co-constructed and continually reshaped iterations. Each of the social domains young women experience are highly relevant to either facilitate or impede the visibility, plausibility, and viability of male-dominated qualifications for different young

women and are relevant to understanding wider processes relating to gender, education and choice-making.

This research has contributed towards understanding highly gendered choices by examining the exceptions. Focusing on women in masculine arenas and the influence on these atypical choices reveals complexities to traditional theories of socialisation or emphasising these 'exceptional' choices as the result of agentic action. Rather, I have argued these choices must be understood as deeply embedded within and across social and cultural contexts. These contexts cannot be taken in isolation. The layering effect of the processes and structural arrangements within shapes young women's choices as (in)visible, (im)plausible and (un)viable. Choice-making in highly gendered spaces also cannot be reduced to either the result of pushing back against constraints, or freely choosing in the absence of constraints (McNulty Norton, 2021). Rather this study finds this is a complex interplay of resistance, and constraints that are navigated, negotiated, and reframed in ways that mean women can, and do, find their space in male-dominated arenas.

7.3 Research findings; Home life, the family and growing up.

The role of parents and home contexts in shaping aspirations and career choices are long explored across sociological and educational literatures (Barnes, 2020; Eccles, 2005; Carroll, 2023; Irwin and Elley, 2013; Polavieja and Platt, 2014). Through a focus on atypical educational choices and qualifications, I have found the home can have a profound impact on the social reproduction of behaviours and skills that can either restrict or release women from conventionally gendered outcomes. In Chapter 4 I examined the specific home practices that are implicated in choices outside of traditionally gendered courses of action. From this I have revealed more about the processes and interactions within the home that enable some young women to follow male-dominated qualifications.

At the start of Chapter 4 my analysis highlighted how there was much to unite all the young women in terms of how a sense of naturalness about their chosen qualification was embedded within tracing past contexts to their current choices. This

in turn further demonstrated the value of this study in engaging with an exploration of the home and family as they shape young people's sense of the world and, importantly, perceive plausible and viable action. With such shared patterns, examining what enabled atypical choices I argue can be, in part, explained through an exposure to more traditionally 'masculine' hobbies, interests and other informal exchanges in the home.

Though practices and family dynamics were varied across households, there were underlying patterns distinguishing the girls on male-dominated qualifications from those who followed more gender-typical pathways. Young women growing up with a parent(s) with arguably more liberal views towards traditional gender roles, and those with present fathers who disrupted conventional gender roles in the home, developed an orientation towards careers outside gendered conventions. The habitus was less restricted to constraints of dominant gendered ideals which are important in structuring the plausibility of later engineering and construction qualifications.

Parents play a critical role even when they do not have first-hand experience of occupational sectors, especially in male-dominated spaces. Offering support and encouragement can be just as important. In this research ideas of gluing together aspiration and resource, (Irwin and Elley (2013) whereby young people anchor aspirations (and choices) to a proximate reference point are expanded to suggest this is not always concerned with straight forward imitation but rather choices can be made as result of aspirations and resources being inculcated through more informal exchanges in the home. When parents' roles in the home do not conform to long standing trends, such as fathers taking on domestic responsibilities, there is concurrently an increased plausibility of male-dominated careers even when these are not based on direct occupational role modelling. In the absence of significant patterns of specific occupational role modelling within the sample, the analysis in Chapter 4 revealed that the disruption to traditionally gendered practices in the home served as a basis from which career possibilities were not restricted to normative gendered conventions and future possibilities not bound to normative gendered action. Alongside this a familiarisation with the 'tools' and engaging in less gender-typical hobbies, interests and skills acted as the cornerstone upon which cultural capital could

be accrued, along with engendering views about gender that were unconstrained from dominant thought.

As I demonstrated in Chapter 4, family practices and parental engagement also specifically implicates the role of fathers in engaging daughters in activities typically reserved for boys. Fathers imbue daughters with cultural and social capital through the informal exchanges of skills and knowledge that can act as important forms of support and knowledge when subsequently working in male-dominated sectors (Bridges et al., 2021). I also found that the absence of similar age male siblings is a notable familial context when young women go on to pursue male-dominated pathways, as the absence of a brother is related to women's engagement with non-gender normative practices in the home. These are similar patterns that were identified in Carroll's research (2023) whereby fathers' engagement with the daughters was often in the absence of a male sibling. Therefore, this study demonstrates wider geographical patterns to gendered home practices related to women's choices of gender atypical qualifications. Expanding these ideas, I have also argued these patterns also speak to how gendered ideals often remain constructed within normatively gendered terms, even in more liberal homes. Even when young women partake in such activities and practices, they still often perceive they are doing something reserved for boys. As much as home practices serve to unbound women from dominant gendered ideas in respective of their own possible courses of action at college and for their career, young women remain aware of gendered conventions and even reproduce these. For example, when they continued to frame these practices as related to 'tomboy' identities rejecting notions of a 'girly identity'. In this sense, a gendered dichotomy is reproduced rather than challenged. To be unbounded from gender-typical choices is not to be gender unaware. I have shown the importance of home environments and interactions in influencing young women's choice-making. Importantly this has expanded our understanding of *how* home settings shape the plausibility of gender atypical qualifications through fostering less gender restricted ideas and the viability of pathways through non-gendered skill development connecting childhood hobbies and interests to later post-16 choices.

The experiences of those who ultimately followed pathways that are highly gender normative demonstrates the implausibility of male-dominated routes was often

related to home interactions and perceptions of parental values. A sense that choices outside gendered conventions were implausible was then, in part, the result of foundational practices and perspectives established within the home. Though a small sub-sample all these young women lived in two-parent households described by participants as having gender-typical divisions of labour and in some cases highly traditional gender views. Even when unspoken, a sense of normative gendered conventions permeated these young women's sense of appropriate educational and career possibilities. Relatedly, young women on more gender-typical routes also perceived their parents were ambivalent about their post-16 choices. Any sense of parental ambivalence I have argued may rather reflect the quietness of a choice that lay within conventional gender frameworks. Their choices represented highly normative outcomes, both at an individual level and within broader social and cultural expectations, and for them, were the plausible course of action

For the young women undertaking beauty therapy or childcare, any possibility of a gender atypical qualification or career was impeded by an incompatibility between themself and perceptions about male-dominated roles. These were often reinforced by the perceptions and assumptions of others in the home, with male-dominated careers framed as an implausible course of action. So powerful in fact were these assumptions, that for some their feelings about their familial perceptions fostered norms that even when these young women felt engineering could be financially lucrative or aligned to aspects of their skills and hobbies, it remained implausible, despite potentially being a viable possibility. Pathways and qualifications being open to all is not sufficient to tackle gender inequality and this also demonstrates how some gendered ideologies remain deeply embedded amongst young people. In turn this has revealed greater complexities about young people's views about gender. Despite young people generally having more egalitarian ideas of gender, (Allen and Stevenson, 2023; Allen et al., 2022) I have found young women often retreat into essentialist descriptions of gender often mediated by the views and perceptions of parents, and, as I showed in Chapters 5 and 6 teachers, peers and college staff. This is even the case when young women themselves have acted contrary to long-standing gendered patterns.

As Chapter 4 discussed, the parents of young women and their openness to, and encouragement of their career trajectories was identified as important for the young women who followed qualifications in engineering and construction- irrespective of the level of qualification. The young women including those on lower-level qualifications such as brickwork felt their parents' pride was directly related to their disruption of conventional gendered norms with little recollection of parents concerns about the nature of the work, the masculine cultures within or level of qualification they were undertaking. These insights provide an interesting contrast to Carroll's (2023) findings in Australia, where some of the women she interviewed working in heavy industry felt their parents were initially reluctant about their choice of qualification and career with pride coming later when they had, to some extent, proven themselves in the male-dominated space. Parents being outwardly supportive and proud of their daughter's choice of qualification, before starting college was a key pattern in this research into how confidence was engendered within the home about the plausibility of their choice. This also suggests further exploration of the role of parents could yield important insights into shifting generational attitudes and changes in cultural gendered perceptions across divergent geographical settings.

Young women undertaking a trades related qualification were highly dismissive of gender-typical qualifications such as hairdressing and beauty therapy, framing these as 'easy' and evoking tropes associated with these occupations. Despite the level of qualification being equivalent to their chosen qualification, the highly gendered nature of these qualifications came with perceptions that rendered these implausible and unviable. This demonstrates that young women, facilitated by parents, can enact choices that are contrary to gendered norms whilst upholding underlying views that are still aligned to gendered stereotypes about those who conventionally occupy different educational and occupational spaces. The parents of young women and their pride and support of qualifications not bounded to conventional gender patterns is an important element of our understanding how the plausibility and viability of male-dominated careers are fostered by parents. There must however be substantiative meaning behind what parents *say* and crucially, remain compatible with what parents themselves *do*. These practices are related to and compounded by processes and arrangements within their subsequent school and college settings.

7.4 Research findings; School life and the influences on post-16 choice-making

Scholars have argued schools can act as a site of educational advancement and development, but they are also where inequalities, and in particular gendered inequalities, can be reproduced (Bourdieu and Passeron, 1990; Fuller, 2009; Leathwood and Archer, 2004). My analyses in Chapter 5 emphasised the roles of school arrangements, focusing on how these shape young women's post-16 choices.

The possibility of undertaking a vocationally based subject during secondary school was a pattern across the young women who subsequently undertook a male-dominated qualification and is of course related to the visibility of related careers. This possibility fostered and nurtured interests and hands-on skills often built on the foundations laid in the home. This acted to further expose young women to more specific non-gender normative career possibilities. This positively impacted the young women's confidence about the viability of a career in a highly masculinised sector. Through vocational curriculums and activities in schools', skills can be aligned to careers, imbuing young with meaningful forms of cultural capital. However, this does not act to challenge dominate gendered norms about subjects and qualifications as young women still largely recognised the gendered nature of these subjects. This research finds that the institutional arrangements of curriculum offerings and these practices within schools' shape and compound both the plausibility along with the viability of engineering or construction/trades qualifications.

Key differences were found in the processes within schools that shape the construction of the viability of male-dominated qualifications between those who follow engineering and higher-level construction routes, compared with those undertaking gender-typical qualifications. Despite comparative grade attainment, young women pursuing gender-typical routes *felt* they were not good at maths, expressing low maths confidence. Compounding this in the absence of meaningful career advice or potential access to recruitment events, the viability of a gender-typical choice remained aligned to their own perceived skills from already visible options. This was in some cases despite some young women recognising financial

potential or creative possibility in different gender atypical qualifications demonstrating the overlapping influence of social domains and social actors within.

Understanding choices and the visibility of different male-dominated qualifications places school-based careers advice in the spotlight. The experiences of the Covid-19 pandemic impacted the participants secondary school years, however careers advice in schools was more meaningfully recalled by young women who followed male-dominated post-16 qualifications. The visibility of routes enabled through careers advice, however, suggests that as a form of cultural capital this was often aligned to already established interests or work experience outside the educational setting. This was also evident for those who ended up undertaking gender-typical qualifications. The substantive meaning of forms of careers advice and recruitment events can, for some, act as social capital that is accrued not just over time but across different settings.

In Chapter 5 I identified how the visibility of male-dominated qualifications, especially engineering, through labour market and college led open events, can be beneficial for some and also impeded by prerequisites of attendance set by labour market representatives and college staff. In turn this revealed that male-dominated pathways, particularly engineering, remain conceived by the labour market and college tutors in often rigidly academic terms. Literature and empirical research have tended to frame engineering under the STEM umbrella and consequently situated this with narrow conceptualisation within an academically oriented space. As I detailed in Chapter 5, it was not surprising, and unlike those following more trades related qualifications, that maths was a key feature in the accounts of young women from engineering courses that does, in some respects, echo previous literature (Swan et al., 2020).

However, the data I presented relating to the engineering students and their reflections on maths during their secondary school years, revealed more about the relationship between the young women and the subject than simply a strong maths ability associated with a narrowly conceived academic identity. Where maths often gets framed in highly academic terms as a STEM subject, (Archer and Mendick, 2024; Wood, 2002) in this study the engineering, and some higher-level construction

students, largely distanced themselves from an academic identity in favour of a practical identity that was coupled with an enjoyment of maths. Their maths ability took on meaning and contributed to the viability of certain qualifications when coupled with an already cultivated plausibility, often from within home contexts. This foregrounded a hands-on enjoyment of skills and hobbies associated with boys and in some cases a disavowal of feminine identity. These insights speak to how qualifications traditionally conceived in academic terms might be framed more broadly and, along with social actors in schools, can potentially begin to challenge ideas that 'academic' and 'vocational' qualifications must be mutually exclusive. For those who undertook an engineering or higher-level construction qualification this blurring of the academic and vocational increased the visibility and engendered greater confidence about the viability of different career possibilities.

College and labour market recruitment practices for engaging school aged girls in engineering in particular, commonly draw on traditionally male oriented skills and hobbies and 'good' maths abilities. Questions at open events that relate to a childhood enjoyment of 'fixing' and events that target school-aged girls who are judged to be 'good' at maths however, means that these build on already established dispositions for some, rather than acting to broaden possibilities for others. This challenges more simplistic notions that an awareness of career possibilities alone is sufficient to disrupt permeating gendered patters of participation. The visibility of pathways remains underscored by both an awareness of careers, but that these must also be perceived as compatible within young women's gendered frames of reference through the structuring of the habitus and other forms of social and cultural capital. This speaks to the compounded influence of the plausibility and viability of male-dominated careers.

Whilst open events were useful for some, as social actors appeared to align skills to career possibilities, the young women also commonly viewed industry diversity initiatives and events as conflicting. Whilst they can be helpful and informative in broadening the visibility of different careers, they run the risk of appearing superficial, and reinforce ideas that positive discrimination practices may undermine their achievements and reduce them to token hires. This scepticism remained and was further illustrated in Chapter 6 as part of a broader awareness of the enduring cultural

norms and expectations young women hold about their future careers. As gender is so ubiquitous to the choices and (later college experiences) of young women in male-dominated sectors, to also be 'gender blind' in recruitment practices fails to take account of differences in previous social experiences, leaving some young women still without the visibility of possible career opportunities.

Teachers have been long implicated as having significant influence on young people's aspirations and educational outcomes (Archer et al., 2014; Swan et al., 2021). Previous literature has challenged the value of gender-matched teaching, and some empirical research has argued the gender of the teacher does not have significant impact on student attainment (Carrington et al., 2007; Francis et al., 2008). As a development of this literature, and thinking beyond 'attainment', the value young women place on female maths teachers is an important insight into how social actors can make certain qualifications not just visible, but also viable for young women. Teachers own knowledge (or lack of) can impact the dissemination of knowledge as the guidance and direction is limited to their own frames of reference (Fuller et al., 2014). In this study, female maths teacher's knowledge of industries, such as engineering, where maths can hold significant value, acted as a valuable and meaningful form of cultural and social capital. This was especially pronounced with their secondary school female maths teachers being particularly valued for their highly feminised attributes. It was not just that female maths teachers feature significantly in choices to follow engineering and higher-level construction choices, the perception of a caring and nurturing approach of these teachers was just as important.

Exploring the motivations and processes that make atypical qualifications plausible and viable also revealed in Chapters 5 and 6, a complex articulation about the use and value of feminised skills in masculine spaces. For some young women, disavowing dominant forms of femininity in favour of aligning to a 'tomboy' identity, is deployed to justify and legitimise their choice of qualification and space within the masculine cultures associated with their respective college courses. The rejection of typically 'girly' identities as an act of resistance towards conventionally gendered displays also conflicts with underlying views when some career choices remain aligned to their perceived feminised attributes. The desire for a career that offers

creative possibility or that can help others was foregrounded in the young women's choices. Similar motivations were also articulated by young women who ultimately followed gender-typical routes. What separated them was the application of these factors either aligned with feminised qualifications or relevant to masculine forms of labour.

I have found the possibility of an engineering offering creative possibilities broadly echoes with elements of Swan et al's., (2021) findings, but contrasts other elements of their work. I have argued that for some young women engineering as a career that can contribute to society, is a crucial piece of understanding why some of these women followed the path they did. Relatedly, that brickwork could be a highly creative skill, and building houses to help people reveals a novel way of framing what has been a long-standing masculine sphere of work. In some cases, parents were the ones who glued together skills with less gender-typical qualifications, such as the ability to use creative skills in brickwork qualifications. In others more internalised processes were evident, whereby trades including plumbing and carpentry offered women deeply altruistic possibilities in caring for others. This illuminates the subtle ways that young women both subvert gendered norms through their choice of qualifications and uphold other gendered expectations. I suggest this is not inherently a reproduction of gendered norms but rather a space in which women carve out alternate ways of choosing and navigating male-dominated spaces. These findings bolster and expands upon wider literature that suggests women re-gender spaces as part of the process of fitting into masculine occupations during their time at work (Wulff et al., 2022). My analyses, particularly in Chapter's 5 and 6, suggests arrangements and social actors within colleges and educational settings can compel young women to align to normative cultures of the anticipated occupational setting. Fostering a plausible fit within women's own gendered frames of reference is an ongoing negotiation in masculine spaces.

7.5 Research findings; Navigating college and expectations for working in male-dominated industries

This thesis has highlighted the role of FE settings and the social actors that shape experiences for young women on male-dominated college-based VET. More specifically this relates to the practices and structural arrangements in colleges that can impact the experience of being in a gender minority, influencing the ongoing construction of the plausibility and viability of future careers in non-traditional fields.

As I discussed in Chapter 6, upon starting a male-dominated qualification at college, young women expressed a desire to see other women on their course. This was framed as a source of solidarity and shared experience relating to their gender minority position. Contemporary empirical research has identified forms of social capital as being key to women's success in the trades sector as women act as mentor and support for other women (Bridges et al, 2021). Whilst Bridges et al., research was honed on the occupational setting, the findings I present from this study, based upon the training stage, suggest the potential value of other women has already been identified as important by the young women and can potentially contribute to their ongoing successful journey through a male-dominated qualification and into the labour market.

The plausibility of continuing from to college onto work in a male-dominated sector relates to how engendered assumptions about the self are navigated and negotiated during college. When faced with a male-dominated space, for some of the women for the first time, physical differences came to foreground. Issues of physical strength rooted in biological assumptions highlighted their presence as different and this was often reinforced by others. The young men and the male tutor's expressions of disorientation (Puwar, 2004), confusion and sometimes sexist attitudes towards the young women can further proliferate inequalities and difference which in one case undermined the plausibility of a career in a male-dominated sector to the extent the young woman was changing her course of career.

In contrast to the young women's sense of the disorientation of male tutors and peers, the male college tutors that were interviewed largely dismissed the gender of their students as unimportant and suggested for them they consider 'all learners are the same'. Drawing upon work that has sought to address systemic racial inequalities in

education, Joseph-Salisbury and Connell (2018) argue that claims of colour-blindness fosters environments where more subtle forms of racism can be proliferated. Based on the findings of this research then, college tutors taking a gender blind or taking a 'gender doesn't matter' approach is not only problematic, but these views also appear contrary to their underlying gender normative behaviours and expectations. Rather than being a useful universal approach, this reinforces patterns of inequalities that are reproduced in college settings when tutors claim to be gender-neutral but concurrently act in ways which demonstrate the young women's presence remains the unexpected.

The young women's college experiences as a gender minority further demonstrate the complexities of gendered dynamics that are embedded within structural arrangements and daily interactions. The college experiences examined in Chapter 6 found the foregrounded nature and varying salience of gender. This includes how gender is often dismissed by the young women as unimportant, yet gendered assumptions are simultaneously reproduced. Dilemmas are evident when young women articulate messages of wanting to 'fit in' and be accepted whilst simultaneously recognising and being reminded of their difference. Through everyday gendered language or perceiving that college tutors have lower expectations because of their gender women are marked as not only different, but unequal. This difference however is also framed as both a position to celebrate, as a pioneer for social change, and a potential limitation where gender stereotypes and biological difference are evocated as problems to overcome. These tensions echo broadly with wider societal and gender essentialist ideas whereby when women enter spaces not normally reserved for them, they are the 'female engineer' or 'female bricklayer'. It is then not just the women who must viably occupy male-dominated spaces but must also convince others of this viability as their skills and abilities can be undermined by biological assumptions and gendered stereotypes.

When sexism and inequalities are dismissed as banter, humour, or the result of temporarily bad actors they remain unchallenged and continue to reproduce dominant masculine cultures within the space. The findings from this study bolsters wider literature and provides a broader scope relevant to different occupational sectors and demonstrates that masculine cultures prevail across male-dominated workforces

(Britton, 2017; Fielden et al., 2000; Powell and Sang, 2015). These are echoed across levels and types of male-dominated qualifications and are not isolated to certain sectors or just the workplaces this expands literature focused on separate occupational sectors (Carroll, 2023 Bridges, et al., 2024; Smith 2011) as this research suggests that masculine cultures remain dominant in and across these VET spaces. Women's disavowal of sexism or placing the blame only on individuals, fails to take account of systemic issues and in turn suggests that tackling broader cultures through legislation can be some sort of panacea for change (Britton, 2017; Carroll, 2023). Similarly, to focus only on the broader picture of systemic inequalities through legislative change, for example, may not address the role of social actors especially those teaching and supporting those undertaking such qualifications.

As an expansion of extant literature, this research also demonstrates more about some of the tensions and contradictions that young women in male-dominated VET spaces articulate when thinking about sexism and gendered inequalities. Everyday classroom banter and examples of sexism were explained and dismissed as age related. This invokes ideas of maturity associated with young men as form of 'lad culture' and a phase of masculinity (Jordan et al., 2022; Nichols, 2018). Concurrently women consider that sexism and inequalities can, and likely will, remain present in their future careers. Unchanging cultures in male-dominated spaces can be in part proliferated by women's acquiescence of behaviours that represent broader gendered inequalities and sexism in the workplace. This also reveals some of the challenges around about what enabled women to circumvent traditional gender conventions and follow their chosen qualification. Despite arrangements withing the home, school and college having an important role in fostering the ongoing plausibility of their pathways these processes also reinforce the pressures and burden of representation resulting in a further complex space women must continue to navigate when they are in the minority.

As learning pathways strongly associated with work-place focused learning, Ward (2018:3) has argued, 'VET courses are also areas of the curriculum where specific performances of masculinity (and femininity) are on display'. This suggests that stereotypical performances of femininity and masculinity remain within VET and associated careers. The findings of this research suggest complexities surround

performances of gender when women follow male-dominated qualifications and careers. Taking vocational learning as a space in which 'specific' performances of gender are displayed are performed assumes a rigid and fixed approach to gendered norms – the experiences of the young women in this research highlight the ongoing negotiation with gendered norms as both conforming to the dominant narrative of the space and also show there is, often concurrently, a resistance to these values and behaviours. Within the overarching context of engineering, accounts from labour market informants illuminated important insights into how, despite the renewables sector being a much younger industry and presenting a much more inclusive approach to recruitment, the cultures and arrangements within already resemble cultures within longer established engineering industry such as oil refineries. This can be taken as a further example of dominant cultures continuing to appear across and within masculinised forms of labour.

7.6 Contributions to sociological knowledge and theory

Overall, the findings of this research contribute to sociological literature about the complex interplay of past and present contexts including the role of the family, educational settings, and college experiences in shaping young women's choices and experiences of male-dominated VET.

This research and methodological design have provided a unique vantage point from which contributions to the field have been made and are a particular strength of this study, as previous research has tended to bracket different educational qualifications and occupational sectors or compare the experiences of boys and girls. Through the methodological strategy I have contributed to a gap in our understanding about the patterns and processes behind different highly gender segregated educational spaces, focusing on young women's past and current experiences. My empirical study specifically contributes insights into the shared experiences and patterns in the practices and structural arrangements, across those following different types and levels of male-dominated qualifications and demonstrates how gender remains highly salient for young women across these settings. The use of a comparative group of

young women on gender-typical qualifications served to bolster this study's claims by examining the experiences across young women. This approach was highly valuable in revealing novel insights that brings together a more expansive and nuanced understanding of how young women are oriented towards, and away from, different highly gendered qualifications. This methodological approach has in turn has broadened our scope of understanding about gender and VET.

Framing choices as visible, plausible and viable has been a particularly valuable analytic framing and an important element of the theoretical contributions of this thesis. As a theoretical contribution to sociological thought, I have suggested that choice-making can be more effectively understood as visible, plausible and viable. I have built this framework expanding ideas of careership, horizons for action and pragmatically rationality (Hodkinson and Sparkes 1997) and embedded Bourdieu's conceptual ideas. My conceptual framework was intended to not just speak to *what* choices are made but explain more about *how* they are enabled. This approach contributes to our understanding of choice-making as an ongoing iterative process and explicates how this is relative to the different social domains young women move through. A more processual account of choice-making that expands understandings about the wider processes relating to gender and education has been demonstrated through the visible, plausible and viable framework. Focusing on choice-making and experiences within gendered contexts and choices which represent the exception, has in turn revealed more about wider gender issues and inequalities and related social processes.

As a contribution to sociological literature concerned with gender and education, I have found that at times gendered norms are reproduced and compounded by experiences in home and educational settings. These occur to a varying extent through different processes and practices that may, on the surface, appear counter to gendered conventions. Home settings and parents can support the disruption of normative gendered action whilst concurrently reinforcing perceptions of gendered binaries. My study has expanded our understanding about the role of teachers and college staff in engaging young women in ways that can enable gender atypical post-16 qualifications, for example by nurturing maths skills or aligning creative possibility to occupations not normatively perceived in these terms. Moreover, I have

added to debates about the vocational/academic dichotomy in demonstrating how this division is less clear cut for some, acting as a useful insight into how young women in male spaces align practical skills to careers in engineering and construction. However, those working in schools, colleges and male-dominated labour market sectors also act in ways that reveal how normative and dominant gendered ideals often perforate their articulations of gender equality and inclusion within education demonstrating ongoing gendered assumptions.

Contributing to sociological insights about youth and gender I have found that in following a male-dominated qualification young women's choices, experiences and anticipated futures are inherently related to their gender. This offers greater understanding about young women's ongoing negotiation with gendered inequalities. Wanting to pioneer social change in gendered participation is often in conflict with simply wanting to fit in and get on. This is particularly relevant to a body of research that has found young people express more gender-liberal and equitable attitudes compared to previous generations. Whilst my research does not serve to dispute this notion, it does deepen our understanding about the complexities and challenges evident for young women when they are navigating gender minority spaces. My study's insights suggest that what young people express about gender (in)equalities is often still permeated by stereotypical perceptions, even when young people *do* disrupt gendered norms in educational choices. Whilst there are nuanced differences in their journey to their respective qualifications in engineering or construction, the prevailing argument is that their gender transcends the level and type of qualification with more to unite them in their experiences than to separate them. This research has shown that gender inequalities and norms in many ways continue to be reproduced, reflecting underlying power structures and inequalities where men remain in the dominant position.

As such, the focus in this thesis has been the atypical but these exceptions should not be seen as isolated anomalies. They reveal insights into wider societal processes. This study has examined these exceptions and how they emerge, illuminating how gender norms and inequalities are perpetuated and maintained across highly masculine spaces.

7.7 Recommendations and Implications

This research leads to a number of important practical and policy implications with potential relevance for both the educational and labour market contexts of highly male-dominated sectors. As Barnard et al. (2010) argued women remain underrepresented in engineering but often solutions are 'women focused' and not multi-faceted enough to tackle cultural change. It stands to reason these arguments are applicable to other male-dominated sectors including construction and related qualifications. As such, the considerations and suggestions in this section recognise past problems where women's underrepresentation has been a 'women's issue' and instead take a considered, reasoned approach based on the findings of this research.

7.7.1 Careers advice

The Skilled Trades Index 2024 reports the potential for significant staffing shortfalls across construction and the trades in coming years. Delivering on Government focuses on housing targets and Net Zero places all of the industries focused on in this study in the spotlight for future recruitment. However, the construction industry and associated trades have attended less specifically to diversifying gendered recruitment practices. Conversely engineering has been subject to wider spread initiatives and national government spending to increase numbers of women entering the sector (Dimitriadi, 2020; White and Smith, 2021). Despite this, women remain significantly underrepresented. Within The Skilled Trades Index (2024) report on skills shortages, one of the four recommendations to address these issues suggests schools and college should offer guidance on vocational opportunities as part of the curriculum. This kind of broad-brush approach leaves a fragmented sense of who is responsible for recruitment practices placing onus back on school and colleges and not labour markets themselves. From this research, I support the idea that careers advice in school can be an important part of opening the visibility of pathways, the report however fails to take account of the reasons *why* construction and trades remain so heavily gender segregated. Forms of social capital such as careers advice, cannot be

deployed in meaningful terms when it is short lived such as in a one-off careers' advice session. Careers advice and guidance is and should remain a valuable tool in addressing gender segregation but greater co-ordinated action between schools, colleges and the labour market will be crucial in ensuring careers guidance has meaning and substance and not seen as a tokenistic attempt that could undermine industry efforts to move towards greater gender parity. Alongside this broader curriculum subject offerings in secondary schools and developing teachers' awareness of career possibilities are important recommendations from this thesis to incorporate into policy and education providers training considerations as a way to support young people's post-16 careers choices.

7.7.2 School curriculums

This study has recognised from the outset that the value of vocational subjects remains in a complex and contradictory policy space. A 2024 Department for Education report by The House of Lords Education Committee recommends that vocational and technical curriculums, especially at KS4, could broaden post-16 possibilities for young people and their later career opportunities. The Committee further argue that the current curriculum is overly focused on academic routes, recommending it be made possible for all for young people to follow at least one vocational and/or technical subject through secondary school. The findings from this thesis certainly echo this sentiment, particularly when looking at permeating patterns of gendered participation and ways to potentially disrupt this. However, the initial response, from the now former Government, was that whilst there is value in vocational offerings and technical options for study at KS4 (or GCSE), they should not be a 'prerequisite' for Post-16 study. Implicit here is that whilst engineering, for example, as a GCSE (or equivalent) qualification to follow to a Level 3, Post-16 qualification is not *required,* the Government response fails to take account of the significance of the exposure or visibility that subject offerings at school can have. For the young women in this study, it was not that following engineering, trades or other construction pathways were dictated to by their having achieved a GCSE in a related vocational subject, rather the exposure and visibility of these as formal subjects and school clubs formed a bigger influence in the viability of their post-16

choices. As such policy that specifically addresses the range of subject available at KS3 and KS4 should consider how a varied curriculum not just supports those who fall outside of an academic orientation but also fosters skills in crucial sectors such as engineering and construction. This should be an approach that involves labour markets, colleges and schools working in a cohesive and collaborative way to design and offer varied, industry relevant curriculums in secondary schools.

7.7.3 Open events

There are many opportunities for colleges and those from the labour market to consider their own lines of questioning and preconceptions when young women are enquiring or embarking on male-dominated qualifications. Social actors from college and labour market settings can support young women to understand how their perceived skills align to non-gender traditional sectors. Staff at college and industry led open events should move away from exploring only 'hard' skills such as a maths ability to identify potential female recruits. This is an important recommendation for labour markets and colleges to not just promote different sectors but that this can, and should, be done in a gender sensitive way and applied more broadly to different sectors and qualifications. Rather than inviting those who are perceived as good at maths or likely already interested in these careers, targeting these at young women who are good at problem solving or enjoy finding creative solutions could offer important steps towards recruitment challenges. These recommendations are based on the valuable space identified in this study to consider how the visibility, and viability of qualifications are communicated to young women so they can do just that – be aware of possibilities so they are freely choosing in the absence of *certain* constraints.

7.7.4 Further Education Providers; staff training and practical arrangements

Attention to the assimilation of young women into the college environment at the post-16 transition is especially pertinent given the preconceptions about starting college

this thesis has revealed. Through implied positive discrimination, exclusionary gendered language and assumptions about being a lone female, young women face a number of barriers before even fully commencing at college.

Some of the industries I have explored are especially physically demanding ones and so retirement may occur earlier than in white collar sectors. Many FE and college-based tutors are retired from industry and teaching is a common step for those after employment in industry (Rogers and McGrath, 2021). A large majority of the engineering and trades tutors at the college site where this research was conducted had retired from industry and moved into teaching. Whilst this can give them beneficial insider knowledge of their industries and practical hands-on experience, from the tutors I did interview, this also revealed how male tutors often embodied the dominant cultures of their respective fields - as I showed in Chapter 6. Through the interviews I conducted with those working in the labour market and male college tutors I also found a common rhetoric of 'inclusivity'. In some cases, this was claimed as a form of gender blindness – that all students are the same and are treated equally. This thesis, alongside other contemporary work, continues to echo ideas that gender remains highly salient in young women's career choices especially when those choices are contrary to gendered trends (Bridges et al., 2021; Carroll et al., 2023; Wulff et al., 2022). As gendered inequalities are often woven into the fabric of the young women's expectations, interactions and experiences, gender-blind approaches not only fails to tackle these inequalities but, in some cases, can exacerbate them. Recognising the value women placed on other women, upon starting college practical arrangements that place women in the same class or group as well as cross-programme tutorials could act as an important source of support for gender minority students.

In the final stages of completing this thesis I became aware of new training opportunities being offered by another FE provider for an 'apprentice engineering instructor'. The role was advertised for those working in industry to complete their on-the-job teacher training with future engineers. Given the current gender segregation of these labour markets currently, it is reasonable to assume this is likely to attract higher numbers of male applicants and teachers into roles which, without consideration, could potentially perpetuate and exacerbate gendered cultures of

practice in the college sector. These roles were targeting those wanting a career change or those thinking labour retirement a path into teaching using their industry knowledge. These roles will be vital in ensuring the ongoing and future training for young people across vocationally trained, male-dominated sectors but, based on my findings, specific training opportunities arise. Those teaching young people should be more gender aware, inclusive and empower, rather than manage, young women to navigate these spaces. Specific policy that embeds gender aware practices and approaches into inductions and training for sector related teaching staff and relevant labour market stakeholders should be considered alongside ongoing professional development. I indicated in Chapter 3 that I have had contact with some of the labour market informants following their interviews. These connections have already fostered important relationships whereby I am part of ongoing projects that involve labour market recruiters and college staff in working towards developing tangible policy change and staff training that aims to tackle everyday sexism and misogyny in the classroom with a goal to move towards a more equal, and safe space for women undertaking male-dominated qualifications.

However, it is important to recognise a key argument I have presented is that whilst the habitus should be considered directional rather than determinal, the plausibility of male-dominated qualifications and occupations is often largely fostered from within home contexts. When young women's family and home contexts are largely bounded to normative gendered conventions to disrupt gendered trends in their post-16 choices is largely implausible. Either through overt parental opinion or more in the subtle and unspoken perceptions young women hold about what their parents and family *may* think. As such this requires attention to family contexts as an important area for colleges and labour markets to understand more about in the development of recruitment initiatives. I have argued and evidenced that gendered practices in the home heavily shape dispositions towards male-dominated careers, as such greater inclusion of parents in the knowledge dissemination processes could act to improve awareness and potential positives of alternate career possibilities. Emergent then are avenues for improved connections between schools, colleges labour markets and not just events targeting young women but inclusive practices that involve parents. Based on this college open events should also engage parents specifically.

7.7.5 Limitations and opportunities

Beyond these implications for policy and practice, opportunities arise to develop this research and further explore the issues raised in this thesis. These opportunities are based on consideration of some of the practical research design choices adopted in this research and a way to further operationalise the framing of choices as visible, plausible and viable beyond the context of this study. Whilst the research design was a considered and deliberate course of action balancing practicalities with ensuring a clear scope of the research this does also mean there is potential to develop the research in the future. This research drew participants from one college site, and this allowed for in-depth comparisons to be made between participants. This also provided an important vantage point from which to explore gendered choice-making and experience. Nevertheless, this is recognised as a potential limitation of the research. Based on this, making comparisons across different college sites and geographical locations would also be a valuable consideration for future research. The demographic of the eastern coastal town of Thornfield where the fieldwork was conducted is predominantly white British and this was reflected in this studies participant sample being all white females. However, wider research has highlighted the intersection of other inequalities including how gender and ethnicity (e.g. Archer and Leathwood, 2005; Wong, 2016) also play a key role in choice-making and educational and occupational outcomes. A further area of development from this research would be to explore these intersections where time and resource permits. Using an intersectional lens with a more diverse sample whilst applying the visible, plausible, and viable framing of choices could yield important insights into the processes of choice-making with broader social groups.

There are also opportunities beyond development and expansion of the fieldwork setting. This research, largely owing to the practical limitations of PhD fieldwork, captured the young women at one moment in time. A qualitative longitudinal exploration could add important pieces of the puzzle in how young women then navigate workplaces across different sectors. Moreover, as part of capturing women at one moment in time I focused on school leavers during college, so the women were

aged 16-19. There will be benefits to further research capturing women later in life, those who want to change careers or return to work, as further and higher education college providers are also a key part of this agenda with funding such as with 'lifelong learning loans' being made available. There is also attention on Skills Bootcamps to address pressing labour market needs including in engineering and construction (Institute for Employment Studies, 2025) and so exploring women after college age and their choices and motivations could add important insights. An emergent finding in this study related to the cultures within established industries compared to newer renewable/clean energy sectors and this would also be an important avenue for future research to consider more about the cultures across these occupational spaces particularly with ongoing focus on NetZero targets in the UK. Future research could also engage with parents themselves to understand and explore inter and intra generational exchanges and perspectives in relation to exchanges within with home and how informal careers advice is shared, particularly in gender atypical contexts.

7.8 Final remarks

This research has highlighted that young women's choices to follow male-dominated routes is complex and multi-layered. Their experiences during their qualification highlight the ways gender remains salient to their daily interactions. Despite being an 'exception' and in a minority these experiences reflect broader and ongoing gendered inequalities. These insights have offered an important piece of the puzzle into the specific practices and processes that enable choices to follow pathways contrary to gendered trends but also speak to the complexities and challenges women continue to face in these spaces. Tracing the choices and experiences of the young women who are the exception or the atypical reveals insights into wider normative social processes and highlights the importance of everyday practices and structural arrangements that are embodied and reproduced in home and across educational settings. Building on this research and continuing to explore these issues will add value to understanding persistent patterns in occupational segregation. Permeating patterns of gender segregation require ongoing consideration if industries are to

realistically make steps towards plugging skills gaps through greater gender diversity and challenging the dominant cultures of practice within.

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Appendix A Interview Schedule with students

Hi, thank you for agreeing to take part in this interview for my PhD which focuses on the choices and experiences of girls who have chosen to follow vocational pathways. The interview will last around one hour, but there is no time limit so please go into as much detail as you like.

I'll ask a range of questions about your choice and experiences of your course of study, as well as asking about Thornfield and other people around you.

Taking part is entirely voluntary so please let me know if you would prefer not to answer a question or if you would like to stop the interview, and feel free to ask me to repeat anything or explain further. I will let you know when the interview recording is about to start, but you may ask me to stop the recording at any point. Once the recording has begun, I will read out some short statements and ask whether you give your verbal consent to being interviewed. If you would like more time to read the study-information sheet, please let me know.

Are there any questions you would like to ask before we begin?

[BEGIN RECORDING]

[READ VERBAL CONSENT STATEMENT]

Part one: Thornfield

Do you live in Thornfield? How long have you lived in Thornfield (or other)?

Can you tell me what Thornfield is like?
-How would you describe it as a place to live/study?
-Why?

Have your family always lived in Thornfield?
-Do they work in the town? Have they always? What do they do?

What opportunities are there for young people in Thornfield in terms of studying and jobs?

Part two: School experiences

When you were at school what school subjects did you enjoy?
-Any you enjoyed but found difficult?
-Or easy but didn't enjoy?
-Do you think this was important in what you then chose to do at college?

What about the teachers at school, can you tell me about any teachers that you think may have helped you a lot or advised you?

Did you have any particular hobbies or interests at school?
-Go to any clubs or activities for example?

What about any careers advise at school?
-Who did this?
-How valuable did you find it?

Did you do work experience at school?
-What did you do?
-How do you choose what you did?

Where there any events or open days that you went to or people from outside jobs and colleges came into your school?
-Did you go to these? Why/why not?
-How useful did you find these?

Part three: The College and programme

Can you tell me about how you came to study at this college?
-What is it like to study here?
-What are the students like at the college in general?

Can you tell me about your course? What are you doing? How long you have been doing it?
-Do you enjoy the course?
-What did you expect when you started?

Have you always considered going to college after school?
-Why college and Tlevel/BTEC?
-Are there other ways of learning for your course?

Can you tell me about your programme and the types of people on it?
-What kinds of people tend to take this programme?
-Why?

Can you tell me a bit about the different types of lessons you do?
-Practical or classroom based? What are they like?
-Are they what you expected?
-Do you have to do work in groups? Who works together? How is this decided?
- Does everyone in the classroom get on?

What kinds of things do you do during breaks?
-Who do you spend breaks with?
-Does everyone spend time together from your class or do different things?
-What kind of things do different groups do?

Have you ever considered other programmes or courses?

-Did you talk to anyone about it? Friends, families, teachers?
-What made you stick with this one/what made you change your mind?

Part four: Friends/family/significant others

What do your friends/family think about the course you have chosen?

What kinds of jobs do people in your family do? What about friends?
-Do they enjoy their jobs? How do they talk about their jobs?

What kinds of things do you enjoy doing outside of college?
-With friends or family?
- Do you have any hobbies and interests outside of college?
- Do you or have you had a part time job outside college?

I understand there are not many girls studying (x).
-How many girls are there on your course?
-Is this what you expected?
-Why did you expect/not expect this?
-Is this an issue to you at all?

Did you think about this when choosing your course?
-Did anyone of your family or friends talk to you about this?

(*) The course you did choose has mostly girls – is this what you expected?
-Why did you expect/not expect this?

Part five: Employment and future plans

Can you tell me about your plans when you finish your course?
-Who do you discuss these plans with?
-What do you think makes a ‘good’ job?

-(Apprenticeship specific) What do you look for in an apprenticeship? Are there any companies/organisations that come into college? Or staff and other students talk about?
- How do your plans compare to other people on your course?

I'd like to talk about what is most important to you from a job.
(Small task within interview task – below, underneath notes)

-Why is x most important?
-Why is x least important?
-Is there anything missing from this list?

What does careers advice look like at the college?
-Who delivers this?
-How useful do you find this?
-Are there other things about going into employment would feel you would like to know/cover?
-Have there been any initiatives by the college or employers to help you make plans for after college?

What do you think the people working in the (your course) sector are like?

The sector that follows your course is heavily male-dominated.
-How do you feel about working in place or job with mostly men?

Are there advantages to being a woman in this environment?

(*)The sector that follows your course is predominantly women.
- How do you feel about working in place or job with mostly other women?

Notes

What's important to you?

Which aspects of future occupations are most important to you?
Please place in order of most to least important. *These would be on small pieces of paper to be placed in order. (Captured in a photo and field notes)*

Interesting job

Job security

Time for family

A job that helps others

High income

Contribute to Society

Lots of leisure time

Being able to stay local

Appendix B Interview Schedule College tutors and support staff

Hi, thank you for agreeing to take part in this interview for my PhD which focuses on the choices and experiences of girls who have chosen to follow different vocational pathways. The interview will last around one hour, but there is no time limit so please go into as much detail as you like.

I'll ask a range of questions about programmes at the college and your perceptions of Thornfield and employment and training within the area.

Taking part is entirely voluntary so please let me know if you would prefer not to answer a question or if you would like to stop the interview, and feel free to ask me to repeat anything or explain further. I will let you know when the interview recording is about to start, but you may ask me to stop the recording at any point. Once the recording has begun, I will read out some short statements and ask whether you give your verbal consent to being interviewed. If you would like more time to read the study-information sheet, please let me know.

Are there any questions you would like to ask before we begin?

[BEGIN RECORDING]

[READ VERBAL CONSENT STATEMENT]

Part One: Job context

Can you tell me about your job role? How long have done it? Have you always done this? What are your key responsibilities?

Have you worked in industry?

-Experience of working industry?
-‘Typical’ people working within this industry?

Part Two: Student background and recruitment

Can you tell me about your experience of the college you currently work in?

Can you tell me what the students are like here in general?
-What kinds of background do they come from?
-What pathways and destinations?

What about in relation to your specific programme?
-What are they like? Background
-Are there commonalities in the pathways students tend to follow following the programme?

Do you see the college has typicality’s in the student type? Does this apply across programmes?

Are there arrangements at the college to drive and diversify recruitment?
-If so, what does this look like?

Can you tell me about some of the any initiatives the programme college currently has in terms of gender and recruitment?

l would like to ask about learner experience/ student recruitment?
-What do open events ‘look like’
-What is the profile of students who enquire about your course?
- How have open events and marketing for these programmes been designed?
- Are open events attended by or do they have input from local employers/industry?

Are there arrangements here to try and diversify recruitment? If so, what does this look like?

-What is your role, if any, in this?

Across the college - do you have any specific initiatives to recruit less gender-typical students?
-What does this look like OR why do you think the college doesn't have these?

Part Three: Thornfield

You work in Thornfield, what do you think about the town?

What do you think outside perceptions of the town are?
-What do you think shapes this?
-How do you hear colleagues/earners talking about the town?

What do you see Thornfield has to offer young people in terms of their studies and future employment opportunities?
-Can you tell me what you consider to be 'good' about Thornfield for your learners? Or perhaps limiting about Thornfield?

How do you see the current job market for students in Thornfield?
-Is this the same for the sector associated with the course you teach? Why/why not?

What do you think about Thornfield in terms of students staying or leaving the area? What do your students tend to do? Why is this?

What factors do you think impact this?
-Can you tell me what you consider to be 'good' about Thornfield for your learners? Or perhaps limiting about Thornfield?
- Can you tell me what you consider to be 'good' about Thornfield for your learners? Or perhaps limiting about Thornfield?
-How do you hear colleagues and learners talk about Thornfield?

Part Four: Programme and learners

Can you tell me about the programme(s) you teach on?
-Different levels/courses?
In terms of your programme, How involved are you in the development and design of the course? Can you tell me more about this?
-Changes that have been made?
-Planned changes?

The last few years have seen disruption in teaching especially thinking about Covid, can you tell me how this has impacted your course specifically?
-How has this impacted your learners?
- Has it impacted any learners or aspects of teaching more than others?

Can you tell me about your programme more specifically?
- What is the profile of students?
-Has this changed over time?
-How different/ similar to the college in general?

Can you tell me about the gendered profile of your student groups?
-Is this fairly consistent, have you noticed changes?
- Can you think of any examples of this?

What do you think are the attributes that makes ‘good’ student on your course?
- Do you think the same sorts of things drive girls to study the subject as boys? Or are they making different kinds of choices?
-Why?
-Do they have similar career ideas or different ones?
-Has the college tried to encourage more girls to study X ?

What does a successful student look like and what do you think might help this?
-In terms of family support/college support?

Can you tell me about the gendered profile of your student groups?
-Is this fairly consistent, have you noticed changes?
- Can you think of any examples of this?

Thinking about the classroom environment when students are learning – what do the interactions look like between the boys and girl(s)?
-Does this impact your teaching approach? If so, how?

Do the college offer any specific training to support staff with teaching and working with girls studying engineering / building…

Do you ever have guest speakers/outside employers come in to speak to students?
-What is the purpose of these?

Do you think there are any practical barriers students in a gender minority could or do experience?
-In the classroom?
-Preparation for employment?
In the labour market?

What do you see as the main issues that exist for girls/young women on this course?
-Is their gender advantageous or prohibitive? In what ways?

Part five: Employment

What, generally do students do after completion of their course with the you/the college?
-What do students talk about as being important after college?
does this differ between boys and girls? If so, how?
-Why do you think this is?

What do you see as the biggest influencing factors on what students on what students do following their course?
-Elaborate on what may be the 'biggest'?

Can you tell me about student destinations after completion of their course?
-Are there employers locally that tend to recruit from the college?

Sectors such as engineering have seen national pushes to recruit more girls, such as Women into STEM.

-Have you seen the impact of this locally? Or within the college?
-This course (e.g. construction) would fall outside these sorts of direct initiatives – are there any examples of trying to recruit more girls?

How has the employment sector that this course feeds been impacted by national/local situations and events?
-Covid
-Brexit
- Austerity
-Local initiatives/ investments

Are they key employers within your sector that students work with during their course or employment after? Any that offer placements or apprenticeships?

How do you prepare student for employment in your related field? Are there any challenges students face? What are these?

How do you go about preparing students for employment?
- Are there differences in the ways girls' and boys' approach this at all?
-If so – can, you say more about that...
-What factors do you think differ between boys and girls when preparing them for employment?

There has been lots of suggestion recently that employers should play a bigger role in the development of VET courses - Are there any key employers that play a role in programme development?
-In what ways?
-What impact does this have?

Are there any employers you would like to build stronger connections with?
- Why?

What does any future development of the programme look like?
-What are the key priorities?
-Student recruitment initiatives?
-Does gender feature in these?

Appendix C Interview Schedule labour market informants

Introduction

Hi, thank you for agreeing to take part in this interview for my PhD which focuses on the choices and experiences of young people on vocational pathways in Thornfield. The interview will last around one hour, but there is no time limit so please go into as much detail as you like.

I'll ask a range of questions about programmes at the college and your perceptions of Thornfield and employment and training within the area =. I will also ask about your experiences and perceptions of the industry you work in

Taking part is entirely voluntary so please let me know if you would prefer not to answer a question or if you would like to stop the interview, and feel free to ask me to repeat anything or explain further. I will let you know when the interview recording is about to start, but you may ask me to stop the recording at any point. Once the recording has begun, I will read out some short statements and ask whether you give your verbal consent to being interviewed. If you would like more time to read the study-information sheet, please let me know.

Are there any questions you would like to ask before we begin?

[BEGIN RECORDING]

[READ VERBAL CONSENT STATEMENT]

Part One: Job role:

Can you tell me about your job? What your role entails?

Can you tell me about the sector you work in?

-Typicality's in the people?

-What attributes does someone need to be successful within this sector?

Part two: Thornfield

Id like to talk about Thornfield, what do you think about the town?
-What changes have you seen?

How do you see the current job market students more broadly in Thornfield?
-Is this the same for your sector

What do you see Thornfield has to offer young people in terms of their studies and future employment opportunities?
- Can you tell me what you consider to be 'good' about Thornfield in terms of employment opportunities?
-Or perhaps limiting about Thornfield?

How do you see national initiatives translating to Thornfield?
-What messages are important for young people to hear?
-What's stopping this?

Part Three: The college

Can you tell me about your relationship with the college?
-What's the role of colleges and schools in this?
-What about in areas like Thornfield?

What would you change/ develop about courses particularly in relation to the employability of young people?
-Is this the same for boys and girls?

Part four: Employing people

I'd like to talk about the types of people you employ and that work within this sector**.**

Can you tell me about the different pathways and qualifications that lead young people to employment within this sector/organisation?
-Specific courses/colleges?
- Apprenticeships? Higher level quals? No quals?

What are they key priorities and agenda for your sector in terms of employment, skills, and recruitment?
-Is your sector currently experiencing any specific skills shortages?
-How has your sector been impacted by national/local situations and events?
-What motivates young people to work in this sector?

What skills and attributes do you look for in an apprentice?
-Why?

Why do people want to work here? Young people in particular?
What pathways do people follow after an apprenticeship/training with you?
-Is this the same for boys and girls?

Part Five: Gender

Do you currently have any initiatives or plans to drive diversity within your sector?
--If so, what are these? Why?
-Who or what is driving this?
- If not, what would you like?
-Are there any focuses to drive diversity? Gender, ethnicity?
-How well placed do you/your organisation feel to support women/young girls within this sector?

Are there are wider/national policies that have driven your recruitment strategies? [Offshore Wind Industry Council OWIC in May 2022 published a best practice guide, *"Addressing Gender and Ethnicity in the Offshore Wind Sector]*

-Why are these important/why do you think this industry falls outside certain initiatives?
-How does gender fall within these?

What about opportunities for boys and girls?
-Are they the same?
-Either wanting to join the industry or in progressing?

Can you tell me about your experiences of young women working in this sector?
-Are there any implications of this as an employer?
- Do you see them facing any barriers?
-What advantages do you think young women in this sector may experience?

Appendix D Information sheet and consent script

Participant Information Sheet

UNIVERSITY OF LEEDS

Why should I read this information sheet?

You are being invited to take part in a research project. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please get in touch if there is anything that is not clear or if you would like more information. Take time to decide whether you would like to take part.

What is the research project about?

The research is about the experiences and choices of girls on Vocational Education and Training (VET) programmes

Who is the researcher?

My name is Raychel Robinson and I am a Postgraduate Research Student at The University of Leeds; this research is part of my PhD study in the School of Sociology and Social Policy.

What is the purpose of this research project?

This is a 3-year PhD research project. By speaking to young women and girls, parents, teaching staff and local employers I aim to find out about the ways girls come to choose and experience particular VET pathways in Thornfield.

Why have I been chosen?

You have been invited to take part because as a girl on particular VET programme, or the parent/carer of a young person and your experiences are very valuable for this research. You may also have been invited to take part if you are a teacher on a particular course or work in a sector of interest to this study. You may also be a key stakeholder that is relevant to this study.

Do I have to take part?

Taking part in this research is entirely voluntary; it is up to you to decide whether to take part. If you do decide to take part, you will be asked to give your verbal consent before being interviewed. You can withdraw at any time during the data-collection stage and do not need to provide a reason. If at any point you withdraw from the study, data already provided will only be used with your permission. If you do decide to withdraw, you won't experience any negative consequences as a result.

Once the data has been anonymised, withdrawal of data is no longer straightforward. Data can be withdrawn up to **1** month after the date your interview takes place.

What do I have to do if I take part?

I would like to interview you at the College

I will ask about your experiences your programme and plans for work afterwards. Interviews will be relatively structured, but you can elaborate as much or little as you prefer. There are no right or wrong answers, and you do not have to answer. You may ask me questions throughout, and we can stop the interview at any time.

What are the possible disadvantages and risks of taking part?

This is a low-risk study and there are no likely disadvantages and risks involved.

As interviews will touch on themes which may be personal and sensitive to the individual and their family. I understand that each person will have a different private

life. Once again, there is no obligation to answer questions, and interviews can be stopped at any time.

It is very unlikely that the topics discussed will lead to a criminal disclosure or raise safeguarding concerns, however in the event of a disclosure which reveals *risk of harm to the participant or others* then there is an obligation to act.

What are the possible benefits of taking part?

The project gives you the opportunity to speak in-depth about issues that are hopefully very interesting and important in your own life. Whilst there are no *immediate* benefits to taking part (e.g. monetary payment), it is hoped this project will contribute important insights into the experiences of girls on traditionally male-dominated programmes in Thornfield.

Will my taking part in this project be kept confidential and anonymous?

All contact information collected about you during the research will be kept strictly confidential and stored separately from research data in a secure university-drive. Interviews will remain confidential, except where a disclosure reveals risk of harm to the participant or others. Steps will be taken to anonymise the data so you will not be identified in my PhD thesis or any future publications. However, it is possible that participants from the same family may recognise one another even in anonymised data.

Will I be recorded? And how will the recorded media be used?

Interviews will be recorded as audio media only. This means I will not record any visual videos of your interview. The audio recording from your interview will be transcribed verbatim into a written document and will be used for analysis purposes only. Audio-files will be kept securely and separately from other personal information. No one outside of the research project will be allowed access to the original recordings and these will be destroyed at the end of the project.

What will happen to the data collected in this research?

I will write up the research and will use direct quotations in my analysis, writing and presentations. A copy of this will be made available as an eThesis in the University

of Leeds Institutional repository. All quotes will be anonymous so you will not be able to be identified.

Please contact me for further information:

Raychel Robinson
ss18rlr@leeds.ac.uk

If you have any concerns that you feel you cannot raise with me, the project supervisor Dr. Kim Allen can be contacted on the below email address:

allenka@leeds.ac.uk

Thank you for taking the time to read through this information.

Verbal Consent Script

Script to be read to participants and audio-recorded prior to beginning interviews.

1.I confirm that I have read and understand the information sheet explaining the research project and have had the opportunity to ask questions about the project.

[participant response]

2.I understand that my participation is voluntary and that I am free to withdraw at any time during the interview without giving any reason. If I change my mind later on, I can withdraw so long as I do so up to one month after your interview has taken place.. In addition, should I not wish to answer any particular question or questions, I am free to decline.

[participant response and date of withdrawal verbally confirmed and recorded]

3.I understand that my name will not be linked with the research materials, and I will not be identifiable in any publications from this research. I understand that my taking part will be kept confidential unless there is a disclosure revealing risk of harm to myself or others.

[participant response]

4. I understand that the data collected from me will be used in relevant future research in an anonymised form, and the final manuscript will be stored as an e-thesis.

[participant response]

5. I agree to take part in this research project and will inform Raychel (the researcher) should my decision change

Appendix E ‘At a glance’ participant information

Figure 2 'At a glance’ participant information

NAME	PROGRAME	Level of Study	SCHOOL	Pseudonym	Vocational curriculum	MUM	DAD	Siblings
Leah	Childcare	Level 2	[redacted]		N	Childcare	IT	brother, 9 and 20
Emily	Childcare	Level 2		St Marks	N	SAHM	IT	sister
Maisie	Hair/Beauty	Level 3		Hillhead High School	Y (Y10)	Unemployed	Bins	sister
Poppy	Beauty	Level 2		Wilson Garnge Academy	N	Sick	Painter and decorator	Older sister and brot
Ruby	Beauty	Level 3		Wilson Grange Academy	N	SAHM	Facotry owner	2 sister
	Construction							
Abi	BTEC Construction mangament	Level 3		Mannerview High School	N	teaching assistant	Offshore on the rigs	sister
Elena	Brickwork	Level 1			N	Hair/beauty/army reserves	NOH Air force	brother 8 and brothe
Katy	Carpentry	Level 3		Franklin Hill secondary	Y	Nurse	Absent	younger sister
Libby	BTEC Construction mangament	Level 3			Y	Retail	Caretaker/handyman	older borther and sis
Molly	BTEC Construction mangament	Level 3			Y	Admin	Mechanic/car wraps	2 sisters
Sam	Brickwork	Level 2			Y	Bus company	Absent	brother older vet nu
Sophie	Plumbing	Year 1 Apprencticeship		Roundwoodpark Academy	Y	Iceskating teacher	Plumbing company owner	Brother 6
Beth	Brickwork	Level 3			Y	SAHM	DJ	brother older unemp
	Engineering							
Bella	Engineering	HNC Mechanical		Roundwood Park Academy	Y	Retail	Maintenance engineer	3 sisters
Ella	Engineering	Level 2 Mechanical and electrical diplimoa		Hillheadhigh school	Y	Retail	Stepdad - packaging	sister
Eve	Engineering	MHC Mech			N	Unemployed	Absent	older sister and brot
Izzy	Engineering	Level 3 Mechanical		PRU	Y	Factory work	Fishmonger	only child
Lucie	Engineering/Fabrication and Welding	Year 1 apprenticship		Franklin Hill Secondary	Y	Retail	Depot manager	sisterolder
Paige	Engineering	HNC Mech		Franklin Hill Secondary	Y	Waitress	Grandad - mechanic	Sister younger
Tyla	Engineering	Level 3 mechanical		Wilson Grange Academy	N	Sick	Truck driver	Much young bother.
Charlie	Engineering/MOET Orsted	MOET Apprenticeship			Y	Retail	Absent	only child
Martha	Engineering/MOET Orsted	MOET Apprenticeship			Y	SAHM	Police	brother younger

Appendix F Examples of coding

Table 8 Examples of coding

Research question	Theme	Description	Codes (note VPV where relevant)
Why do some girls undertake male-dominated vocational qualifications and how is this experienced and understood by these young people?	**School** Arrangements and opportunities within secondary schools	Social actors and practical arrangements in schools that either serve to enable or disable the possibility of certain subjects.	Lack of vocational school subjects VIS/VIA Vocational/practical subject offering VIS/VIA -Tom boy P -Disavowing femininity P An enjoyment and seeing the value of maths. VIA Dislike/devaluing of maths VIA Maths teachers – character and gender VIA Maths teachers – advice and guidance Aligning to a practical identity P/VIA

	External involvement with schools from the labour market	The different practices and processes recalled relating to the labour market.	Dismissing an academic identity Gender based open events Labour market advertising/visits (VIS) Careers days within school (VIS?VIA) Attendance requirements