The Political Economy of Australian Construction Cadetships

by Christopher Brown

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under the supervision of

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Certificate of Original Authorship

I, Christopher Brown, declare that this thesis is submitted in fulfilment of the requirements for the award of 17900 PhD Thesis: Built Environment at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise referenced or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

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Note on Thesis Format

This thesis was prepared to fulfil the criteria for Doctor of Philosophy and is in the format of a conventional thesis. It adheres to the guidelines set forth in the Graduate Research Candidature Management, Thesis Preparation and Submission Procedures 2023 - University of Technology Sydney. This thesis adheres to the American Psychological Association (APA) 7th edition referencing style.

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The Dean of University of Technology Sydney (UTS) Graduate Research School (GRS) has advised all UTS PhD candidates studying through Covid-19 lockdowns to note how the pandemic has affected their research. Based on this recommendation, I should note that the data collection phase of this research was not hampered by the Covid-19 pandemic; however, analysis of the data and subsequent writings for Stage 2 and Stage 3 have been delayed, due to the many personal, social and professional consequences of Covid-19 and lockdowns.

Impacts of the pandemic on my social and personal responsibilities have led me to take periods of Leave of Absence (LOA) from studies. Meanwhile, the professional impacts of Covid-19 on this research include the ongoing restructuring and redundancies occurring in Australian higher education, which has affected members of my supervisory team, and my own professional workload. I have had three PhD Thesis Supervisors leave UTS during my candidature. Staff teaching and working conditions are directly linked to student learning outcomes, so in the context of this research and work integrated learning (WIL), it is likely that the neoliberal redundancies and restructuring in Australian universities since Covid-19 has further hindered the capacity for academics to adequately support and advocate for their students involved in WIL.

I would like to extend my deepest appreciation to all of my PhD supervisors who have each spent time in the capacity of my Primary Supervisor and Secondary Supervisor. I would like to thank Associate Professor and Course Director of the Bachelor of Construction Project Management (BCPM) Program at UTS, Peter Smith, who provided invaluable primary supervision and consistent support as Course Director during the latter half of my candidature. Next, I would like to thank Associate Professor Michael Er who supported me as Primary Supervisor during the middle of my candidature and whose industry contacts and networks have been monumental in shaping this work. I would also like to thank Professor Franklin Obeng-Odoom who guided me into Political Economy by supporting my Honours Thesis, and was Primary Supervisor during the foundational Stage 1 of my PhD candidature. Also, many thanks to Dr. Christopher Biesenthal who spent a number of years as a Secondary Supervisor.

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Having spent over a decade immersed in the Australian construction industry, I have developed a passion for building and construction. My first work experience was a hands-on introduction to carpentry at 16, later working on-the-tools in building and facility maintenance. Then, during my undergraduate degree in the UTS BCPM I completed my own construction cadetship. Since 2017 when I completed that degree, I have worked with numerous Australian construction organisations gaining on-site, office, and digital experience. During my PhD candidature, I have witnessed close friends, family and hundreds of students pursue their own apprenticeships and cadetships, many facing serious adversity. These personal connections to cadets, trades-people, designers, engineers and managers, and my continued practice as a Lecturer in the UTS BCPM, have instilled in me a nuanced understanding of the challenges faced by WIL-based construction workers. So, it is with this insider insight that I approached my doctoral research, not with the intent merely interpret it or, as mundane, simply to criticise the construction industry, but rather, to holistically improve workplace conditions and educational outcomes for the workers engaged in WIL. This orientation partly reflects my own practical construction background, partly emphasises my grounding in the UTS School of Built Environment, and fundamentally signals my ontological affinity with Karl Marx's political-economic *Thesis Eleven* stated persuasively in 1845*:* 'Philosophers have hitherto only *interpreted* the world in various ways; the point is to *change* it' (Marx, 1972 [1845], p. 123).

This thesis on Feuerbach is even more relevant today. I hope that this thesis, the present thesis on Harris Street, makes a meaningful contribution towards empowering and supporting those embarking on careers in Australia's construction industry. 'Another world is possible'.

Publications as a result of this work

Brown, C. (2023) Australian construction students' experiences in the pursuit of human capital through cadetships. *Australian Universities Review*, 65/1

Accepted for publication, 2023.

Abstract from the publication:

This paper assesses suggestions in international research and media that the modern construction cadetship experience is exploitative and, on that basis, problematises the growing trend of work integrated learning (WIL) in the Australian construction industry. Field research, aligning with the methodologies of major studies in this field, was conducted to examine the experiences of some construction cadets enrolled in construction degrees in six Australian universities across NSW and ACT. The data related to student experience and renumeration are analysed within a Marxist-Polanyian dialectical framework. The results show there is limited consistency in construction students' experiences and education while participating in this WIL. This indicates that the construction industry lacks a regulated and collaboratively driven program for cadetships. The findings also identify causes and consequences for the high rates of burnout of this cohort that is already established in the literature. From a neoclassical economics human capital theoretical perspective, this WIL can offer some benefits to construction students. However, given the ad hoc and unstructured employment arrangements, construction cadets can be exploited in ways akin to undocumented and other precarious labour. The construction students whose experiences are the focus of this study have a limited knowledge of their rights and support networks, and can be exposed to wage theft extracted under the guise of providing education and experience. While individualistic 'law and order' frameworks may help improve material conditions for particular WIL workers whose experiences can be brought to the attention of authorities, greater collectivisation of WIL labour could be effective in ensuring more propitious conditions for those in cadetships.

Papers in progress as a result of this work:

This conference paper was presented to the UTS DAB Faculty higher degree research symposium, where it was awarded the people choice award. It is currently undergoing revisions to develop into a journal paper, with publication planned for 2024.

Brown, C. (2024) Class reproduction and structure in WIL; A political economic case study of Australian construction cadetships

Abstract:

In contemporary economic and pedagogical discourses, young people are encouraged to entrepreneurially and strategically invest in an education in ways which maximise the return on investment (ROI). The neoclassical economics human capital theory paradigm has catalysed the torrent of work-integrated learning (WIL) programs across various industries and degrees. WIL is now a cornerstone of a modern, competitive and quality higher education, especially in the field of construction. The ROI of WIL is substantiated by extensive mainstream literature; however, a critical lacuna persists to adequately explain how class structure, reproduction, and ownership relations impact the WIL dichotomy. WIL programs throughout the AEC remain consistently marred by student exploitation, discrimination and wage theft, so it is in this milieu that this thesis asks; how has the setback of class in WIL education contributed to educational, policy and economic ramifications for WIL workers? A political-economic-WIL framework is operationalised to interpret qualitative interview and observational data from key Australian construction industry stakeholders involved in the construction cadetship, which is used as a case study. The resulting data show that, despite the ostensible promise of ROI, the positive impacts to students can be inequitably distributed, overshadowed by class, racial, gender, and age intersections. Triangulation of data against apprentice related literature shows that issues in the cadetship are not isolated but are endemic across various aspect of construction-based WIL. As the employability narrative has become further institutionalised, WIL worker stratification has flourished because the education in WIL is geared towards meeting industry needs in a way which dominates any social, moral, political or philosophical benefits of education. Extending and adapting Polanyi's Market Society thesis to WIL, an educational model founded exclusively on equipping young people for labour and thereby commodifying of educational objectives, impedes class mobilisation and will eventually culminate in society's total destruction.

Contents

Abstract

In the Australian construction industry, the construction cadetship is a form of employment for construction students used to meet work-integrated learning (WIL) varying demands of tertiary construction education. Literature documents that during cadetships, construction students are often impacted by overwork, burnout, and poor mental health. Yet many educational and labour related impacts of the cadetship to students are still not well understood. Existing literature typically does not view cadets as workers nor does it adequately address the economic and philosophical contradictions related to labour and education within this WIL program. This research uses a political economy approach to address these gaps, and asks two questions:

1. How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?

2. How do these impacts shape the political economy of the construction cadetship?

The aim of this research is to demonstrate and illustrate the real-world nature of WIL relationships, explain them, and provide alternative pathways if and where necessary. To do so, qualitative data is collected from construction cadets and their employers, through semi-structured interviews, group interviews and observations. Data is also triangulated against university handbooks, industry publications and existing WIL studies. The thematic analysis shows how cadetship education can be impacted in three key themes including; (1) structure of learning, (2) labouring to learn and learning to labour and (3) the banking concept of education. Meanwhile, the findings also show cadet labour related impacts revolve around three key themes including; (1) precarity, (2) construction culture and (3) intersectionality.

The use of a novel political-economic-WIL framework shows the cadetship is not a neutral education. Rather, the cadetship exists as an industry-driven program, with limited alignment to best practice WIL frameworks, minimal collaboration between key stakeholders and limited safety nets for students. In this inconsistent, informal and un-collectivised state, cadet impacts can be marred by intersectional differences, stratified both in terms of return on investment (ROI), exclusion, exploitation, and precarity. In line with a historic materialist approach, the research contributes a unique encapsulation of pedagogy, politics and economics, by outlining viable ways of coordinating and cooperating to deliver a collectivised, de-commodified, and critical construction cadetship.

Key words:

Work Integrated Learning (WIL), Construction Cadetship, Human Capital, Political Economy, Marxism, Critical Pedagogy

List of Abbreviations, Figures and Tables

Abbreviations

ABC	Australian Broadcasting Corporation
ABS	Australian Bureau of Statistics
ACA	Australian Constructors Association
ACT	Australian Capital Territory
AEC	Architecture, Engineering, and Construction
AIB	Australian Institute of Building
AIPM	Australian Institute of Project Management
AIQS	Australian Institute of Quantity Surveyors
AR	Augmented reality
ASTD	American Society for Training and Development
ATO	Australian Taxation Office
AUD	Australian Dollar
BCPM	Bachelor of Construction Project Management
BIHECC	Business Industry and Higher Education Collaboration Council
BIM	Building Information Modelling
C	Commodities
C'	Produced Commodities
CA	Contract Administrator
CFMMEU	Construction Forestry Mining, maritime and energy union
CIOB	Chartered Institute of Building
CoP	Community of practice
DET	Department of Education and Training
DRS	Developmental Research Sequence
GDP	Gross Domestic Product
GERAIS	Guidelines for Ethical Research in Australian Indigenous Studies
GPA	Grade point average
GRS	Graduate Research School
HCA	Human Capital Accounting
HR	Human Resources
HREC	Human Research Ethics Committee
HSC	Health and Safety Compliance
ICESCR	International Covenant on Economic, Social and Cultural Rights
IJWIL	International Journal of Work-Integrated Learning
ILO	International Labour Organisation
IT	Information Technology
LOA	Leave of Absence
LP	Labour power
M	Money Capital
M'	Expanded Monetary Capital

MBA	Master Builders of Australia
MP	Means of production
NAWIC	National Association of Women in Construction
NSW	New South Wales
OECD	Organisation for Economic Co-operation and Development
P	'Produce' (in the Circuit of Capital)
PM	Project Managers
PMC	Professional-managerial class
PMI	Project Management Institute
POC	People of Colour
RICS	Royal Institution of Chartered Surveyors
RM	Research Master
RMIT	Royal Melbourne Institute of Technology
ROI	Return on investment
SNA	System of National Accounts
STEM	Science, Technology, Engineering, Mathematics
SWA	Safe Work Australia
SWL	Study-Work-Life
TA	Thematic Analysis
TM	Tinbergen Model
UAC	University Admissions Centre
UN	United Nations
UNECE	UN's Economic Commission for Europe
UNSW	University of New South Wales
US	United States of America
UTS	University of Technology Sydney
VET	Vocational Education and Training
VR	Virtual Reality
WIDAC	Women in Design and Construction
WIL	Work integrated learning
WLB	Work-life balance
WLSB	Work-life-study-balance

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Chapter 1: Human Capital, Political Economy and the Construction Cadetship

1.1 The research background

Universities around the world are being restructured to deliver a more instrumental education. The emphasis on this type of schooling is to enhance the job prospects of graduates. By this view, higher education must be utilitarian. That is, the quality of university education is being increasingly judged by its ability to satisfy individual rational desires for going to school; to obtain a job. *The Economist* (2014; 2020; 2023), for example, argues that the competition students now face within a globalised education market makes it imperative to weigh the time and cost of receiving education against the potential return of that service. Future investment in human capital by governments should be prioritised even in the face of climate change (The Economist, 2023), based on the belief that 'as natural wealth is used up, economies will rely more on human capital' (*The Economist*, 2020, p. 16). This pragmatism with regard to education, but especially higher education, has become prominent in recent times because of current global economic inequalities, explained in terms of the level of skilled labour in the Tinbergen Model (TM). According to the TM, inequalities are a reflection of the race between education, which supplies skilled labour, and technological traffic, which determines the level of skilled labour to be demanded (Tinbergen, 1972, 1975). Thus, a thorough education must enhance the chances of the student being hired and reduce the prospect of being fired.

This commodity view of education draws its theoretical validation from human capital theory, established by prominent neoclassical economists such as Thomas Schultz (1960), Garry Becker (1962) and Jacob Mincer (1958). Developed from somewhat 'rudimentary formulations' (Blaug, 1976; Bowles & Gintis, 1975), it established a generally positive relationship between investing 'resources in people' (Becker, 1962, p. 9; Mincer, 1974) and an increase in future real income. The theory has since been extended to mainstream economic personal income distribution, firm optimisation and national growth and human capital accounting methods have been applied by researchers at micro and macro levels, to quantify how education and training can influence a return on investment (ROI) for the individual, the firm, and governments (see, for example, Blundell et al., 1999; Mincer & Polachek, 1974; Jacob A. Mincer, 1974; Ragan & Tremblay, 1988; Tomaskovic-Devey, 1993; Tomaskovic-Devey et al., 2005; Wu, 2007).

Since the neoliberal turn in the 1980s, neoclassical human capital theory has become even more influential. Appealing to neoliberals is one particular aspiration of neoclassical human capital

advocates, who contend that neither class, race, gender, religious identity nor any identity matters in the labour market; only education, or one's human capital, matters in determining the chances of navigating the labour market. Inherent in this view is a specific methodical individualistic logic of productivity and capabilities. That is, education increases an individual's productivity, which consequently enhances their employment capabilities (Matherly & Tillman, 2015).

Neoclassical human capital theory has had significant influence on pedagogy and, in turn, the structuring of educational objectives on a global scale, since becoming endorsed by the Organisation for Economic Co-operation and Development (OECD) in 1987. Through the Human Capital Project, the World Bank identifies neoclassical human capital as a core strategy to increase growth across the world's economies, and even uses conditionalities in its loan programs to coerce the acceptance of the human capital agenda (Noy, 2021; World Bank, 2021). Indeed, the theory has driven governments' and higher education institutions' rationale for an employability-based curriculum, grounded on the notion that 'the development of contemporary economies depends crucially on the knowledge, skills, and attitudes of their workers—in short on human capital' (OECD, 1987, p. 69).

Wedded to these theoretical notions of human capital theory, Work Integrated Learning (WIL) is an umbrella term for the ideology and practice of a formalised tertiary educational curriculum characterised by integration with practical, discipline-specific and structured learning in industry (McLennan & Keating, 2008; Patrick et al., 2008; Tanaka, 2009). It can include internships, internship-like work, vocational learning, apprenticeships, cadetships, or any other real-world learning or professional learning experience (Patrick et al., 2008; StewReturn on art et al., 2021). In one view, WIL programs are how neoclassical economics human capital theory has been put into practice by universities, to ensure student graduate capabilities include industry relevant and fee-earning skills. There are however, clear constraints on WIL programs and there is a wide recognition that strict guidelines and multi-party collaboration must be designed into WIL programs for all stakeholder mutual benefit, but especially to foster students' human capital development and guarantee a ROI.

For instance, any WIL beneficial to human capital development must align with certain industry-related capabilities, be fully integrated and regulated in a tertiary education program, and be regulated and structured collaboratively by all stakeholders, especially universities, professional bodies and associations, unions, student groups and industry (Flesher et al., 1996; Smith, 2012). If these WIL requirements are met, consistent with neoclassical economics human capital

theory, then the WIL is expected to develop the technical skills and discipline-specific knowledge of students, improve productivity, and steepen the undergraduates' earnings curve, with consequential favourable effects on the economy and society (Billett, 2001a; Fuller & Unwin, 2009). In addition to these mainstream and formalist economic benefits, some studies (Davies et al., 1999; Maertz Jr et al., 2014) show that effective WIL can also enhance emotional development, networking opportunities for students (Coleman, 2016), and provide students with an opportunity to test out the profession before fully committing to a career. It is particularly important to note that most studies recommend practical steps be taken by stakeholders to ensure that support networks, WIL subjects for reflection, assessments and structured learning environments occur during students' WIL placements.

There has been a sharp global rise in the adoption of WIL, facilitated by corresponding educational policy, restructuring of university curricula and interest from industry. Across the OECD countries, workplace competencies have been integrated into national education policies and curricula, with the justification that these generic employability centred competencies are complementary to a traditional broad-based curricula (OECD, 2001; Stewart et al., 2021). This shift towards an employability agenda has also been supplemented by industry's keen interest in WIL programs, where multinational corporations have provided ongoing funding and interest for future development (Gamble et al., 2010; Manoharan et al., 2022). In the United States for instance, industry has promoted WIL programs to the point where they have become a dominant part of the employment and higher education landscape and are now considered a 'virtual requirement' (Yamada, 2002, p. 215) for students looking for employment in most professional industries (Chen et al., 2015). Meanwhile, numerous studies from other parts of the world, including Africa, Asia and Europe, have documented the recent domination of the WIL agenda, proliferating across curricula, industries and economies where WIL was once considered unnecessary (see, for example, Ananiadou & Claro, 2009; Cannon & Arnold, 1998; Gamble et al., 2010; Olawore et al., 2011; Smith & Chan, 2015; Stewart et al., 2021). Over the past few years construction-based WIL has even been thriving recently as online learning, or e-learning practices (Afolabi et al., 2019; Hattinger, 2022; Quinn et al., 2019).

So, in the context of global adoption, it is not unusual that WIL in Australia also appears to be at an all-time high (Grant-Smith & McDonald, 2016), in line with Australia's so-called employability agenda (Moore, 2020). In 2009, the Australasian Survey of Student Engagement found approximately 34 per cent of Australia's university undergraduates were involved in WIL (Coates, 2009). Since then the share has almost tripled. For instance, in 2015, Interns Australia showed that this figure could be as high as 91 per cent, with some students taking up to three

WIL placements in their time as undergraduates (Chen et al., 2015; Stewart et al., 2021). Some of the most recent and substantial data collected to date by Universities-Australia claims that 555,403 WIL activities took place across Australia in 2017 (Universities-Australia, 2019) and that at least 90 per cent of university students are exposed to WIL concepts, showing a significant increase and domination of WIL across all Australian higher education.

WIL is especially prominent in the Australian construction industry, both within higher education and Vocational Education and Training (VET) (Smolders et al., 2021). A review of all current Australian universities curricula and course handbooks showed that as of 2022, 19 Australian universities currently offer full-time undergraduate degrees in construction or related fields, with a total student base of approximately 7,000 local and international students. At least 14 of the Australian universities that teach construction require students to engage in work placements, preferably WIL, in order to graduate. According to UAC data, this suggests that approximately 5,000 construction students are involved in WIL annually (see Chapter 2 for detailed breakdown of data). University expectations and requirements for WIL can range from 30 days, while universities in New South Wales (NSW) and Australian Capital Territory (ACT) tend to have higher requirements. For instance, at University of Technology Sydney (UTS), construction students are required to complete a minimum of 200 days industry experience during 4 years of study which is the greatest formal requirement to engage in WIL out of all universities that offer a construction-related degree in Australia. Other universities, like Western Sydney University, can require 1,200 hours of work placements. Existing quantitative studies on Australian construction student work practices reinforce this evaluation and suggest that at least three out of four construction students who work while studying, work within the construction industry (Mills et al., 2012; Lingard, 2007).

It is in this context that this PhD thesis seeks to adress two pressing and unanswered questions, namely:

1. *How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?*
2. *How do these impacts shape the political economy of the construction cadetship?*

A political-economic-WIL framework is developed in chapter 3, to answer the research questions. The framework operationalises a dialectical methodology and analytical processes to understand impacts of the cadetship in two distinct domains: (1) education and (2) labour. The framework provides the philosophical and economic basis to argue that the rupture between

the theory and practice of WIL involves structural economic and political forces that make WIL a dichotomy, and fundamentally contradictory under capitalism.

Informed by the methodological aspects of this framework, evidence is collected from the study of the key groups and stakeholders in the Australian construction cadetship. The first group studied involves 20 Australian construction cadets employed across 12 head contracting organisations while enrolled full-time in a premier Australian university that has extensive WIL requirements embedded into the curriculum. The second group studied includes 15 senior construction professionals from 7 significant Tier-2 head contracting organisations who employ these cadets and operate across numerous capital cities. The senior professionals interviewed; Project Managers (PM), Human Resources (HR), and Directors, are responsible for designing and/or implementing their organisation's cadetship program. The third data set is drawn from detailed and ethnographically based on-site participant observations of cadets while at work.

The data collected addresses gaps in existing literature regarding how the cadetship impacts students. In the analysis of this data, the political-economic-WIL framework is applied in Chapter 6, supplementing and transcending other existing WIL analysis. The analytical component of the framework is built on the assumption that the practice of WIL is inherently entrenched in neoclassical economics human capital theory, and thereby classical liberal ideology, especially methodical individualism. Here, the deconstruction of WIL relies on a political economic thematic analysis that invokes ownership relations and other social relations of production that shape the WIL working relation. It uses the diverse Polanyian and Marxist concepts to explain structural labour impacts, while using a zone of proximal learning and critical pedagogy to interpret educational impacts. The framework allows for analysis of the data in the context of industry specific problems, while also requires the data to be triangulated against broader research. Doing so uncovers the idiosyncrasies and contradictions that may occur when neoclassical economics human capital theory is formalised into a particular employment learning experience (Baptiste, 2001).

The value of this framework in understanding and developing WIL is that these key theories synthesise a collective and critical educational solution to all WIL-based problems, in that they acknowledge the fundamental class, economic, educational and political pressures that shape how labour can be reproduced through the education system under capitalism. By doing so, the framework not only contributes to a deeper understanding of the complex dynamics at play in WIL programs but also offers potential pathways for addressing systemic issues rooted in class

structures and capitalistic modes of production. The intention of piloting this framework in the context of cadetships, is that it may eventually have application across any WIL program.

1.1.1 Contextualising WIL in Construction

The high rates of WIL ideology and adoption globally, and nationally, must also be analysed in the context of the Australian construction industry facing an image problem (Turner et al., 2017). The image problem can be witnessed on many intersecting fronts and at micro and macro levels; yet its understanding, both in the literature and media, is typically situated in information silos focusing only on gender, race or age, and rarely on topics like class. Culture in construction is notoriously difficult to define; as the existing literature notes, it is such a broad and multifaceted topic for workers within the industry. From the outside perspective, there are also deep and pervasive widely held social assumptions of what construction is, and what it is like to work within construction. In order to help position the research approach and the way in which the rest of this thesis has been framed, plus, to contextualise the reality of the Australian construction sites where this research takes place, the next sections aim to outline and connect many of the multifaceted image problems Australian construction faces both internally and externally. Problems related to gender, race, age, physical safety, mental safety, sham contracting, corruption, wage theft, WIL worker exploitation and abuse are discussed in turn, to help explain and contextualise the work environment that cadets find themselves navigating as part of their studies.

It is well known that the Australian construction industry workforce continues to face immense problems regarding gender. The entrenched cultural and social gender prejudices within construction are clearly prominent on modern Australian construction sites. Each in their own right are key research agendas, and issues for stakeholders across the entire AEC industries. For instance, gender and an over-representation of men is recognised as a priority to address by many professional bodies, and there are significant efforts from numerous women's associations like National Association of Women in Construction (NAWIC), Women in Design and Construction (WIDAC), or Women in BIM (WIB), to help address the gender problem. These professional organisations, alongside existing empirical evidence, widely recognise the industry as having a gender-related cultural problem (Carnemolla & Galea, 2021; Galea & Chappell, 2022; Galea et al., 2017; Galea et al; 2018; 2020; Powell et al., 2012; Rotman & Nassaney, 1997); Zhang et al., 2021).

The gender-based cultural problem is so severe, feminist scholars have deemed the disproportionality of men in the industry as a 'male supremacy' and 'male over-representation'

(Galea & Chappell, 2022, p. 1698; Galea et al., 2020). Efforts aimed at providing support and advocating for vulnerable and minority female labour within construction associations through networking, meet and greet, funding research and seminars, are seemingly unsuccessful in rectifying pay gaps or employment gaps. For instance, in the case of women's participation and representation in the Australian construction industry, despite significant efforts over the past two decades from women's advocacy groups, unions, businesses and governments; women's participation in the industry has been decreasing over the past decade (Galea & Chappell, 2022; ACA 2022). Indeed, it is even likely that these trends may continue, backed by research that shows that Australian female high school students are continuing to turn away from construction careers, due to the perceived male-dominated nature of the industry and other cultural phenomena (Carnemolla & Galea, 2021; Galea & Chappell, 2022). Put simply, Australian women are avoiding construction as a career, because it is not perceived as a nice place for them to work. Meanwhile, little is known about Black women, Asian women and other minorities in their experiences within the Australian construction industry (Obeng-Odoom, 2022, pp. 178-211; Feng, 2014). The research within this body of literature has asked few questions on how WIL status, age, gender or class intersections may impact these groups.

The image problems in construction have not typically been viewed via an intersectional framework (Crenshaw, 1990). However, if the situation is so extreme on Australian construction sites that 'male supremacy' is an appropriate way to describe the culture in existing empirical research, it therefore possible to hypothesise that a white supremacy also exists. There is a body of research that shows abuse, power imbalances, and precarity of migrant and non-white workers across all levels of the construction industry (Dunn, 2004; Dunn, 2003; Loosemore & Chau, 2002). Research stresses how racist attitudes within the Australian construction workforce can be associated with intersections of age, a tertiary education, and race (Carangio et al., 2021; Paradies, 2016; Paradies, 2006). There is also research that specifically shows how construction workers can harbour anti-Asian and other racist beliefs (Li, 2019; Loosemore & Chau, 2002). The Australian construction industry is dominated by men, particularly white men, and the toxic hegemonic masculinities and hierarchal structure of the industry appears to support and reinforce not only a gender hierarchy that acts as a key barrier to the attraction, retention and progression of women, but also as a racial hierarchy that restricts and oppresses minorities, more specifically women of colour, and young women of colour (Crenshaw, 1990). While the industry is recognised as being particularly multicultural, there are distinctly unequal concentrations of power, pay and representation within specific groups (Feng, 2014; Liu et al., 2023).

People of colour (POC) and migrant workers in Australia face informal and precarious labour structures and work on sites that are disproportionately unsafe and in exploitative conditions, compared to white workers. Yet, the impact of cultural differences on occupational health and safety, as well as on the mental safety of workers within a racially and culturally diverse workforce, is yet to be fully understood (Feng, 2014). Safe Work Australia (SWA) have been clear that there is an over-representation of migrant workers in accidents and deaths on Australian construction sites (see media reports from Sydney Morning Herald, 2019; Toscano, 2016; or data from Safe Work Australia, 2023). Indeed, refugees and migrant workers face worse conditions on sites compared to white counterparts. Unions claim the informal and unbalanced structure of labour in the Australian construction industry has meant wage theft and sham contracting is rampant across all levels of this industry (CFMMEU, 2011; 2018). Workers across many intersecting demographics have been subject to these problems, but workers with English as a second language and migrant workers are exposed to informal labour practices at higher rates than white workers (Dunn, 2004; Dunn, 2003). The intersections of identities of these construction workers are important to understand, given the extent to which the Australian construction industry upholds discrimination and exploitation through unbalanced informal recruitment and employment structures of migrants, indigenous and refugees (Dunn, 2004; Dunn, 2003).

In the national context, the physical safety ramifications for workers labouring in an informal, unregulated, unstructured, sham contracting employment culture are dire (CFMMEU, 2011; 2018). Sham contracting employment practice involves misclassifying employees as independent contractors, thereby avoiding the provision of legal entitlements and protections that are typically afforded to regular employees. This leads to a lack of accountability for safety standards, inadequate training, and insufficient safety equipment, all of which contribute to a heightened risk of accidents and fatalities. While the physical and mental safety of all workers on construction sites in Australia has historically been improving, it remains at treacherous levels. SWA reports that recent historical data for fatalities on Australian construction sites shows improvements, especially since 2007, yet the most recent data shows that around one Australian construction worker loses their life every two weeks due to a work-related incident (Safe Work Australia, 2023).

Meanwhile, research over the past two decades reveals an inverse trend in the mental safety of construction workers. Here, current literature outlines a mental health crisis for Australian construction workers across all ages. Construction workers are now six times more likely to commit suicide than have a fatal accident on-site site (King & Lamontagne, 2021; Ross et al.,

2020; Turner et al., 2017; Tyler et al., 2022). Young WIL workers in apprenticeships face disproportionate rates of bullying and harassment at work on Australian construction sites that in many cases are extreme, violent and abusive. For instance, the recent MATES in construction report found that the construction apprentices sampled were subject to extreme rates of workplace bullying and abuse, with suicide rates double to their equivalent demographic with jobs outside of the construction industry. In the nationally recognised and structured WIL apprentice scheme, the findings of the MATES report show one in three young male apprentices in Queensland had thought about suicide in the past 12 months, a damning number for the governments, organisations, training providers, professional bodies and unions tasked with supporting these young apprentices (Ross et al., 2021; Ross et al., 2020). Statistics for the MATES report and other associated mental ill-health research was collected before the Covid-19 pandemic, which likely further exacerbated mental health problems; some warned Covid-19 and the following years could create the perfect storm (Turner et al., 2019; Zhang et al., 2021), with disastrous consequences for the mental health of all workers, particularly young people entering the industry.

The construction industry's youngest and some of its most vulnerable new labour, first experiencing work through WIL, are clearly not immune to exposure to these far-reaching industry cultural problems. First-year constructions students can even learn in their construction undergraduate subjects about the cultural problems stigmatising their new industry. Yet, by second year, these students quickly find themselves alone and at the coalface of these institutional and structural issues. Much like apprenticeships, female labour and racial minority labour in construction, support mechanisms for cadets seem to be lacking, ineffective or under-resourced. There is strong evidence showing abuse, exploitation, burnout and overwork of construction students during their placements in industry (Loosemore et al., 2020b; Mills et al., 2012; Moore & Loosemore, 2014; P. Moore & M. Loosemore, 2014; Turner et al., 2017); yet compared to apprenticeships, little is known about the cadetship. Indeed, the term 'cadetship' is rarely even mentioned in the literature, rather the focus remains broadly on construction students in WIL.

Some existing evidence shows the cadetship as a form of precarious labour, which can involve wage theft. Other studies show that Australian construction students face exhausting long hours at work, working 30 hours per week and up to over 60 hours per week in cadetships, while also studying full-time (Forsythe, 2012; Lingard, 2007, 2012; Lingard et al., 2007; H. Lingard, 2012; Mills et al., 2012). The repercussions of such significant overwork have been explored to show that construction students in Australia have much higher rates of burnout and mental ill-health

problems than other national and international cohorts of students, largely attributed to the onerous Study-Work-Life-Balance (SWLB) of construction-based WIL. In these burnout studies, construction students surveyed raised concepts such as how working such long hours and presenteeism meant they sacrificed time to their work that should otherwise have been for studying or socialising. The studies raised important questions related to education, employment structures, regulations, support mechanisms and remuneration for cadets that still go unanswered (Lingard, 2007, 2012; Lingard et al., 2021).

The existing literature and current media suggest a bleak portrait of the culture for workers in Australian construction, especially WIL-based labour. WIL research has developed into a burgeoning and significant field of its own, but there are still very distinct schisms between WIL in theory and WIL in practice (Obeng-Odoom, 2016b; Obeng-Odoom et al., 2011). Therefore, the primary aim of this study is to *demonstrate* and *illustrate* the real-world nature of these relationships, explain them, and provide alternative pathways if/where necessary.

1.2 Existing literature and the research problem

Chapter 1 has so far outlined the neoclassical economics human capital ideology and agenda in the framing of WIL on a global stage; next it proceeds to introduce the significant literature reviewed that focuses on WIL in the Australian construction industry, before mapping out the key gaps identified within the cadetship literature, to contextualise or frame the two main research questions of this thesis.

The bulk of the literature reviewed is outlined in Chapter 2, at a range of abstractions. Firstly, from the outermost scale of abstraction, the theoretical validation for WIL, neoclassical economics human capital, is reviewed from a global perspective. The literature review in Chapter 2 then magnifies to the next scale of abstraction, to outline major studies on WIL globally, in Australia, then further increasing focus to review WIL in Australian construction, before finally outlining the small, but notable, body of work that specifically contends with Australian construction cadetship. Chapter 2 outlines how, at any scale, the WIL literature can be broken into five major themes related to the perspective of each stakeholder in the WIL process: (1) the perspective of students, (2) the perspective of firms, (3) the perspective of universities, (4) the perspective of governments, and (5) the perspective of professional associations and organisations.

The Australian construction industry has a particularly intense utilitarian view of education that underpins current WIL arrangements, programs and curricula (Zhang et al., 2021). Some of the first construction-specific degrees in the US in the 1950s had curricula structure strongly dominated by industry, and this remains persistent today (Abudayyeh et al., 2000). Vocationalism in the construction industry has historically been customary (Knight, 2012), and this rite of passage has set the historical conditions for building professionals to commonly perceive practical work experience as a better investment in human capital than theoretical knowledge alone (Adcox Jr, 2000; Dubois & Gadde, 2002; Edum-Fotwe & McCaffer, 2000; Tener, 1996). This prevailing attitude among building professionals has also been compounded by the practical and materialist nature of construction, which requires the appropriate learning to also be practical and materialist in nature. Accordingly, there is a dominant ideology held by senior industry figures, with a firing and hiring capacity, that generally construction graduates with no prior 'real world' experience are not adequately equipped to deal with basic necessary tasks required for work upon graduation (Ayarkwa et al., 2011; Davies et al., 1999; Turner et al., 2019). As a result, industry-based avenues for students to invest in human capital as WIL have manifested through several programs.

The term 'cadetship' originates from the armed forces and, in its current form, is loosely modelled on the trade apprenticeship scheme that utilises 'combined on-the-job training with paid employment or a stipend, often with study at university, to provide entry-level training' (Knight, 2012, p. 6). A form of WIL, the description of the construction cadetship assumed in this thesis is a part-time or full-time position, filled by an undergraduate student of a Construction Project Management degree or similar (Lingard, 2012), employed in a relatively ad hoc arrangement (Forsythe, 2012), by a head contractor or subcontractor. Other employers can include quantity surveying firms, client-side project management and consultants, but cadets working in these organisations are not involved in this research. Literature shows cadets appear to be generally employed on an equivalent full-time basis with allowances to attend university; however, it is likely they can also be employed part-time, pro rata, or even casually (Moore & Loosemore, 2014).

The continued existence of cadetships in head contracting organisations can also be attributed to broader WIL influences including students' understanding of industry's expectations (Moore & Loosemore, 2014), economic pressures (Torres-Machí et al., 2012), the general lessening of the quality of degrees due to commercial criteria being used to restructure higher education (Stilwell, 2003a), and especially, compulsory university requirements. The term 'cadet' is typically neglected in the construction literature; instead, other forms of WIL, like apprentices

and trainees, are more commonly the focus, likely as they comprise a much larger part of the workforce. On a national scale, cadets' general employment circumstances are reflective of only a small minority of undergraduates, that is, only four per cent of students in Australia are studying full-time and working full-time (ABS, 2017a). Comparatively, in May 2016, there were 188,600 apprentices or trainees (ABS, 2016) and in 2022 that number had risen to 297,000. Construction cadetships do appear to be unstructured and inconsistent and unlike construction apprenticeships, cadetship norms may vary from state to state, business to business, or project to project – a reflection of industry requirements and dissimilar university curriculums (Lingard, 2012; Brown, 2023). Yet, because the major employers of cadets are national contractors, the daily activities and the nature of work completed by cadets across different states can indeed share parallels.

Whether the WIL that construction students are being forced to complete as part of their studies is actually beneficial to their studies is relatively unknown. There is no clear acknowledgement if or how the WIL process, and specifically the cadetship, is beneficial to students in existing literature. Rather than a collaboratively designed program which is considered good WIL, construction businesses, prepared for the constant supply of construction student labour, have had the lead role in the design, structure and implementation of the cadetship. They face minimal to no regulations on educational requirements (Smolders et al., 2021). It would not be unreasonable that these cadetship programs designed by businesses will therefore be oriented towards achieving the needs of those businesses, especially in terms of their short-term goals of profit (Friedman, 1970; 2007). The specific educational outcomes in these WIL programs would likely therefore be geared towards forming greater productivity and efficient, reliable labour for the business, rather than an education that is beneficial to long-term industry culture, career development, innovation, digitisation in construction, or other innovative democratic structures and commons-based ways of working.

1.2.1 Gaps in existing literature

The existing research identifies that Australian construction students are burnt out and overwhelmed, but there are few studies specifically on students working for head contractors as a cadet. The wider construction student demographic is more generally a group that have been left understudied. Indeed, the cadetship is rarely tied to its conceptual economic underpinning, neoclassical economics human capital theory. But this conceptual pillar does exist and deserves to be scrutinised during the analysis of specific job roles it has helped mould. It is important to recognise and understand how these structural forces shape the way WIL reproduces class distinctions for a new working class. Largely, the literature review in Chapter 2

of this thesis found gaps that can be grouped in two distinct fields, which are related to the first key research question.

Firstly, there are education-related gaps. There is minimal literature that interrogates educational outcomes, guidelines, certifications, regulations or standardisations in the structure of educational competencies of the cadetship program. There are few coordinated efforts by universities, professional bodies and associations, or unions to reduce the impact of the numerous cultural or image problems young labour in construction faces when first beginning a career. Indeed, the structure, learning processes, outcomes and curriculum design of cadetship seem to have been historically, and currently, moulded by industry. The lack of input from other stakeholders in the wider literature indicates that cadetships are an unregulated and unstructured form of WIL Australia (Forsythe, 2012), yet, no qualitative research exists that examines how industry driven learning outcomes in cadetships may have impacted the educational structure within the cadetship. Indeed, even little research exists related to understanding if graduate outcomes are being met as a result of participation in the cadetship. These gaps are problematic given unstructured and informal WIL programs have been identified in other countries and industries as having poor learning outcomes for students, poor support networks, as well as being riddled with precarity.

How the construction cadetship impacts construction students in terms of their labour has also been left understudied. Cadetships can pose numerous problems to the construction students involved, but the labour-related studies tend to focus only on burnout. Employment appears to be informal and unstructured, with wage theft occurring through students working unreasonable and extended hours. There are also important unanswered questions relating to the consequence of these WIL impacts to the wider industry culture and existing deep rooted image problems. Other labour-related gaps include the need to better assess the practical working experiences of cadets and understand irregularity in the intersections of identities within construction students, but no research has yet attempted to investigate these impacts (Zhang et al., 2021).

1.3 Research questions and objectives

In considering these literature gaps and seeking to address some of these unanswered questions using data collected from construction cadets, this thesis aims to address the gaps in two distinct areas. The primary focus of this research is to explore the dichotomy between labour impacts and student impacts inherent in WIL.

This thesis seeks to answer two main research questions:

1. *How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?*
2. *How do these impacts shape the political economy of the construction cadetship?*

Based on the two main research questions, the research objectives are threefold:

1. Investigate and review cadetship, WIL, political economy and university curriculum literature to inform a political economy WIL framework. Identify gaps in knowledge, then, devise a methodology to collect data that can appropriately target (1) education and (2) labour impacts related to research questions.
2. Use framework as an intersectional and class-based analysis to understand how these impacts shape the political economy of construction cadetship. Challenge and critique the prevailing neoclassical theoretical positioning of WIL's roots in neoclassical human capital theory (Anderson, 2004).
3. Use the findings to assess and improve the education and labour impacts of the cadetship. Adopt a political economic lens, to offer a novel nuanced and multifaceted perspective on WIL within construction pedagogy.

These three research objectives strive to advance knowledge in the field of WIL, challenge prevailing theoretical economic and philosophical perspectives, and contribute to existing literature. The framing of the main research questions, and indeed wider methodology, have been considered using the dialectical method which relies on Marx's historical materialism. The research questions and objectives have been framed in two distinct contexts, so as to specifically allow analysis of interactions and contradictions within the research topic.

WIL is conceptualised to inherently contend with two separate concepts: working (labour) and learning (education). The application of dialectics here moves away from Hegel's version of dialectics, which was limited to the spirit, and builds on Marx's historical materialist inversion of that idea. Freire's protégé, Gadotti, discusses Marx's historical materialist interpretation of dialectics in Pedagogy of Praxis (1996), which has been applied to how WIL is theorised in this thesis:

1. Totality, where everything is related.

2. Movement, in which everything is transformed and everything is considered within its future.
3. Qualitative change that is not reciprocal or a repetition of the old, but rather qualitative changes through an accumulation of the new.
4. The contradiction and unity in the struggle of opposites, only made possible by the transformation of things through the synchronisation of forces in their own interior, and through simultaneously and continuously moving toward unity and opposition. (Gadotti, 1996, p. 60)

Dialectical philosophy is in opposition to positivism, the individualist rational logic and the methodical individualism of Western Enlightenment (Gadotti, 1996). The fluidity, movement and internal contradictions of the dialectic in this framework, fundamentally contradict positivism, which claims that things exist in isolation of each other and are analysed as if they were fixed in space and time (Au, 2007). Therefore, dialectical methodology requires a deep historical materialist qualitative approach that considers the historical dimension, social dimension, economic dimension and political dimension of the research problem. Dialectics has a long and well-scrutinised history of being used as social scientific method, and as Lévy and Duménil (2018, p. 38) note, the neglect of Marx's dialectics as an analytical framework within the broader literature has had devastating theoretical and political consequences to labour relations fields.

How dialectics informs the research questions and, in turn, how this has structured the approach of the analysis is visualised below in Figure 1, which outlines the framework employed in this thesis for understanding WIL. It is founded on the basis that the dialectic is a historical materialist conception that enables a process of understanding social and economic phenomena that are reciprocally related, linked and materially determined (Marx & Engels 1965 [1845]). In the WIL dichotomy, education is seen as being at dialectic odds with labour. That is, during WIL, education does not exist externally to a student's experience of labour but is an internal contradiction that continuously moves towards unity and opposition.

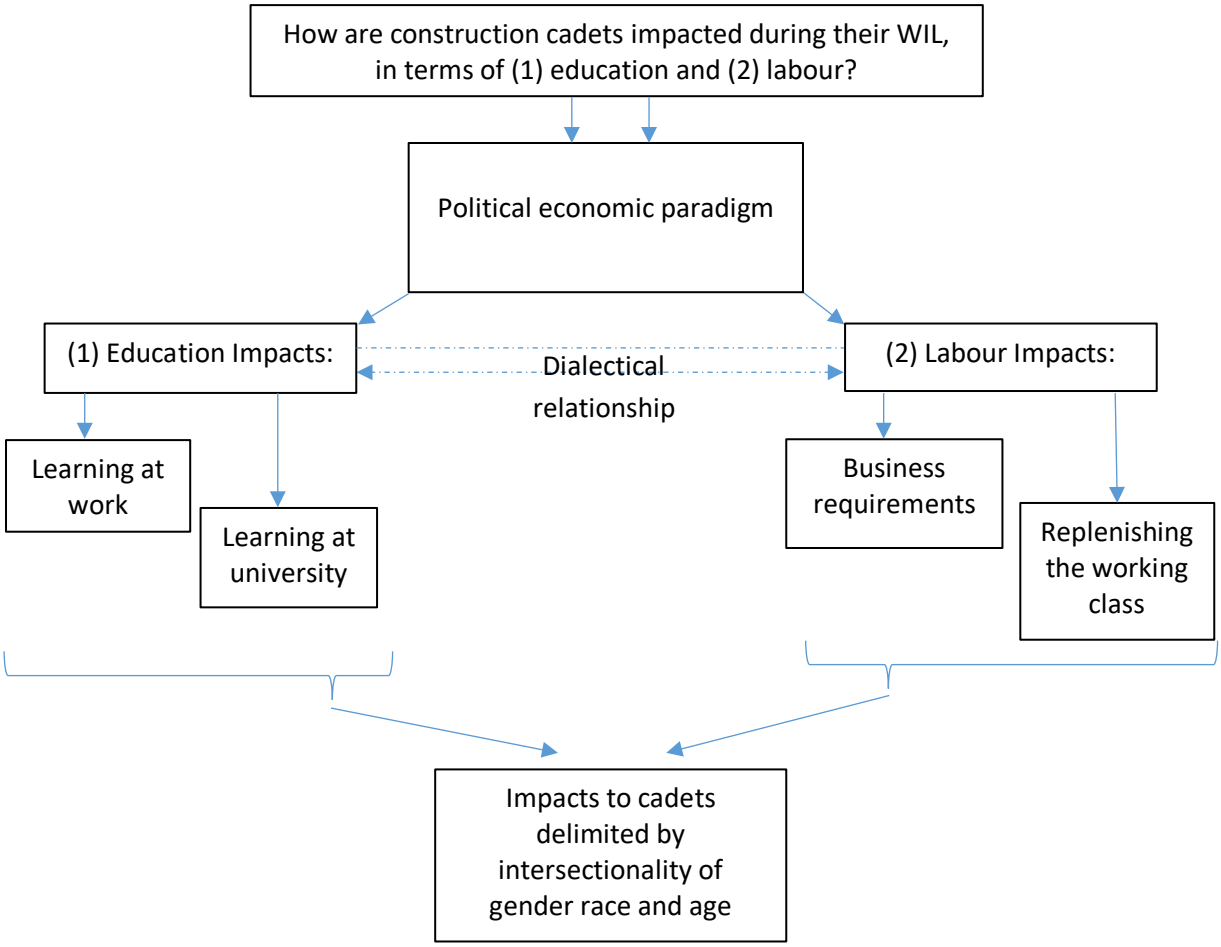


Figure 1: Visualising the research questions and contributions

Figure 1 shows that the framing of WIL in two parts within research questions has been designed to be ideologically and theoretically aligned with the principles that Gadotti lists of a dialectical conception. It demarcates that within the WIL dichotomy, learning can be considered as the Thesis of WIL, and labour as the Antithesis. These purposes have been derived from a historical materialist theorising of WIL. That is, one purpose of the cadetship demands that the pedagogical outcomes of WIL must be achieved for the cadet to improve their human capital. Next, in order to be effective, the cadetship must also meet industry purposes to provide new labour power and, in the long term, replenish the workforce.

For the educational impacts of WIL to be considered, the structure, coordination and forms of learning at work and within university need to be understood. Indeed, whether the learning impacts of WIL are meeting the requirements of the associated university degrees must also be considered. Then in the second aspect of the research questions, analysis needs to focus on

whether the WIL delivers on its labour purpose, in terms of enabling the development and reproduction of the profession, and whether it sufficiently meets other employment priorities.

1.4 Scope of political-economy-WIL framework

What makes a political economic approach so valuable is that it is not purely fixated upon one interpretation of the world. Rather, a political economic approach allows the use of more than one paradigmatic analysis (Greene & Hall, 2010; Venkatesh et al., 2016) and is considered a valid methodological approach to all qualitative research (e.g. Anderson, 2004; Denzin, 2017; Stilwell, 2002). The approach inherently considers a wide social, economic and political analysis of the consequences and impacts of the research problem by using ideas from a wide range of philosophers, political economists and social economists. A benefit of using a political economic approach is that it can draw out the moral debates of a research topic, while still preserving a critical engagement with the 'economic' or technical side of the argument (Anderson, 2004, p. 137).

In this research, the political economic scope must be defined to demarcate how the impacts of WIL on students have been interpreted. The scope of the analysis of the 'labour' impacts are primarily fixed within Marxist political economy. The scope of the global theme of 'education' is primarily understood via activity theory and critical pedagogy. The Marxist version of dialectics remains a fundamental tenet within this political-economic-WIL framework and in line with the convention of many critical scholars (hooks, [1994] 2014; Humphrys, 2018; Wright, 2005; Zizek & Žižek, 2011) and critical pedagogy theorists (Au, 2007; Freire, 018; Gadotti, 1996), the dialectic methodological and analytical aspects of the framework do not abandon traditional WIL research, but rather transcend it dialectically.

The scope of a political economic analysis of the data also involves intersectionality (Crenshaw, 1989). This key component of the research is not the primary aim, but does offer analysis that examines women in construction and contributes to discussions related to minority labour in construction, both numerically (Workplace-Gender-Equality-Agency, 2019) and hierarchically (Cassells & Duncan, 2020). The scope of the gender, race, age and class analysis in Chapter 6 taps into existing research, where for instance, it offers novel intersectional explanations of impacts to women and other minorities facing exclusion and precarity within the industry (see for example; Borg & Turner, 2016; H. Lingard et al., 2021; Turner et al., 2017; Turner et al., 2019; Zhang et al., 2021).

1.4.1 Labour theories informing labour impacts on cadetships

Historical materialism has long been used as an effective framework for analysing labour conditions (see, for example, Barnes, 2012; Humphrys & Collerson, 2012; McGrath-Champ et al., 2010; Tweedie, 2013), because it is well-suited to contextualise the causalities and contradictions of labour practices. Its value lies in the analysis of the historic and structural conditions that have led to the current mode of production, and how these forces can spur the motives of numerous stakeholders. In contrast to the general consensus in WIL literature, which paints workplaces as positive environments where workers learn valuable skills and build their knowledge base (Billett, 2001a), a historical materialist analysis of WIL contends that a workplace will only teach its workers to the point that it is profitable for the organisation. Under the current mode of production, the ever-increasing and continuous extraction of surplus value from WIL workers is the initial and critical requirement of the social relations of production, not their education. Or, as Stilwell notes, 'absolute surplus value denotes surplus value obtained by lengthening the working day (or week). Relative surplus value denotes surplus value obtained by increasing the productivity and/or intensity of labour' (Stilwell, 2011, p. XX).

Education under capitalism, backed by uncritical pedagogical theory and practices, can be seen as one of many cogs involved in the indoctrination of the hegemonic ruling ideology, which fosters individualistic thinking and alienation. This notion is particularly significant to Freire, who sees education as the key tool used by oppressors as an apparatus to maintain the status quo (Freire, 1970). Meanwhile, Gramsci also believed the education system under capitalism is a reflection of the power dynamics of the state and society, which reinforces the prevailing hegemonic dominance (Gramsci et al., 1971). Both of these theorists are still relevant in the WIL context, in line with some notable recent educational literature that claims current educational practices are not necessarily rooted in any philosophical, moral or theoretical backing (Chomsky, 2004; Chomsky & Hitchens, 1994; Whitaker & Moses, 1988); rather, as testament to neoliberalism, have simply adopted a view that learning is a product (Hager, 2004). Graduate attributes, graduate outcomes and employability frameworks, show the hyper-fixation on employment outcomes are part of the wider neoliberal employability agenda that dominates the current educational landscape (Moore, 2020).

An important benefit of using the Marxist political economic approach to analyse the labour impacts of the research questions is that alongside a critique of institutions and structures of capitalism, there are prescribed antidotes which can offer workers, and in this case construction cadets, some respite from the ills of their precarious work. These ideas are interwoven throughout the whole of this thesis, yet are explored in specific detail in Chapter 2 (literature

review), Chapter 3 (theoretical framework), and Chapter 7 (research conclusion and implications) of this thesis.

1.4.2 Educational theories informing the educational impacts of cadetships

To comprehensively address the educational impacts of the cadetship, there must be an understanding of how learning happens, and how mainstream educational theory and practice have justified and analysed combining higher education and education in the workplace through WIL. This thesis sides with the arguments that no individual educational theory in isolation is of particular value when assessing WIL; rather, a collection of educational theories needs to be applied to explain the complex processes and impacts that occur during work. There are important experiential-based, situated (Lave & Wenger, 1991), immersive, guided, and transformative learning fields (Foley et al., 1995; Forsythe, 2012; Mezirow, 1997) that have contributed to best practice in WIL. This practical WIL-related educational theory is also coupled with a critical grasp of how, and if, organisations can effectively mediate these types of learning through Activity Theory (Vygotsky, 1980). Through synthesising a critical pedagogy to more standard WIL literature and theory, educational impacts of WIL are understood in relation to the banking concept of education, a culture of silence in the workplace, and 'conscientizacao' (Freire, 1970). Educational impacts related to WIL are then interpreted through a substantive approach (Polanyi, 1944), also using Gramsci and Freire to help show the connection of learning in WIL as part of an indoctrination into the ruling hegemony.

The educational theories that justify WIL can be at odds with other economic and social features within the workplace (Chomsky, 2004). That is, how educational theories are realised in the workplace relies on methods and techniques that may be outweighed by power imbalances, hierarchy, and other intrinsic forces within the work relation. For instance, the teacher's rapport with the learner, the teacher's time commitments, or their motivation to engage with the student will all affect the impacts of learning, regardless of whether WIL was planned to be immersive, experiential, guided or structured. Within the cultural history school, Activity Theory provides a framework to understand how learning can be materially facilitated in the workplace (Engeström, 2001). Proponents of Activity Theory vouch that it is useful in interpreting the multifaceted nature of workplace learning, which encompasses a myriad of educational theories, yet entails at least two distinct characteristics of learning at work: firstly, learning in the context of a specific workplace through a community of practice (CoP) and secondly, learning through a materialist action of practice (Wenger 1999; Melick, 2015).

Activity Theory is based on a materialist view of society espoused by Marx and Engels (1965 [1845]) and shifts the focus from the individual to see the entire workplace as a system, considering the work environment, the history, and current experiences of the worker (Vygotsky, 1980). In this lens, for a worker to learn, they must undergo certain transformations that are affected by particular workplace community rules and procedures that are both explicit and implicit, and which impose on the nature of the activity. Activity Theory is useful to help understand how workplace culture is created, as by using this lens, the WIL worker is situated as part of the workplace community and learns and reinforces behaviour through their participation in that community. These informal CoP learning processes have been shown to not only impact technical skills, but also have implications for teaching and perpetuating political, social and cultural norms within the community (Wenger, 2000).

A critical pedagogy interpretation of the current educational system and the pedagogic theories that are used to endorse neoliberal WIL programs is also deployed in Chapter 3. Freirean critical pedagogy philosophy contends that the existing state of education is a one-way deposit of disconnected and fragmented knowledge that restricts the function of the student to 'receiving, filing and storing the deposits' of knowledge (Freire, 1970, p. 72). This particular method of education indoctrinates students into a fragmented sense of reality by spoon-feeding disconnected knowledge, thereby positioning the student to be a passive, uncritical and unquestioning observer. This form of drip-fed education perpetuates the ruling ideology, inequity, and prevents students from being truly liberated by their education (Gadotti, 1996; hooks, [1994] 2014). Instead of the 'banking concept of education', Freire posited a radical form of pedagogy to give oppressed peoples the ability to recognise their own 'conscientizacao' and become liberated.

'Conscientizacao' is one of Freire's formative contributions and is similar to the Marxist concept of class consciousness, but with a greater focus on pedagogy. It is the development, through education and experience, of an individual's consciousness, so that they have the knowledge to critically examine their own class standing, their oppressor's ideology, and further, to have the capacity to self-criticise the historical material development of their own personal and class consciousness (Au, 2007; Freire, 1970; Holst, 2019). Ultimately, Freire contended that using a 'problem-posing concept' of education, where learners and educators are situated in a position of solidarity with one another, will lead to class struggle, providing the emancipatory potential of this theory through the learner's praxis, and create true Conscientizacao in a student.

In line with these theoretical concepts, the appropriate data to answer the research questions must be materialist in nature. Hence, in the context of this research, qualitative data should be collected directly from cadets, from those physically around cadets, and be situated in the physical context or community of practice where cadets experience their day. In terms of remaining material in the application of the dialectic, the way in which data has been collected is also dialectical, in that it takes data from sources that can be in contradiction to one another. In this case, the data sources that are in contradiction are the employee–employer, or cadet-construction professional relationship. Dialectics within this context is therefore ontological and epistemological (Holst, 2019). Important to Freirean educators and Marxists, outcomes of research using this political-economic-WIL framework must also involve the researcher's own praxis. Here, the praxis, as discussed in Chapter 7 will rely on teaching and supporting construction students in a way which targets the development of Conscientizacao and class consciousness.

1.5 Research Methodology

Based on the aforementioned literature gaps and the scope of the political economic approach that require this research to be within a social science, multiple qualitative data collection techniques were involved in collecting data to answer the research questions. According to Greene and Hall (2010), using multiple methods of data collection within the dialectic paradigm provides researchers with the opportunity to meaningfully engage with difference as it is encountered (Venkatesh et al., 2016).

Hence, data collection in this thesis is interview-based in the form of individual semi-structured interviews and group interviews, with the addition of participant observations used to enrich the data obtained from the interview methods. In terms of practicality, the three-phase method maximises the depth and richness of data, and ensured that information was communicated between parties in the most appropriate way possible, an issue that can arise when dealing with confidential, personal and political concepts. The scope of data, for practical purposes, has been restricted to construction management cadetships in tier 2 head contractors undertaken by local Sydney-based university students undertaking construction management degrees.

1.5.1 Semi-structured interviews

A series of interviews were conducted with cadets working full time and enrolled full time at a premier NSW based university to determine how their cadetships impacted them. Individual

semi-structured in-depth interviews were an effective method, as they allowed participants to be asked similar questions but within a flexible, informal framework (Dearnley, 2005). This technique encourages depth, complexity, allows new concepts to emerge (Drever, 1995) and was useful for forming a relationship with the participant, to help facilitate discussion of uncomfortable or personal information (Doody & Noonan, 2013). This was particularly useful given the personal nature of some of the questions in the interviews. Informed by the literature and the governing research aim (Cooper et al., 2010; Flesher et al., 1996), the questions included the perceived educational merit of cadetships, duties required at work, and the perceptions related to learning in the workplace while studying.

1.5.2 Group interviews

Alongside the cadet interviews, semi-structured group interviews were undertaken with senior construction professionals at a management or executive level or within a senior human resource role, representing seven construction organisations. The individuals involved in group interviews had all had some experience in managing cadets directly and had experience as cadets themselves, earlier in their careers. These interviews added an antithesis to the understanding of the interplay between the external pressures that cadets face and illuminated organisational and management perceptions, understanding and structuring of WIL. It also helped to contextualise the varying and inconsistent ways the cadetship has been designed and implemented from the perspective of the organisations. Pursuing this data was secondary to the aim of this research; however, it remains within the dialectical paradigm to consider this perspective. In terms of practicality, the group interviews added nuance and value to the research. Further, considering the perspective of the employers in this research, has also been included to reduce the likelihood of bias-related criticisms of this research due to previous peer reviews.

The group interviews of construction professionals generally followed a similar format to the cadet interviews in that they were semi-structured research techniques that were actively analysed, so that questions could be updated to explore themes as they emerged. In terms of content, the interviews with construction professionals began by probing the respondents' personal attitude and perception of cadets, noting value to the organisation and individual before interrogating the organisation's cadetship approach to training, personal development, employment, structure, wages and diversity.

1.5.3 Participant observations

To gain a deeper understanding and to materially verify the experiences and impacts to cadets, participant observations were allied with the semi-structured interviews and group interviews. Observations were conducted with four cadets in Sydney from four organisations that had already been involved in the group interviews. The cadets selected to be observed were reflective of the demographic that was interviewed; they were selected based on their work experience within the organisation, that is, some were new to the role with less than a years' experience, while others had two years' experience in the organisation. All were employed full time, had participated in interviews previously, and were enrolled in university full time. The overall observation duration of each cadet ran between nine and a half to 12 hours – a typical full working day for cadets. The observations were completed during the university semester, when the student's workload is full, in order to be best representative of the cadet's workload during the majority of the year. Participant observations helped to improve the richness of data collected and helped to provide specificity to the interviews. Participant observations were also useful to add depth to the themes identified in the interviews and provided material context to scenarios and examples cadets had discussed during their interviews.

1.5.4 Ethics

All research was done in compliance and submitted for approval to the UTS Human Research Ethics Committee (HREC). Data collection was done in line with UTS ethical guidelines, strictly observing the Australian Code for the Responsible Conduct of Research, as required by UTS policy. Given that the impacts of cadetships have racial and gender variances which is a notable finding within this work, the 2012 Guidelines for Ethical Research in Australian Indigenous Studies (GERAIS) were also the forefront of the research design. Due to the critical nature of this research, it is important to note these guidelines require fair, truthful and intellectually honest reporting of data, while GERAIS entails specific acknowledgement that research with Aboriginal and Torres Strait Islander, or other racial minorities can span disciplines, languages and social contexts, and so results should not be generalised to be representative of a population. There was no data collected from Aboriginal and Torres Strait Islander individuals, although abiding by these guidelines was helpful to keep the research design adaptable and considerate of themes that may be unique to other POC.

Ethics required that cadets had full working rights in Australia, and so all cadets were working with permanent residency or citizenship and no international students were involved. The scope of cadets involved was limited to construction cadets with over six months and fewer than four years of employment in cadetships, to ensure consistency in the data. Care was also taken to

conduct research during periods when cadets were not on university holidays. All data including interviews will be desensitised, to ensure anonymity of participants. Please see attached ethics forms in Appendix 1 for further specific details.

1.6 Thematic analysis

The data drawn from the semi-structured interviews, group interviews and observations was transcribed by hand and then thematically analysed. Thematic analysis is common within political economy and the processes outlined by Attride-Stirling also have a strong history of being used to analyse questions surrounding labour. Hence, the six-step Attride-Stirling thematic network analytical method was used to categorise and analyse the data from all three sources. This process and the coding framework used are outlined in detail in Chapter 5.

In essence, all data was imported into NVivo software, where it was then read multiple times to build an understanding of the data. Next, using the Attride-Stirling six-step method (Attride-Stirling, 2001), all data was grouped into codes that included demographic categories, such as ages, year of enrolment or work experience, to analyse for recurring content. The next sequences of reading the data focused on constructing initial basic themes, by noting and grouping the coded data informed by the research questions and theoretical framework. Finally, similar codes were grouped and refined to form basic themes. Basic themes were then grouped and arranged to form organisational themes. These organisational themes were then considered and arranged to form the two global themes that provide the main focus of the analysis: (1) labour and (2) education. This process created branch-like networks of themes stemming from the overarching themes of this work, (1) labour and (2) education.

While the results of this research are purely qualitative, numerical data from the interviews and observations are used to categorise the data sets, a method supported by many prominent qualitative researchers (Becker, 1970; Erickson, 2007; Hammersley, 1992). Data has also been triangulated against existing publications in this field, alongside statistical data from the Department of Education and Training (DET) and census data, 'to facilitate pattern recognition or otherwise to extract meaning from qualitative data, and verify interpretations', as recommended by Sandelowski et al. (2009, p. 210).

1.6.1 Scope of findings

The analysis is constructed around two global themes in the data. The scope of this thematic analysis in Chapters 5 and 6 relies on the pillars set out in the political-economic-WIL theoretical framework developed in Chapter 3.

The first global theme derived from the Attride-Stirling thematic process, 'educational impacts', is built up out of three organisational themes that include; (1) structure and style of workplace learning, (2) labouring to learn and learning to labour, and (3) banking concept of education. The second global theme, 'labour impacts' is also built up around three key organisational impacts (1) precarity and burnout, (2) culture, (3) intersectionality and discrimination. Each of these organisational themes can be seen in their own right as an impact to cadets' education and labour, so as to directly answer the first research question of this thesis. Then to anser the second question, how these impacts and themes shape the political economy of the cadetship is discussed throughout Chapter 6 and 7 using concepts operationalised from the framework in Chapter 3.

It should also be noted that over the period of this research, economic fluctuations globally, locally and within local industry may have had impacts on the employment structures, remuneration and social relations of cadetships. The economic impacts of Covid-19 and lockdowns are a factor contributing to cadet labour impacts (King & Lamontagne, 2021), yet the consequences from Covid-19 did not form part of the analysis and discussion of this thesis. This factor is noteworthy, as the Covid-19 pandemic has had consequences for the mental health of students globally, and emerging studies claim that there is a perfect storm of factors which could further push WIL workers towards mental ill-health (King & Lamontagne, 2021; Turner et al., 2019).

1.6.2 Reflexivity

It is important to establish the author's orientation to the research, as Banister et al. (2011) claims that reflexivity may now be the defining feature of qualitative research. Following the advice of Hertz (1997) and Finlay (1998, 2002), research should explicitly disclose the researcher's individual position and interests within the research undertaken. To this end, and also due to the nature of participant observations, this research can be perceived as both etic and, to a certain extent, emic in that it is influenced by the perspective of an insider, but approached from the perspective of the observer (Harris, 1976). Some cultural anthropologists, particularly Morris et al. (1999), note each of these approaches are not necessarily at the

expense of one another; when employed in conjunction, they can offer more meaning and understanding of the topic.

However, this intimacy also posed ethical concerns related to conflict of interests between the researcher and participants. The researcher is a graduate of the Construction Project Management degree and was previously employed as a cadet, prior to commencing a PhD. Further, over recent years, the researcher has taught numerous courses within the Bachelor of Construction Project Management (BCPM) and is now a lecturer in the BCPM degree at UTS. This insider perspective has been beneficial in terms of keeping up to date with the nuances impacting current cadets, through regular interaction, discussions and supporting cadets. Indeed, the researcher's close alignment to the topic was part of the motivation to pursue this research and gave some baseline insight to the nature of the work and general experiences to which cadets could potentially be exposed. Being informed by literature and an understanding of the topic shaped the researchers' supervisory team, and helped to formulate questions that promoted the free flow of responses given during the interviews. The rights of those affected by the research were considered in these situations and care was taken so that respondents understood that responses to the research are purely voluntary and did not have any weighting on their academic performance through future marking, special consideration, or prejudice within the faculty. Other ethical considerations related to any potential conflict of interest that may have arisen during research are addressed more fully in Chapters 4 and 5.

1.7 Thesis outline

Chapter 1 has outlined the working parameters, assumptions and ideologies and is reflective of the general arguments contained within the thesis. That is, it has attempted to signpost that a narrow, neoclassical orthodox economics conception of the construction cadetship, and WIL more broadly, is insufficient; it prevents the analysis encompassing the broader socioeconomic and political ramifications related to student experiences and cannot provide a framework to truly alleviate structural social or economic inequality. Rather, in order to respond to the research questions and discuss the learning impacts and labour impacts of the cadetships on the cadets involved, a holistic political economics approach is required.

The introductory chapter of this thesis is divided into six parts. (1) The neoclassical human capital theory, that has supported WIL's prominence within higher education globally, has been examined thus far in this chapter, so as to signpost the direction and topic of this work. (2) The following section provided an outline of the literature review, delimitating a political economic

understanding of WIL within the Australian context, before refining the literature to introduce the Australian construction cadetship. Key gaps are identified in the literature to reveal two important unanswered questions, which are the focus of this research. Then the following section (3), details the two research questions of this thesis and frames the three objectives required to answer those questions. After that (4), offering an introduction to the political economic influences that govern the approach to the research, theoretical concepts developed in Chapter 3 are introduced. The rest of this Chapter (5) has introduced the methods, scope, types of analysis and ethical considerations of the data, before (6) providing the structure, outline and arguments conclusions within this thesis, built on the data collected from Australian construction cadets and their employers.

After the scene setting in the first chapter, Chapter 2 provides a critical review of the literature, presenting the neoclassical human capital approach as a significant influence on the recent rise of WIL, and the implications of this theory and other neoliberal advances for pedagogical theory and higher education agendas. Contesting the notion made by neoclassical human capital theorists that salary is tied to education, the chapter will argue that within a class-structured social and economic system, there can still be varying levels of exploitation and oppression, depending on the individual's demographic and material conditions. By examining literature that provides insight into systemic exploitation in the construction industry based on gender and race, Chapter 2 shows how that disproportionate, yet structured, exploitation has been commonplace for WIL workers through their progression into graduation. Gaps in the literature are then outlined, explicitly related to the studies done on construction cadets.

Chapter 3 describes and defends the theoretical framework developed and piloted to respond to these identified gaps and the research questions. The chapter outlines key terminology and theoretical interpretations of Marx's notion of the proletariat and exploitation, drawing on the influence of Freire, to assert the importance of developing and instilling class consciousness in cadets during WIL. The chapter provides the theoretical background to the notion that critical pedagogy is crucial for cadets while they exist as students before they become professionals who, as Freire, Gramsci and Marx point out, are much more difficult to coax into acting for positive systemic change. The chapter concludes by theorising class structure and reproduction using the cadetship as a basis to contend Wright's contradictory locations within class distinctions theory.

Chapter 4 provides a detailed explanation and justification of the methods used to collect the data. The first three sections are comprised of individual discussions associated with each of the

data collection techniques used to collect data. The fourth section of Chapter 4 describes the limitations, reflexivity and other methodological considerations that were made when collecting the data to help improve the confirmability, reliability and transparency of the research.

Chapter 5 presents the data collected from the aforementioned research methods. The data is introduced in three main categories that align with the three data collection methods defended in Chapter 4. They include; interviews with cadets, interviews with construction professionals and observations of cadets while at work. Each data set is triangulated against existing empirical research. Then, how the data has been subject to a coding and thematic analytical process is delineated, before the thematic networks generated from that detailed process are outlined.

Next, Chapter 6 provides a discussion and analysis of the key themes grouping into educational and labour impacts. In terms of labour impacts to cadets, the findings are discussed around three key themes including (1) precarity, (2) culture, and (3) intersectional discrimination. The analysis here draws heavily on the Marxist approach to collective resistance and unionism as a way to resolve some of these issues. It also discusses the contradictions when some mainstream approaches directed at improving the conditions of WIL workers are employed. Here, one example is a mandated framework, or apprentice style system, which is claimed by some (e.g. Leong & Kavanagh 2013) as an avenue to ensure the consistency of ROI for those in WIL, increase the integrated learning and limit the exploitation whilst generally improving the material conditions of the workers.

Finally, Chapter 7 concludes the thesis. It not only summarises the thesis but also highlights its key arguments and returns to the key theoretical propositions with the aim of enriching them. This allows the work to then become adductive (Dubois & Gadde, 2002). The chapter provides recommendations for future research and signals various ways of further theorising WIL and developing a dialectical political economy as a research approach.

1.7.1 Conclusion

This chapter, Chapter 1, has contextualised the entirety of this thesis. It introduced neoclassical economics human capital theory as an institutionalised and commonly applied theory with ramifications to mainstream labour reform, pedagogical techniques and global educational objectives. Neoclassical human capital theory provides the justification for the adaptation of WIL by governments and institutions globally. By seeing the construction cadetship as a form of WIL, spawned from a result of these ideological forces, aided by traditional pedagogical views in the Australian construction industry, and university uptake of employability framework adoption,

the chapter provides the theoretical setting for the following deep dive into WIL within the Australian Construction industry.

WIL is understood dialectically in this thesis, because it allows a deep qualitative understanding of how socioeconomic and political forces interact, contradict and provide the material conditions that compel parties into WIL agreements. The chapter has also signposted some relevant pedagogical theories that govern the practice of learning within the workforce and at university, which are used to assess the learning impacts of cadetships in their current industry-driven, unregulated and unstructured state. Finally, this introductory chapter has constructed the argument that a traditional mainstream economic analysis of the construction cadetship is insufficient, in that it does not breach the labour, political or economic realm, and generally neglects a discussion of the broader socioeconomic and political ramifications of student impacts resulting from WIL. The existing cadetship literature is especially lacking important analysis related to the understanding of the cadetship experience from the perspective of students.

Indeed, the learning and labour impacts that accompany construction students while navigating the labour market, as a mandatory part of their academic studies, is a fragmented literature. Hence, the following literature review chapter aims to clarify and map out these stated gaps. It begins by introducing how the cadetship literature review has been approached from a range of abstractions from the research questions.

Chapter 2: Literature Review

2.1 Introduction and chapter overview

Research on WIL has now come of age. At the same time, it seems the literature has become stagnant, incapable of keeping up and documenting the boom in WIL programs in a holistic way (see Chapter 1). Take the International Journal of Work Integrated Learning (IJWIL), the leading home for such research. A recent special issue identified that a holistic approach is fundamental in all WIL based research, yet a holistic approach remains neglected (Rowe et al., 2018). This literature review chapter appreciates the state-of-the-art literature and shows where more research is required, across rarely stitched together fields of political economy, construction education and WIL.

Five themes are clearly identifiable and can be found recurrently in the literature. They form the basis for the structure of this chapter outlined in Figure 2 below. As noted in the final section of the chapter, the key research questions of this thesis have emerged from this body of theory and literature and are pressing because they have not yet been answered by the existing literature.

1. How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?

2. How do these impacts shape the political economy of the construction cadetship?

The rest of this literature review chapter is split into six key parts. Firstly, the five key areas of literature related to the thesis are systematically reviewed and exhibited below in Figure 2. The five key areas of literature include: (1) WIL as a result of neoclassical human capital theory; (2) WIL programs on a global scale; (3) WIL in Australia; (4) WIL in the Australian construction industry; (5) Australian construction cadetship studies; then finally, (6) an outline of gaps in the literature are grouped into educational impact gaps and labour impact. Figure 2 seeks to show the foundations of, and structure of the literature reviewed, while also visualising a general representation the literature size for each category. For instance, human capital research is pervasive, especially across mainstream educational and economics fields, while the size of specific cadetship related literature is a much smaller body of work in comparison.

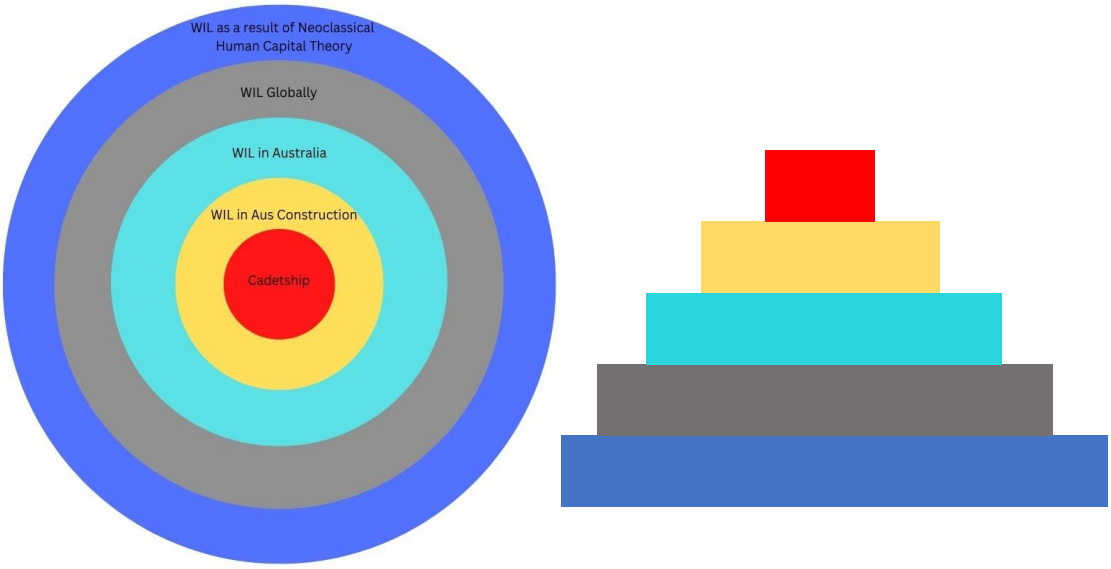


Figure 2: Visualising the literature review from varying levels of abstraction

Each section is one building block in defining and understanding and contextualising the literature on the construction cadetship.

In the first foundational layer of literature reviewed, the theoretical concept of neoclassical human capital that governs WIL elucidates the context of this entire research. Following the political economic approach, neoclassical human capital is critically examined to contextualise how the ideologies underpinning the application of this economic theory continue to influence global education curriculum as WIL. This introductory section traces the historical lineage of human capital theory by starting to outline its roots in classical economics ideas, then proceeding to the more complex and specific institutionalist economic perspectives. Finally, there is a review of modern neoclassical economic assumptions and critiques of human capital accounting methodologies that align with contemporary educational policy and narratives, which strive to pursue the development of human capital on a global scale. Indeed, a significant body of literature within political economy claims that labour is commodified when accounted for using these modern human capital-based accounting (HCA) methodologies. As Yarrow shows (2022, p.231), it can reproduce Polanyi's notion of an 'economistic fallacy' (Polanyi, 1977, pp. 5-15). The fallacy is that HCA methodologies assume that the exchange value of educational investment can be meaningfully isolated from its other cultural, social, political and economic roles.

Moving up a level and further filtering the abstraction of literature, WIL programs on a global scale are next considered. Indeed, global education frameworks have promoted WIL, enabling individual states to develop narratives around what is deemed 'the employability agenda'

(Arora, 2015; Curtis & McKenzie, 2001; Matherly & Tillman, 2015; Torres-Machí et al., 2012). Institutions including the World Bank, OECD and United Nations (UN) have a long history of promoting and supporting human capital adoption; meanwhile, global corporations have also celebrated the need for more internships to provide work-ready graduates. As explored in the global human capital agenda literature, work-ready graduate outcome dogmas and other strict employability skills frameworks currently imbedded in higher education have promoted WIL programs across industries and countries where WIL was, even recently, considered unnecessary. Studies also exist showing that some WIL programs do little to teach or improve the academic ability of students. Yet, students across the planet face a prevailing educational landscape shaped by the mentality that, if human capital investment must be made through higher education, the ROI should be maximised; so higher education is only useful if it results in good employability.

Further closing the literature review refinement, existing literature regarding the relevance and implementation of Australian WIL is then considered. WIL in Australia is strongly rooted in the neoliberal framework; here, neoclassical human capital theory application is driven by the hegemony of neoliberal Australian governments, universities and organisations (Humphrys, 2018; Humphrys & Collerson, 2012; Yarrow, 2022). Recent and current national educational frameworks and programs, including; Job Ready, PaTH, and Graduate Ready Skills Framework, are part of the recent broader agenda that focuses on higher education frameworks solely in terms of Australian employability skills. The literature also notes that a reality for many Australian students engaged in WIL is that their experiences are marred by precarious work and poor learning outcomes. The extent of the employability agenda in Australian education, especially when manifesting as WIL, combined with the direct and indirect costs of attaining a degree from an Australian university, shows education in this context to be highly commodified, reminiscent of Polanyi's Market Society thesis (Polanyi 1977).

Next, the second most detailed level of abstraction of the literature are outlined; these are existing studies that seek to understand and analyse WIL within the Australian construction industry. This specific body of literature is generally focused on understanding the implementation of WIL for young Australians working in construction. Firstly, a brief history of vocational education in Australian construction is outlined. Then, studies in line with wider media reports of WIL exploitation are reviewed, which show that many Australian construction WIL programs are shrouded in numerous negative empirical cases of abuse. As this section shows, the literature documents particularly extreme cases for students in trade-based WIL programs endorsed by state and national governments (Fuller & Unwin, 2009; Jericho, 2017;

Knight, 2012). Widespread issues exist for young WIL workers on sites, while a smaller, but rapidly growing body of literature contends there are also problems for young WIL workers working in site sheds.

The most refined and specific body of literature reviewed dives deep into studies of Australian cadetships. Literature in this field indicates that Australian construction cadets share many common experiences to their apprentice colleagues. While Australian apprentice research is significant, construction student research is a much smaller body of work, so studies that focus on this particular WIL program are relatively scarce. The reviewed existing Australian construction student research is generally focused on three major themes: burnout, work-life balance, and male dominance. New research from a number of prominent Australian construction educators and researchers shows that construction students, especially young women entering the industry (Carnemolla & Galea, 2021; Galea & Chappell, 2022; Galea et al., 2020), need greater support to make their careers in construction more rewarding and less taxing, emotionally and physically.

The literature reviewed aims to contextualise the research, preventing WIL in construction and more specifically, the construction cadetship, from being viewed in a vacuum. The chapter thereby dissects and reviews the literature from the perspective of a range of stakeholders involved in the cadetship process. The stakeholders considered include Australian national construction head contractors who employ cadets; Australian construction and professional unions who help collectivise and regulate labour; professional bodies and associations who aim to regulate and advocate within the construction industry; universities who promote or enforce construction students to seek work in the industry as cadetships; and finally, Australian construction students who are forced, throughout their undergraduate degrees, to take an entrepreneurial approach in planning their own education, in an unsupported and individualistic way. The literature reviewed from the perspective of each stakeholder in the Australian construction cadetship process is valuable to interpret, as it shows how conflicting attitudes and power relations exist within the WIL process. While the following sections outline reports and studies from the perspective of all of these stakeholders, there are detailed insights on the curriculum structure of the Sydney-based university that has the greatest mandate in the country for WIL and the cadetship. Based on this literature finding, this Sydney-based university became the location for this entire research.

The final section of the literature review demarcates gaps in the literature reviewed, then groups these gaps into two key areas that remain a dialectal focal point for this research. In terms of

educational gaps, a key finding in the literature indicates that the cadetship has been shaped predominately by industry, while universities, professional groups and unions have had little documented organisational involvement in co-authoring or developing learning outcomes or regulations for cadetships. It appears that cadetships in Australia are uncontrolled and unstructured, as evidenced by the data collected in this research, triangulated against an absence of guidelines from institutions, professional groups, and broader literature (Forsythe, 2012; Forsythe & Zou, 2006). This educational gap is problematic, as research shows that industries harbouring unstructured or unbalanced WIL labour have been identified as having poor learning outcomes for WIL workers, thereby reproducing inequality and further stratifying already marginalised groups. Given that there is very little recognition of the cadetship in the literature, limited studies exist that offer a practical qualitative understanding of the learning or broader educational impacts of cadetships to Australian construction students during their studies.

Meanwhile, gaps in the literature show that the labour impacts of cadetships on construction students have also been understudied. Cadetships can provide several challenges for construction students; although most are labour-related, research focuses solely on measures of student burnout. As observed by research in many large-scale construction student studies, there are still critical unsolved concerns regarding why Australian construction students are burning out at such a high rate and in turn, how burn out may be impacting the entire construction sector with broader social, political and economic ramifications. Also, the issue of how age, gender, race or class impacts burnout, or wider student experience in WIL, is relatively understudied. Other labour-themed gaps highlight the need to review current working experiences, impacts and conditions, given the unstructured and unregulated nature of the cadetship. In light of this informality, it is therefore also imperative to document the many intersectional experiences among construction students, as no research has yet attempted to examine these effects (Zhang et al., 2021).

2.2 Neoclassical human capital and global adoption of WIL

The neoclassical economics human capital theoretical approach has had a significant influence on the educational objectives, narratives and global rise of contemporary WIL. To understand this phenomenon, it is imperative to appreciate the history of human capital.

2.2.1 Tracing the history of human capital

Reviewing the works of Hodgson (2014), Yarrow (2022) and others (Boarini et al., 2012; Nadezhina & Avduevskaya, 2023) is a useful starting point. To help enrich this historical and contextual setting, constructing an in-depth historical perspective of the 'c-word' (Hodgson, 2014, p. 3) is critical, as is unpacking how the 'c-word' is now a mainstream and commonly applied methodology to quantify a human's worth.

One of the earliest traceable uses of the term 'capital' was in 1211 in Italy, used within a financial context of trading and investment, to describe 'money advanced by owners or shareholders to establish a business' (Hodgson, 2014, p. 3). This classification remained relevant until the 18th century (Braudel, 1982) and dominated most other competing definitions, notably by Cotgrave (Fetter, 1930). Then, in what Hodgson describes as a 'seminal shift of the meaning of capital for economists', Adam Smith foundationally extended the notion to include people and their labour. Smith's description treated physical assets as capital, including machines and people, although he did not explicitly use the term 'human capital' in his work (Smith, 1827). In 1776, Smith published The Wealth of Nations, where he outlined that labour costs are subject to quantity and quality-related factors, including 'acquired and useful abilities of all the inhabitants or members of the society' and 'the acquisition of such talents, by the maintenance of the acquirer during his education, study, or apprenticeship, always costs a real expense, which is a capital fixed and realized, as it were, in his person' (Nadezhina & Avduevskaya, 2023, p. 557). In other words, Smith suggested that human capital encapsulates individuals' abilities as well as their qualifications. Smith's convention dominated most economic circles, but there was still some ambiguity in reaching a consistent definition of the term (Mill & Nathanson, 1875; Senior, 1836, p. 156). Even many mainstream economists wished to simplify the 'superfluous and confusing' (Fetter, 1930, p. 187) meanings and return to the earliest definition of capital that strictly resides within the financial context of trading and accounting. As Hodgson notes, these voices included the illustrious Hobson, Sombart, Weber, Innes, Fetter and Schumpeter. Schumpeter famously declared 'What a mass of confused, futile, and downright silly controversies it would have saved us, if economists had had the sense to stick to those monetary and accounting meanings of the term instead of trying to 'deepen' them!' (Schumpeter, 1954, pp. 332-323, exclamation in original). Yet, regardless of these declarations, capital has continued to mature from its traditional meaning; nowadays, it can be applied to any unconsumed productive resources, which has led Hodgson to exclaim, 'Everything has become capital' (Hodgson, 2014, p. 3).

Kiker (1966) points out that attempts to gauge the worth of humans in economics has historically been centred around two predominant approaches; one is focused on calculating the costs

involved in creating a human, while the other concentrates on accounting the expected future earnings, or worth, of a human (Hodgson, 2014). It is on this second approach that the first modern economic application of human capital was based, tied to the literal adjunction of the words 'human' and 'capital'. It was used by Sir William Cornwallis Harris in 1842, with reference to African slaves whom, like fixed physical assets and capital, were owned as property. In 1875, Westgarth used the term also with relation to slavery, in an attempt to discredit capital being used to describe the labour capacity of waged labour (Hodgson, 2014). Building on Westgarth's point, even some contemporary discussions in the field note that it is important to make a clear distinction when using the term 'capital' to reference human capital as waged labour, because of its modern fundamental differences to capital. That is because of collateralisation, which is a defining characteristic of capital, and which cannot apply to human capital in waged work because, unlike slavery, waged labour cannot be bought or sold, only rented on the labour market (Schultz, 1960; Becker, 1975; Hodgson, 2014).

While the classical economists had much to say about human capital, the theory throughout this classical economic period was still a fairly underdeveloped concept. According to Anikin (2017), the rise of human capital throughout the early 1900s was a response to traditional forms of capital investments eventually failing to ensure sustainable economic growth, so with that came a deeper scrutiny of the importance of intangible assets to an economy (Rodionov et al., 2018). During the 1950s, the notion that there was a value to the knowledge and skills of an employee as a differentiator in the market, at the micro and macro levels, began to take the form of a conceptual framework. This period is characterised by the institutional approach to estimating human capital.

Jacob Mincer was the first economist to notably shape human capital theory as it is known today (Mincer, 1958). Mincer theorised that training and education, in the form of human capital, greatly affected personal income distributions. This foundational and relatively primitive model of investment in human capital outlined a hypothesis that income forgone to pursue education and training is logically compensated with higher earnings in the future. Mincer outlined some important distinctions to this hypothesis. For instance, Mincer believed that ROI from training and education was inversely related to age, due to his assumption that overall productive capacities of humans deteriorate with ageing. Another important distinction Mincer noted in his theoretical contribution is that differences in education lead to differences in ROI. This difference is particularly notable in relation to a person's professional rank, where the higher professional rank, the higher the level of earnings and the steeper the life path of earnings (Mincer, 1958). Mincer also noted that training and education could and potentially should come

from the workplace, in what he deemed to be helpful development of work experience. This presupposition also relies on a theoretical positive correlation between work experience and earning levels.

After Mincer's theoretical contributions, Nobel prize-winning economist Theodore Schultz soon provided a grander conceptual model and application of human capital (Schultz, 1960). Shultz denoted three main aspects of human capital. He claimed that firstly, human capital is strictly an economic concept, since it represents a source of future earnings that are both tangible and intangible for the worker and for a nation's GDP overall. Secondly, he claimed that the person and their human capital are inseparable; and thirdly, that human capital investments are inextricably linked with opportunity costs, for example, any income foregone during school attendance. In line with Mincer's theoretical contributions, Schultz also considered investment in education as worker training costs that would be compensated with higher earnings later in the career. According to Shultz's methodical individualistic conceptual model, however, it is not necessarily the quality of a workplace's education that generates variations in salaries; rather, it is the individual's strategic and entrepreneurial decision to be educated in specific ways that will improve their own education and abilities (Schultz, 1960).

Neoclassical economics gave rise to microeconomic models of perfect competition. There are few basic distinctions between neoclassical and classical economic assumptions. The key differences lie in how neoclassical assumes that individual economic actors make rational choices, maximise their utility, and make decisions at the margin. Neoclassical economics ideology is most closely tied to classical liberalism. Neoliberalism borrows the assumptions of neoclassical economics, particularly methodical individualism, to advocate for free trade, low taxes, minimal government regulation, and low government spending and privatisation (Hodgson 2014). The neoliberal movement from the 1980s marked a partial return to neoclassical economic policy assumptions and a partial rejection of the unsuccessful central planning ideas and policy of the 1930s (Cahill et al., 2018).

The supremacy of neoclassical human capital ideology under neoliberalism can be observed on a global scale by focusing on the current association between education and economic growth. For instance, according to Becker, 'the human capital approach considers how the productivity of people in market and non-market situations is changed by investments in education, skills and knowledge' (Becker, 1994). In this sense, an education is primarily regarded as an investment and therefore, an education, like any other 'investment', should be judged on the merit of its economic ROI. The theory assumes that individuals are acting entrepreneurially and

competitively in their decision-making processes through opportunity cost calculations, based on market criteria during the structure of their own education. This behaviour from students has only been amplified within the neoliberal framework, and as Cook et al. (2004) point out, during the earlier periods of the neoclassical human capital agenda and at the inception of mainstream WIL prior to the 1970s, students expected academic credit and financial remuneration if they were going to undertake any form of WIL (Hite & Bellizzi, 1986). Pursuing the strategy that, theoretically at least, it should improve education and abilities, student rates of WIL increased during the 1980s, egged on by neoclassical, 'post-industrial, networked capitalism' (Perlin, 2011), so that by 1998 (Cook et al., 2004), students were choosing to sacrifice remuneration or even a structured education (Cannon & Arnold, 1998; Grant-Smith & McDonald, 2016) to receive a placement in WIL.

There is a global recognition of the importance of human capital as a strategically important national investment (World Bank, 2018; 2019; 2021), in terms of achieving competitiveness in a globalised and increasingly automated world (Yarrow 2022). This is reflected in global policy discourse and national growth strategies, which are increasingly prioritising investment in education that offers maximum value for money (Collini, 2012). At the same time, the need to secure a global market share in human capital has led to a current focus on education with a high ROI, both for individual students and for society as a whole (Yarrow, 2022; Baptiste, 2001; Huber, 2022). As Yarrow notes:

> By tying the value of human capital wealth to labor market outcomes, lifetime income approaches naturalize the idea that sustainable welfare systems must be grounded in the expansion of formal wage labor and employment. They therefore measure not the contribution of education systems to the generation of economic welfare *per se*, but rather the comparative degree of commodification in different societies, equating this with the size of the human capital stock and therefore to the 'sustainability' of different political economies. (Yarrow, 2022, p. 242)

In recent years, neoclassical human capital theory and associated modern human capital accounting (HCA) methodologies have been core strategies to increase growth across the world's economies, aligned to the UN System of National Accounts (SNA), which is the main global framework for measuring economic performance (Boarini et al., 2012). In 2016, the UN's Economic Commission for Europe (UNECE) produced an international framework for human capital accounts. The World Bank subsequently produced estimates of national human capital stock based on this methodology in The Changing Wealth of Nations and The changing nature

of work (World Bank, 2018; 2019), which have also been updated since the Covid-19 pandemic. Meanwhile, the World Bank continues to use conditionalities in its loan programs to pressure the acceptance of the human capital agenda (Noy, 2021; World Bank, 2021). Indeed, the theory has driven the rationale of institutions and governments for an employability-based curriculum, in the context of a global economic governance, which has extended national capital and wealth measurements beyond traditional manufactured and financial assets, to also be comprised of natural resources, ecosystems and social institutions (Boarini et al., 2012; OECD, 2001; World Bank, 2021). As Yarrow notes, 'this wealth accounting approach, which frames sustainability in terms of the preservation of a comprehensive national balance sheet, has become the dominant framework for measuring sustainable development.' (Yarrow, 2022, p. 228).

Numerous studies from other parts of the world, including Africa, Asia and Europe, have documented the recent domination of the WIL agenda, proliferating across curricula, industries and economies where WIL was once considered unnecessary. Major endorsement of WIL in the US has come from larger employers, especially multinational corporations (see, for example, Ananiadou & Claro, 2009; Cannon & Arnold, 1998; Gamble et al., 2010; McDonnell et al. 2010; Olawore et al., 2011; Smith & Chan, 2015; Stewart et al., 2021; Tanaka & Zegwaard, 2018; Yarrow, 2022).

Many WIL programs across the globe appear to be industry-driven, and existing research in WIL (see, for example, McRae & Johnston, 2016; Orrell, 2011; Sachs et al., 2016) shows how contemporary WIL has had limited scrutiny, specific guidelines or standards from stakeholders other than industry (Campbell et al., 2021). For instance, Higgs (2019) aimed to articulate a set of guidelines for practice-based education, identifying standards for the dimensions of staff support and systems, student support systems, and risk management in WIL. Nevertheless, despite providing a detailed review of general WIL practice, Higgs' standards do not adequately address what practice might truly entail in specific fields, or detail an adequate support system for specific industries and WIL programs. Generally, it appears most existing broad or general WIL frameworks and methodologies are limited in scope or fail to translate WIL standards into specific contexts and practice (Campbell et al., 2021).

Alongside the push from human capital theorists to validate WIL from an economic perspective, universities and pedagogical theory including experiential-based learning, immersive learning and transformative learning has been used to justify WIL to students (Maertz Jr et al., 2014). Much of the recent advances in WIL have been pressured by higher education reform through

governmental frameworks and industry-focused agendas, in an attempt to embed industry needs into educational curriculum.

Universities are partially adopting a strategy suggested in a 1996 research titled Creating Effective Internships by Flesher, Leach and Westphal (1996), in that they are managing and designing curriculua to meet specific industry requirements. Research in this vein has responded favourably to the introduction of WIL in new industries, and outlined how universities must collaborate with other stakeholders, but particularly industry-based organisations to encourage various types of working arrangements, in order to improve student's practical knowledge and graduate outcomes. For WIL to be beneficial for the undergraduate, universities must dedicate time to 'developing links with industry, planning the scope of duration of activities, and implementing the program.' (Flesher, Leach & Westphal 1996, p. 2)

Others, like Nagarajan and Edwards (2015), argue that the extent of responsibility universities must assume in response to WIL is contentious. They explain the increasing friction between universities and companies regarding the development of graduate qualities, as both parties strive to shift their respective duties. Instead of altering curriculum to teach practical skills that should be learned in the workforce, Nagarajan and Edwards argue that universities should guarantee that their curriculum emphasises 'deep learning', which teaches students how to study. In addition, they stress that many of the practical and technical abilities required of graduates cannot be fully developed over the duration of a university degree and should therefore be actively fostered by the business sector. Therefore, they argue that successfully integrating WIL requires a collaborative effort and that altering a university's curriculum alone is insufficient to meet the needs of graduates.

There have been other criticisms of curriculum reform using commercial criteria and neoliberalism as a framework (Moore, 2020; Obeng-Odoom, 2019; Stilwell, 2003b; Stilwell, 2014; Stilwell & Argyrous, 2003), whereby the economic aspect of the changing academic environment and the process of commercialisation are contended against the social cost. The decrease in the quality of degrees is attributed to an outsourcing of higher education to businesses, both of which come at an expense to the quality of an academic-based curriculum. These changes to curricula to better appeal and cater to industry have also been accompanied by changes in how WIL is administered, putting additional pressure on graduates to obtain practical knowledge from within the workforce (Cook et al., 2004; Stilwell, 2003a).

In lieu of specific standards, a bulk of literature also shows that while empowering employers, professional bodies and universities, WIL across the globe is causing discomfort for students

(Piketty, 2014). Paradoxically, in this sense, some WIL programs have been shown to have detrimental consequences to the development of human capital, as students must sacrifice getting an education in order to work, become overworked, and feel obligations to complete the requirements of conflicting roles that impede their other social pursuits (Schaufeli & Enzmann, 1998). In some specific cases, due to these pressures, WIL is leading to worse overall academic performance for students (Adcox Jr, 2000; Chen et al., 2015; Hauck et al., 2000). WIL has also been documented to create the conditions ripe for wage theft, as employment is often informal, precarious, and students are often poorly rewarded or even receive no pay for their labour across an array of industries (see, for example, Christensen, 2016; Funnell, 2016; Lucas, 2012; Rodino-Colocino & Berberick, 2015; Smith, 2015; Yaxley, 2017).

For students involved in WIL, alongside financial stresses of underpaid or unpaid WIL, there have been noted social and physiological costs that are also not considered in the neoclassical human capital accounting methodologies or ideological approach to assessing ROI of WIL. Numerous studies identify the excessive time demands by both work and university as a key driver of decreased mental health and burnout (Lingard, 2007; Sorensen & Winn, 1993; Vickers et al., 2003). Indeed, the working conditions that WIL promotes can harmfully impact on students' work-life balance (WLB) and can lead to tensions between work, social and family responsibilities (P. Moore & M. Loosemore, 2014).

Meanwhile, Standing (2011 [2016]) claims this process been especially significant since the Global Transformation from 1975 until at least 2008, and has led to a new social structure, where there is a growing section or precariat class of society who lack some, if not all, of the seven forms of labour-related security. The seven forms of labour-related security are defined by Standing as: '(1) labour market security – adequate income-earning opportunities; (2) employment security – regulations to protect workers from arbitrary dismissal, etc.; (3) job security – ability and opportunity to carve out a career; (4) work security – protection against accidents and illness at work; (5) skill reproduction security – opportunities to gain and make use of skills; (6) income security – assurance of an adequate/stable income; and (7) representation security – ability to have a collective voice in the labour market' (Wright, 2016, p. 125; Standing, 2011 [2016]). There has been data from other scholars to back up the idea that informal labour was on the rise during 1975 to 2008. For instance, Stone (2013) examines the assertion that there has been a reduction in the 'standard' employment contract and a shift to more 'insecure' kinds of employment, using data from 10 OECD nations covering the period from 1985 to 2010. Stone discovered that the data confirms Standing's theories of shifting national

labour markets and the expansion of 'non-standard employment', particularly for students and young people entering the job market while studying.

Literature shows current WIL, after the past decades of Standing's 'Global Transformation', is a type of labour practice that involves predominantly young people in precarious working experiences, accompanied by minimal collectivism and limited social and legal protections. In this light, as a form of non-standard labour, WIL shares parallels with Guy Standing's (2011 [2016]) conception of precarious work. That is, educated young WIL workers are emerging as a new exploited precariat class, characterised by an erosion of regulated employment relationships, the decline of standard employment, and programs with rampant wage theft. Associated with the expansion of WIL are broader social and economic problems, such as a decline in labour and employment standards, as the work completed by students could otherwise be performed by full-time employees. WIL has also been documented to create hurdles to employment, since only students who can afford to engage in low-paying labour may participate; and job market competitivity increases by requiring over-skilling in junior roles (Perlin, 2011; Hewitt, Stewart & Owens, 2018; Stewart & Owens, 2013).

2.1.2 Conceptually linking human capital to WIL

Conceptually, human capital is the source of heated and continuing debate in labour economics. Yet, for universities that have fully absorbed WIL ideology in approaches to education, the WIL is rarely tied to its conceptual economic underpinning: neoclassical human capital theory. But this conceptual pillar of WIL does deserve deeper scrutiny, because by establishing this connection, WIL is therefore also connected to economic policy, that is, rooted in historical economic theory and ideology inherent in the current mode of production. It is important not to merely examine the impact on modern working relations and expectations of new labour, but to do this to help improve the conditions for the many young individuals that must participate in WIL. In doing so, there is also a need to contend with the very structural forces that mediate the labour relations that shape this exchange of labour.

There is no agreed-upon single definition of WIL in the literature, however, there are several similar characterisations recognised (Patrick et al., 2008; Stewart et al., 2021). WIL is a multidisciplinary field that translates across underpinning theories of industrial relations, experiential learning, work-based learning, and vocational education and training; however, each of these fields have such differences they can be seen as separate fields in their own right. Some describe learning as knowledge that can be acquired, as being external to the learner, waiting to be attained and embraced, typically with the aid of a teacher, while others believe

learning is something in which we participate (Candy, 1991). Constructivism, grounded in the theories of Kant, Dewey and Vygotsky, posits that learning is an active internal process and the individual learner mentally constructs knowledge, based on their subjective representations of reality (Vygotsky, 1980). Within the thesis, 'best practice' learning is generally centred from the base of the critical pedagogy camp (Freire, 1970, 1973; Gadotti, 1996; hooks, [1994] 2014).

Generally, the majority of views in WIL-based literature align with the view held by IJWIL, which takes a broad definition of WIL to allow for inclusivity in practice. The IJWIL define WIL as; 'an educational approach that uses relevant work-based experiences to allow students to integrate theory with the meaningful practice of work as an intentional component of the curriculum.' (Bowen, 2020; Campbell et al., 2021; Fleming & Zegwaard, 2018; Rowe et al., 2018; Venville et al., 2021; Zegwaard et al., 2023).

Other notable literature does not specifically claim that WIL needs an organisation-based work experience component to involve an intentional integration with a component of a curriculum. Rather, this view holds that 'WIL' is simply an umbrella term used to describe a formalised educational curriculum supplemented with practical, discipline-specific and structured learning from within industry (McLennan & Keating, 2008; Patrick et al., 2008; Tanaka, 2009). This view specifies that it includes any internships, internship-like work, vocational learning, cadetships or any other 'real world learning' or 'professional learning' experience (Patrick et al., 2008, p. 5). This view is common within the Australian WIL literature and is a view clearly upheld by many Australian universities in their approach and support of the cadetship, as outlined in Chapter 2.

In line with the standard neoclassical theory of the firm, which states that businesses are mainly focused on maximising profit (Friedman, 1970; 2007; Penrose, 1952), the business research on WIL tends to probe the nexus between profit maximisation and WIL. For example, Cannon and Arnold (1998) suggest that firms use WIL because undergraduates 'provide them with inexpensive help, new ideas, and [create] a talent pool from which future full-time employees may be drawn' (1998, p. 2) Meanwhile, the other vein of thought is that businesses have endorsed WIL because they are dissatisfied with the quality of graduates' practical ability and knowledge base (Hauck et al., 2000; Tener, 1996); although not strictly looking to profit from them in the immediate future, businesses believe that general training will eventually lead to labour cost reductions and increased productivity throughout the industry (Coleman, 2016; Moore & Plugge, 2008). There are also wider economic fluctuations that businesses must navigate when they consider working conditions and remuneration of those in WIL.

Literature dedicated to understanding the practice of modern WIL has become a quickly growing field in response to increased WIL adoption. This literature generally notes that the bulk of the advantages of WIL are only applicable if WIL is implemented correctly, involving fair collaboration between all stakeholders: students, businesses, universities, governments and professional associations (Chen et al., 2015; Edwards, 2015). This collective view of WIL broadens the number of stakeholders involved in developing a student's human capital, and adds complexity to how this process is managed, as all parties seek to maximise their ROI. So, to ensure the mutual benefit of all involved, WIL programs must have clear recognition of all parties' interests, clear and consistent agreements, structures and planning implemented in a collaborative way (Jeffrey Flesher et al., 1996; Maertz Jr et al., 2014; Orrell, 2004; Smolders et al., 2021). The studies that provide these law-and-order frameworks for broad WIL implementation draw on the structure, culture and industry to justify the structure of WIL implementation, emphasising the role each party involved in the process must play in order to enhance the students' experience and learning (Higgs 2012; McRae & Johnston, 2016; Orrell, 2011; Sachs et al., 2016).

Modern exponents of neoclassical human capital theory, like George Jesus Borjas (Borjas 2019; Borjas & Cassidy, 2023) claim that the results of education like WIL will develop the technical skills and disciplinary specific knowledge of students, improve productivity, and steepen the undergraduates' earnings curve, thereby benefiting the economy. 'Individuals decide on their education (...) and other additions to knowledge and health by weighing the benefits and costs' (Becker, 1993, p. 43). At the heart of claims by these proponents is that labour markets are efficient in allocating labour in such a way that neither class nor any other identity matters, contentions persistently challenged by political economists, especially stratification economists (Burnazoglu et al., 2022a; Burnazoglu et al., 2022b; Darity, 2023; Folbre, 2012;). Yet, consistent with neoliberalism as an ideology (Stilwell, 2014), this view emphasises that only education matters, so the unemployed are lazy, inexperienced and uneducated.

The literature offers a variety of explanations for why students participate in WIL. A portion of the available literature supports WIL, while the rest is critical of WIL, warning of precarity and exploitation. The body of research that argue that WIL is beneficial to a student's professional life and is an effective way to overcome any deficiencies in graduate competence can be summarised by a 2002 study by Knemeyer & Murphy, which claims that the bulk of the benefits of WIL for students are typically not evident until after they graduate. They argue that, after graduation, WIL can increase the likelihood of obtaining a full-time job and provides other benefits, such as an in-depth grasp of actual business operations that may not be taught in

university. Empirical studies demonstrating the benefits of WIL, including a study by Hiltebeitel et al. (2000), indicate that individuals with WIL experience appear to be more satisfied with their jobs than those without WIL experience. In addition, Knemeyer & Murphy (2002) believe that students who have participated in WIL have a greater grasp of business procedures and are placed in new employment more quickly than their peers who have not participated (Knouse et al. 1999). Gault et al. (2000; Gault et al., 2010) also found a correlation between WIL participation and greater beginning salaries and work satisfaction.

The neoclassical ideas behind current human capital application create fissures between theory and practice. The ruling hegemony of neoliberal ideology facilitates and promotes WIL, creates numerous antagonisms for labour and capital and imbeds Polanyi's 'economic fallacy' (Polanyi, 1977, pp. 5-15) in the broader political, social and environmental domains of education. When WIL is viewed within a setting where the needs of the involved parties can be contradictory to one another, power imbalances and market forces will subjugate students without proper support from universities or professional bodies to organisations with more bargaining power. In this case, WIL workers are poised directly against the might of neoliberal institutions, governments and industry (Stilwell, 2003a; Stilwell, 2014).

Polanyi condemned the idea that the economy was a self-standing entity that could be examined as a purely empirical phenomenon and regulated by a technical, market-oriented discipline. This view, for Polanyi, rests on a distinction between a neoclassical 'formalist' understanding of the economy and the 'substantive' perception of the economy (Polanyi, 1977, pp. 19-25). Formalist economics approaches economic problems by assuming an ideal model of market exchange. This approach has been criticised in that it narrows the focus of economic theory down to decisions under conditions of scarcity, or as 'the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses' (Robbins, 2008 [1932] p 73). Thus, when using the formalist approach and the methodological assumptions of HCA, there is a rift between how the economy is measured and how the economy functions in reality. The rift is the fact that the economy is seen as a self-standing entity, understood as an entirely separate problem from the political, moral, social, and environmental problems that can reside within it (Holmes & Yarrow, 2019).

Polanyi claims that the formalist view of the economy and the dominance of formalist reasoning in mainstream economics, which focuses on free market exchange as the primary mechanism for allocating resources, is an 'economistic fallacy', especially in the context of education (Polanyi, 1977, pp. 5-15). By conflating the economy with market institutions, this approach

ignores the broader substantive and qualitative context in which economic activities take place. According to Yarrow (2022), this hyper-fixated market-centric perspective on the economy and society has consequences that twist perceptions of the economy, in turn, altering democracy and political reasoning. Polanyi also notes the formalist approach to economics limits the conceptual space for an 'adjustment' (Polanyi, 1977, p. 59) that is required in the economy to better deal with urgent social, political, ecological and economic issues. The persistence of these formalist economic fallacies in political reasoning delegitimise, or diminish, the significance of solutions to problems that rely upon a de-commodified relationship or ownership structures based on a shared commons (Obeng-Odoom, 2016a). Therefore, any substantive solutions that exist outside the theoretical boundaries of formalist economics, and indeed outside of the neoclassical human capital theory, are disregarded by a purely formalist approach (Holmes & Yarrow, 2019).

WIL is not only the result of formalist market forces, but is also inherently connected to wider substantive economics; therefore, it can not only be addressed by formalist approaches but needs deeper substantive approaches and solutions, based on de-commodification and democratic commons-based ownership structures. In other words, the complexities of modern WIL need to be understood, not just in an economic human capital-centred approach but conceptually, in the context of much broader social, cultural and political economics capabilities.

The notion of human capital and HCA methodologies are generally rejected by Marxist political economy, because the theory leads to the commodification of labour, focuses on the individual, and distances analysis away from what should be a class-based discussion (Bowles & Gintis, 1975). Strong criticism of the modern educational implications derived from neoclassical human capital theory comes from Marxists such as Baptiste (2001) and Bowles & Gintis (1975), who argue that restricting education to capitalistic market tendencies causes pedagogic objectives that are not based on any philosophical or moral code. It makes the education apolitical, individualistic, and thwarts its ability to entirely alleviate social or economic inequality (Baptiste, 2001).

Baptiste (2001) argues that restricting education to market tendencies causes pedagogic objectives that are not based on any philosophical or moral code. Human capital theory moves debate on labour away from that of a class-based discussion, due to the methodological individualism underpinning the theory's neoclassical economic roots (Bowles & Gintis, 1975), and has further segmented the labour force by sanctioning economic inequity through a 'meritocratic' mechanism, which is unfit to properly cater to the intricacies of modern society

(Berry, 2014; Stilwell, 2014), as it does not 'prioritise well-being or an expansive human agency' (Walker, 2012, p. 387). In this critical view, the economic problem of WIL is framed in the context that firms extract the maximum amount of surplus value from their workers, by lengthening the working day (or week), or the intensity and productivity of labour.

As labour is not created to be sold in the market, its capitalisation, and also its commodification, is *fictitious* (Polanyi 1977; Yarrow 2022) and can only lead to major social problems for the labour force and society, resulting in a market society (Hodgson, 2017; Lie, 1991). For Polanyi, in The Great Transformation (1944), a market society allows market relations and incentives to dominate all aspects of life, especially the education system. By treating labour as a commodity, the education system which helps produce skilled labour therefore also becomes subject to, and limited by market forces, which thereby prevents human development, increases inequality and, according to Polanyi, will result in society's and the environment's complete annihilation. Specifically, treating labour power as a commodity (Paton, 2010) will cause serious ramifications for people, because 'labour power cannot be shoved about, used indiscriminately or even left unused, without affecting the human individuals who happen to be the bearers of this peculiar commodity' (Polanyi, 1944, p. 42).

Many have argued that contemporary society in advanced capitalist countries is fast resembling a market society, and that Polanyi's analysis is increasingly relevant, with growing marketisation and hyper-individualism blooming (Block, 2015; Fraser, 2014; Yarrow, 2022). Standing (2011 [2016]) for instance, claims that neoliberal processes during the 'Global Transformation' from 1975 to 2008 caused the global economy to become 'disembedded' from society, as 'financiers and neo-liberal economists sought to create a global market economy based on competitiveness and individualism' (Standing, 2011 [2016], p. 26).

Through a neoclassical and formalist approach, WIL intends to bring economic benefits. Yet it has been shown to diminish labour and employment standards; can create barriers to work, as only the students who can afford to engage in low paid work can become involved; and makes the job market barrier harder to crack, by forcing over-competitiveness in junior roles (Perlin, 2011; Stewart & Owens, 2013). Furthermore, some studies conclude that there is no direct association between WIL and improving students' knowledge (Knechel & Snowball, 1987). For instance, Hauck et al. (2000), who examined construction management students' performance in regards to grade point averages, found no statistically significant increase in academic performance among the surveyed undergraduates who had undertaken WIL. This is similar to the field of accounting where cadetships can also occur as shown by Myring et al. (2005), who

found no variance between WIL and non-WIL Grade Point Averages (GPA). The majority of undergraduates who had participated in some sort of WIL increased by little more than one per cent, which was judged statistically insignificant. To help explain this apparent contradiction in existing WIL programs, Lingard's research (2007; 2012) shows that construction students participating in WIL sacrifice time at university for their work, causing higher rates of burnout, which potentially undermines their academic capacity and performance.

These holes in the prevailing human capital agenda are consistent with the contradictions inherent in neoliberalism. Methodical individualism, formalist approaches and other presuppositions in the free market have been coordinated through the political process, resulting in global frameworks and policies that are incomplete and ineffective. In many cases, achieve the opposite of their intended outcome (Stilwell, 2014). As the rest of this literature review shows, with its strong conceptual roots in neoclassical human capital theory, WIL in the construction cadetship is a clear example of such a case.

2.3 WIL in Australia

The right to education has been enshrined in the Universal Declaration of Human Rights, adopted by the United Nations General Assembly on 10 December 1948. This right is also recognised in other international instruments, such as the International Covenant on Economic, Social and Cultural Rights (ICESCR) which was adopted by the UN General Assembly in 1966. Signatory countries are obligated to recognise the right of everyone to free compulsory primary education and ensure access for all children to secondary and higher education without discrimination. Australia is one of these countries, but has not formally adopted a bill of human rights with an enshrined right to education. However, agreeing with these rights, in essence, means that governments must take steps to ensure free and compulsory access to education; provide accessible educational materials in all languages used by students; ensure non-discriminatory access to quality education for all regardless of gender, race or disability status; and guarantee a safe learning environment (Tomasevski, 2006; 2008).

These pressures that are shaping global WIL are also felt in Australia, by students, organisations, institutions and governments. The literature generally describes WIL in Australia as having been shaped by a conglomerate of industry reform, higher education providers, governmental policy, as well as associations and bodies. The next section of the literature review outlines some of the key factors that have formalised WIL, specifically in the modern Australian context. It highlights that while Australian WIL shares some similarities to global WIL, especially in the adoption of

the employability agenda, there are also some economic, ideological and social factors related to the cost of living, university fees and Australian cultural norms that make Australian WIL unique. Indeed, the investment in undertaking a degree in Australia is substantial and in the midst of stagnating wages, rising costs of living and increasing student-loan interest rates, these costs, footed by students, are changing the way that study in Australia is occurring (Moore, 2020).

Australian students are enrolling in higher education at some of the highest rates in history according to recent Department of Education (DOE) data (DOE, 2022). The most recent Australian census data shows that approximately 1.1 million people were engaged in higher education or similar study (ABS, 2017b, 2022a). The Australian Bureau of Statistics (ABS) also shows that Australian universities are facing decade high rates of local enrolment across most demographics, and especially for women. For the first time, there were 100,000 more Australian women starting a degree in 2022, compared to Australian men. In 2016, 45 per cent of young Australians between 20 to 24 years old were engaged in study, and numbers appear to be steadily increasing post-pandemic (ABS, 2017b, 2022a).

Meanwhile, Australian universities are charging local bachelor students annual fees of between $4,000 to $14,000 average, while these costs can treble for international students (Kniest, 2014; ATO, 2021; Playdon, 2017), substantially increasing their risk of indebtedness to profit-oriented banks. Coupled with the profit-oriented nature of Australian universities and Australian educational programmes generally, students experience a double whammy. While this unravelling of educational crises is often deemed an American problem (Baum, 2017), the most recent Australian Taxation Office (ATO) data show this problem is, perhaps, just as significant in Australia. In the US, the median debt level is about 28,000 (Baum, 2017) and, in Australia, the average outstanding debt from higher education is $23,685 per student (ATO, 2021). Nationally, however, the current Australian Higher Education Loan Program debt is over $68.7 billion, and nearly 300,000 past students of Australian universities owe between $50,000 to $100,000 each, with increasingly severe indexation (ATO, 2021). These fees, although not always outright, make Australia one of the most expensive countries in the world to study (Kniest, 2014).

The financial realities and educational landscape have created a predicament where many, if not most, Australian students are forced to work while studying (Stewart & Owens, 2013; Stewart et al., 2021). Alongside the upfront cost of education, Australian students also face rising cost of living expenses at unprecedented levels and high rental costs, especially in major Australian cities (Moore, 2020). Australia has the second highest household debt/GDP ratio in

the world, fast increasing at unsustainable rates (Rosewarne, 2020, p 31). It is these wider economic pressures that also help govern Australian students' decisions to participate in specific WIL programs, and focus on choosing universities and degrees that have high levels of employability (Moore, 2020). Claims in the literature and media that the expenses associated with study are forcing students into the workplace while studying are also backed by ABS data. For instance, the 2009-10 Survey of Income and Housing (ABS, 2013) showed that the main income for three out of five higher education students was a wage or salary. There are numerous more recent studies (see, for example, Grant-Smith & McDonald, 2016; Lingard, 2012; Moore, 2020) that document undergraduate students pressured to work while studying, often achieved in their chosen field of study. These students can experience significant levels of precarity, especially international students where Morris et al. (2022) found around one in twenty were extremely precarious and one in five were highly precarious.

Australian universities have created a profitable market for education. Australian education is considered the third largest contributor to the country's GDP. Like any OECD country, the Australian government invest heavily. Government funding per student, which continues to be greater than ever, has risen 42 per cent in real terms between 2008 and 2018 (Doyle, 2017; Hurley & Van Dyke, 2020). Before the Covid pandemic, the revenues of Australian universities were at all-time highs as data from Universities-Australia shows; the total operating revenue of all universities in 2014 was $27.1 billion, up almost 50 per cent from 2004, and by 2016 that figure was as high as $30 billion (Doyle, 2017). Modelling published in 2020 showed that Australian universities would face a cumulative loss of $10 to $19 billion from 2020 to 2023, as a result of decreased international student enrolment. Yet the current reality for universities back pocket is less than clear. In response, mass redundancies across the higher education sector occurred through the Covid pandemic, as Australian universities attempted to soften the blow of lower expected revenue generated by fewer international students (Cahill, 2021; Moore, 2020). Yet even after the pandemic that was expected to cripple the Australian higher education industry (Owens et al., 2022), university enrolments remain at record levels, at least in terms of local enrolments (ABS, 2022a).

Even after Covid-19, business appears to still be good for Australian universities and, total revenue is now over $38.9 billion, with some universities recording record surpluses where, for instance the University of Sydney recorded a surplus of $1 billion in 2021 (Cassidy, 2023.) Meanwhile, as the recent ATO data shows, and studies by Morris et al. significant costs remain for students investing in their own education (ATO, 2021). Morris (et al. 2022) show in 2020 during the lockdown, the number of extremely precarious students doubled to 11 per cent, and

nearly 30 per cent of students studied were deemed highly precarious, totalling 40 per cent. This was a significant increase from 2019, where only about a quarter of students were in these categories.

Australian universities face increasingly globalised and changing markets and must adapt. Since, the neoliberal framework, with what Bridgstock (2009) attributes to economic challenges from snowballing globalisation and technological development, the restructuring has influenced the curriculums of entire degrees (Bath et al., 2004), in favour of a competency-based education that provides a clear outline to employers of the widely generic, employable and 'practical' skills students have attained during their degrees (Hager & Holland, 2007). On an institutional level, one major influence here is that Australian universities are facing significant pressures from industry and the state to adapt to skill shortages amid recorded levels of employment (Moore, 2020). Australian universities have responded to frameworks endorsed by governments through the incorporation of graduate attributes, employability skills and, particularly, WIL into the curriculum of degrees, in an attempt to help graduates enhance employability after graduation and meet these skill shortages (Wang et al., 2017). Specifically, requirements of a professionalised workforce and a demand for job-ready graduates has seen Australian universities adapt their curricula to cater for students working more while studying (see for example, Department of Education, 2000; OECD, 2004). So, much of the recent advances in Australian WIL are in the context of a pressurised environment, where higher education reform through governmental frameworks and industry funded reports attempt to meet labour market shortages by imbedding immediate and seemingly necessary industry needs into educational curriculum.

The neoliberal Australian state has played a pivotal role in these issues, where interventions like privatisation, deregulation of the labour market and anti-union policy have created a setting of reduced collective bargaining power and fostered the individualisation of the employment relationship (Cahill & Humphrys, 2019; Cahill et al., 2018). While neoliberal hegemony in Australia was brought about by the Labor Party, the Howard Government continued and potentially worsened that trend through 1996 to 2005, mainly via the Workplace Relations Act 1996 (Rimmer, 1997), then followed by the radical but short-lived 'Work Choices' legislation of 2005 (Cahill, 2021; Cahill et al., 2018). Then in 2009, the Rudd Government introduced the now relevant Fair Work Act (Fair Work Act 2009, Cth).

Workplace competencies have been rebranded to suit national education policy, justified under the argument that generic work-ready, or employability, competencies should be paired with

existing traditional broad-based and skill-specific education curricula. Key competencies and graduate attributes, based on global workplace competencies (OECD, 2001), were introduced by successive Federal Labor Governments from 1983 to 1996, as a response to the criticism that labour in Australia was not adequately multiskilled or adaptable and had lost its international competitiveness (Hager & Holland, 2007). This was originally in the form of the 1992 Key Competencies Framework submitted by the Mayer committee, but has since had revisions for reconsideration in the 2002 Employability Skills Framework, which more strongly proposes recommendations to ensure education meets industry need. Significantly, it also encourages universities to better accommodate WIL (Curtis & McKenzie, 2001). Essentially an enhancement of the 1992 Key Competencies Framework (Comyn, 2005), the Employability Skills Framework reworked eight main competencies, including communication, teamwork, problem-solving, self-management, planning and organising, technology, lifelong learning, and initiative and enterprise, as necessary attributes graduates should have (Cleary et al., 2007).

The institutionalisation and imbedding of these skills as the employability agenda in Australian higher education continued to be supported by industry bodies and associations throughout the 2000s. For instance, in 2007, a report by the Business Industry and Higher Education Collaboration Council (BIHECC), stated that, '... industry representatives are satisfied with the technical or discipline-specific skills of graduates but for some there is a perception that employability skills are underdeveloped' (BIHECC, 2007, p. 2). The report also stated that employers believed WIL to be important in order to establish industry connections. In this report, relevant businesses and industry groups claimed they were prepared to work with universities, students and accrediting bodies to pursue the provision of work-related experiences for undergraduates to better achieve these goals.

The Australian Learning and Teaching Council set out to conduct the first large-scale national research on WIL (Patrick et al., 2008), with the goal of mapping the increasing prevalence of WIL in modern Australian higher education. It asserts that universities should play the primary role in promoting and strengthening WIL experiences, and so curricula must be modified to meet industry needs. Similarly, Barnett (2000) notes that universities have a decent amount of responsibility in meeting industrial expectations. Barnett argues that a university's curriculum is a 'mix of dimensions and elements embedded in such media as … increasing academic and employer discussions' (Barnett 2000, p. 259).

Professional associations are a significant driving factor in the reform of curriculums to include WIL, by incentivising their own accreditation of courses which can include work experience

(Patrick et al. 2008). According to research by Patil and Codner (2007), competitive pressures on universities owing to internationalisation and globalisation are increasing the complexity of accreditations for Australian engineering degrees. A course is accredited by a rigorous procedure based on a national quality assurance system and standardised qualifications, and Australian universities are aggressively pursuing legitimacy through accreditation by modifying their curricula to meet the requirements of such professional organisations (Patil & Codner, 2007). These changes may include a requirement that graduates have worked for a certain number of days, weeks or years in their field.

In Australia, the Fair Work Act 2009 (Cth) currently leaves those participating in unpaid WIL arrangements with limited representation. As per this law, students who undertake vocational placements as a mandatory part of their formal education are not considered as national system employees. Consequently, they are not eligible for any national or industry-specific employee benefits (Chen et al., 2015). However, if the work is carried out outside the scope of an educational course, the Fair Work Act 2009 (Cth) recognises them as regular employees, thereby entitling them to minimum pay and conditions. Under this premise, construction cadets, in the context of this study, are not strictly engaged in a vocational placement, so should be entitled to receive at least the minimum wage and industry-specific employee benefits.

The Fair Work Ombudsman offered further clarification on this matter by asserting the relationship between employer and employee should be 'mutually beneficial', and that this was critical in assessing the legal and ethical legitimacy of WIL. 'Mutually beneficial', in this context, means that the employee is benefited through remuneration and/or structured relevant education, while the business benefits through an employee who is expected to turn up to work between set hours (Stewart & Owens, 2013; Stewart et al., 2021).

A clear distinction made by Stewart and Owens (2013) and Stewart et al. (2021) is that the conditions of employment vary, depending on whether the employment is paid or not paid. Those who are not paid for their work should be receiving a well-structured, coherent education that is beneficial and relevant to their field in return for their work, deeming the relationship to be mutually beneficial. Furthermore, in this role, the person should not be undertaking work that is directly beneficial to the success of the company; if they do, they are entitled to be reasonably financially remunerated. One interpretation of the principle is that those who are entering into a form of WIL but are being paid, are not necessarily entitled to a well-structured, coherent education that is beneficial and relevant to their field, as the relationship is already deemed to be mutually beneficial by the current Australian law.

More recently, others point out that the employability agenda in higher education represents the unhealthiest element of educational policy, based on half-baked conceptual foundations that encourages educational curriculum in Australia to orient towards an unadulterated utilitarian conception. Developments in how Australian universities have rebalanced their business models to cater for the Covid-19 economic slump may have further degraded tertiary approaches to teaching and impacted WIL. The Economist (The Economist, 2020), for example, has argued that universities across the developed world, particularly those dependant on international revenue, like most major Australian universities, will need to adapt their methods of teaching and reinvent how their services allow students to grow their human capital. One part of these changes may include an increase in online learning and a wider re-imagining of the undergraduate experience off campus, especially through WIL. Australian universities have even experimented with online based WIL (Bowen, 2020; Quinn et al., 2019). This further push for WIL hegemony, even in an online setting, shows that it is unlikely that the academic sector will turn away from encouraging or requiring WIL, as governments and industry continue the pressure on producing work-ready graduates.

While these competencies can be interpreted to be useful broad life skills, educators, pedagogical theorists and Australian researchers have qualms with the notion that, rather than outsourcing learning to organisations, these competencies can also be easily learnt in the duration of a degree, accumulated, and then transferred from situation to situation as needed (Crawford et al., 2023; Elkjaer, 2003; Hager, 2004). Indeed, a purely utilitarian conception of education would signify the end of a traditional broad-based education (Baptiste, 2001; Matherly & Tillman, 2015). As Comyn (2005) points out, fundamentally these frameworks reduce the curriculum and that which is considered to be of value in universities, to something that is objectively and empirically measured. Indeed Australia's current employability skills and graduate outcomes are a far cry from the skills of self-reflection and critical awareness that critical pedagogics contend should be a fundamental element of education (Arora, 2015; Freire, 1970; hooks, [1994] 2014).

The Australian government's endorsement of reports that impact educational policy and curriculum has contributed to the high level of student participation in WIL in the country. For instance, in 2021, the Education Minister initiated a policy-driven approach to encourage higher education in STEM subjects, with extra Commonwealth funding provided for those participating in STEM-based WIL. The National Priorities and Industry Linkage Fund was allocated $900 million in June 2021. This fund aims to motivate universities to produce graduates who are ready for the workforce and meet the needs of local businesses and employers.

Meanwhile, another significant recent example of the growing WIL influence on industry endorsed by the Australian state is the recently scrapped PaTH program in the 2016-17 national budget. The PaTH program sought to increase WIL placements by 30,000 in the first year, by offering financial incentives for firms to take on interns (Commonweath of Australia, 2016). The policy outlined that businesses be given $1000 for taking on an intern at up to 25 hours a week, and receive another $6,500 to $10,000 if they eventually employ the intern. Meanwhile, the intern receives $200 per week, or as low as approximately $8 per hour, in a context where minimum wage is nearly three times that (Fair Work Act 2009, Cth). The policy fielded criticism in the media and literature for breaching minimum wage standards and neglecting the educational component of WIL; it was accused of being an industry subsidy, rather than an employment or educational policy (Edwards, 2016; Jericho, 2017; Moore, 2020). The scheme struggled to meet 90 per cent of its targets, and 24 months later, only 3,652 young people found continued work after completing their internship (Triple j, 2020). Some Australian businesses took on multiple interns; for instance, Senate estimates inquiries, legislation and media (Cth, 2017; Medhora, 2019) shows that some businesses used up to 48 interns, while another business took on 17 interns without formally hiring any after their placements. Some businesses were noted in Senate estimates hearings as having shed their interns after 2 days.

A study by Grant-Smith & McDonald (2016) critically examines the trend of increasing professional work experience for Australian young planners and asks if WIL is 'essential experience' or 'essentially exploitation'. The study provides insight into newly graduated planners' expectations and experiences and considers the impact of WIL on graduate entry into the workforce. Grant-Smith & McDonald (2016) discovered, similarly to Nagarajan & Edwards (2015), that a primary motivator of student engagement in WIL is a growing desire for an early career and to distinguish themselves in a competitive work environment. The research also examines the role of industry groups in reconciling the competing goals of creating 'work-ready' graduates and protecting the working circumstances of early career planning professionals (Grant-Smith & McDonald 2016).

Clearly, human capital informed Australian policy that sells WIL workers to businesses has flaws. These examples of WIL workers being exploited by businesses in state-funded programs shows the nature of how neoclassical human capital informed policy can lead to a commodified education. It more broadly demonstrates how WIL policy, founded on a neoclassical human capital ideology and without proper support networks, can also fail educational requirements and creates inequality. WIL workers are not afforded the same working conditions, because the business is footing the bill for the investment in human capital through the 'education' during

the WIL. So logically, these costs should either be subsidised by the state or be passed onto the worker via diminished wages and conditions or, in the case of PaTH, both. These unintended results of policy also serve as an example of how working conditions can erode and inequality can thrive, when a reserve army of WIL workers is guaranteed by policy. The assumption by the Australian government and industry that WIL is 'costing' businesses, so should therefore be subsidised, sets a precedent for the treatment of those in WIL across all industries, and may lead to a negative influence on wider educational and labour practices. This view disregards the notion that WIL exists to help businesses be profitable, while costing workers their time.

2.4 WIL in Australian construction

Australian WIL programs in construction, like the construction cadetship, are a result of this economic theory and also spurred on via governmental policy, university adoption, and other specific industry-driven market forces. There is significant involvement from other stakeholders in this process too. So now, literature that gives context to WIL in the Australian construction industry is considered, before refining the literature to focus specifically on WIL programs in Australian construction, and specifically, construction students in the construction cadetship.

The Australian construction industry is Australia's third largest industry, both in terms of value and employment (ABS, 2019). The industry contributes approximately eight per cent to the nation's GDP and employs at least 1.1 million people. Closer inspection of these figures shows that approximately 60 per cent of the 338,000 construction firms act as sole operators, while approximately only 1.4 per cent of construction businesses employ over 20 people (Toth et al., 2015). Yet, it is this minority of large companies which dominate the market share and thereby dictate how other construction companies must perform. Contrary to the dominant views in mainstream (construction) economics that these firms are merely price takers, they are, indeed, price givers. Thus, they can change both prices and the structure of the price system. These 1.4 per cent of Australian construction businesses are oligopolies (Rothschild, 1947). As oligopolies of construction and construction culture, they act as a catalyst for what will be considered standard labour practice in the industry. This is particularly relevant to the WIL, and specifically, to the cadetship experience, as these companies utilise cadets to reinforce their labour force, thus creating a norm the rest of the industry must abide by to remain competitive.

The small number of Australian construction contractors that employ over 20 people rely on WIL for business as usual. They either employ WIL workers directly, or indirectly by subcontracting to organisations and trades that use WIL labour (Forsythe, 2012). Indeed cadets are typically

neglected in the literature; instead other forms of WIL, like apprentices and trainees, are more commonly the focus, likely because they comprise a much larger part of the workforce. In May 2016, there were 188,600 apprentices or trainees (ABS, 2016). Comparably, as many as 16 Australian institutions may offer construction degrees, but there has been little study into exact figures of participation (Moore & Loosemore, 2014). Data reviewed in this literature review shows there could be as many as 7,000 construction students across Australia, using recent enrolment data from varying admission centres and ABS data (ABS, 2021, 2022a, 2022b). In Loosemore's study of nearly 400 construction students nationally, it was found that 83.2 per cent of the students surveyed were in paid employment and over one-third of students were working for head contractors as cadets (Loosemore et al., 2020b; Moore & Loosemore, 2014).

The aim and the WIL instrument that could be used within an Australian head contracting organisation is partially dependent on the form of the organisation and the type of work the workers carry out within the organisation. For instance, in Fordist organisations, workers have narrow job descriptions, repetitive tasks and very restricted autonomy (Fuller et al., 2004; Fuller & Unwin, 2009). The workers in Fordist organisations do jobs that can be learnt quickly, and the organisation of work provides no possibility of certification, promotion or learning. Learning components within these organisations are generally limited to loyalty, reliability and compliance. This may be the case within certain construction companies that do repetitive low-skilled work; however, due to the nature of building, construction organisations are not purely Fordist, and rather can be classified through Fullers' view as high-performance work organisations (Fuller et al., 2004; Fuller & Unwin, 2009). On the other hand, as Braverman (1974) and others have demonstrated, high-performance organisations maximise the involvement of workers' skills and knowledge in how the labour is structured (Fuller et al., 2004). In high-performance organisations, technical aspects, teamworking, communication and problem-solving skills are essential, so human capital development in these types of organisations tends to be identified as a continuous process of acquiring consistent experience over the course of the person's employment within the organisation (Fuller et al., 2004).

The neoliberal organisations involved in WIL continue to increase the standardisation of work tasks. The measurement and monitoring that started with Fordism and Taylorism have been exacerbated by financialisation within the working realm, and concepts of shareholder pressure have resulted in increasing intensity and pressure for workers. For instance, Thompson (2013) cites a number of recent studies that show how reducing staff levels has led to the intensification of performance management and control by employers. Thompson makes the direct connection that employers are attempting to get more for less in order to achieve shareholder value goals,

utilising flexible, diverse and non-standard forms of employment to demarcate new lines of external and internal labour markets. Thompson, however, does not go so far as to connect the findings to a drive to extract surplus value, and the erosion of workers' conditions, which are structural forces inherent in the current mode of production.

For Australian construction companies that are high-performance work organisations, workers can be rotated between jobs and multi skilling is practised, to ensure that workers are competent in a range of varied tasks. Workers in head contracting organisations integrate into small self-managed project-based teams to take control over aspects of the design and construction process, requiring them to become proficient at decision-making and problem-solving across numerous disciplines and areas of expertise. Therefore, a high-performance Australian head contracting construction organisation should have a WIL program that increases the opportunities for learning and skill acquisition in a multidisciplinary way, with continued and increasing supported exposure to tasks that help build technical, teamworking, communication and problem-solving ability. Whether this beneficial WIL learning opportunity is actually occurring for construction cadets is unknown.

Meanwhile trade unions, which are often at odds with the construction industry, have historically and continue to have significant responsibility in supporting the institutionalisation of WIL. In the Australian setting, there has been a strong history of unionism being used to shape, improve and collectively bargain for better working conditions for students in WIL. Historically, unions have acted to prevent the individual worker selling his labour at a price below its value (Kwai-Sim et al. 2010). More recently, unions are adapting to support white-collar employees and further, a study by Bateson (2013) noted that some unions were even using internships themselves to supplement their own workforce. However, Schwartz (2013), affirmed by Perlin (2011) and Standing (2011 [2016]), claims that the development of white-collar unionism, collectivisation and class struggle has generally not extended to include those in WIL. Perlin's (2011) notion is that students, while working full-time jobs, still consider themselves to be students and see their employment as an 'educational experience' or 'networking opportunity' (Schwartz, 2013, p. 44). The conclusion drawn from this is that if workers do not see themselves as workers, then they are unlikely to dynamically collectivise to gain better workers' rights and entitlements (Choi et al., 2013). Generally, it appears that construction unions have limited documented involvement in institutionalising WIL (Nagarajan and Edwards, 2015).

Australian construction unions have already identified serious existing labour relations problems within the industry. For instance, the Construction Forestry Maritime Mining and Energy Union (CFMMEU), Australia's main trade union in building and construction published a report in 2011 that claimed 'sham contracting' was an extensive issue across all levels of the construction industry. Sham contracting is where employment obligations, like payroll tax, workers compensation and superannuation, are systematically ignored under informal contractor arrangements, rather than adequate full-time employment. The report notes;

> on the basis of official figures it can be estimated that the number of sham contracting arrangements in the construction industry as at November 2010, was between 92,000 and 168,000. This represents between 26 to 46 per cent of all independent contractors in the industry. These are conservative estimates. Anecdotal evidence and industry experience suggest the real figure is much higher … Major contractors in the Australian construction industry have been complicit in the practice of sham contracting for many years by either deliberately ignoring it or actively promoting it. (CFMMEU, 2011 p. 38)

The major contractors that the union references directly employ cadets. The union notes that sham contracting is highly illegal, undermines employment conditions, and undermines the Fair Work Act 2009 (Cth 2009). Overall, the report demonstrates how unions are already aware of unfair and exploitative employment as being rampant within the Australian construction industry; so unions, especially the CFMEU and other allied unions, should be prepared for these dishonest and illegal employment practices to extend to WIL workers.

Bateson (2013) observes that several unions utilise internships to bolster their own workforce, which should suggest that unions promote WIL. However, it appears that professional groups, associations, and unions in the construction industry have limited documented involvement in institutionalising WIL (Nagarajan and Edwards 2015). Specifically, there is a dearth of research demonstrating the role of unions or groups in establishing or sponsoring construction cadetships. This could be due to cultural stigmas associated with unions or a lack of cadet awareness of such programs, as was the case in a study of physics interns in Australian institutions conducted by Choi et al. (2013). If construction cadets are protected by a particular union, the extent to which they utilise this protection warrants additional investigation. Without union representation or independent professional help, construction cadets lack the organisational structures necessary to collectively represent themselves.

Patrick et al. (2008) investigated the frequency and character of WIL in Australia and introduced the role of professional bodies and associations in constructing WIL. Many of the participants in

this study stated that WIL should be addressed more closely by professional organisations and associations, in order to establish sustainable and supportive frameworks. To do this, professional bodies and associations could engage in joint research on how to best integrate WIL into curricula and promote 'equitable participation and access for all students by developing WIL funding structures, policies, and strategic approaches' (Patrick et al. 2008, p. 1).

Meanwhile, Ward and Dugger suggest the importance of accrediting standards and accrediting bodies for engineering and construction education programs. They stated,

> ‘an objective of accreditation, no matter what the academic discipline, is to ensure that certain predetermined sets of standards that have been established by the particular profession are being followed ... Accrediting bodies address the need to establish program benchmarks such as student admission requirements, retention, scholastic success and graduate placement data. While not directly affecting the discipline development, the collection and analysis of these data, where appropriate, play a key role in ensuring that the needs of industry as well as students and society are being met.’ (Ward & Dugger, 2002, p. 3)

Based on this, the relevant professional bodies and associations should be involved in establishing program benchmarks to ensure that the needs of the construction industry, as well as cadets are being met. Indeed, professional bodies and associations have historically had influence on the institutionalisation of the cadetship. For instance, the MBA requires 4 years of study in order to be able to receive credit for a builder’s licence. This has meant many building degrees in Australia over the past 40 years have been structured into 4-year degrees. The Australian Institute of Building (AIB) also promote WIL due to on-site experience as part of requirements for a builder’s licence. Meanwhile, the Australian Institute of Building (AIB), Australian Institute of Project Management (AIPM), The Royal Institution of Chartered Surveyors (RICS) and others commonly accrediting construction management degrees appear to have had limited historical involvement in structuring and supporting WIL, and rather most accreditations are related to curriculum, but are not recommended or enforced.

Specifically, the UTS Bachelor of Construction project management course is accredited by the following bodies: the AIB, Project Management Institute (PMI), Australian Institute of Quantity Surveyors (AIQS) and the RICS (UTS Handbook, 2023). The course is also recognised by the Chartered Institute of Building (CIOB) and endorsed by the Australian Institute of Project Management (AIPM). The course has pathways to organisations like NAWIC, who also support students, via scholarships for women to study and work in construction. Indeed, there are also

a number of industry-based scholarships where students are able to secure pathways into cadetships via academic scholarships, paid cash stipends, and guaranteed paid employment. Students are encouraged to engage with professional bodies, as student members, to access resources that will assist with studies. Some of these associations provide free student membership for BCPM students (UTS Handbook, 2023).

Yet the extent to which these aforementioned professional bodies play in structuring, regulating and mediating the construction cadetship is unclear. For instance, the RICS has an educational development plan that is based on competence for employers to gain accreditation; however, that development plan is not mandated nor has it been documented to be applied to the Australian industry or BCPM program. Furthermore, the RICS educational development plan does not include the working conditions for construction students, wages or recommended structure of WIL, and only outlines competencies.

The mounting neoliberal influence of human capital theory on the education curriculum is disintegrating the sovereignty of higher education facilities and its students (Brady, 2012). As Smolders notes, 'In response to Government demand-driven funding, Construction Management programs are being urged to adopt a pedagogy to ensure students are "job ready"' (Smolders et al., 2021 p. 13). UTS has one of the few remaining construction degrees in the country to enforce WIL as part of the construction undergraduate degree on offer. Other universities across Australia have had periods of compulsory WIL, but many have watered these down over the past decade. For instance, the University of New South Wales (UNSW) course recently removed mandated WIL requirements and integrated work placement into the degree (see table 2.1). This power shift away from university to industry is substantiated by the notion that to ensure students become efficient workers, the marketplace should dictate their education. The situation thereby forces extrinsic outcomes on universities that offer construction degrees to orient their curricula towards career development and employability. Many scholars have pointed out that reconstructing the 'higher moral purpose' of universities (Brady, 2012, p. 343) is unlikely in the current political climate, because the university plays a fundamental role in the wider political and socioeconomic system that has also been splintered by neoliberalism. The sharp rise in the number of vocational courses and the fuel of student in WIL can be understood within these neoliberal confines (Cahill, 2021).

From the standpoint of Australian construction undergraduate programs, there are two types of research involving WIL. One is in favour of integrating WIL into universities as a reaction to industry-driven demands for graduate skills, while the other is sceptical of these alterations. Numerous institutions have sought to positively respond to industry constraints by building graduate qualities and revising curricula (McLennan & Keating, 2008), which ideally involve cooperation with certified organisations to form mandatory and organised WIL (Cannon & Arnold, 1998). One example is the significant amount of research related to better imbedding modern construction skills and knowledge in fields of digital construction, building information modelling (BIM) and digital engineering (DE), which generally claims graduates are not meeting industry expectation and are lacking (Alieh et al., 2021; Hosseini et al., 2021).

On a national scale, the current general employment circumstances of cadets are reflective of only a small minority of students, that is, only three to four per cent of students in Australia are studying full-time and working full-time (ABS, 2017a). A comprehensive analysis of the curricula and course handbooks of all Australian universities in table 2.1 below shows that, as of 2022, 19 universities in Australia offer full-time undergraduate degrees in construction or related fields, catering to as many as 7,000 domestic and international students. A minimum of 14 of these universities mandate work placements, preferably WIL, as a graduation requirement for construction students. Based on total data of all admission centres from around the country, it implies that roughly 5,000 construction students participate in WIL each year.

Table 2.1: Australian construction degrees or degrees in project management with majors in construction or similar

University:	Is work experience required?	Specific Requirements:	Handbook and course details
UTS	Required	200 days	https://www.uts.edu.au/study/find-a-course/bachelor-construction-project-management
UNSW	Required and integrated	80 days or 560 hours	https://www.unsw.edu.au/study/undergraduate/bachelor-of-construction-management-and-property?studentType=Domestic
WSU	Required	1200 hours (150 days @ 8hours)	https://www.westernsydney.edu.au/future/study/courses/undergraduate/bachelor-of-construction-management-honours

UNA	Required	16 weeks	https://www.newcastle.edu.au/degrees/bachelor-of-construction-management-building-honours
Swinburne	Required and integrated	4 semesters (electives)	https://www.swinburne.edu.au/study/course/international/bachelor-of-digital-construction-management/
USYD	Recommended	0	https://www.sydney.edu.au/courses/courses/uc/bachelor-of-project-management0.html
RMIT	Recommended	0	https://www.rmit.edu.au/study-with-us/levels-of-study/undergraduate-study/honours-degrees/bachelor-of-applied-science-construction-management-honours-bh114
Deakin	Recommended and integrated	1 core unit in WIL	https://www.deakin.edu.au/course/bachelor-construction-management-honours-bachelor-property-and-real-estate
VU	Recommended	12 weeks (Elective)	https://www.vu.edu.au/courses/bachelor-of-construction-management-honours-nhcm
MU	Recommended	0 Design Construction major	https://edsc.unimelb.edu.au/course-planning/sample-course-plans/construction
AISI	Required	WIL or capstone project in simulated work environment	https://aisi.edu.au/courses/building-construction/bachelor-of-construction-management-honours/
CQU	Required	480 hours or 12 weeks	https://www.cqu.edu.au/courses/bachelor-of-engineering-honours-civil-construction-and-diploma-of-construction-management
QUT	Required	30 days as part of WIL core unit	https://www.qut.edu.au/courses/bachelor-of-urban-development-honours-construction-management
Griffith	required	40 credit point WIL; total work placement 442 hours.	https://www.griffith.edu.au/study/degrees/bachelor-of-construction-management-honours-1598
BOND	recommended	0	https://bond.edu.au/program/bachelor-construction-management-and-quantity-surveying
USQ	Required	60 days	https://www.unisq.edu.au/study/degrees/bachelor-of-construction-honours/construction-management & https://www.unisq.edu.au/course/synopses/2022/ENG4909.html
Uni of SA	Required	60 days or 450 hours	https://study.unisa.edu.au/degrees/bachelor-of-construction-management
Curtin	Required	80 days	https://www.curtin.edu.au/study/offering/course-ug-bachelor-of-applied-science-construction-management--b-conm/?segment=dom&gclid=Cj0KCQjwteOaBhDuARIsADBqRehZW3g0H7u-tLbDkd4u2bZgVvEqPS_DNO-zQpL-
UC	Required	60 days	https://www.canberra.edu.au/course/ABB101/1/2023

According to the extensive review of handbook data in table 2.1, there are six universities in NSW that offer a construction management degree or related course. These are UTS, University of New South Wales (UNSW), The University of Sydney (USYD), University of Newcastle Australia (UNA), and Western Sydney University (WSU). In the ACT, University of Canberra offers a construction degree. Based on a review of course literature from these universities, course expectations and WIL requirements can be wide-ranging. For instance, some universities outline that industry experience is a compulsory requirement in order to graduate with a bachelor degree, while other institutions do not require any industry experience. UTS has the most significant requirements, where in the second year, most students begin cadetships and must work part-time or full-time for the final two years of their degree, to complete the minimum 200 days industry WIL requirement (UTS Handbook 2023). According to handbook records, WIL has been involved in the UTS construction degree as far back as the course's inception in the 1970s. As noted in the most current UTS Handbook:

> The Construction Project Management course comprises a 4-year full-time degree with a part-time option. Students have flexibility to change from full-time to part-time and vice versa during the course. This enables students to undertake industry employment during the course. The course has a strong culture of collaborative education with students obtaining industry experience concurrently with their studies … Students are required to accumulate a total of 200 days of relevant industry experience prior to graduation. Students are required to organise this themselves – most students achieve this through paid employment including cadetships. (UTS Handbook, 2023 pp. 2-12).

Specific policy, structures or guidelines from universities, governments or professional associations, guaranteeing consistent and quality-driven integrated, collaborative and structured learning in the cadetship, are lacking or non-existent in the literature. The UTS Handbook, along with many other university handbooks (especially NSW universities), requires students to organise their WIL themselves (see, for example, Canberra, Newcastle, Western Sydney, and UTS 2023 handbooks). Limited support in cadetship acquisition and pay structures means that the 'integration', structure and format of academic learning is being decided upon by the individual firm (Forsythe, 2012; Smolders et al., 2021). Given that some major employers of cadets are national contractors, the daily activities and the nature of work completed by cadets across different states can indeed share parallels. In this milieu, construction cadetships in Australia do appear to be unstructured and inconsistent and, unlike construction apprenticeships, conditions of work vary due to a reflection of industry requirements and dissimilar university curriculums (Campbell et al., 2021; Lingard, 2012).

The continued existence of the cadetship in construction higher education can potentially be attributed to students' understanding of industry's expectations, compulsory university requirements, economic pressures (Torres-Machí et al., 2012) and the general lessening of the quality of degrees, due to commercial criteria being used to restructure higher education (Stilwell, 2003a; Stilwell, 2003b). Indeed, these pressures are also maintained by added force from professional bodies and organisations that accredit construction degrees; for instance, the MBA will only license if that person can demonstrate four years of study in related fields. Therefore, many universities offering construction degrees pride themselves on meeting these high standards. As many senior managers would have likely been exposed to WIL in their own careers, the cadetship has a historical basis of being used by industry as a means to address these issues. In this sense, the cadetship is a standard stepping stone to graduate from university and to receive recognition from within industry as a practical and able graduate, transforming the role to a rite of passage.

The drive that students must have to pursue WIL, can be partly explained by the 2015 research of IT graduates by Nagarajan and Edwards, who contextualise situational knowledge and situated learning within the context of WIL students. The results of the study indicated that graduates' conceptions of learning at work were distinct from their conceptions of learning at university. Nagarajan and Edwards cite additional reasons why graduates participate in WIL, including a 'personal duty to build their own professional skills' (Nagarajan and Edwards, 2015, p.34). According to the findings of this research, undergraduates can seek WIL because they are aware of what is required of them upon entering the profession and want to remain competitive.

Positive work relationships, the ability to learn on the job, and a company that is passionate about its work are the top three most essential workplace attributes for university students in construction courses, according to a poll of 160 undergraduates from 26 foreign institutions (Sedighi & Loosemore, 2012). Construction students appreciate and understand that the best way they can acquire these benefits is through WIL, while they are also aware that WIL can provide other important career-centred perks. Construction students can see their WIL as beneficial for self-development (Grant-Smith & McDonald, 2016), offering industry connections, potential permanent placement with the sponsoring companies, clarification of career choices, and an increase in self-esteem. Students appear to understand that effective WIL also offers other competitive advantages and provides them a chance to test the water before committing to the profession.

The validity of the claim by construction firms that graduates are lacking practical ability is disputed, raising doubts on the sincerity of firms in peddling WIL. The concept that engineering and construction undergraduates are inadequately equipped for the workforce was first articulated in 1986 (Hite & Bellizzi, 1986), and later examined in respect to construction graduates by Tener (1996). Regarding construction students, Davies et al. (1999)'s study titled Employers' Expectations of the Performance of Construction Graduates examined the notion that graduates lack practical skills. Comparing employers' anecdotal claims to a systemic examination of how and if expectations were satisfied by graduates, the study indicated that construction graduates are not so ill-prepared for the workplace as anecdotal evidence would suggest' (Davies et al., 1999, p. 194), based on data indicating that graduates are actually meeting and exceeding their employer's competence evaluation. This was more recently expanded on by a study conducted in Ghana (Ayarkwa et al., 2011). In this study, Ayarkwa et al. discovered disparities between employer expectations and the practical building knowledge and problem-solving skills of construction graduates. Nonetheless, the construction graduates questioned exceeded their employers' expectations in areas such as IT literacy, communication skills and interpersonal skills, indicating that the inability to meet expected graduate performance may be limited to certain 'specific nontechnical skill requirements' (Ayarkwa et al., 2011, p. 201).

According to Smolders et al. (2021), WIL activities in construction tertiary education originated from industry-led initiatives and do not come under any organised WIL program offered or supported by Australian institutions or professional bodies. While there are emerging frameworks being used to review, explore and benchmark WIL in construction management, greater research is needed to develop specific instruments to ensure quality WIL across institutions that teach and enforce construction-related WIL (Campbell et al., 2021). This is a significant downfall and goes against what is prescribed in the literature as best practice for WIL. The following Table 1 summarises the existing papers that address WIL in construction education in chronological order. The table has been adapted from Smolders et al. (2021), but is also supplemented by some key 'cadetship' literature that was neglected by Smoulders et al. in their recent publication. This body of work is complex because while there is little continuity between states, some major employers of cadets are national contractors, so the daily activities and the nature of work completed by cadets across different states can indeed share parallels.

Table 2.2: Summary of WIL in Australian construction literature

Study	Purpose	Method	Key Findings
Williamson (2008)	To study WIL's contribution in an architectural and construction degree.	Evaluation of reports submitted by students and construction companies based at Queensland University of Technology, Australia.	Agreements exist between the student and employer that identify the primary areas of work experience needed for competence. Some participants have a misconception of the program's objectives, but students generally view the curriculum favourably.
Simmons et al. (2010)	To examine the incorporation of employability skills and practical abilities of construction management and nursing students into an online portfolio platform.	Australia's Newcastle University analysed skills and competencies from a variety of construction accreditations.	The integration of an academic program with WIL skills and competences enables construction students to graduate as competent 'professionals' in their respective fields. The development of students' ethical conduct, team communication, and occupational health and safety practices can be aided by this WIL.
Mills, McLaughlin, and Davis (2011)	To examine the attitude of employers towards assessing cadetships and internships.	Semi-structured pilot interviews followed by focus group of WIL employers in Australia.	The project-based nature of the Australian construction industry presents WIL-related problems or obstacles.
Smith, Mills (2012)	To understand working habits of construction students.	Surveys to examine construction student working hours and pressures of work-university conflict.	Students were working at extremely high rates and more can be done to improve support networks.
Forsythe (2012)	Students in construction management frequently combine work with their studies. To emphasise the possible benefits to students of this experience.	Literature review.	The study proposes a means of enabling and supporting WIL via a structured student-industry network.
Bronkhorst (2013)	To aid in the preparation of civil engineering students for employment.	Activity Theory and case study.	Knowledge and practice gaps exist in WIL in construction. This study argues that universities have a role to play to help to close the gap.
Hardie and Saha (2015)	To comprehend how the culture and practices of the construction industry may pose a resource problem for academics who facilitate WIL programs.	Records of 360 student outcomes over seven years at Western Sydney University.	Impact of WIL in construction management on academic achievement and other educational criteria is inadequately defined in the literature. It remains to be seen what WIL impacts have on construction management

			students in terms of improving their academic performance.
Mutereko and Wedekind (2016)	WIL may have lasting and complex effects on students. Assess a new construction program without WIL.	Semi-structured interviews were conducted with students.	In its present state, WIL does not appear to prepare graduates for the workforce. Employers utilise it either to get more inexpensive labour or as a recruiting method.
Gesa Ruge & Coralie McCormack (2017)	Reframing assessment for learning and skills development of employability skills in construction students.	Reflective practice-based methodology using student data.	Construction student employability skills can be facilitated through discipline-based curriculum design linking university and industry. There should be clear integration of work-based learning settings and assessments with particular characteristics. Recommends scaffolded assessment for a constructive, explicit, and reflective education that helps students build general and professional abilities.
Gillett-Swan and Grant-Smith (2018)	To examine the influence of WIL on the quality of life of students.	The WIL wellbeing conceptual model is developed and applied as a methodology to assess the impact of WIL outside the educational context.	The WIL wellbeing conceptual model underlines the importance of refining a mix of individual coping methods, formal policy, and informal institutional support in construction curriculum.
Quinn et al. (2019)	To assess the adoption of online (virtual) WIL site visits for students enrolled in entirely online courses.	The modelling and simulation of business processes using immersive learning, graphics and student input/feedback.	Blending virtual tours and activities with individual on-site visits and evaluation gives students WIL experience that is authentic, supportive, and constructively aligned.
John Smolders et at. (2021)	To document a Certificate of Practice as a means for Western Sydney University construction students to verify their successful WIL achievements and to enable greater engagement with industry.	Case study of CoP implementation though online portal building on Forsythe (2012) online WIL tool.	This research finds the CoP is a novel strategy for a construction management undergraduate curriculum that promotes a cultural transition from the typical WIL-based approach to practice-based construction education.

Alongside the WIL and pedagogically focused literature on construction students, there is a growing body of studies that document and seek to understand how construction students are managing their education and work-life-balance (WLB) (Borg & Turner, 2016; Lingard et al., 2021; Loosemore et al., 2020b; Mills et al., 2012; Moore & Loosemore, 2014; Turner et al., 2017; Turner et al., 2019). Burnout as a poor WLB is a significant issue to address as it can be a predecessor to other mental health problems, causing students to drop out of their studies,

leave their jobs (Vickers et al., 2003), and can, in turn, lead to broader economic and social problems. Burnout of construction students engaging in WIL should be seen as particularly problematic, given that mental health issues remain relatively unaddressed and stigmatised in the wider Australian construction industry (Turner et al., 2017).

These studies suggest that over the past two decades, Australian construction students face burning out at extreme levels due to work-life and work-life-study stressors (Lingard, 2007, 2012; Lingard et al., 2007). Literature that examines construction students working in industry often uses an adapted version of the well-respected Maslach Burnout Inventory model (Lingard, 2015). The research shows that construction students feel emotional exhaustion, lack of personal accomplishment and cynicism at high levels, even at rates higher than national and international averages (Lingard et al., 2007). These three factors culminate in student burnout and are inversely related to school readiness and academic performance, further damaging the chance of increasing students' human capital through WIL (Lingard, 2007; Lingard et al., 2007; Markel & Frone, 1998; Moore & Loosemore, 2014). Of the construction students in work, half reported working four or more days per week, while one-fifth of students were working more than 40 hours per week above the recommended hours set by Fair Work Australia (Fair Work Act 2009, Cth). This is also confirmed in published research linked to this thesis.

The Australian construction students involved in these studies related to burnout generally did not indicate that WIL workers were successfully balancing work and study. The continued literature, over nearly two decades, highlights that there are fundamental issues with this type of working form. Indeed, it appears that any progress in the past decades from industry bodies, employers and universities to improve the mental wellbeing of construction students has been unproductive, potentially due to the 'ignorance of the problem, a lack of initiatives, or poorly designed initiatives' (Moore & Loosemore, 2014, p. 1073). It is imperative to identify the reasons and effects of burnout in construction students, as research shows that it has negative consequences for an individual's wellbeing (see, for example, Cotton et al., 2002; Humphrey & McCarthy, 1998; Robotham & Julian, 2006).

2.5 Gaps in the literature and research focus

This literature review thus far examines the research topic in varying levels of abstractions. It first established a critical history of neoclassical economics human capital theory, which has been foundational in shaping the climate for WIL programs globally. Under the philosophy of

methodical individualism, entrepreneurial and competitive decision-making, to weigh up the cost of an education against its ROI, WIL is making education apolitical, immoral and not rooted in any philosophical or ethical codes. Yet, student uptake of WIL is currently at record levels of adoption across all industries and developed economies; students are now sacrificing fair remuneration and standard employment relationships to achieve an education through WIL.

WIL is especially common in construction, both on-site and in offices. Through refining the scale of abstraction, the literature review has eventually outlined key studies within the construction WIL literature. These key existing studies do not specifically define the cadetship, but tend to agree that WIL in construction education is missing some important elements. One key finding here is a lack of a predominantly industry-driven nature. The WIL literature on Australian construction shows cadetships are programs that can be unstructured, exhausting, ineffective, and with limited university or other stakeholder participation. The cadet burnout literature shows there are serious implementation problems for students, related to the nature and culture of construction that make this WIL especially complex. Indeed, the current literature shows the cadetship does not align with pedagogical requirements for effective WIL, as outlined in key and prominent WIL framework and guides.

In Australian construction, neoclassical economics human capital theory has been especially prominent, as neoliberal governments, institutions and organisations support the employability agenda and other graduate ready initiatives and schemes (Yarrow, 2022). Construction in Australia already has significant problems in how it currently supports and treats workers, especially apprentices and other WIL workers. The literature shows how these problems have roots in a culture that, through a male supremacy view (Galea & Jardine, 2021), ignores gender exploitation, racial exploitation and other forms of discrimination. Construction students may very well be facing the brunt of these cultural problems, given they are especially burnt out, overwhelmed with apparently little university, union, or professional body support (Smolders et al., 2021). There are wide-ranging gaps in understanding the experiences of the construction student demographic, particularly within substantive economic approaches. More generally, construction students' WIL is a topic that has been left understudied, compared to apprentices and other WIL programs. In line with the dialectical analytical framework used in this thesis, the gaps related to cadetships can be grouped into two distinct fields: education and labour.

2.5.1 Education gaps

Firstly, there are education-related gaps. These gaps are predominately centred on the notion identified in the literature review that universities, professional associations and unions have

provided inadequate guidance, in terms of educational frameworks, learning competencies, specific skills or guidelines, for the practical implementation of the cadetship program. This lack of stakeholder involvement contradicts recommendations in WIL literature and indicates that cadetships are informally acquired, unstructured and unregulated in Australia (Forsythe, 2012). So, further research is needed to assess the extent of informality, and the consequences of informality in terms of how learning occurs. Industry appears to be the foremost party structuring the learning involved in this WIL, but the gap between best practice and theory also needs scrutiny. Indeed, no qualitative research exists that examines the learning impacts of cadetships. While the existing research into Australian building students shows they are prone to burnout as a reflection of poor work-life-study balance (WLSB), there is little research that seeks to understand why burnout and poor mental health is common, nor is there deep examination of specific learning techniques used by businesses to train construction students, while they are at work within the construction industry as cadets.

Wider educational impacts and student experience related to the cadetship are also not completely understood in the existing literature. There is a paucity of research that considers the age and/or life stage of cadets and how the educational requirements involved in their WIL affect other cultural, social and academic activities, although these areas have recently received scrutiny (Carnemolla & Galea, 2021). For example, burnout-related research neither seeks to quantify students' academic performance nor establish a relationship between WIL and burnout. Therefore, it is uncertain whether time commitments to paid jobs, work-university conflict, and/or exhaustion have a negative impact on formal academic learning, or other equally important soft skills. It is important for future research to identify questions related to why student burnout exists, through relying on existing measures of burnout; but also by following a more holistic approach to understanding the direct and indirect social, political and economic effects on students, as a result of their paid WIL labour in a commodified education.

A number of publications from academics who teach construction students have attempted to understand how their students participate in WIL in recent years, especially at The University of Melbourne, Western Sydney University, Newcastle University, Canberra University and Queensland University of Technology. However, UTS has limited recent publications that seek to understand how their students experience and participate in WIL, even though the university promotes the most significant WIL requirements of any construction degree in Australia. Indeed, none of these studies involving any Australian universities take a critical pedagogical perspective in their assessment of construction-based WIL; they generally remain in the technical realms of

assessing and understanding WIL in relation to online learning, project management, BIM or quantity surveying fields. None use a critical pedagogy in their analysis of educational outcomes.

2.5.2 Labour gaps

Labour-related impacts of WIL on individuals are typically disregarded in the literature, possibly because students and researchers tend to see participants in WIL programs as students and not employees. This rationale has traditionally been applied to all of the cadetship literature reviewed, where construction students have always been characterised as students. Cadetships can provide several challenges for construction students, as the labour-related research shows through measures of burnout. As observed in the range of studies, including feminist research, there are still critical unsolved concerns about how the WIL interface may be leading to Australian construction students burning out and dropping out at such a high rate, and how this impacts the industry's economic capacity, productivity and culture. Other gaps highlight the need to understand and review practical working experiences, in order to comprehend irregularities of benefits based on the intersections of identities among construction students. No research has yet attempted to examine these effects (Zhang et al., 2021).

Due to the lack of literature detailing specific policy or structures from universities, governments or professional associations, employment conditions, remuneration structures and other nuances of the employment of cadets appear to be decided upon by the individual firm (Smolders et al., 2021). The rationale for the cadetship has existed for as long as building degrees in Australia have existed, and so many current construction industry leaders started their own careers as cadets. But there is also little literature that contends with how this industry-driven WIL has addressed or improved the claims of industry 'image problems', graduate incompetence, or a lack of fee-earning skills upon graduation.

Baptiste (2001), on the other hand, has identified gaps in the manifestations of human capital theory to educational programs and how these labour experiences can lead to wider economic inequities. The strong presence of the employability agenda in publications understanding contemporary industry-driven WIL programs in Australian higher education also brings into question the need for alternative and competing political economic studies, to help shed light on the complexities of WIL. Indeed, a political-economic-WIL framework should be especially clear that students, when engaged in WIL, are indeed workers. So, when understanding how they experience WIL and the benefits of it, labour-related impacts, like working conditions, wage theft, precarity and burnout, are equally important as the learning impacts.

2.6 Research focus and conclusion

Over the last two decades, the literature on WIL has developed and expanded as an academic discipline, becoming more visible and stronger (Lester & Costley, 2010; Rowe & Zegwaard, 2017). At the same time, there are still gaps. While there is a conviction in the overall good of WIL, issues like inequality, precarity, access and wage theft still pose obstacles for students. Gaps have been identified in areas related to understanding cadetship impacts in terms of education and labour. Key and pressing unanswered questions remain to demonstrate and illustrate the real-world nature of the WIL relationships, explain them, and provide alternative pathways if and where necessary. The two key research questions of this thesis that have been informed by existing literature and previously noted gaps, are:

> *1. How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?*
>
> *2. How do these impacts shape the political economy of the construction cadetship?*

To fill gaps, answer these questions, and to contribute to a deeper understanding of the cadetship, this literature review has drawn on laterally relevant literature from different domains to expand on the issue. In doing so, it has opened up new pathways for transdisciplinary study and theory, which can help to strengthen the empirical and theoretical foundations of WIL in the construction industry. Modern WIL, like construction cadetships, is supposed to be educational, regulated collaboratively by all stakeholders, with the proper recognition of the interests of all parties through clear and consistent agreements, structures and planning (Flesher et al., 1996; Orrell, 2004).

In some cases, especially in health and education fields, WIL arrangements can successfully meet these criteria and are a functional tripartite relationship (Stewart & Owens, 2013). However, literature also suggests that WIL workers are young people in insecure working arrangements, accompanied by minimal collectivism with limited social and legal protections. So, as a form of non-standard labour, WIL workers could be classified as part of the precariat, to use Guy Standing's (2011 [2016]) conception of precarious work. Indeed, recent media reports and research have documented young people's complaints of wage theft, exclusion, lack of recognition and poor edification during their WIL programs in built environment fields (Chesters & Cuervo, 2019; Han, 2015; Lewchuk, 2017; Rodino-Colocino & Berberick, 2015; Tweedie & Ting, 2018). More systematic research on Australian construction students' work experiences, shows they are a cohort extremely susceptible to mental health issues and burnout issues (Lingard, 2007, 2012; H. C. Lingard et al., 2007; Moore & Loosemore, 2014). There have been calls to

investigate the causes of construction student burnout and poor mental health in more depth (Lingard, 2007, 2012; Lingard et al., 2021).

There are also gaps in existing literature related to understanding the impact of modern working relations and expectations of new labour in an increasingly competitive job market. There are few studies that document conditions for the many young individuals that must participate in WIL in Australian construction. There are even fewer studies that contend with the structural forces WIL workers face that mediate their social relations which govern the mode of production, the gendered, racial and cultural issues that can be passed down to new labour through an uncritical education, or any class-based analysis. Further research is needed, not only on the benefits and negative impacts to students involved in cadetships in terms of education, but also to examine whether the current systems are not just a masked attempt at accessing a larger, cheaper, inexperienced and fragmented workforce. Contradictions of how the labour and educational purposes of WIL are poised in the current mode of production are complex in their own right. Therefore, using dialectics, as outlined in the next chapter, to view the way these two concepts interact with one another can help bridge some of these gaps and to create a deeper understanding of the problem.

Chapter 2 has provided a critical analysis of the existing literature, highlighting the significant influence of the neoclassical human capital approach on the recent surge in WIL and the implications of this theory, along with other neoliberal advancements, on pedagogical theory, higher education structure, and social and economic development. The chapter disputes the neoclassical human capital theory approach to education. The chapter examines the literature that sheds light on systemic exploitation in the construction industry, particularly on the basis of gender and race, and demonstrates how this disproportionate exploitation may affect cadets as they navigate this industry. The chapter then identified holes in the existing literature, particularly with regard to research on construction cadets. These gaps highlight the need for additional research to better understand the experiences and challenges encountered by cadets in the construction industry, contributing to a more nuanced understanding of WIL in this context.

Chapter 3: Political-Economic-WIL Theoretical Framework for the Cadetship

3.1 Key concepts and their operationalisation

How to address the questions that emerge from the literature is an arduous task. Tim Anderson (2004), one of the leading Australian Political economists, points out how a dialectical synthesis of theories within a political economic approach can be useful to answer a wide range of questions, due to the added range and dynamism. He claims that there is a 'need to provide an effective critique of orthodox economics, to inform social resistance, to help reconceptualise socioeconomic problems and to construct a relevant economic pedagogy' (Anderson 2004, p. 136). One way is to construct such a model for classroom teaching (Stilwell & Thornton, 2022; Obeng-Odoom, 2017; 2019; 2020; Stilwell, 2011) but, ultimately, a much wider framework that links the classroom to work and industry is needed to address the research questions for this thesis. Anderson claims that a political economic methodology for achieving such, is not only a viable theoretical framework for understanding problems around labour and education, but also, a necessary and practical one.

A political economic approach to research has three practical considerations that must be weighed (Anderson, 2004). Firstly, according to Anderson's Method in Political Economy, the analysis must address what orthodox economics does not. Secondly, neoclassical economics remains orthodox because it supports the ruling hegemony; meanwhile, research within political economy addresses broader social concerns, social movements and resistance struggles outside of the orthodoxy. Hence, the approach used in this research to understand impacts of the cadetship is borne out of the existing literature, theories underpinning the present economic structure and implementation of WIL. Thirdly, political economic research should attempt to develop some form of coherent views of economic and social questions; in the case of this research, the work contends with the neoclassical concept of human capital as justification for all WIL. As Dunn (2004) shows, a political economic approach can be useful in the case of the cadetship, as it is useful to help understand the complexities of the construction industry, as well as demystify and, indeed, more holistically reassess certain neoclassical economic assumptions.

Based on Anderson's proposition, this chapter incorporates a number of political economic theories and develops these ideas into a theoretical framework that sets the basis for a novel and holistic analysis of the cadetship in Chapter 6. The framework extends the orthodox theories

related to WIL, education and work, by constructing a political-economic-WIL framework. The framework is constructed through the next sections. It's aim is to provide a theoretical basis for the approach and analysis of the data in Chapters 5 and 6. By building on existing WIL frameworks to develop a novel political-economic-WIL framework, this thesis aims to be adductive in that it furthers the analytical depth and broaden ethical, social and broader philosophical debates within broader WIL research, and especially within studies of construction-based WIL (Baptiste, 2001; Dubois & Gadde, 2002; Awuzie & McDermott, 2017).

This chapter also draws on ideas surrounding class structure and reproduction from neo-Marxist, Erik Olin Wright (Wright, 1976; 1980; 1996; 2005). To help address more specific aspects of the data, like how learning occurs in organisations and groups, as well as how cultural factors can impact learning, the framework is also informed by Activity Theory, Communities of Practice, and the Zone of Proximal learning (Vygotsky, 1980; Wenger, 1999). The dialectical synthesis of these theories (Benson, 1977) into the framework, provides the basis for a holistic and dialectical consideration of individual cadet experiences, the firm's organisational structures, the interplay of mediating factors which govern cadets' motivation to learn, and the structural social, political and economic conditions that fundamentally govern the way the cadetship is practised and experienced.

The philosophical basis and economic assumptions of political economy used within this chapter differ from mainstream approaches in many ways. Generally, the split between mainstream economics and this political economic approach comes down to deeper philosophical arguments over how the economy should be managed and measured. Another heterodox assumption used in this thesis, is how the experiences of WIL workers involves structural and institutional power imbalances, driven by capitalist firms attempting to maximise their extraction of surplus value from labour, and the social consequences of that process in the urban economy (Obeng-Odoom, 2016b, pp. 55-80). The supposition of social classes, particularly a neo-Marxist perception of class, using a theory of contradictory locations within class distinctions (Wright, 1976, 1980, 1996, 2005), is also a central assumption in the framework. Critical pedagogy theories, are useful this WIL framework in that they recognise the centrality of class and prescribe the tools for developing and instilling a critical consciousness in students. These tools are required for WIL workers to critically understand their own situation within the dichotomy between an oppressed and oppressor (Freire, 1970) and to be able to interpret the intersections of these dynamics as part of their learning at work.

3.1.2 Three pillars

Right at the onset, it is critical to clarify the concepts that make up the theoretical framework for this thesis. Outlining and defining these terms plainly, in the context of the research aims, should help the reader to better understand the whole meaning and context of this work. Clarifying the use of particular terminology is important here, because some of the relevant ideas and terminology have different applications across different fields and can conflict with terminology in other fields. Outlining how these concepts have been considered and used by the researcher in the framework will be helpful for giving context how the framework has been applied to the data, piloted in chapter 6 of this thesis. The framework outline below also informs methodological approach in order to use data and observations to materially analyse the cadetship, developed later in Chapter 4.

Key theoretical perspectives are outlined below, grouped into three key areas: critical pedagogy, intersectionality and historical materialism. Across these central pillars of the political-economy-WIL framework, other influences from Gramsci and Polanyian social economic theories are synthesised. Their selection is justified not only because of the limitations of orthodoxy but also because of their well-established and documented (see, for example Jim Stanford 2017; 2022; Stilwell & Thornton, 2022) potential to understand and change the interactions between education, work, industry, and life broadly.

Historical materialism

Broadly speaking, Marxism, or historical materialism, is the 'theory of international working-class revolution' (Bramble, 2015, p. 1) and proposes that the historic and current economic, political and class relations are crucial during analysis of the relations, conditions and systems under capitalism. The historical materialism used in this thesis is fundamentally based on Marx's social critique that, 'not only that any given society had to be understood in terms of the determinate relationships between living human beings (his theory's materialism), but that the temporally-specific arrangement of social relations of production shaped the entire society in which they dominated (its historicism)' (Humphrys, 2018, p. 3).

Historical materialism is a philosophical and scientific approach to understanding systems of human socioeconomic reproduction using two key analytical criteria, including (1) the forces of production and (2) the social relations of production. The combination of these criteria shapes the mode of production. Historical materialism has been used in this thesis as synonymous with Marxism as a scientific method. The relations of production or specifically, social relations of production, are the social relationships and interactions that people must enter into to survive,

to produce, and to reproduce their means of life. In the case of cadets, construction students must consistently enter into WIL employment relationships; they face social relations which force them to participate in WIL. These actions create a 'legal and political superstructure and to which correspond definite forms of social consciousness' (Marx, 1995 [1859] p 2). These social relations, 'are on the one hand prerequisites, on the other hand results and creations of the capitalist process of production; they are produced and reproduced by it' (Marx, 1992 [1894]).

While the social relations of production are limited to human relationships, the productive forces of society consist of the physical and material production processes and technology that labour uses during work. These include the tools, machinery and the level of knowledge of the society. The forces of production are a key factor in determining the nature and efficiency of the production process and can vary across different economic systems and historical periods. For example, in a capitalist economy, the forces of production are typically owned and controlled by private individuals or corporations and are used to maximise profits and increase competitiveness. Combining the forces of production and social relations of production in a dialectical unity results in Marx's conception of the mode of production (Marx, 1995 [1867] p. 180). The mode of production is theorised as the economic base of society. A capitalist mode of production is therefore the fundamental social relations and forces of production, which define the current system of social power as a capitalist system. The mode of production does not just rely on an economic relation; because it is comprised of social relations of production, it also refers to all of the social levels, including political and ideological relations of power (Carter, 2022). According to Marx in Capital, Volume 3:

> At a certain stage of development, the material productive forces of society come into conflict with the existing relations of production or – this merely expresses the same thing in legal terms – with the property relations within the framework of which they have operated hitherto. From form of development of the productive forces these relations turn into fetters. Then begins an era of social revolution. The changes in the economic foundation lead sooner or later to the transformation of the whole immense superstructure … In broad outline, the Asiatic, ancient, feudal, and modern bourgeois modes of production may be designated as epochs marking progress in the economic development of society. The bourgeois relations of production are the last antagonistic form of the social process of production – antagonistic not in the sense of individual antagonism but of an antagonism that emanates from the individuals' social conditions of existence – but the productive forces developing within bourgeois society create also

the material conditions for a solution of this antagonism. (Marx, 1992 [1894], pp. 264-266)

Depicted below in Figure 3 are the broad stages or modes of production of human society that Marx outlined in The Communist Manifesto (1992 [1848]). Through a historical materialist view of social history, these modes of production, or economic epochs represent human history, beginning with the hunting and gathering mode, the slave mode, the feudal mode, the capitalist mode, and eventually a post-capitalist classless society.

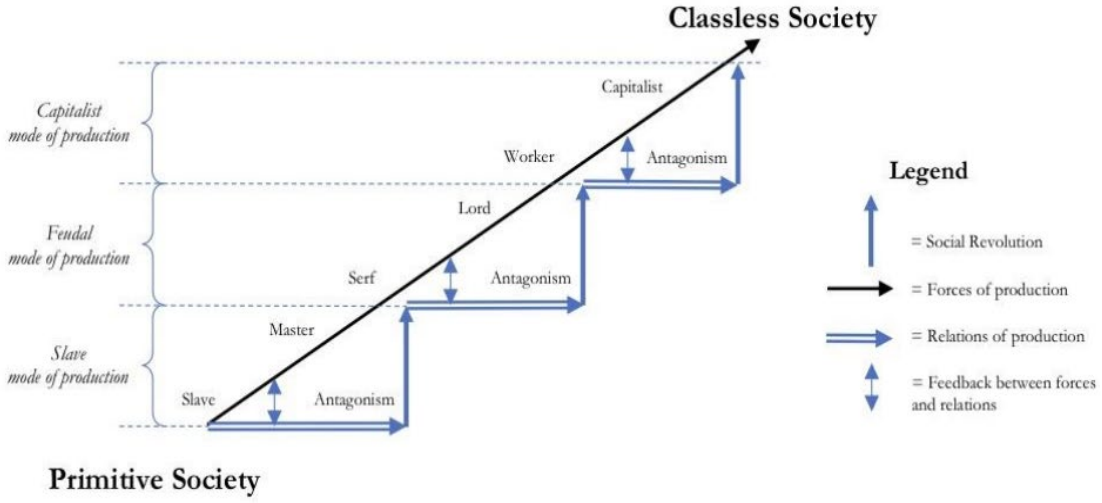


Figure 3: Marx's historical materialist view of social history

From Kunzmann, Burkard and Wiedmann (2011); Carter (2022) p 8.

Critical pedagogy

Pedagogy of the Oppressed (Freire, 1970) is considered a foundational text in critical pedagogy, popularised in the Global West during the 1980s. Since that time, Freire has been a major theoretical and practical influence on debates related to progressivism, social justice, radical praxis through critical education (Gadotti, 1996; hooks, [1994] 2014). Including Freirean theories in the theoretical framework of this thesis allows the research to be better directed towards existing conceptualised notions of pedagogy and provides a basis for the critical understanding of what constitutes effective WIL and how students' integrated learning at work can be more effectively supported and encouraged. When applying Freire, researchers warn of avoiding the hard to penetrate philosophical components of Freire's work, only using a fetishism of method (Aronowitz, 1993). Avoiding the philosophical component of critical pedagogy can lead full circle back to mainstream and non-critical educational practices (Holst, 2019). Hence, wary of these

warnings within existing literature, this framework pays careful attention to the notion that critical pedagogy cannot be separated from its Marxism.

Freire's critical pedagogy is built on a historical materialist presumption that everything is related through dialectics. According to Au (2007), this Freirean version of dialectics is systematic and scientific. For instance, Freire explains that this dialectical learning process is a natural part of our humanism:

> What we do when we try to establish a cognitive or epistemological relationship with the object to be known, when we get it into our hands, grasp it, and begin to ask ourselves about it, what we really begin to do is to take it as a totality. We then begin to split it into its constituent parts … In a certain moment, even though we may not have exhausted the process of splitting the object, we try to understand it now in its totality. We try to retotalize the totality which we split! The moment of summarizing has to do with this effort of retotalizing the totality we divided into parts. (Shor & Freire, 1987, p. 161)

For Freire, learning and developing critical consciousness should happen simultaneously. This learning process occurs through a dialectical progression of breaking things down into related parts and then 'retotalizing' them to synthesise a more complex, systematic understanding of a particular concept, phenomena or skill, while also situating oneself and broader society in relation to the phenomena (Au, 2007; Freire, 1970; Holst, 2019).

Intersectionality

There are limited contributions from Marx on the oppression of women (Gimenez, 2005). Yet there is still value in the methodological and theoretical concepts with respect to gender issues because they help reveal the limitations that capitalism poses to feminist politics. As Gimenez notes, 'as long as capitalism remains the dominant mode of production, it is impossible to fully understand the forces that oppress women and shape the relations between men and women without grounding the analysis in Marx's work.' (Gimenez, 2005, pp. 11-12). With this in mind, historical materialism acts as a framework pillar for understanding gender within this research. There is, however, significant value bringing this together with critical race theories (CRT) and feminist theories in order to pave a deeper intersectional understanding of race, gender, class and other social identity into the political-economic-WIL framework. Therefore, intersectionality as the third key pillar of this framework is utilised to consider both CRT concepts and feminist concepts, in a way which is in strong alignment with both critical pedagogy and historical materialism.

Intersectionality is an instrument for understanding how aspects of a person's social and political identities like gender, race, class, age, sexuality or ability, combine to create different modes of discrimination and privilege. The term was first coined by Crenshaw in a 1989 paper titled *Demarginalising the Intersection of Race and Sex: A Black Feminist Critique of Antidiscrimination Doctrine, Feminist Theory, and Antiracist Politics* and later developed in *Mapping the margins: Intersectionality, identity politics, and violence against women of color* (Crenshaw, 2013 [1991]). The intersectional framework challenges single-axis thinking, which considers forms of oppression as separate and independent from each other, and argues that various biological, social, cultural, racial and gender categories interact on multiple levels, giving clearer insight into systemic injustice and social inequality (Crenshaw, 1989, 1991; hooks, 2004).

In this framework, intersectionality is used as a heuristic and analytical method, in a way that is grounded in Crenshaw's original proposition of the term. Intersectionality is used to consider intragroup differences related to cadets' gender, race and class, among other identities (Crenshaw, 1990), and has been broadened to also include 'social identities, power dynamics, legal and political systems, and discursive structures' (Carbado et al., 2013, p. 304). As, Crenshaw explains the significance of intersectionality;

> If any real efforts are to made to free Black people of the constraints and conditions that characterise racial subordination, then theories and strategies purporting to reflect Black community's needs must include an analysis of sexism and patriarch. Similarly, feminism must also include an analysis of race... (Crenshaw, 1989, p. 166)

The term 'gender' within the whole of this thesis involves the notion that the differences of gender in social economic and political aspects of life are not the result of biology alone, but are rather the result of social and economic relations that ascribe different roles, rights, responsibilities and obligations to performative and socially constructed gender roles. Gender concepts in this thesis align with Butler (2009), who argues that gender is not a fixed or inherent identity, but rather something that is constructed and performed through repeated actions and behaviours, in line with societal norms and expectations. Based on this definition of gender, Crenshaw's concept of intersectionality becomes even more a useful heuristic and analytical tool to consider. As Butler explains:

> …gender is in no way a stable identity or locus of agency from which various acts proceede; rather, it is an identity tenuously constituted in time- an identity instituted through a stylised repetition of acts (Butler, 1988, p. 519)

This perspective challenges the outdated binary view of gender and paves the way for more intersectional analysis of gender. Indeed, since Butlers' theories, the concept of a sexually dimorphic brain has been disproven, suggesting instead that human brains are comprised of unique overlapping arrangements of male-typical and female-typical features (Salinas-Quiroz & Sweder, 2023). This non-binary understanding of gender underscores the modern complex reality of gender and biology, moving away from dual categorisations and highlighting the diverse nature of a gender and biological sex spectrum (Richards et al., 2016).

As existing construction studies note, the specific beliefs, norms, organisations, behaviours, cultures and practices that govern structural gendered, racial, and other social relations can vary significantly based on industry and context (Galea & Jardine, 2021). In Australian construction, the social relations within the context of the industry are extremely male dominated, but also dominated by so called masculine ideals of toughness and with clearly stratified hierarchies around gender (see for example; Borg & Turner, 2016; Galea & Jardine, 2021; Lingard et al., 2021; Turner et al., 2017; Turner et al., 2019; Zhang et al., 2021). Therefore, using intersectionality to interpret these multifaceted aspects of the cadetship, provides a novel, but relevant examination of WIL in construction, adding to the discourses surrounding the representation and roles of minority construction workers, in terms of exclusion, precarity, representation (Workplace Gender Equality Agency, 2019), and hierarchy (Cassells & Duncan, 2020).

3.2 Dialectical paradigm

Dialectics is recognised as an epistemology and an ontology (Holst, 2019). The dialectics that sets the paradigm for the framework is interpreted in the Marxist, and therefore as a materialist, philosophy, with strong influence from critical pedagogical theorists, especially Freire and Gadotti. A dialectical understanding of a concept is based on the subjects' inner relations and therefore, it is the relational feature of the subject that defines its nature. This dialectic has roots in Hegel 's (1977) master and slave dialectic, that claims it is impossible to imagine a slave without considering the existence of a master. As Au describes:

> At the heart of dialectics is the idea that all 'things' are actually processes, that these processes are in constant motion, or development, and that this development is driven by the tension created by two interrelated opposites … two opposites [that] require each other to exist … A dialectical conception also sees a world as a layered, interrelated system, a totality, a chain of relationships and processes. (Au, 2007, p. 2)

In a context that Freire describes in Pedagogy of the Oppressed, a dialectical approach to the notion of poverty and wealth should start with the idea that these two concepts are internally related. That is, neither status can exist independently because these terms are relational to themselves. In a Freirean language, there are oppressed because there are oppressors. The nature of either group is dependent on the existence and the relation with the other (Holst, 2019).

The reference of dialectics within this thesis moves away from Hegel's version of dialectics, which were limited to the spirit, and builds on Marx's inversion of that idea. Freire's protégé, Gadotti (1996) discusses Marx's interpretation of dialectics in Pedagogy of Praxis (1996) and explains that for a pedagogy of praxis, dialectics can be guided by four principles. This thesis draws on numerous Marxian versions of dialectics; however, the following Freirean description is central to how the methodology, including the research questions, research design and methods, have been considered:

1. Totality, where everything is related.
2. Movement, in which everything is transformed and everything is considered within its future.
3. Qualitative change that is not reciprocal of the old, but rather qualitative changes through the accumulation of the new.
4. The essence of dialectics, the contradiction and unity in the struggle of opposites, only made possible by the transformation of things through the synchronisation of forces in their own interior and through simultaneously and continuously moving towards unity and opposition. It is not built on absurdity, but rather reality. (Gadotti, 1996, p. 60)

The two research questions of this thesis have been specifically designed with Gadotti's fourth principle in mind. To show this theoretical contribution clearly, the research questions has been visualised dialectically in Figure 4.

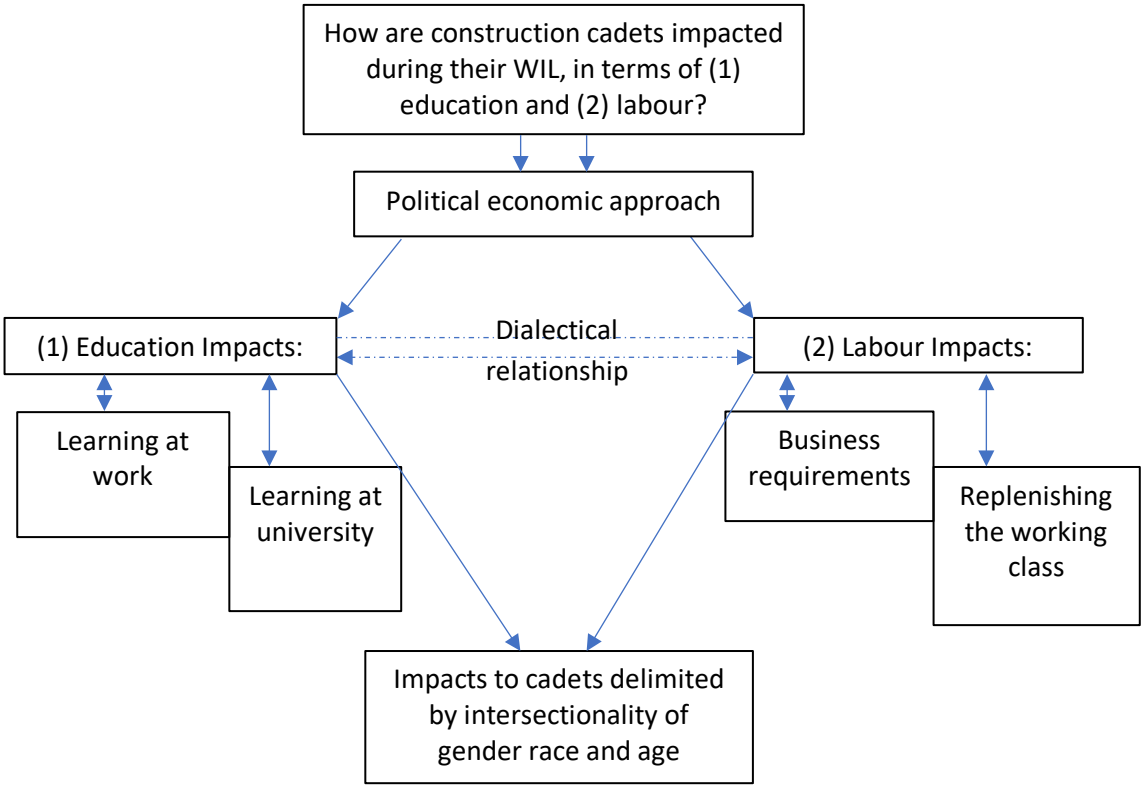


Figure 4: Approaching the research questions dialectically

Using a political economic approach to understand where the cadetship fits within the economic structure exposes the two dominant purposes embedded in the conception of the cadetship, and indeed in all WIL. These purposes have been derived from both a historical and structural theorising of WIL. That is, one purpose of the cadetship demands that the pedagogical outcomes of WIL must be achieved for the cadet to improve their human capital, thereby making the cadetship effective. Next, in order to be effective, the cadetship must also meet industry purposes to provide new labour power and, in the long term, replenish the workforce. Contradictions of how each of these purposes react to the structure are complex in their own right, and so using dialectics to view the way these two purposes can interact with one another or the broader economic system, can help to create a deeper understanding of the problem.

The visualisation in Figure 4 shows how the question requires analysis in two dialectical contexts. The first is related to assessing whether the cadetship impacts the students in terms of their learning at work, and how it may interact with the learning during the associated construction and building university degrees. The second concept involved in understanding the effectiveness of the WIL, internally conflicting with the learning component, is the industry purpose of WIL. 'Industry purpose' is seen as a concept that involves replenishing and developing the profession

as a form of labour. Identifying the relationship between the two inherent concepts within WIL as being dialectical, permits an ongoing material understanding and discussion of social conditions as 'reciprocally related, linked and materially determined' (Marx, 1965 [1845]). In terms of remaining material in the application of dialectics, the way in which data has been collected is dialectical. How the research methods use a dialectical approach is further developed in Chapter 4.

Figure 4 shows how framing the research questions by highlighting the opposing concepts inherent to WIL, and considering the material experiences of the cadets involved, allows the research questions to be approached in what Gadotti (1996) considers the essence of dialectics. That is, the research questions, within a political economic approach, can be viewed dialectically as it contends with two opposing ideas simultaneously: the educational purpose of WIL and the labour purpose of WIL. The relationship between education and labour is not seen as a rigid relationship, but one that is continuously shifting towards a synchronisation of forces moving towards agreement and conflict, forced by the contradictions of capital. The dialectical relationship between the learning impact and labour impact means that each notion should be considered in its own right, with its own characteristics, its own future and contradictions (Gadotti, 1996; Mao & Mao, 1990), or in summary:

> The material dialectic conception understands that in the study of the development of a phenomenon, one should start from its internal content and its relationships with other phenomena … Each phenomena will find itself in its movement, in connection and interaction with other phenomena which surround it. The fundamental cause for the development of phenomena is not external but internal: it is to be found in the contradicting which is inside the phenomena. (Mao, 1979, p. 32)

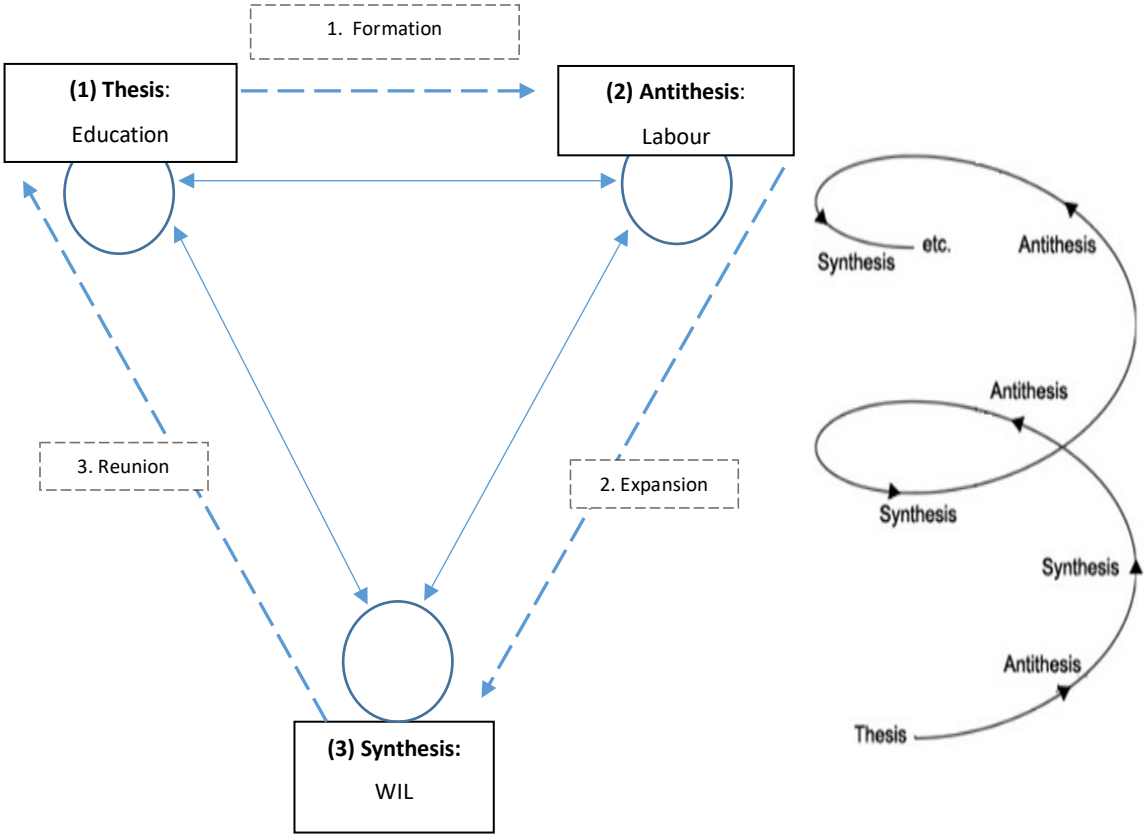


Figure 5: The essence of the dialectic inherent in WIL

Figure 5 demonstrates that a dialectical philosophy is in opposition to positivism, the individualist rational logic and methodical individualism (Gadotti, 1996). The fluidity, movement and internal contradictions of the dialectic fundamentally contradicts positivism, which claims things exist in isolation of each other and are analysed as if they are fixed in space and time (Au, 2007). Dialectics has a long and well-scrutinised history of being used as a social scientific method; yet as Gunnarsson (2020) notes, presently poststructuralism and the growing work in gender and postcolonial studies have usurped dialectics as the leading contending theoretical positioning to positivism.

Hence given cadets are merely working to improve their material standing through professionalisation, while being subject to extreme ideological indoctrination both within the workforce and within education institutions, applying the orthodox logic of workerism does not help to clarify or salvage the cadet's struggle when indeed, 'capitalism visibly antagonizes and produces revolutionaries among virtually all strata of society, particularly the young' (Bookchin, 1969).

Concepts of class raised without a historical materialist perspective tend to ignore the social relations of production in their analysis. Rather, class is considered in relation to income or job type, or incidence to precarity. In doing so, these non-Marxist definitions of class move away from a revolutionary narrative. This thesis develops the stance that it is indeed a more proactive labour strategy, to broaden outdated concepts based on current material realities in order to amplify Marxist political economy, in an era where Work Integrated Learning doesn't just blur, but melts the identity of a worker into thin air, reshaping them as a student and thus reshaping the very fabric of our current material realities.

3.2.1 Construction cadets and contradictory locations within class distinctions

The historical importance of 'classes' to Marxists is that they are foundational to the social and economic emancipatory goals of Marxism. In the context of identification, structure and the formation of social class, contemporary discussions have typically been centred on new working roles and how they serve the ideological and material development of advanced industrialised societies (Huber, 2022; Wuthnow & Shrum, 1983). The neoliberal era has seen an increase in tertiary education, therefore an educated, professional and wealthier working populace now exists. Some have referred to them as the professional- managerial-class (PMC) (Huber 2022). These university-educated workers share a number of similarities to the working class, in terms of their relationship to the means of production, yet do not always share the common economic or social interests of the working class given they can also assume managerial roles and act in the interest of capital.

To Marxists, classes are groups inherently connected to economic materiality and are therefore political and dynamic (Smith, 1987). Class relations and formation under capitalism embody the notion of historical materialism (Thompson, 1966) in that they are centred on the material result of a structure of exploitative social relations of production (Smith & Pun, 2018). In Capital, Marx clearly makes two distinctions in the notion of a class consciousness: a class in itself, as a class not yet conscious of itself; and a class for itself as a class, having attained consciousness of its social role (Marx, 1995 [1867]). Once a class has attained consciousness of its social role, it can begin to critically question and materially change its social role.

Dahrendorf's (1959) reading of Marx (1959) shows how the factors that make up class can be broken into three subcategories:

1. Firstly, there are common 'objective' factors, like the relationship the working class has with the means of production, and their opposition to the class who owns the means of production and who thereby controls the process of accumulation and profit maximisation. Here, the relationship to the means of production is known in the Marxist sense as the social relations of production.
2. Secondly, there are 'subjective' factors that define class structure, which include relational and dynamic class aspects.
3. Finally, there is the political subcategory, which is directly related to how members of the working class have shared perceptions of a common interest and consequently shared views of how that class should be organised to advance those common interests (Smith & Pun, 2018), otherwise described by Marx as class consciousness.

Given Dahrendorf's reading of Marx's simplified three component explanation of class formation, it is clear that neither philosopher was captivated with specific employment contracts nor individual roles of workers (Marx, 1995 [1867]). Hence, there are some valid criticisms that Marx's explanation is in fact too simple, particularly in the neoliberal era (Jacobs, 2003). A number of scholars have identified issues with analysing class as a rigid and traditional structure, and hence many have resorted to responding with new class theories with a stronger basis in Marxism (see, for example; Florida, 2004; Mallet, 1975; Standing, 2011, Huber, 2022).

Historically, there have been many attempts to reconfigure the notion of an oppressed working class or the proletariat, to adapt to the material reality of modernised economies, such as, the 'new working class' (Mallet, 1975), 'the new middle class' (Poulantzas & Fernbach, 1975), the 'creative class' (Florida, 2004), 'knowledge workers' (Wuthnow & Shrum, 1983), the 'professional class', the 'underclass' (Auletta, 1983), and especially at the forefront of WIL discussions; the 'precariat class' (Standing, 2011). Some estimates even show the traditional views of the working class are nearly outnumbered by the PMC (Huber, 2022). The issue with the labelling of new social classes and analysis is that many of these new social classes do not follow a historical materialist methodology approach in how they identify class-related problems, nor are they dialectical in how they contend with class (Bookchin, 1969). This is problematic, because many of the new social classes are not theorised in relation to how they may contribute to a socialist program, and so their raison d'être becomes lost.

Based on a Marxist understanding of class, and as an alternative to the tendency to create new classes as ways of working change, is a theory called 'contradictory locations within class

relations' (Wright, 1980, 1996). Contradictory locations within class relations distinguishes the modern paradoxes and complexity of working relations, and can probe the nexus between labour and capital for a more holistic and encompassing class analysis that remains true to its roots in Marxism. Even with deep ties to Marx's classic ideas, the theory is still versatile and ecologically focused, so that it can be relevant to modern problems and modern working relations.

Wright (1980) has proposed that when class is analysed, the level of abstraction, that is, the distance from where the problem is viewed, is crucial. For instance, at its most distant level of abstraction centred on the social relations of production, there are only two observable classes: the working class and the capitalist class. However, when that perspective is increased to a more detailed level of abstraction, the social formation of other classes can then become apparent and be analysed. The underpinning for this claim stems from a critique that involved three dimensions of domination and subordination within the production process, as Wright explains:

> money capital, that is, the flow of investments into production and the direction of the overall accumulation process (accumulation of surplus value); physical capital, that is, the actual means of production within the production process; and labor, that is, the laboring activity of the direct producers within production. (Wright, 1980, p. 328)

Wright goes on to clarify that these three dimensions are necessary conditions for the existence of each other and are inherently inter-reliant. They must therefore be analysed as a distinct hierarchy. That is, (1) money capital sets limits to the subordination of (2) physical capital, which in turn exercises dominance over (3) labour within the production process (Wright, 1980; 1996).

Given that the urban economy is a space of class relations (Obeng-Odoom, 2016b, pp. 55-80), it logically follows that the workers within the built environment are also exposed to such forces (Knox, 1982). Yet some have noted a distinct lack of criticality within the broad professional fields of the built environment (Obeng-Odoom, 2016a), even though the built environment is materialist and remains intrinsically related to the functions that help to create, reproduce, and transform social relations (Rotman & Nassaney, 1997). In the context of class formation and structure, the built environment and all those who are involved in it are a reflection of the economic, social and political relationships within broader society (Knox, 1982). Yet the hegemony of neoclassical economics in the built environment has not been challenged in 'any meaningful way in the sector most crucial to capitalism as a system' (Obeng-Odoom, 2016a p. 1). Hence, using the contradictory locations within class relations as a theoretical framework to examine and categorise labour relations and class distinction within the built environment and

related fields is rare. This is surprising, given the class-problem has long been identified and well discussed with respect to the built environment, for instance:

> the people could no longer be thought of in terms of the industrial proletariat, the workers with raised fists, engorged brachial arteries, and necks wider than their heads. Marx's downtrodden masses in their slums. The people were now the 'middle-middle' class, as Venturi called them. They lived in suburban developments, like Levittown, shopped at the A & P over in the shopping center, and went to Las Vegas on their vacations the way they used to go to Coney Island. They were the 'sprawling' masses, as opposed to the huddled ones. (Wolfe, 1981, pp. 109-110)

In line with the convention of many contemporary Marxist scholars (Wright, 2005; Žižek, 2011) and some critical pedagogy theorists (Freire, 2018; Gadotti, 1996), applying the contradictory locations within class relations theory to understanding where cadetships sit in social classes means that this framework does not wish to abandon Marxism, but transcend it – just as Marx transcended Ricardian economics, Hegelian philosophy and older Blanquist modes of organisation (Bookchin, 1969).

3.3 Understanding the impacts of WIL

The structural tendencies and pressures inherent in capitalism have remained unchanged since Marx's time (Bookchin, 1969), although capitalism as a socioeconomic system (Hedges, 2011) has produced new economic conditions, relations, and blurred the barriers between classes. This development in the urban political economy has presented a need to update analytical and practical research methods, so that they are able to more fully understand and interpret the present-day status quo. In the case of this research, the political-economic-WIL framework developed thus far seeks to outline the paradigm to interpret WIL. It has addressed social and economic consequences of WIL that are not currently encompassed by existing frameworks (Hodgson, 2017; Polanyi, 1944). Yet it also needs to be informed of existing theories related to education and labour.

As noted in Chapter 2, according to proponents of neoclassical human capital theory, labour markets are efficient in distributing labour in such a way that neither class nor any other identification matters (Folbre, 2012). WIL strengthens students' technical skills and disciplinary specific knowledge, improves productivity, and steepens the undergraduate earnings curve, ultimately improving the economy. This viewpoint, which is consistent with neoliberalism as an

ideology (Stilwell, 2014), emphasises that only labour and experience matter, hence the jobless are lazy, unskilled or uninformed. This viewpoint, based on Polanyi's (1944) concept of a 'market society', implies that labour is a commodity. For Polanyi, a market society allows market relations and incentives to dominate all aspects of life, which thereby prevents human development, increases inequality and results in society's annihilation (Polanyi, 1944, p. 76). In a similar spirit, Baptiste (2001) criticises human capital pedagogic impacts, arguing that limiting education to market inclinations leads to pedagogic aims that are not founded on any philosophical or moral code. This renders the impacts of education apolitical and impersonal, limiting its potential to completely ameliorate social or economic inequalities. Through the process of the banking concept of education, these material benefits are also accompanied by indoctrination into particular ideologies. Marx stresses the significance that the ruling ideology plays in the subordination of the proletariat as a social class in The German Ideology. He claims:

> The ideas of the ruling class are in every epoch the ruling ideas, i.e. the class which is the ruling material force of society, is at the same time its ruling intellectual force. The class which has the means of material production at its disposal, has control at the same time over the means of mental production. (Marx & Engels, 1965 [1845], p. 169)

To Gramsci, the education system under capitalism is a reflection of the power dynamics of the state and society, which reinforces the prevailing hegemonic dominance (Gramsci et al., 1971). Gramsci's hardliner stance sees intellectuals and educators, such as clergy, philosophers and professors, closely allied to the ruling class as 'the dominant group's "deputies" exercising the subaltern functions of social hegemony and political government' (Gramsci et al., 1971, p. 145). Indeed, this idea has been developed more recently through a slightly different lens (Brown, 1995; Dunn, 2014), detailing that education can further be required to preserve elite cultural capital. This notion is also particularly significant to Freire, who also sees education as the key tool used by the oppressors as an apparatus to maintain the status quo and perpetuate the ruling ideology (Freire, 1970).

Meanwhile, the Zizekian perspective on modern cultural capitalism claims that structural trends which have accompanied the neoliberal program, including higher levels of education, commercialisation of institutions and increasing bureaucratisation, means that indoctrination of the ruling hegemony now permeates all aspects of everyday life, and is especially apparent in higher education institutions (Žižek, 2011). The growth of the mass education system means that a degree is no longer a guarantee of class status or non-precarious employment (Standing, 2011 [2016]). In effect, the degree as a strategy of reproduction was cheapened by oversupply

(Jacobs, 2003). WIL is a significant tool for education under capitalism, both within the university and outside of it, in that it is governed by pressures of capital, profit and extraction. Education governed by capitalistic institutions will usually maintain current class status and perpetuate the wider ruling hegemonic superstructure. Within this Gramscian lens, WIL can be seen as a form of indoctrination to the working relation, as it throws young workers into the jaws of capitalism by exposing them, potentially during their first employment experience, to some of the most precarious labour conditions they will likely receive during their working lives.

3.3.1 Educational impacts

The three foundational pillars of the framework, noted previously as historical materialism, critical pedagogy and intersectionality, directly inform how the educational impacts can be interpreted. In order to help analyse and understand the educational impacts of the cadetship, how education takes place within a capitalist organisation, and to better ground the practical analysis of this research in terms of educational impacts of cadetships, mainstream pedagogical theories may be useful, but require supplementation. A more critical stance on the current educational system and the pedagogic theories that are used to endorse this system have been deployed, in line with the political economic creed.

Hence, this section synthesises key Freirean critical pedagogical philosophy as a useful philosophy to supplement existing learning theories on how WIL can happen, before outlining how Vygotsky's (1980) Zone of Proximal Learning and communities of practice can be used to analyse how informal, guided and experiential learning happens during WIL experiences for students, both in terms of acquiring knowledge of practical, technical skills and employability skills, but also deeper behavioural and cultural attitudes.

Education through WIL is inherently a dynamic process, and remains tied to the social relations of production. Here, WIL experiences to improve one's earnings through the human capital lens, leading to professionalisation, should therefore be seen as a group struggle to improve class position, the struggle for material wealth as well as safety, and to gain higher status (Brint, 1984; Jacobs, 2003). Extending this view by drawing on a Freirean critical pedagogy, education under capitalism, or the banking concept of education, is a political ideology and dogma to help uphold existing regimes of economic and social control. According to Freire,

> … in the banking concept of education, knowledge is a gift bestowed by those who consider themselves knowledgeable upon those whom they consider know nothing … The teacher presents himself to his students as their necessary opposite; by considering their ignorance absolute, he justifies his own existence. (Freire, 1970 p. 72)

To Freire, the existing state of education is seen as a one-way deposit of disconnected and fragmented knowledge, that restricts the function of the students to being vessels used to 'receiving, filing and storing the deposits' (Freire, 1970, p. 72). Through what is deemed the 'banking concept of education', Freire argues that this particular method of education indoctrinates students into a fragmented sense of reality by drip-feeding disconnected knowledge on a need-to-know basis, thereby positioning the student to be a passive, uncritical and unquestioning observer of their own education and member of society. This one-way education perpetuates the ruling ideology and, according to Freire, is the primary basis that prevents students from being truly liberated by their education.

Instead of the 'banking concept of education', Freire posited a radical form of pedagogy to give students the ability to recognise 'conscientizacao' and become liberated by their education. In this learning process, students are dialogically encouraged to consider ways of transforming oppressive structures. In this context, 'conscientizacao' is the raising of one's consciousness so as to have the knowledge to critically examine an oppressor's ideology, and further, to have the capacity to self-criticise their own personal consciousness. The pedagogical techniques and methods used to encourage this liberational critical pedagogy are famously discourse-based.

Dialogue is extremely important to critical pedagogy. During open dialogue, as a social process, the atmosphere is not set for one person to constantly deposit ideas into others. Rather, Freire believes that dialogue helps understand the world together in a mutual process. Freire posits that, 'I cannot think for others or without others, no one can think for me … Producing and acting upon [our] own ideas—not consuming those of others—must constitute [this] process' (Freire, 1970, p. 100). Thus, discourse-based learning in practice means that learning is co-created by the teacher and learner, thereby dismantling the traditional student-teacher dichotomy (Freire 1970, p. 11). In Marxist fashion, Freire contends that in order to reframe the banking concept to the problem-posing concept through dialogue, learners must see the world as problems that can be materially solved, rather than as unquestionable and rigid narratives. The aim is for the learner to foster a critical consciousness, to objectively situate themselves outside of their actions and to break through the methodical individualism that the urban economy fosters (Obeng-Odoom, 2016b, pp. 55-80). Ultimately, doing so will lead to class struggle, thereby providing the emancipatory potential of this theory's praxis.

Freire's critical pedagogy is recognised for its implementation within the tangible, real world, making it inherently material, ideological and political, rather than an impartial form of education. This pedagogical approach is tied to a larger agenda of social transformation, aiming

to cultivate critical awareness through the interplay among students, educators, and knowledge, all of which are in a dynamic relationship with the material world. The essence of this educational philosophy is to dialectically merge critical reflection with tangible action, underscoring that understanding the world is inseparable from engaging with it. Therefore, this liberatory pedagogy extends beyond the confines of the classroom, linking directly to social activism (Aronowitz, 1993; Au, 2007). This highlights the profound connection between critical pedagogy and Work-Integrated Learning (WIL), as both are rooted in an experiential, immersive and participatory approach to education.

Whether learning in the cadetship is discourse-based is not understood. However, the cadetship does have capacity to involve learning simultaneously co-created by the teacher and learner, dismantling the traditional student-teacher dichotomy (Freire, 1970, p. 11). It is posited that any framework for WIL should promote learners in the study of their own discipline to seek the bigger picture, and to pose these concepts as problems that are able to be solved through material action, rather than narratives that exist only externally to the student. To do this, the learner must be willing to situate themselves outside of their actions and see the world objectively.

For those in the cultural history school and sharing parallels with Vygotsky's Zone of Proximal Learning (Vygotsky, 1980), learning, especially at work, is typically a social process, thereby introducing the notion of communities of practice (CoP) and workplace context as noteworthy mediators that facilitate learning at work (Lave & Wenger, 1991). A CoP is said to exist when there is a domain (the workplace), a community (the people in the workplace), and a practice of various activities classified as practice. Learning through participation and experience in a CoP is summarised by Wenger (1999) as learning that is not necessarily intentional, indicating it is a type of informal learning.

The zone of proximal learning concept has been used to assess the merit of apprenticeships and other labour, as it allows a thorough examination of how the process of novice/expert or worker/supervisor relationship allows the learner to gain knowledge and skill while working alongside an expert (Billett & Boud, 2001). The zone of proximal learning assumes learning can happen informally, through exposure and collaboration, to complete specific tasks at work within a team.

Previous studies have used the concept to assess WIL programs, especially apprenticeships, as it examines how the process of uncertified/expert or worker/supervisor relationship allows the learner to gain knowledge and skill while working (Billett, 2001a, 2001b; Billett & Boud, 2001).

Some empirical research in CoP and informal learning suggests that adults may indeed learn more efficiently through experiencing and participating in informal workplace activities than through any other methods (Eraut, 2007; Felstead et al., 2009; Melick, 2015). So, there is clearly a need to supplement critical pedagogy theory with an understanding of CoP and the Zone of Proximal Learning in this WIL framework.

In the context of cadetship, the CoP consists of the students, educators and workers at the head contracting organisations where the WIL takes place. In this COP, members learn from each other through their shared experiences and activities; and so effective WIL will be hindered when there are barriers to a zone of proximal learning, resulting in a COP in which the work experience does not prioritise the learning and development of the students. Rather, the CoP may have ulterior motives for employing cadets.

Contradicting the assertion that informal learning is the most effective pedagogic technique for learning while at work is the claim that guided learning is in line with best practice WIL implementation. In particular, Billett's (2001b) examination of guided learning notes three pedagogical elements that are critical to the intentional structuring of learning at work through WIL. Firstly, there should be a structuring of work and the provision of guidance for learning during that work. Secondly, there should be an acknowledgment that there is a need for workers to be provided with access to different types of training activities that are closely observed. Thirdly, there should be encouragement for workers to engage in learning activities that, over time, develop deep knowledge/skills. By ensuring these steps, the guided learning that takes place can then be reviewed, documented, and techniques further developed to ensure effectiveness of the learning.

While the above theories may help explain the processes behind learning at work and may draw on important external influences, such as, how firms operate and the context of the organisation, how the theories are realised often falls short of their celebrated ability to educate (Chomsky, 2004; Chomsky and Hitchens, 1994). That is, how these pedagogical theories are realised relies on methods and techniques strongly influenced by the teacher's rapport with the learner, the teacher's ability, and the motivation to engage. Australia's employability skills, or typical WIL practice, does not align with the critical self-reflection and critical awareness that Gramsci and Freire contend should be a fundamental element of education (Arora, 2015). Furthermore, some claim current educational practices are not necessarily rooted in any theoretical backing (Whitaker and Moses, 1988); rather, as a testament to neoliberalism, most educational policy and practices simply adopt the 'learning-as-product view' (Hager, 2004, p. 5).

Through synthesising a critical pedagogy with more standard WIL literature and theory, educational impacts in this WIL framework are understood in relation to the banking concept of education, a culture of silence in the workplace, and 'conscientizacao' (Freire, 1970). Educational impacts related to WIL are then interpreted through a substantive approach (Polanyi, 1944), to help reinforce the connection of learning in WIL to the political.

3.3.2 Labour impacts

In order to research whether cadetships are an effective form of WIL, the experiences of the cadets are central. In a Marxist view, cadets, like all workers, will become oppressed and exploited by systematic and institutional powers through the expenditure of their labour. This is inherent in the process, during the circuit of capital (Marx, 1995 [1867]). Historical materialism offers a framework for analysing objectively existing conditions in the world, such as various forms of institutionalised and systemic oppression through the working relation (Dunn, 2011; Dunn, 2003). Historical materialism is useful in the framework for analysing how people can actively become conscious of material conditions, their sources, and then changing these conditions through social collective intervention. Using historical materialism in the framework, to interpret the impacts of 'labour', aligns with how the educational impacts of the cadetship can be analysed using Freire's conception of critical pedagogy.

Contributions from recent Marxist scholars have shown how historical materialism can be used as a method to research modern labour relations (Gunnarsson, 2020). Further explanation of key Marxist terms, including the circuit of capital, alienation, surplus value and exploitation, can be found earlier in this chapter. The following section seeks to apply the explanations to outline Marxist ideology and help clarify these influences have been used to interpret the labour impacts of WIL in the framework developed. According to Marxists, firms attempt to extract the maximum amount of surplus value from their workers. These social relations shed some light on the hostilities of training or education at work, and the contradictory motives of the stakeholders in educating employees within capitalism. Under this premise, learning at work is not oriented towards the development of the individual, but rather to increasing profits of the firm. Indeed, human capital theorists admit that the training firms are likely to provide will be 'specific training' (Becker, 1962); that is, training only relevant to an individual workplace, so that firms do not lose their competitive advantage by training workers who could be employed by their competitors.

The theory of surplus value is a cornerstone of Marxist political economy. Surplus value in Marx's argument extends the classical political economic concepts in how labour creates value. Profit

is in the unpaid labour time expended in the production process by the workers, who are paid less than the value their productivity produces (Carter 2022). Marx attributes the notion that capitalist organisations will attempt to extract the maximum absolute surplus value from their workers, by extending the duration of the working day while relative surplus value is the surplus value extracted by increasing the productivity of labour (Stilwell, 2011, p. XX). This absolute surplus value extraction is represented below dividing the working day into necessary labour time, which is consistent, and surplus labour time, which is variable (Marx, 1995 [1867], p. 162).

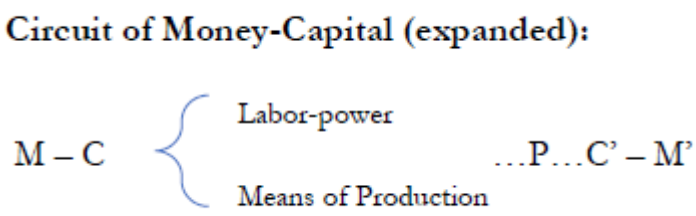
Table 3.1: Limits of the working day

Working day 1	Working day 2	Working day 3
A...B...C	A...B……C	A...B.....C

Source: Capital. Volume I. (1867) p. 162. Available at https://www.marxists.org/archive/marx/works/download/pdf/Capital- Volume-I.pdf

In table 3.1 above, Marx represents the working day visually, by showing three working days, each with a consistent necessary labour time (A...B), while the surplus labour time grows (B...C). Of this working day, there are two maximum limitations, the physical (that the day is 24 hours long), and the moral/social limitations. The minimum limitation is that the duration of the working day cannot be shorter than the necessary duration for the worker to reproduce their own labour power. Under these assumptions, the ratio of surplus labour to necessary labour can be measured and is directly related to the extraction of surplus value and therefore the level of exploitation. Surplus value is also a foundational component within the circuit of money capital.

The Marxian theory of the circuit of capital offers an insight as to why businesses aim to minimise costs related to labour power (Carter 2022). It is widely adaptable and can be scaled to illuminate the working of the integrated global economy, or to demonstrate the principle of how individual businesses can increase capital (Stilwell 2011). The expanded formula is as follows:



Where C=Capital, M= Money, P=Production process;

M < M' and C < C' while; - = movement of capital & … = process of circulation

Figure 6: Marx's circuit of money capital formula

Source: Capital, Volume I, (1867) p. 131. Available at: https://www.marxists.org/archive/marx/works/download/pdf/Capital- Volume-I.pdf

The circuit of money capital formula suggests that capitalists have monetary capital (M) which is invested in commodities (C), means of production (MP) and is used by labour power (LP) to produce (P) capital in the form of produced commodities (C'). The produced commodities are then sold for an expanded monetary capital (M'). The process is cyclical as the expanded capital (M') feeds back to the beginning of the formula and repeats on a larger scale. This cyclical nature of the formula is based on the notion that:

> the capitalist has two objects in view: in the first place, he wants to produce a use-value that has a value in exchange … and secondly, he desires to produce a commodity whose value shall be greater than the sum of the values of the commodities used in its production. (Marx 1995 [1867], p. 131)

To Marxists, class or specifically the working class, is central for developing viable progressive politics. So, it is important to outline how cadets, and broader WIL processes maintain and reproduce the key 'labour power', or working class, in this formula. Wright's theory is useful here because it defines a person's class is by where their social position fits within the following three limitations: control of the means of production, control over labour power, and control over investment or resources. The theory does not rigidly define class boundaries but shows some workers, like salaried professionals or managers, can hold contradictory interests and motives outside of class boundaries. This theory is useful to define construction students as being within the working class in that they meet all three criteria. Yet this theory also has capacity to recognise the nuance that these construction students, who if they have successful careers, will gain control over labour power, therefore falling in a contradictory location within class distinctions. Being dynamic in this analysis is critical, as contemporary class struggle will be

based on the degree to which people in these contradictory locations work together with the working class in a socialist movement (Wright, 1976; 2005).

An important benefit of using the Marxist approach to analyse the labour impacts related to the questions is that alongside a critique structures within capitalism, there are prescribed antidotes; at the least, those antidotes can offer cadets some respite from the ills of their precarious work by targeting the root of the issue. Some of this praxis involved are outlined in Chapter 6 and 7 of this thesis, where collectivisation is discussed as a crucial strategy for labour to begin to withstand and fight back against the continued exploitation of capitalism.

3.4 Conclusion

The theoretical foundation has been laid for understanding labour and education impacts of WIL in a way which recognises the complexity of WIL, and which recognises the need for a holistic and dialectical approach to researching WIL. The chapter has acknowledged the diverse perspectives on how knowledge is acquired, with a focus on a constructivist view rooted in critical pedagogy. This approach recognises learning as an active, internal dialectical process that individuals participate in, in order to construct knowledge. The processes and techniques used to achieve this are political (Freire, 1970).

This chapter has also highlighted the philosophical and economic differences between the political economic approach and mainstream perspectives of WIL. It has presented a political-economic-WIL framework for understanding the potential labour and education impacts of the cadetship. The framework, built on pillars of historical materialism, critical pedagogy and intersectionality, encompasses various specific theories, including Marxist, Gramscian, Freirean, Polanyian, neo-Marxist, Activity, CoP, and the Zone of Proximal Learning. The synthesis of these theories have implications to the research methodology and analysis of data, especially in how it must be dialectically interpreted to understand individual experiences, organisational structures, and the social, political and economic conditions that govern WIL (Anderson, 2004).

The dialectical approach recognises the multifaceted nature of WIL and the various stakeholders, diverse delivery modes, and different models of WIL involved (Rowe et al., 2018). It also acknowledges and attempts to supplement the limitations of existing employability approaches, that focus solely on singular mainstream measurements of the impact of WIL programs. The incorporation of Polanyi's substantivism economics, the recognition of power imbalances in WIL due to capitalist firms' pursuit of surplus value extraction, and the integration

of Marxist theories, especially around class, have added a critical dimension to the analysis of the cadetship. This chapter has also set the paradigm for the framework to encompass a research design and methodology to be holistic, in a theoretically grounded political economic stance, and informed by the dialectical understanding of the internal conflict of a phenomenon (Fleming, 2018; Fleming & Zegwaard, 2018). In doing so, it aligns with the IJWIL which claims holistic understanding of WIL programs are paramount (Rowe et al.,2018).

The chapter has emphasised the novelty of this framework within the WIL literature, particularly in the context of studying construction students. The conceptual framework developed here is applied to the data collected as part of this research in Chapters 6 and 7. The following chapter uses these theoretical underpinnings as a starting point, to inform the strategy used to collect and analyse data to address the research questions, framed around the key concepts in this chapter.

Chapter 4: Methodology

4.1 Introduction

A political economy social scientific approach is uncommon in construction economics; however, it can be found in some WIL research or other critical labour relations studies that investigate construction workers (Jain & Sharma, 2019; Newman & Humphrys, 2020; Piper, 2006). The most applicable and pertinent methods, analytical tools, and methodological underpinnings from each field have been considered, to best answer the research questions of this thesis. This chapter details research philosophy and methods of the three-phase multimethod research design and specific research techniques that were used within a multidisciplinary political economic approach, in order to address the key research questions:

> *How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?*
>
> *How do these impacts shape the political economy of the construction cadetship?*

A political economic approach must rely on various research methods (Anderson 2004). This helps to minimise three key methodological problems including; unrepresentativeness, confirmation biases and noise (Kahneman et al., 2021; Obeng-Odoom, 2023). So, data collection techniques in this research included semi-structured interviews, group interviews and participant observations from a wide range of key stakeholders in the cadetship. The epistemological approach is qualitative and has used an abductive tactic, in that the research questions and methodology have been designed with a bottom-up logic in a way which uses data and observations to explore and evolve existing theories. That is, in order to best respond to the research questions, this research methodology involved a multimethod, political economic approach to data collection, rooted in social sciences, where data is also triangulated against an appraisal of peer-reviewed academic literature, industry reports, student run publications, referenced thus far in Chapters 1, 2 and 3.

This research design entailed that, firstly, in-depth semi-structured interviews with cadets were undertaken and thematic analysis (TA) applied to the data, using the Attride-Stirling thematic approach (Attride-Stirling, 2001). Then, in the second phase, a series of group interviews with senior construction managers and HR managers were designed, in order to cross-reference, validate and, in some cases, oppose the themes identified in the cadet interviews. Group interviews effectively offered a dialectical understanding to what had been developed in the

first phase of the research. The industry professional group interviews were then analysed using the Attride-Stirling approach, to remain consistent with the cadet interviews. Finally, informed by the significant themes drawn in synthesis from both the one-on-one interviews and group interviews, four cadets that had been interviewed were observed while they were at work. The participant observations were conducted as part of a mixed methods approach, to assist in adding depth and validity to the themes established in the interviews (Dean, 2019; Rowe et al., 2018). The rest of this chapter is split into three major sections starting with the research design, which is outlined and defended. In the next section, the methods and processes used to collect data are described and justified. Finally, the method and rationale of analysis for all data is outlined.

4.2 Research design

The philosophy of this research design can be considered pragmatic (James, 2001; Dewey, 1931), in that it places emphasis on what is the most comprehensive method, or combination of methods, that can provide the most appropriate, and best quality data (Kaushik and Walsh, 2019). Using this philosophy, evaluating methods based on their ethical implications, sample sizes and overall practicality have been forefront. The specific research methods and sequence of these methods were selected to most effectively answer the research questions.

With a pragmatic philosophy in mind, a deep understanding of how WIL can impact the students involved requires rich and quality data; hence, numerous research methods were explored before a three-phase multimethod design was decided on. During the conception of this research, a mixed methods approach using surveys and interviews was considered; however, the survey component of this draft mixed methodology was reconsidered, based on practicality grounds. There is also literature that shows that surveys can fail to offer rich data and be unreliable. Indeed, surveys have practical limitations in that, for adequate quantitative analysis, there needs to be a large number of responses (Silverman, 2013; 2020).

Considering these drawbacks and based on feedback from the reviewers of Stage 1 and Stage 2 of this PhD, the survey component in the mixed method was reconsidered and redesigned. Rather than focusing intently on cadets, more value could be added by broadening the perspective and finding additional rich data from other perspectives of the employer, via group interviews and participant observations. When revising the research design, addressing the research questions with quality relevant data was a key factor, along with the ethicality of the research and potential impacts of the research on the participants involved.

Qualitative studies can be criticised for the sampling and sampling sizes used. Indeed, many prominent qualitative researchers (Silverman, 2013; 2020) note that sampling is not a simple matter and determining qualitative sampling should depend on theoretical cogency, rather than statistical logic. Mason's description of theoretical sampling has been the basis for the sampling used in this thesis. Mason (1996) informs that selecting groups or categories to study should be on the basis of their relevance to the research questions, and the theoretical position held in the research. Importantly they should be able to give an explanation or account of the topic or subject that the research is exploring. Given that this research is qualitative and targets an under-researched researched group (Guest et al., 2006), a non-probabilistic but an extremely purposive sample was utilised until a thematic theoretical saturation point was reached.

Methods like interviews, group interviews and participant observations do have their flaws. The limitations of these methods, including interview-based methods like semi-structured interviews and group interviews, have been outlined by respected qualitative researchers (Silverman, 2020). The claims that interviews are overused in qualitative research, and that we are living in an 'Interview Society' (Atkinson & Silverman, 1997), provided the justification to develop a three-phase multimethod design. In an attempt to avoid the pitfalls of interviews, this work does not solely rely on one-on-one interviews, but also includes a substantial sequence of group interviews and some detailed participant observations.

Yet, using interviews, group interviews and participant observation is common in existing research in the WIL fields, when assessing the effectiveness and impacts of particular forms of WIL (see, for example; Bytheway, 2018; Cameron, 2018; Fleming & Zegwaard, 2018; Rowe et al., 2018). Indeed, several recently published doctorates that examine WIL programs have used these three methods to collect data from the groups being studied (for example; Valencia-Forrester, 2020; Sauer, 2019; Galea, 2018). Meanwhile, research in political economy very regularly employs qualitative methods like interviews, group interviews and participant observations, due to the view held by political economists that economics should be viewed as a social science (Stilwell, 2002; Stilwell & Argyrous, 2003). Political economists can be advocates of research design that engage these methods, as the nature of the data collected is detailed, specific, rich, and considers multiple opinions that may frequently conflict (Anderson, 2004; Odell, 2001; Silverman, 2013). In both WIL and political economy fields, there is a strong drive for qualitative methods, as they allow researchers to better comprehend social phenomena in their natural setting and thereby assign significance to the beliefs and experiences of participants involved in those settings (Aspers & Corte, 2019).

An example of WIL research using qualitative methods to collect rich, high-quality data can be found in IJWIL. The IJWIL champions WIL research design that involves methods such as interviews, participant observations and group interviews in a recent special issue, titled Work-integrated learning research methodologies and methods (Fleming & Zegwaard, 2018; Rowe et al., 2018), which outlines wisest practice in terms of WIL research methodologies and methods. The special issue contains publications that note the importance of using a careful, reflective approach when designing WIL research, caution the risks associated with unethical WIL research, and outline strategic ways to design research that can best harness the researcher's insider perspective (Fleming & Zegwaard, 2018; Rowe et al., 2018). In the context of this journal, holistic WIL research design is important, in that it considers multiple parties and multiple methods and how these consequences may affect wider society and the economy. Designing WIL research with these strategies in mind is necessary, to help ensure the research data is replicable and valid.

The IJWIL also notes some deficiencies related to the research design in WIL fields, noting the limitations of some existing WIL research that is not holistic. Rowe et al. (2018) note that some existing quantitative and qualitative methods for assessing WIL focus only on single narrow measurements of the impact of WIL programs on student outcomes. These narrow approaches cannot properly give context to how the WIL impacts those involved, because the potential impacts of the WIL can be so multifaceted. Narrow approaches in WIL research do not always properly consider the complex nature of WIL, and often neglect participation of numerous stakeholders, diverse delivery modes and different models of WIL. A narrow approach, while helpful for identifying burnout or other refined concepts, should be supplemented with holistic research that considers the wider economic consequences and community impact of the WIL in question (Rowe et al., 2018). Therefore, noting the limitations to some existing WIL research design, the research design for this thesis was planned to be holistic. Indeed, this holistic approach lauded in the IJWIL directly aligns within the political economic framework used in this thesis.

To situate the research design employed in this thesis in a theoretically grounded political economic stance (Anderson, 2004), the three-phase approach and the specific order of the three methods employed was designed to be dialectical. Using this theory to help inform the research design in a way that allows the research to develop and contribute to the theory is in line with the abductive approach used in this thesis. Informed by the Marxist dialectic, cadets as employees have interests dialectically opposed to their construction managers and human resource employers. So, to cater to these contradictory interests, data was collected through

semi-structured interviews with cadets and analysed to form an initial starting point to understand the research questions or, in the dialectical sense; to construct a *thesis*. Creating conflict with this initial thesis, the data from the group interviews with construction industry professionals could then be justified as the *antithesis*.

Keeping the dialectic forefront, in order to build a synthesis of these conflicting groups and data points, and to ground this approach in the material, participant observations were next utilised. Participant observations are seen as a way to draw out the synthesis of the thesis and antithesis. Viewing the research design in this dialectical way draws deeply on Hegelian dialectics, Marxian dialectics, and is also steeped in Freirean dialectics, as discussed in the theory chapter of this thesis (see Chapter 3). The dialectic is a robust method of investigating subjective personal and economic behaviours, and hence has provided the underlying currents for this thesis research method design (Freire, 1970; Gadotti, 1996).

Data collected from the semi-structured interviews was first analysed using the Attride-Stirling method (Attride-Stirling, 2001). The Attride-Stirling method is considered especially appropriate for political economy and is a common method of analysis in WIL fields (Prior et al., 2021; Walters, 2021). Given the efficacy of this approach in establishing themes from interview data, which were triangulated with the wider literature on WIL, the Attride-Stirling approach was also then applied to the data collected from the industry-based group interviews. Doing so helped to ensure that all interview data was consistently evaluated and therefore shared some form of commonality when interpreting emergent themes (Berg et al., 2012). After the process of cross-referencing themes and identifying similarities and conflicts between the interviews and group interviews, the data collected during the participant observations was then used to validate the existing themes, add richness, and provide real, concrete examples of phenomena and themes identified in the interviews and group interviews. Data from the observations was also analysed, using the Attride-Stirling approach for consistency and based on prescriptions in the literature (Attride-Stirling, 2001).

4.2.1 Sampling and data saturation

As Banerjee and Chaudhury (2010) explain, sampling bias occurs in almost all studies. In the case of this research, one likely point of sampling bias is the researcher's familiarity with the Australian construction industry, through previous experience as a cadet, industry practitioner, and currently as a lecturer. No doubt there is other sampling bias in this research, so the following section outlines the processes employed to reduce the impact of these potential biases as much as possible.

This research was designed to involve a non-probabilistic sample. The planned minimum number for participation in this research was purposive, and had been chosen to not unnecessarily burden participants, an important ethical consideration to make for a demographic who are already documented to be consistently busy and exhausted (Moore & Loosemore, 2014). Sampling was also purposive in that only participants from a specific range of demographics, based on predetermined criteria relevant to the research questions (Guest et al., 2006), were invited to participate (Patton, 2014). All sampling was initiated via an invitation sent from the supervisory team's email to contacts that fitted within sampling constraints. These targets and specific purposive sampling were made possible and were enabled by the researcher's and supervisory panel's existing knowledge base of students and industry practitioners. After the initial interviews, the snowballing technique was used to gather further participants.

Overall, 20 cadets currently employed at head contractors participated in individual in-depth semi-structured interviews. In addition, 15 construction professionals working as head contractors were invited to participate in 7 group interviews. Also, 4 cadets were observed while at work over 4 separate occasions. Participants involved in this research are employed across 16 medium to large head contractors, working in the Tier 2 industry and with head offices in Sydney.

The concentrated sample sizes used in this research fall within parameters outlined as acceptable by other qualitative researchers. Indeed, a number of qualitative WIL researchers who use interviews, focus group and participant observations, tend not to recommend specific figures for any quantitative research, but show thematic saturation can occur almost completely within the first 10 interviews (some examples of qualitative WIL studies with 12 or lower data sets: Drewery & Pretti, 2021; Gjerde et al., 2021; Guest et al., 2006; Venville et al., 2021). Kuzel (1992) recommends 6 to 8 interviews for a homogeneous sample and 12 to 20 data sources 'when looking for disconfirming evidence or trying to achieve maximum variation' (p. 41).

For this research, data saturation was determined according to Fusch and Ness (2015). That is, when a consistent code has been identified in approximately four or more separate data sources, it can be listed as a basic theme. Given that thematic saturation was achieved in some cases before reaching the planned minimum participation, research was continued to a reasonable limit within the stated objectives, to ensure anonymity was maintained for the participants. Doing so is considered best practice in terms of ethical consideration to participants (Attride-Stirling, 2001; Fleming & Zegwaard, 2018). In some cases, however, like the observations, the research scope exceeded the planned number of participants as thematic

saturation was still occurring, and relevant themes were continuing to emerge. Covid-19 restrictions during 2020 and 2021 did not create any sampling problems or add to ethical considerations; nevertheless, ethical implications of this research related to physical health and mental health were at the forefront of the research design, as detailed in the following section.

4.2.2 Designing ethical WIL research

For ethical reasons, research design in WIL fields should be carefully planned. Ethical considerations are key to ensure the safety of participants and to guarantee the validity of the data. Students, and indeed construction cadets, are a particularly vulnerable group to study, due to their existing relationships with the academics who study them (Fleming & Zegwaard, 2018). Hence, this section outlines the numerous ethical considerations that were made when planning, collecting, implementing and analysing the data from all participant groups. Many of the ethical considerations made in this research design were based on the highly renowned Qualitative Research Methods for the Social Sciences by Berg et al. (2012) and from David Silverman's book (2013).

According to Denzin and Lincoln (2011), the foundation of ethical research is informed consent. The term 'informed consent' consists of two important elements. Firstly, those involved must wholly recognise what will be asked of them and how their data will be used; secondly, participants must be informed of the consequences arising from their involvement (Berg et al., 2012; Fleming, 2018; Fleming & Zegwaard, 2018).

Consent must also be gained for research to be ethical. In this case, those involved in the research required signed consent forms (see Appendix 1) in order to take part in the research, including understanding their rights to access their information and the right to withdraw at any point, even after data was collected. The informed consent process can be seen as the contract between researcher and participants. To ensure no effective coercion, the recruitment process was managed through the PhD supervisor, who sent out the initial recruitment emails. Afterwards, once contact had been established with the cadets who felt inclined to participate, the researcher was open and transparent about their own standing in terms of the research, clearly outlining that research would be anonymous and confidential and that participation was purely voluntary (Denzin & Lincoln, 2011; Fleming, 2018). The recruitment correspondence for all methods was done by email.

A significant consideration in the research design was the reflexivity of the researcher and how that may impact the participant consent and quality of data (Berg et al., 2012). Given that the researcher is a recent graduate of a Construction Project Management degree, has worked in

the construction industry previously, both as a cadet and a construction professional, and is currently involved as a Lecturer in a Construction Management program, many participants involved in the research had some form of a pre-existing relationship. To this end, this research can be perceived as both etic and, to a certain extent, emic, in that it is influenced by the perspective of an insider, but approached from the perspective of the observer. Fleming (2018) describes this form of WIL research as insider research or endogenous research (Trowler, 2011), where the researcher has some prior existing relationship and understanding of those involved in the WIL program being studied.

Critics of this research approach claim that the data collected through insider research, and more broadly qualitative research, is compromised by an inherent subjectivity and therefore a lack of trustworthiness (Creswell & Poth, 2016). However, it is argued that this positivist criticism is flawed, due to the deeper philosophical dispute that there is no real pure objective observation of practice in any organisation, regardless of insider or outsider research (Smyth & Holian, 2008). Nevertheless, wider criticisms of insider research remain common and do have particular ramifications in terms of ethics. Consequently, the insider perspective used in this thesis needs to be justified under a constructivist understanding of how education and WIL happens. Merton defends insider research, by noting the limitations of external research, where the 'outsider' is doing the research:

> has a structurally imposed incapacity to comprehend alien groups, statuses, cultures and societies. Unlike the Insider, the Outsider has neither been socialized in the group nor has engaged in the run of experiences that makes up its life, and therefore cannot have the direct, intuitive sensitivity that alone makes empathetic understanding possible. (Merton, 1972, p. 15)

In the case of any pre-existing relationships, the researcher's insider perspective may actually help to enable a richer understanding and interpretation, which objective approaches may not be able to uncover. Smyth and Holian (2008) note that insider research is valid, as the researcher is 'immersed, embedded and strongly connected with both the setting and those being "researched" in a shared setting where they operate together on an ongoing basis' (p. 34). In terms of practicality, insider knowledge can help enrich the quality and depth of responses, as familiarity can enable the researcher to better formulate questions that promote the free-flow of the responses (Fleming, 2018; Fleming & Zegwaard, 2018).

Further benefits that justified this thesis research design include building rapport, allowing the researcher the ability to draw on understandings and experiences when asking questions in

interviews, and a more open discussion of topics that may be considered taboo. Also, when analysing the data, a pre-existing understanding can be useful or relevant to the researcher's own practice in WIL, to help identify emergent themes. Due to these benefits, insider research that involves interviews, group interviews and/or observations is becoming increasingly common in WIL research (see, for instance, Brannick & Coghlan, 2007; Crabtree et al., 2021; Dean, 2019; Dean & Sykes, 2021; Fleming, 2018; Floyd & Arthur, 2012).

4.2.3 Ethics approvals

Standard university ethics approval was applied for and approved. After several rounds of review by PhD supervisors, the University Ethics Team, and the Dean, the research design [ETH18-2562 - ER (for BROWN)] involving the following documents was approved. The ethical documents including invitation letter, information sheets and consent forms for all parties have been included in Appendix 1 of this thesis:

A1.1 Cadet Interview invitation letter

A1.2 Cadet research interview participant information sheet-consent form

A1.3 Construction professional information and consent form

A1.4 Observation and third-party information and consent form

A1.5 Ethics Committee and Dean's approval for research

It is important to note that the research evolved, based on feedback. The methods and approach used to address the research questions have already been subject to peer review; based on those reviews, they have evolved to the current three-phase format. The evolution of the research methods and analysis are also in direct response to the calls in the literature for more comprehensive and holistic approaches when studying WIL. So, to seek a diverse range of opinions and ideas, the work has been strategically peer reviewed from numerous disciplines and fields, including economists, political economists, construction economists, construction theorists, educational theorists, labour theorists, business theorists and Marxists. Indeed, the inclusion of the focus group and shadowing in the research design was based on peer-reviewed feedback of this work, as outlined in the following section.

4.3 Methods of data collection

Once ethics approval had been completed, research began in February of 2019. This section describes and justifies the rationale for each of the three methods used to collect data in this

multimethod approach. To help the flow and add continuity for the reader, the order of this section is in line with the order in which data was collected.

4.3.1 Interviews

A dynamic, in-depth, semi-structured interview was administered to cadet participants, keeping in mind Dearnley's (2005) paper which reflected on the use of semi-structured interviews. The benefit of semi-structured interviews is that they allow all participants to be asked similar questions, but within a flexible, informal framework (Berg et al., 2012). Semi-structured interviews are an effective way for researchers to make sense of complex and evolving concepts. The open nature of a semi-structured interview encourages depth and vitality (Dearnley, 2005), allows new concepts to emerge, and is useful for forming a relationship with the participant in which they may feel more comfortable about disclosing personal information (Doody & Noonan, 2013).

The interviews were completed in two rough stages. Generally, the questions for the first stage, which included the first three interviews, were rigid and focused on assessing cadet experiences, while testing out research techniques, like question phrasing, language and level of detail. The questions and structure of the second stage were more adaptive, with a greater focus on detail, as the researcher gained insights into developing fluid phrasing and natural timing of questions.

Indeed, using semi-structured interviews requires constant reflection 'in action' (Altrichter, 2020; Schön, 1983 [2017]), where any verbal or non-verbal cues should be noted. Moreover, care should be taken during the process to avoid leading questions, if there are newly emerging issues that require further probing and exploration (Doody & Noonan, 2013). Following an interview, 'on action' reflection is necessary to review consistency in questioning techniques (Schön, 1983 [2017]) and whether there was sufficient identification of newly emerged concepts from individuals. An 'on action' reflection was performed following the completion of each interview, where the researcher spent one hour noting the participant's standout nonverbal cues and reflecting on own performance. This step, while time consuming, was especially useful in developing the researcher's interviewing skills, which are notoriously difficult and can lead to frank criticisms.

Interviews tend to be criticised because the participation of an interviewer may reduce the respondent's concentration, distract, or direct the respondent through suggestive language. Moreover, a large body of recent evidence indicates that socially undesirable behaviours are often misreported in interviews (Bradburn, 1983; Dearnley, 2005; Tourangeau & Smith, 1996). As Harris and Brown (2010) point out, there may be other practical problems in aligning data,

where result deficiencies may stem from time restrictions, nonresponses or the interviewee's reluctance to admit to embarrassing or deeply personal activities. Additionally, there may be problems correctly transcribing the interviews, if informal language is used (Hauck et al., 2000).

Yet, the advantages of using interviews are enormous and far outweigh these limitations. An interview offers benefits that other methods of data collection may neglect. These include increased respondent motivation (Dearnley, 2005), response clarity (Harris & Brown, 2010), and gaining a greater understanding of the participant's experience from the way in which they talk about it.

The method of analysing the interviews will also draw on a concepts from Developmental Research Sequence (DRS). DRS is an ethnoscientific approach (Spradley, 1979 [2016]), based on the concept that individuals will arrange and present their knowledge situated in culturally designated rules and behaviours (Parfitt, 1996). This means that during an interview, the demeanour, specific language and colloquialisms used by each participant will be important in understanding their opinions. With consideration regarding how semi-structured interviews are designed and conducted, a majority of the noted limitations can be avoided (Harris & Brown, 2010).

Regarding the recruitment of cadets to be interviewed, the researcher and the primary supervisor invited students from their first year to fourth year of studies to be involved in interviews, using faculty email. There were conditions to be met, in terms of demographic features, that excluded some cadets from participating in the interviews. To qualify to be a participant in the interviews, cadets had to be currently employed as a cadet for a head contractor building organisation or construction-related organisation. They must have been employed in their current organisation for at least six months, so that they had settled into the role. Next, the participant had to be enrolled full-time in the UTS Construction Project Management undergraduate degree (at least 18 credit points or equivalent). Finally, due to travel constraints and to ensure consistency, the participant had to be working and studying within the Greater Sydney Region. No one was under the age of 18, because it is unlikely that younger students would have a cadetship role. Also, students were excluded from participation if they were studying part-time, were past their sixth year of study (as may have been the case for those studying a double degree), or had special considerations.

In the initial email, the researcher drafted a rough outline of the overall thesis research questions, an information sheet to clarify the data that was intended to be collected, a consent form, together with encouragement for participants to ask questions or concerns regarding this

research (Denzin, 2017; Denzin & Lincoln, 2011). This draft email went through ethical review. Next, the PhD supervisor and the researcher compiled an original list of 27 students studying a Construction Management undergraduate degree from university records and believed to be working as cadets. That list was then refined to 15, based on demographic features, to create a balance between gender and year of enrolment.

It was made clear in the invitation that participation was voluntary and that a decision to participate or not would have no effect on students' subject marks or treatment within the university. Finally, and in line with the snowball technique (Atkinson & Flint, 2001), the email contained information for participants who may be interested in participating in further observational research after the interview. From that first wave of emails, there was positive interest from seven participants.

The next process of recruitment was similar in that the researcher drafted a list of potential cadets, based on existing relationships and university records. This list was then reviewed by the PhD supervisor, and participants were contacted by the supervisor. Of that second list of ten potential participants, responses were received from a further three participants. The final three cadets involved in this phase of the research were contacted through the snowball technique (Atkinson & Flint, 2001), and through some early recruitment for the second phase of the research during preliminary discussions with construction professionals, as part of the researcher's other academic commitments.

Interviews were generally taken wherever best suited the cadet. Often that meant the interviews were conducted in the meeting room within the university faculty office; however, some were conducted on-site. The setting and time of the semi-structured interviews was planned to have least impact on cadets, and to remain ethical and considerate.

The semi-structured interviews were roughly designed in the following order. To provide adequate data to assess how themes may have been impacted by demographical information, it was necessary to record the respondent's age, year of university, gender and ethnic background. More widely, however, the questions for these interviews focused on assessing the cadet's opinion of the effectiveness of the cadetship, in terms of their learning and their work. Informed by the literature (Cooper et al., 2010; Flesher et al., 1996), this included the perceived educational merit of cadetships, duties required at work, and the perception of learning from university being integrated into the workplace. Next, informed by literature that claims construction students may not improve academically after WIL placements, due to working at the expense of education (Adcox Jr, 2000; Ayarkwa et al., 2011), questions related to time spent

at work and university and contentment were explored. These questions were also formulated to extend previous studies on Australian construction student burnout, cadets' exposure to harassment, and exclusion or discrimination experiences during work (Lingard, 2007, 2012; Lingard et al., 2007; Loosemore et al., 2020a; Moore & Loosemore, 2014).

Questions remained consistent between participants; however, the order they were asked varied depending on the conversation with each individual. For instance, the question: 'You have been working as a cadet for one year now, how is it going?', could be followed by: 'What have been the main challenges so far?' Details of the response were obtained by asking for examples throughout the process (Dearnley, 2005). It is important to note that in many cases when conducting the interviews, the participants asked the researcher questions, as they would in an everyday conversation. Given the insider nature of the research and due to indications in the literature, this was pre-emptively considered and, on the advice of Dwyer and Buckle (2009), the researcher would sometimes share their own experiences to help build a level of trust and rapport. All interviews were audio recorded and transcribed by hand after the session. Specific questions and different formations of interview questions have been included at the end of this thesis in Appendix 2.

While the original research design intended to recruit at least 10 cadets for interviews and aimed for the demographic composition to be approximately half male and half female, following peer reviews of this research, the data collected has been extended and is much more in-depth. In total, 20 cadets were interviewed. The number recruited increased more than predicted, as thematic saturation had not yet occurred for some significant themes, while new themes were still being identified at a rate that indicated more research needed to take place, while criticisms of this work from stage 2 reviewers was also considered. An additional benefit of conducting the additional interviews is that it offers greater anonymity to the participants, but care was taken to limit the number of cadets to reduce the impact of this research on an already extremely busy and overworked population. Further details on the respondents and results can be found in Chapter 5.

4.3.2 Group interviews

After the cadet semi-structured interviews had been completed and then analysed, the second phase of the research – group interviews – was undertaken. Group interviews are a well-established method of data collection, often employed in conjunction with other methods such as interviews and observations (Adams & Cox, 2008; Barbour & Schostak, 2005; Morgan, 1996). The main purpose of focus group research is to draw on the participants' beliefs, experiences

and reactions in a group setting. Often, group interviews are used to gather information from multiple sources at once, and reveal ideas that may be more prominent in a social setting (Powell et al., 1996).

There are many definitions of 'focus group' in the literature, but the group interviews methodology in this thesis typically followed a group interview or discussion format, much as Krueger (2014) and Powell et al. (1996) describe, drawing closely on semi-structured interview techniques and principles. Powell et al. (1996) define a focus group as 'a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research' (1996, p. 499). A key difference in interviews versus group interviews is that during group interviews, rather than interviewing, the researcher facilitates discussion based on topics that are drawn from the research questions.

Group interviews can be criticised, as Barbour and Schostak (2005) note, from seven major directions. These criticisms revolve around the power structures inherent in groups, the social positioning of participants, value of quotes made, trust of participants, meaning, interpretation, and underlying uncertainty. Indeed, Fern's (1982) significant work on judging individual interviews against focus groups, found that each focus group participant produced only 60 to 70 per cent as many significant ideas as they would have in an individual interview. This problematises group interviews as an effective method of collecting data, so the techniques used and benefits of this research technique need to be justified.

Benefits of group interviews are abundant. Group interviews are an efficient way of gaining a multitude of perspectives simultaneously, generating discussion and allowing ideas to emerge within a group context (Adams & Cox, 2008; Barbour & Schostak, 2005; Krueger, 2014). Focus groups are efficient, in that they permit the researcher to gain a larger amount of information in a shorter period of time than individual interview, where the data collected is still detailed and contextual. Also, group interviews are particularly useful when involving decision-makers or senior professionals, when culture or attitudes of particular groups is of interest, and when one wants to explore the degree of consensus on a given topic (Morgan & Krueger, 1993). Due to these benefits, group interviews can be an ideal choice in organisational research, particularly in the fields of marketing (Gibbs, 2012).

Given these challenges and benefits, the purpose of these group interviews was to address a potentially conflicting perspective of the cadetship and help to contextualise the themes derived from the interviews with cadets. Group interviews were designed to be effective in gaining many perspectives at once, while still being time effective and reducing impact on participants.

Secondly, the group interviews were designed so that they could add to the understanding of the interplay between the external pressures that cadets face and potentially shed some light into the current set-up of this WIL and the way it is currently practised from the perspective of the organisation, rather than an individual within an organisation. Thirdly, given that this phase of data collection was secondary to the research questions, the group interviews were intended to help add nuance and value to the already established emergent themes identified in the cadet interviews. Gaining perspectives of multiple parties within organisations was important, to help reduce the likelihood of criticisms related to bias in this research.

The recruitment of construction professionals for the group interviews was primarily facilitated through the existing relationships between the PhD researcher and the supervisory team. The inclusion criteria for these professionals were as follows: they must be managers of cadets or work with cadets on a daily basis; they must have experience in coordinating cadetship programs or have contributed to the development or implementation of such programs within their organisation; and they must be employed by a Tier 2 head contractor based in Sydney. The specific job roles targeted for this research included Human Resources Managers, Construction Managers or Directors, and Project Managers. All participants needed to work with cadets, needed to have significant industry experience of at least 10 years, and needed to have been employed in their current organisation for more than 2 months. The reason for imposing these limitations on participation in interviews was that construction professionals could give more informed answers to questions related to organisation structure.

Given the target nature of sampling, recruitment of these participants was direct. First connection was either established through a phone conversation or email, where the researcher advised the participant of the thesis research questions and scope. In line with good ethical conduct, the researcher provided participants with a brief overview of this research, an outline of the research questions, summary of the type of questions and topics to be discussed in the group interviews, an information sheet to clarify the data intended to be collected, and importantly, a consent form. The researcher encouraged the construction professionals to ask questions or concerns regarding this research, and noted that their participation was voluntary, confidential and anonymous.

After initial contact, the formal invitation to participate in this research was sent to 15 participant's organisation email address. Implementing the snowball technique, the invitation also included information about obtaining consent to potentially observe cadets within the organisation, in the hope that group interviews could lead to a relationship where workplace

observations would be permitted. After the initial invitations, all participants agreed to join the research. It is likely that the response rate was so high because there was an established connection with the manager from past working relationships, familiarity built through the previous interviews with cadets, or the PhD supervisor's industry connections.

Based on guidance from in the literature (Morgan, 1992, 1996) that smaller group interview sizes are best suited to emotionally charged topics or contentious topics, the researcher planned to include three participants in each group interview. Literature also shows that smaller group sizes generate high levels of participant involvement (Browers & Ho, 2021). Group interviews were designed to run from 40 minutes to 1 hour. This decision was mainly due to time constraints, as many of the interviews were conducted with senior management of large companies who were time poor. Based on the wider research design, the group interviews were also planned to be less in-depth than the cadet interviews, as they were designed to supplement the initial cadet data and not act as stand-alone data.

Construction professional participants responded to a semi-structured question protocol to share their opinions. The group interviews began by probing the participants' personal and shared attitude to cadets, noting value to the organisation and individual, before canvassing the organisation's systemic cadetship approach to education. Group interviews were recorded and transcribed by hand in full. Group interviews were predominantly completed in Sydney, with nationally operated organisations. Thematic saturation occurred after seven group interviews.

It is significant to note that while this phase of the research was planned to be strictly group interviews with three construction professionals in each session, many sessions had participants drop out at the last minute. Dropouts occurring in this phase of the research were predicted to occur, based on literature indicating that logistical problems can be common when researching senior professionals in busy organisations (Adams & Cox, 2008; Barbour & Schostak, 2005). Given that group interviews are a form of interviewing and the nature of data from each method share many similarities, the researcher continued the sessions – in some cases, with only one participant. While a lack of reliability in participation is a significant criticism of using group interviews, the researcher employed a number of tactics to address these concerns.

There are numerous reasons to justify why data collected from all group interviews can be included in this thesis, under the banner of construction professional group interviews. There are already existing sociology debates on whether to apply an inclusive or exclusive definition of group interviews; yet consistently, these arguments agree on the practical limitations when the research is actually conducted, and will often share a common ground in terms of attempting

to maximise the effectiveness of the application of available techniques (Morgan, 1996). Indeed, group interviews are a form of interviewing (Gibbs, 1997, 2012) and can therefore be analysed using the same methods. As Adams and Cox (2008) note, 'Group interviews are very similar to interviews and therefore many of the guidelines for conducting interviews also apply to conducting group interviews' (p. 24).

Literature also notes that less than two participants does not necessarily affect the integrity of the data; a smaller group may provide deeper and richer information because participants can have more time and space to explain their opinions (Fern, 1982; Morgan, 1992, 1996). The researcher was already prepared to have dropouts occur and so entered the group interviews informed with semi-structured interview techniques, and with the recognition that completing in-action research needs to be dynamic, to allow for the realities of completing research in complex, busy, and less than ideal situations, especially on live construction sites (Altrichter, 2020; Schön, 1983 [2017]). All construction professional data were analysed consistently, as the intended questions and scope of the group interviews were achieved in all cases.

4.3.3 Participant observations

To help validate and enrich the themes that had emerged from the previous data collection points, and to help ground this research in the material, cadet observations took place over a period of one month. All previous methods of data collection and analysis had been completed by this third phase. The limitations of interviews and group interviews were resolved by the third and final method of data collection: participant observations. Participant observation, or shadowing, was used as a research technique where the researcher closely shadowed a cadet previously interviewed during the course of a full working day. As Dean (2019) outlines, participant observation research has a long history in many fields, such as education and organisational disciplines. However, it has not been fully explored in the study of WIL. Indeed, Dean's own observational research is pioneering in this sense and as she astutely comments, 'while students' experiences and perceptions of placements can be readily accessible, simply by asking, it can also be limited because people can't always explain why we do what we do' (Dean, 2019, p. 2; Pader, 2015).

McDonald (2005) notes that shadowing has the potential to make a distinct contribution to organisational research, which could also be extended to scholarship on WIL, because it differs from more traditional forms of qualitative research in two key ways. Firstly, the level of analysis is more detailed than other qualitative methods, where shadowing data does not rely on an individual's account of their role within an organisation. Rather, the researcher is situated

ethnographically and is therefore in a position to first-handedly observe the context and specificity of the individual's situation within the organisation. This closeness means that research data collected from this method is extremely detailed and can give the researcher access to both the trivial and the difficult to articulate aspects of the individual's working day (Pader, 2015). McDonald (2005) notes that, in fact, while on the surface some of this data may appear trivial it can be useful, as it is often the hardest to research.

The second feature of shadowing that gives it the potential to extend the ways in which organisations are researched, is based on the unit of analysis. Here, by not solely focusing on an individual within an organisation, shadowing can be seen as a more holistic qualitative management research method than interviews alone (Rowe et al., 2018). This is due to the fact that shadowing examines the individuals in a holistic way that examines the individual participant's opinions and behaviour simultaneously. Thus, the actions of the participant are contextualised by the running commentary they give, while every opinion expressed can be related to the situation which produced it (McDonald, 2005).

The selection of cadets involved in participant observations reflect the demographic that was interviewed. The duration of the shadowing was for at least one full working day during the university semester, while the student's workload was full, which is representative of a cadet's workload for the majority of the year. The cadets selected to be shadowed were representative of the demographic that was interviewed; they were selected based on their work experience within the organisation, that is, some were new to the role, while others were well experienced in their organisation.

Access to organisations was granted by management at the firm, then by the project team and then by the individual. Ethical consent forms were signed by all parties and an informational email was sent out to the workers who would be present during the observations. Audio was recorded in some parts throughout the day, however, due to confidentiality of working on live projects and being privy to confidential information, it was often more effective to dictate some notes into a digital audio recorder. The main form of data recording was via in-depth field notes throughout the day. In some cases, where appropriate, non-identifiable pictures were taken to help supplement these notes. These photos have not been included within this thesis or any subsequent publications, due to ethical requirements.

4.4 Conclusion

This chapter has presented the three-phase research design, outlined the specific practical methods used to collect empirical data, and described the way in which all data was collected through multiple stages of semi-structured interviews, group interviews, and observations. No one method can be right at all times, so a political economic approach must rely on various methods which minimises three problems including; unrepresentativeness, confirmation biases and noise (Kahneman et al., 2021; Obeng-Odoom, 2023). To be recognised as trustworthy, qualitative scientists must demonstrate that the analytical processes used to interpret the raw data are precise, consistent and exhaustive. To be truly trustworthy, transparency in the presentation of data is also important, to ensure the research is replicable. To this end, the following Chapter 5 introduces the data collected through the methods described above, shows how the data has been coded, and puts that data in context to help contextualise the analysis in Chapter 6.

Chapter 5: Framing, Organising and Analysing Data

5.1 Introduction to the data and chapter outline

This chapter builds on the established research methodology and data collected to detail the data organisation analysis and framing. The data that receive attention are of three types: (1) data from cadet semi-structured interviews; (2) data from construction professional group interviews; and (3) cadet observations. These categories are useful to help understand the scope and detail in the data, yet are not necessarily to be seen as individual data sets. Rather, as governed by the dialectical paradigm, these categories of data overlap and intertwine in the analysis as one whole. All sample structure and size of the data categories have been purposive in response to plugging aforementioned gaps in the literature as noted in Chapter 2. The sample size and structure has also been influenced by ethical requirements, and the broader research methodology as outlined in Chapter 4. Even with this concentrated and purposive sample size, there has been extensive and time consuming analytical processes applied to the data.

The first data category consists of 20 detailed and lengthy semi-structured interviews with cadets enrolled full time at a Sydney university which has significant mandatory requirements for WIL. The 11 female cadets and 9 male cadets interviewed were from diverse backgrounds and employed across 12 head contractors that regularly use the cadetship. These interviews covered numerous topics ranging from cadet experience at work, university and social life, and impacts of balancing these through a work-life-study balance. Questions were developed over time to provide detailed examples of cadetship program structure, cadet assessment, rotation, salary, working hours, support, enjoyment, and integration with studies which has highlighted the varying requirements and structure of cadetships.

The second data category involved seven group interview data from the 15 construction professionals who are responsible for designing, managing and implementing cadetships in their respective organisations. Seven organisations were represented in these group interviews, some of which had clear structure, resources and guidance for cadetships. Other cadetships however, were noted to have very little structure to the programs, and relied on project teams to customise the structure of cadet working conditions, learning outcomes and role description.

The third data category helped to verify and triangulate the interview data. Four cadets already interviewed, and employed by the construction professionals also previously interviewed, were observed for a full working day each- in some cases over 10 hours- on live construction projects, site offices and in head offices.

Demographic information of participants involved in the research has been outlined in the following sections via table format and graphs. Using numbers to present this qualitative data is justified, as many prominent qualitative researchers (Becker, 1970; Erickson, 2007; Hammersley, 1992; Maxwell, 2010) endorse this method 'to facilitate pattern recognition or otherwise to extract meaning from qualitative data, and verify interpretations' Sandelowski et. al. (2009, p. 210). The tables and graphs in these sections also follow ethical guidelines, to present data in a way that does not reveal the coding or naming conventions within data sets that would allow the anonymity and confidentiality of the participants to be compromised. To this end, the following tables and graphs make use of techniques like grouping data and framing data within approximate ranges. These ranges are not too broad, to avoid the chance of overgeneralisation, and not too specific so as to reveal confidential information of participants, following the strategies outlined by Maxwell (2010).

The rest of the chapter is structured as follows: Firstly, all data categories are introduced and discussed in turn. Then, the steps and processes during the coding of these data categories are next described and defended. Reflections on the reliability and quality of the data, the coding, and the analytical process, are also discussed in the context of four criteria for evaluation, based on those set out by Lincoln & Guba (1985): credibility, transferability, dependability and confirmability. Practical issues faced by the researcher while collecting the data are also noted, and reflections on the observational data collection processes are made. The chapter finally frames the data to give context and outline any limitations of the data and limitations of the steps and processes involved in the thematic network analysis.

5.2 Cadet interview data

The cadet semi-structured interviews were extensive and detailed. The initial 10 interviews regularly ran for 2 hours each. Then, guided by the methodology outlined in Chapter 4, the following 10 interviews were shorter, but still with a duration of at least an hour each. The second 10 interviews were still valuable and detailed within the shorter time frame, as the semi-structured interviews became more targeted and refined, having reached data saturation in some areas, while also adapting to cater to further emerging themes.

The following Figure 7 shows the key demographic information from all 20 interviews conducted with cadets as part of this research, in comparison to one of the most significant studies of Australian construction students in the past two decades. It shows how the demographic of cadets studied in this research aligns with the sampling of the significant quantitative study of

nearly 400 Australian construction students by Moore and Loosemore (2014). The comparison between datasets in the figure aims to highlight how the current research has been designed to extend results of the existing prominent studies, and also to probe areas that may not have been explored sufficiently using qualitative methods (Loosemore et al., 2020b; Moore & Loosemore, 2014).

Comparison of Sample Structure
Moore & Loosemore (2014) vs. Data Collected in This Study

Description	Frequency	Percentage
Gender		
Male	303	82.2
Female	66	17.9
Age		
17-19 years	43	11.7
20-22 years	142	38.5
23-25 years	86	23.3
26-28 years	30	8.1
29 years +	68	18.4
Living Arrangements		
Live with parents	197	53.4
Live on campus	6	1.6
Live in share accomodation	59	16
Live with partner/spouse	80	21.7
Other	27	7.3
Financial support		
Supported by family	58	15.7
Self-supported	175	47.4
Supported by Government	31	8.4
Mixed levels of support	105	28.5
Student type		
Australian student	325	88.1
International student	44	11.9
Enrolment		
Full-time student	313	84.1
Part-time student	56	11.9
Year of study		
1st year	61	16.5
2nd year	78	21.1
3rd year	112	30.4
4th year	99	26.4
Other	19	5.1

Moore & Loosemore, 2014, p. 1068

Description	Frequency	Percentage
Gender		
Male	9	45
Female	11	55
Age		
17-19 years	3	15
20-22 years	11	55
23-25 years	5	25
26-28 years	1	5
29 years +	0	0
Living Arrangements		
Live with parents	12	60
Live on campus	0	0
Live in share accomodation	3	5
Live with partner/spouse	5	25
Other	0	0
Financial support		
Supported by family	2	10
Self-supported	8	40
Supported by Government	0	
Mixed levels of support	10	50
Student type		
Australian student	20	100
International student	0	0
Enrolment		
Full-time student	20	100
Part-time student	0	0
Year of study		
1st year	1	5
2nd year	8	40
3rd year	6	30
4th year	5	25
Other	0	0

Cadets interviewed as part of this research

Figure 7: Comparing this research with Moore & Loosemore (2014)

Figure 7 shows that the demographic identities of this study that align most closely between this research and Moore & Loosemore's (2014) study are related to construction student age and year of study. This was purposive and due to recommendations from universities and course handbooks to begin the WIL components of the program in the second year of study, alongside industry conventions noted during construction professional interviews. Most cadets who

participated in this study are below the age of 25. These age representations also appear to be general industry conventions as noted during the construction professional interviews. All studied full time in the BCPM at UTS. There are many similarities between the sample structure of these studies, which are also likely a reflection of enrolment conditions. Most cadets live at home with parents in the Sydney region, especially the younger cadets under the age of 22. Half of cadets admitted to mixed financial support from parents, while two cadets who lived at home felt their parents were their main financial support. Eight participants were using their cadetship wage to fully financially support themselves living out of home.

Where sample structure percentages of this study exceed sample structures of the existing studies, has been purposive. Differences between the two studies' sample structure are most prominent in terms of gender. These variations are designed to target the noted gaps in existing research related to intersections of gender and race, so the sample structure was designed to be more comprehensive and purposive in these areas. Many existing studies in this field have more men involved than women. For instance, another significant study of nearly 300 construction students over seven years involved 90 percent male participants (Swinburne 2018). Comparably, in this study, 55 percent of cadets interviewed were women, in order to help fill these gaps of experiences of young women in construction.

Age	Year of study	Time in Cadet
20	3	18 months
22	4	36 months
19	3	12 months
25	2	6 months
23	3	11 months
20	2	24 months
21	2	8 months
23	3	24 months
26	2	18 months
22	3	24 months
23	5	10 months
22	2	6 months
20	1	9 months
22	4	24 months
22	3	18 months
19	2	6 months
19	2	6 months
22	4	18 months
25	4	15 months
21	2	6 months

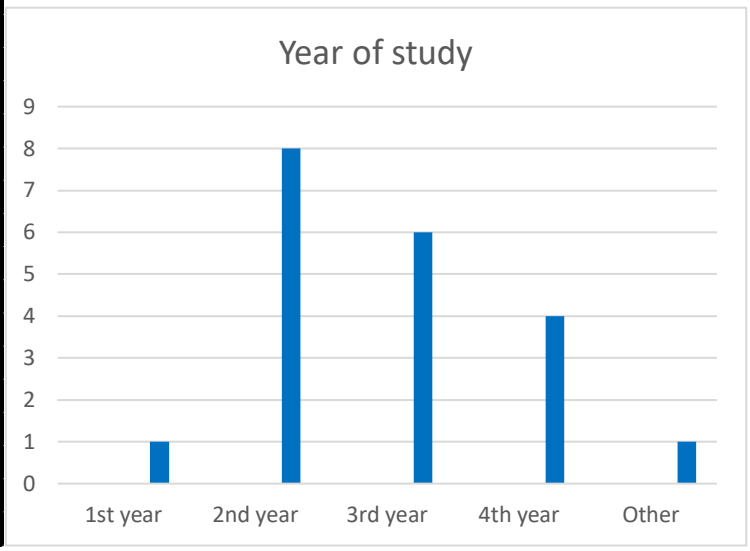


Figure 8: Years of study and time in cadetship vs. age of cadets

As Figure 8 shows, in terms of experience and age, all the cadets studied had spent significant time in their cadetships before being interviewed. For cadets to be eligible to participate in this study, the minimum amount of time spent employed was six months. This was to ensure that they had an adequate understanding and involvement in their work. The table shows the ages of cadets interviewed, year of study and time spent in cadetships. It was expected to have less involvement from cadets in their first year of study, as recommendations from businesses and universities encourage work to begin after the first full-time year of study.

Some cadets were experienced in cadetships, with five cadets interviewed having over 18 months of cadetship experience. Year of study was a good indicator of cadetship experience, yet there was limited correlation of cadetship experience and progress, to age. Rather cadet's competitiveness and entrepreneurism, family connections to the industry, and year of study were found to be the strongest indicators of cadetship experience and self-reported capacity. Five cadets interviewed had some form of previous experience working in the industry. The rest of the participants had very limited past exposure to the construction industry. For all the cadets interviewed the cadetship was their first serious and professional employment. Cadets sample size represented fair distribution of onsite to offsite workers. However, it was noted that cadet experience on or off site was not always consistent given the nature of cadet's labour. Also, cadets can rotate between projects, roles and teams depending on the type of the cadetship program.

Cadets that were interviewed were employed across 12 head contracting organisations. Multiple cadets were interviewed from seven selected organisations. These organisations were selected to have multiple cadet interviews as they employed the construction professional that had agreed to be interviewed in this research. Cadets working on different projects across these organisations helped to compare and contrast the cadetship experience within an organisation. All organisations at the time of study were tier 2 head contractors, but given the rapidly changing economic nature of the industry this measure can fluctuate.

Fifteen cadets had informally found their own cadetship via applying and interviewing with organisations. The other five had found work via support of university teaching staff, student notice boards, scholarships, or already had prior existing relationships in industry. Role description, responsibilities and working commitments, and overall experience at work varied greatly between cadets. Indeed, cadets within the same organisations had vastly different experiences negotiating working hours, payment, and responsibilities. Cadet payment structure was predominantly a full-time salary. There were also some contract work and casual

employment. In turn there were significant deviations in remuneration of cadets between organisations, but specific income comparisons of cadets were difficult to analyse due to the varying job descriptions, working hours and contract structure. What stood out in the data, however, was some third and fourth year cadets were earning less than second year cadets. Similar inconsistencies in remuneration, which do not appear to align with experience or age, have been noted in other WIL studies (Myring et al., 2005; Hauck et al. 2000), but not before in construction WIL studies.

Based on role descriptions by cadets, interviews with professionals and observational data, cadets whose employment was casualised or contract based experienced less of a structured and formal cadetship program. Typically, in these cases, cadets were treated as substitute labour for reception, site managing, Contract Administration (CA) or Site Engineering. Cadets in these situations described being supported through a particular task in the past, but then when put on a new project were expected to complete these tasks completely independently thus undermining the need for a graduated or qualified employee. Some cadets in these precarious roles were moved around different line managers, numerous times per day, to fill in for absent labour or help teams that were busy complete specific tasks. Experiences of cadets being used as runabout labour, substitute labour or supplementary labour in these cases, are similar to accounts of some apprenticeships (Ross et al., 2021; Ross et al., 2020).

Across the 12 organisations who employed the cadets studied, seven cadetship programs appeared to have clear guidelines, program and rotations to different roles. Cadets' experiences, time in rotations, roles, and support however were not consistent across the data, nor consistent within organisations who had implemented formal cadetship programs. There were also cadets who experience had very limited semblance of a structured cadetship program. Rather than cadet programs or rotations, these cadets experienced a wide range of unstructured and informally allocated work tasks, including admin tasks, reception duties, CA work physical labour, site management. In these cases, cadets described their labour felt like runabout labour, and that they were interchangeable across projects, teams, and roles, providing little continuity, or exposure to a formal job description.

The average working week for a cadet was structured to allow a balance with study. All 20 cadets had clear permission to leave work to study, between one to two days per week. During university holidays, which comprise nearly half the year, cadets were consistently expected to work full time hours. Cadet self-reported working weeks aligned with other existing studies in that they could exceed 60 hours, during full time semester studies, especially for cadets on site

and working Saturdays (Mills et al., 2012). Cadets noted an expectation of presenteeism and overwork as being why they needed to work such long hours. Cadets also liked feeling like they could contribute to the team, and so would work while the rest of the team was working.

The working hours expected of cadets, study allowances, timing of additional leave for exams or assessment was always organised informally between cadets, project teams and organisations, without any input from universities, or collaboration between other stakeholders. Nearly half of cadets interviewed had to also work some Saturdays on site, often without pay and integrated into salary. Cadets often described being able to take time off work to study, but many had pressures, especially those in smaller project teams, to informally stay back at work late to make up for time taken off to study.

5.2.1 Cadet responses and summary of interviews

Now that the cadet sample data have been introduced, the next section uses anecdotes drawn from the interviews to provide an overview of them. Semi-structured interview questions initially involved duties at work, structures and programs in place, perceptions and experiences learning at university and in work, levels of integration of technologies used at university into cadetships, and other broad open-ended questions, to help inform a broad understanding of the cadet's education and labour impacts during WIL. Adding further insight to existing research, questions over time evolved to target themes in the data that emerged related to experiences and scenarios delimited by intersections between gender, age, race and class. In this manner, evolving interviews were informed by the methodology and research framework, as noted in Chapter 4.

As a whole, the cadet interview data shows how cadets can be impacted from their WIL. Cadets interviewed were generally treated as a junior worker, rather than a student. Cadets were relied on within project teams to benefit the overall project and the wider business, using skills gained at university and on the job. Cadets, and especially cadets with at least a year of experience on projects, were generally seen by project teams, construction professionals and the cadets themselves to be an integral member of the team. Based on these indications, as far as the Fair Work Ombudsman is concerned, the interview data shows that cadets indeed do work that benefits the organisation.

Cadets are generally treated as full-time employees with their own tasks and have a sense of job dependency. So, they are entitled to full pay under the *Fair Work Act* (2009, Cth). Indeed, senior

construction professionals agreed that project progress and business success relies on the presence and contributions of cadets, often as versatile labour. Cadets were employed on full-time salary, part-time salary, contracts, and casually. Based on role descriptions by cadets, interviews with professionals and observational data, it was often cadets whose employment was more precarious and casualised who experienced less of a cadetship program. Typically, they were treated as substitute labour for reception, estimators, Contract Administrators (CA) or Site Engineers. Some cadets in these precarious roles were moved around different line managers, numerous times per day, to fill in for absent labour or help teams that were busy to complete specific tasks. In these cases, experiences of cadets being used as runabout labour, substitute labour or supplementary labour are similar to accounts of some apprenticeships (Ross et al., 2021; Ross et al., 2020).

For the seven organisations that had implemented a cadetship program, the rotations and competencies generally ran over a two-year stint, with exposure, in three key domains; the head office, in estimating department, and on site. Yet even in these programs, it was not uncommon for cadets to have had unique experiences due to the project based nature of construction. One cadet described their program that was a generally representative of cadet program used by the seven organisations:

> ‘Yeah, so the cadetship is, it's a set-up program that's divided into modules. And so, when you're interviewed, you get shown all the different modules. So there's um, estimating, then there's structures, then there's services, um, façade, um, like a certification handover, um, defects, and basically the cadetship's broken down into all these modules, and the intention ... you graduate your cadetship once you've rotated through all these modules. In the beginning they throw you out on a work site, and it goes for two years, and you're there for the whole time, with a bit of time in estimating to make sure you learn what’s needed ... Well, it's the idea that the project manager pushes you through every module … but there isn’t any alignment of these modules with my uni.’

The interviews seen as a whole suggest that the work cadets do is demanding, in a stressful and conflict-ridden work environment (Galea et al., 2020). Cadets claim they consistently face a heavy workload and a lack of flexibility in the work schedule. Other studies in the field note that presenteeism is a barrier to retention of women, and the findings of this study further indicate this notion can be extended to a retention barrier for all young construction workers in WIL. For example, one cadet explained; ‘everyone has so much pressure at work. You literally can't miss

a day because if you missed a day there's so much to do. You'll let everyone down.' This quote, and the following quotes, provides some examples of the presenteeism, fast-paced work environment, intense time pressures and alienation impacting cadets' labour and learning.

Under the dialectical framework outlined in Chapter 3, questions also probed economic, political and educational realties for cadets. Questions in this vein started by interrogating how students felt about being forced to work as part of their undergraduate qualification. Many responses here were complex and conflicting. There were students largely happy with their own cadetship arrangements and some who were not happy. However, there was some consistency in that each participant knew a friend or had colleagues who was unhappy in their cadetship. The variance in responses here is due to the key finding that the experiences of cadets was informal and often unique. Rotations and programs did not appear to be consistently applied, even within organisations. Rather, they are largely project dependent. Based on these experiences of cadets, head contracting organisations appeared to have very little to no oversight from any industry body, union or university in regulating or structuring the cadetship, given the significant variance in experience.

Questions also explored cadet work-life-study balance (WLSB), in a way which also considered a need to earn a living wage, other financial pressures as a student, and if or how the cadetship met those demands. In line with the IJWIL approach to understanding WIL holistically, questions also sought to understand living arrangements, salary, social, cultural and other family commitments. Aligning with other evidence collected relating to student burnout, work-life balance or work-life-study-balance was difficult for cadets to maintain, and was a regular problem in the daily lives of more than half of the cadets interviewed (Loosemore et al., 2020b; Moore & Loosemore, 2014).

Given indications in the existing literature, many questions in interviews were based around understanding how burnout impacts cadets. Collectively, in the data there were extreme imbalances between time spent at work and time for personal and social activities. The following specific account provides some understanding as to why construction students are at such risk of burnout and mental health-related problems, and help explain how burnout was impacting cadets: 'I learned quite a few things, but burnout was so bad … I still managed to get good grades, but I was like missing out on everything my friends were doing.'

Like other studies in the field, the Maslach Burnout Inventory model was used to interpret how, why and when construction students feel (1) emotional exhaustion, (2) lack of personal accomplishment, and (3) cynicism (Lingard, 2015). Within the cadetship cohort interviewed,

these three factors identified widespread student burnout. Most cadets noted feeling as if they were not successfully balancing work, study and personal life during the university semester. In turn cadets described being emotionally exhausted and cynical about their studies and future career. All cadet interviewees expressed burning out in their cadetship, at least once and some multiple times.

Queries run in NVivo of interview transcripts highlighted patterns indicating that later in their degrees and with more work experience, cadets felt less interested in their studies and a lack of personal accomplishment. Many cadets during the interviews described being currently exhausted, unhappy with progress at work, and cynical about their studies at university. They also noted very limited support networks within the organisations, which left them to individually manage their own cadetship:

> ‘When I was on the phone to HR, she kept saying the words, "I don't know what we're going to do. I just don't know, we just have to figure this out." Instead it was more of a "You figure it out and then you come and let us know." So during that period, I was like okay, well if I'm not going to get help, I need to figure out what I'm going to do. And during that period, coming to work was horrible, I hated coming to work.’

As others have shown, burnout has consequences inversely related to school readiness and academic performance, alongside other social and emotional pursuits, all which can undermine the chance of increasing a student’s human capital, which cadets pursue so doggedly through WIL. The data also helps shed light into why and how burnout is so common in construction students and gives clear examples of how these negative consequences impact an individual’s emotional wellbeing (see, for example, Cotton et al., 2002; Humphrey & McCarthy, 1998; Robotham & Julian, 2006). Numerous cadets discussed their burnout at length; they detailed specifically the impact of being too burnt out, as a result of overwork in WIL, to pursue social, academic and cultural activities:

> ‘Because when I started my cadetship, it was during the break, so I was working 6 days a week, like every single day for like 6 to 7 months and that just hit me. Like I was so tired all of a sudden and I just felt demotivated. Not only that but I was constantly under pressure and all that uni stuff as well.’ [Cadet who claimed to be working 12 hours a day frequently each week]

Another specific example of how burnout can cause exhaustion for cadets is contained in the following quotes from an interview:

> ‘I did not have a life like outside of work. I literally felt I had no use at all. And not only that but I started to develop like health problems from that as well. So, I experienced extreme fatigue. And then it was just yeah, one thing leads to another and I started considering my job options and job descriptions, and not only but I had a lot of mental breakdowns during work as well. And I’m like, you know this is not healthy for me anymore I should start looking for the root causes for this. Cause I wasn’t like this before. I felt like I burnout completely.’

This quote demonstrates the cynicism and fatigue that was common throughout many of the interviews. Another cadet talked about pushing past burnout:

‘So you actually burnt out completely?

Yes, I actually burnt out completely and then pushed beyond my burning stage.’

Isolated and alienated experiences with stress and mental health issues due to a cadet’s unbalanced workload can be interpreted through Freire's concept of the 'culture of silence' (Freire 1970). This refers to the way in which oppressive structures can lead individuals to internalise negative experiences, without questioning or challenging them. Often, in the interviews, a cadet’s initial response to stress was met by a culture of gritting their teeth and pushing through. This concept reflects a culture of silence and highlights the individualism and alienation currently fostered by cadets. For example, another cadet claimed:

> ‘It's gotten to the point now where I like I can tell when I’m getting to burnout point because I reached this point this time last year … It just got so out of control I was having panic attacks as I was having conversations with people and I was so out of it. I was so unwell that I remember having conversations with people when I'm going up on the scaffold and sadly just feeling so ill and thinking this isn’t safe.’

The data also sheds light into racial diversity within the cadetship program. Purposive sampling allowed these areas to be explored significantly, to existing knowledge and understanding of the program's dynamics. The previous Figures 7 and 8 in Section 5.2, however, do not show the extent of data collected in this study related to how individuals from diverse racial backgrounds are impacted during their WIL. Out of the 20 cadets interviewed in this study, 9 identified as white Australians, while the remaining 11 identified as being from various racial backgrounds, including Chinese, Lebanese, Ghanaian, Greek, Zimbabwean, Cantonese, Slovenian, Italian, Sri Lankan, Polynesian, Iraqi, Korean and Filipino. All students were Australian citizens and qualified for full working rights in Australia. The majority of these cadets were second and third

generation migrants. There were also many intersecting identities within this group. Two female cadets out of the eleven female cadets interviewed identified as being white Australian. Meanwhile, Black and Asian female cadets had significant representation in the sample structure.

Examining the experiences and impacts of WIL from different racial backgrounds, noting intersections of identity like gender and age, gave a deeper understanding of the nuanced factors that shape the impacts of WIL, allowing for a more comprehensive and inclusive understanding of the cadetship program. These distinctions have been prominent, given some of the extreme cases of sexual harassment documented in the interviews. Indeed, seven female cadets reported sexual harassment at work, especially notable in the experiences of Black women and Asian women.

An extreme example involved a young female cadet receiving sexts from a line manager, after submitting a tender late after work. The cadet explained how it impacted on her ability:

> ‘He would randomly message me at night-time, at like 10:00 pm or something. He would message me and he'll tell me about how he had like a waxing session or something and how the girl that was waxing him was doing other things. And he asked if I wax. And then he asked if I go on all fours. And he'll just go on and on, and on and I just don't reply to the messages … So then I'd come to work the next day and he would act normally, but don't expect me to go into his office.’

This cadet had not reported this disgraceful and illegal conduct, unaware of support mechanisms. Research ethics and a duty of care by the researcher led to this student receiving confidential legal and counselling support from UTS student services.

There were many other extreme examples of sexual harassment impacting a cadet’s comfort at work. Informality in recruitment is an issue already documented to be causing poorer educational outcomes within construction WIL (Forsythe, 2012; Galea, 2018). For instance, another cadet described receiving inappropriate text messages:

> ‘The guy who hired me sends me inappropriate messages. So, he's married with kids. Yeah. His wife is a bit young. He's 38 maybe, the wife is like 26, so wife isn't too much older than me. I ignore those messages, but I just reply to the ones that're work-related. But there is no HR to complain to really. Okay. And even if there is, I don't think much would happen, because he’s high in the company.’

Not only do these examples show how gendered power balances impact young people in WIL, they also show how there can be limited support networks, both within the organisation employing the cadets as well as externally. In cases where extreme abuse was discussed, occurring multiple times throughout data collection, university ethical procedures have been followed and interviewees referred to appropriate support and legal services.

Echoing findings from Demolishing Gender Structures (Galea, et al., 2018), but also enriching these feminist critiques, the interview data shows how negative gendered impacts are acutely experienced by young women in construction during their WIL; this may especially be the case for marginalised groups. As other literature suggests, there is a tolerance for sexism in construction that makes female workers feel ostracised. This tolerance was abundant in how cadets described their workplaces as being informal. For instance, one cadet noted: '… work is extremely informal … people are just them. They will say whatever they want to say and it's very blokey, but blokey with a Ralph Lauren suit.'

The construction industry is the most male-dominated sector in Australia, with only twelve per cent of the workforce being female in 2016, and new census data indicates this is closer to five per cent on sites (ABS 2022). The sheer extent and frequency of examples of sexual discrimination and harassment in interviews show how cadetships impact young women's lives, oppressing and generating feelings that they are 'working in a boys' club'.

These young female cadets are at the coalface of the industry and regularly interact with a diverse range of people, from legal professionals to tradespeople. Indeed, all female cadets, even after only six months of employment, were aware of male over-representation in these interactions. The exclusionary nature of the construction industry reminds female cadets of their gender and racial differences; these reminders frustrate and exhaust cadets. One cadet felt her male-dominated cadetship prevented her from adequately seeking sick leave:

> 'So now from this point where like I understand my health issues and my industry enough to be like, okay, if I get to this point, I need to have at least one day off to avoid having to have these conversations with men. I can see it's not normal in the team.'

Another female cadet noted how the culture she experienced felt constricting:

> 'Because it's definitely an industry where you keep quiet and you suppress your feelings, it's definitely like a skill I've learned, like, definitely coming into that industry where I've definitely become a lot more closed off. And I've, I guess, failed to open up to things and I've definitely learned that through my workplace and that's not, that's not a good skill

to learn. It's not a good skill to pick up on to suppress your feelings and act like everything's OK when it's not so.'

Female cadets interviewed were already considering different careers in other industries, without having graduated, aligning with studies showing poor retention in construction (Galea 2018):

'I also got to the point where I started to seriously question whether I liked construction or not … It turned me away from construction. I consulted my friends and people around me like, and was like I don't think this is actually for me, and I don't even know if I want to do this.'

According to Grown & Valodia (2010), women earn less than men, even after controlling for standard human capital accounting variables including age, education and job experience. According to the International Labour Organisation (ILO), the gap has narrowed in some countries over the past decade (ILO, 2009), yet these hierarchical and patriarchal structures persist (hooks, 1994; Crenshaw, 1990). Female cadets are very aware that there is a lack of female involvement and feel the repercussions of this in many ways. They frequently mentioned a blokey culture, or boys' clubs that can be hard to infiltrate, creating division among the workers. Not only is the language or 'shit talk' being 'toned down' to accommodate women, an indicator that they have not yet reached this club, it can also be manifested in material ways when women are excluded from particular social events or categorised into stereotypical roles. Both female and male cadets are aware of the male-dominated aspects of work, to the point where even RM Williams shoes were a common talking point for cadets, who described how wearing these shoes can help to fit in.

Cadet experiences highlighted the power dynamics and structures in the workplace. For instance, cadets mentioned feeling that their existing skills were sometimes undermined or neglected on purpose. Many cadets were not included in important meetings, as their project teams claimed cadets were too busy to attend these high-value and important learning experiences. There were numerous examples in interviews where cadets described missing out on learning opportunities, because they were too busy completing often menial tasks. As one cadet explained:

'I know cadets that have been subservient to the system. I guess that they've ended up in document control for a year out of what should be like a two to three-year cadetship and that is a ridiculous amount of time in doc control. Yeah, and it's literally just because they just haven't thought to go ask like they just don't care enough or whatever. And a

> lot of people I spoke to at work are like oh yeah, it's up to managers to like push us through. And I'm like but yeah, but it takes two to tango. If you're going to do a cadetship, you have to be driven enough to make sure you get to all of these sorts of milestones and that you make your way through it in a prompt and timely fashion and you can't leave it all up to the PM who's dealing with so many other things.'

Some cadets felt out of place in their teams but recognised the nature of their project-based work, and had resolved to remain in these teams. Feeling out of place was described by several cadets, especially four male cadets in the dataset who felt that they were being bullied by their more senior colleagues. One of these cadets described how they felt targeted:

> 'There was a funny comment made at work the other day. I walked into the site office and the site manager was like, "You depressed coming to work? Just remember there are some cadets that work Saturdays." And I just look around, did I say I was depressed? What kind of person makes that comment? Did I say I was depressed? Did I say I was tired? Did I say I don't want to work a Saturday? No. I show up and work bloody hard every day they ask.'

The consistency of similar confrontations was significant for the four cadets who felt bullied and had largely been unaddressed by their project team. This specific exchange gives an example of how harsh language and lack of compassion form part of the male supremacy culture on construction sites, and how cadets respond by becoming further alienated and isolated in their work.

Cadets were extremely entrepreneurial, yet individualistic, in their decision-making. Many cadets were being active in their own learning and taking it upon themselves to structure their learning at work was frequent, as was their persistence to work hard, demonstrated in the quote above. The data revealed that more than half of cadets had already qualified for the minimum amount of industry experience required to graduate within their BCPM degree; so their continuing motivation to be a cadet was typically career driven, and with recognition of the labour market competition.

The most driven cadets were actively sacrificing time at university to go to work, because they held the notion that work was more important to their education than university. These cadets were aware that the learning occurring at work was related to 'exposure' and 'experience' which the industry highly values. Cadets identified their experience on projects and across different stages of the building process as being key to their own growth. Site-based cadets, especially

the more experienced ones, downplayed the importance of their studies at university, claiming that work was the best and unrivalled place for learning.

The data gathered from the interviews reveals a significant trend in the cadets' competitiveness and academic performance. The semi-structured nature of the interviews allowed for a progressive examination of the students' academic dedication, GPA, and overall grades. Not necessarily within their cadet cohort, but relative to their broader social circles, many cadets perceived themselves to be high achievers. This perception was supported by a strong motivation to work diligently to improve their current situation. They believed they were in the busiest and most demanding phase of their professions and that their situation would improve. This assumption was based on the belief that hard work and dedication during their WIL would pay off upon graduation. The cadets appeared to be motivated by the prospect of future rewards, viewing their current efforts as an investment in a prosperous construction industry career.

The data from the interviews indicate that while cadets were generally not aware of support mechanisms, they often lacked a comprehensive understanding of their rights at work and had no knowledge of any industry ‘standard’ employment structure for cadetships. This lack of knowledge exposes their vulnerability and underscores the inadequacy of the support they receive during their cadetship. This finding is in stark contrast to the recommendations in the literature for effective WIL, which emphasises the importance of providing students with sufficient support and guidance throughout their work placements. The absence of such support for cadets in the construction industry is a significant concern, as it leaves them susceptible to exploitation and mistreatment.

As one cadet aptly noted, ‘I feel like if you're young and you're a cadet, I feel like you're particularly vulnerable.’ This statement underscores the need for improved support structures and educational initiatives to ensure that cadets are adequately informed about their rights and the standard procedures within their work placements.

5.3 Construction professionals interview data

The table below outlines the seven group interviews with the planned 15 senior construction professionals. Eventually, however, due to last-minute cancellations as outlined in Chapter 4, only 11 senior construction professionals were interviewed. Research continued despite these last-minute cancellations, given that at least one representative from each business originally

targeted for research was available to be involved in the interviews. Companies targeted for these interviews were specifically Tier 2 head contractor organisations, with offices in the Sydney area, and who employed cadets already interviewed in this research. The organisations targeted are known to be reputable and the professionals interviewed prided themselves on designing and constructing some of Australia's 'most awarded buildings'. All organisations who participated in the interviews claimed to facilitate well-managed and reputable cadetship programs with support mechanisms, training, rotation across roles, and exposure to many different aspects of head contractor organisations, including key areas of safety, estimating, site engineering, contract administration, site management and digital construction. Cadet programs or modules had often been developed using the company's own internal expertise and then applied by project teams to cadets, with mostly full autonomy from the PM and other managers as to how competencies or skills would be met during the cadet's placement or part of the rotation.

The group interviews were designed to capture a range of reputable organisations and targeted professionals who directly employed or had extensive experience working and training cadets. Therefore, all professionals interviewed had experience either interviewing and employing cadets, managing or training cadets, and promoting cadets after graduation. These senior construction professionals were selected to be involved because they are known to be integral in shaping the careers of employees, with the capacity to recruit and promote employees in companies and place them onto projects (Galea, 2018). The specific occupations of the professionals involved in this research are shown in the following Figure 9.

	Years of experience (yrs)	**Role in Business**
1	10, 10, 10	Project Manager, Senior Contracts Administrator and Human Resources Manager
2	15, 12	Construction Director, Project Manager
3	47	Digital Manager
4	15	Project Manager
5	43, 15	Director and Chief Estimator
6	15	Project Manager
7	15	Senior Contracts Administrator

Figure 9: Senior construction professionals interviewed

Data collection from construction professionals shows a noticeably unequal distribution of female and male construction professionals (see following Figure 10). Indeed, the identity of the construction professionals has likely impacted data, as all professionals interviewed were Caucasian. This one-sided gendered and racial nature of the Australian construction industry has been noted by many in the literature (Carnemolla & Galea, 2021; Galea & Chappell, 2022; H. Lingard et al., 2021), and indeed impacts the quality, variance of opinion, and nature of responses in the data collected. Also impacting the data was the finding that all of the senior construction professionals involved in this research had been involved in a cadetship or apprenticeship during their own training within the industry. These historical personal experiences of cadetship heavily informed the professionals current perceptions of cadetships, training, exposure and WIL impacts. Indeed, all professionals consistently referenced how good things are now for their cadets, compared to their own experiences on-site during their own training.

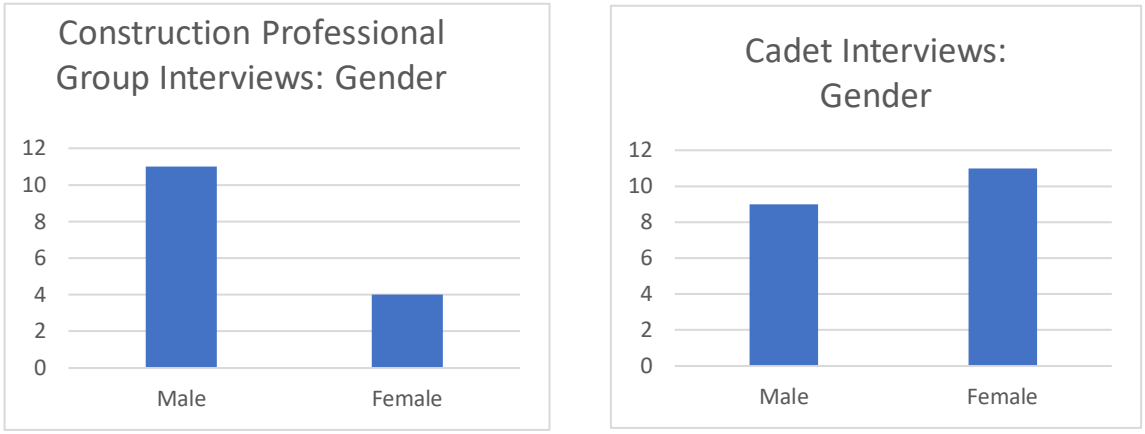


Figure 10: Gender comparison of interviewees

The range of attitudes of the construction professionals towards race and gender dynamics and culture within the industry was significantly polarised via their own gender. For instance, as noted by one female professional, 'the construction industry's been a boys' club for a long time'. Indeed, all of the female professionals interviewed spoke about how their own cadetships had left them isolated. They discussed a range of experiences and issues related to wellbeing, work-life balance, and the long working hours of construction that had impacted their own cadetships and careers. These female professionals looked to proactively support their female cadets; they noted that, in some cases, they had been intentionally paired with female cadets to be able to better support the cultural challenges they would face on-site. Three out of the four female

professionals noted that they would not recommend a job in construction to their younger selves.

Meanwhile, male project managers noted the existence and persistence of a “boys’ club”. Men also noted having to change their behaviour to accommodate female cadets; ‘I have worked in all boy site tents and you get a bit raucous sometimes, so it's definitely a lot more professional with the girls around.’ These existing concepts are complex and multifaceted in their own right, and have been predominantly viewed from questions around a disparity in industry leaders' views regarding retention rates, particularly the retention of women.

Despite recognising the existence of a “boys’ club”, male professionals were extremely hesitant to use ‘identity politics’ to justify additional support, employment, diversity or promotions. The men interviewed were aware of existing gender problems within the industry and were conscious, to a certain extent, of how young female cadets may face barriers in construction:

> ‘Yeah, so the girls are invited to Women in Construction events and there is some mentoring in the industry as well. So everyone from my level all the way down to cadets that are part of mentor groups that are specifically designed for them, really providing getting more girls in the industry and giving them opportunities as much as what has been probably done for boys, that's pretty well accepted.’

The professionals were consistently adamant that their female cadets were being taken care of, while many were sceptical of giving advantages to any one particular group of cadets. Some professionals held views that the current efforts to promote gender diversity were detrimental and unfair. In terms of recruitment, informality was common, as noted in existing studies (Forsythe 2012). Allying with other recent feminist studies on perceptions and conflict resolution, the data showed how these informal practices in recruitment, retention and handpicking project teams (Galea et al., 2020; Galea, 2018), may further entrench existing biases. For instance, after one director noted how informal employment could be by employing based off recommendations from other cadets, they responded to any efforts to increase women participation with; ‘I mean, if you push the, "We want to employ women," story, then you're discriminating against the best candidates who could be a male.’. This contradictory narrative was pervasive for most male professionals interviewed as their primary criterion for hiring cadets was based on perceived compatibility with the project team and the overall business, with gender or race being a relatively secondary or negated condition. As one senior manager put it: ‘We employ cadets based on how well we think they’ll fit into the project team and business, rather than their gender’, or another stated, ‘we're certainly not preferring

females over males either and vice versa'. Even with this reluctance, there was still a commonly held belief that increasing women participation within the industry relied on 'them having examples of others', or 'some role models up there'.

This view neglects structural problems within the industry. It also disregards current efforts to address gender issues from professional associations and bodies (for instance; NAWIC, WIDAC, or WIB), federal government initiatives like incorporating gender balances in construction procurement systems (see for instance women and Indigenous requirements in design and construct head-contract, GC21), or the lowering of university admissions (UTS, 2023). In this study, the differences in perspective of construction professionals was notably evident between male and female, aligning with other gendered findings of studies in the construction industry which show how informality in recruitment can lead to a sexist and discriminatory boys' club culture in a way which can be ignored by men (Galea & Chappell 2022). The view of many male professionals assumes that even in the context of a prominent boys' club, the labour market is freely competitive and without discrimination. It is problematic and pervasive as it 'places men at the centre as the legitimate markers of Australian construction professionals and perpetuates the "othering" of women, who are expected to adapt around them' (Galea & Chappell, 2022, p. 1702).

The research on gender equity in Australian construction has found evidence of homophobia, sexual discrimination, and a hetero-toxic masculinity (Galea, 2018; Galea et al., 2018; Galea et al., 2020; Galea & Chappell, 2022; Galea & Jardine, 2021). The interviews with construction professionals and the ethnographic observations over the next section adds a novel WIL dimension to this body of evidence. Through the zone of proximal learning, these gendered beliefs may be passed on to cadets informally from simply participating in a CoP. One manifestation, described by one cadet whose male PM had previously mentioned gender diversity was potentially discriminatory to males;

> 'No one really talks shit to the girls or about the girls... I just feel like they get it easy based on the fact that they're girls. I mean, they get away with murder in terms of workload and they just have it easy. Because they're girls and they just give all the blokes the hard jobs. It's the only sort of discrimination in this office anyway.'

5.3.1 Responses of construction professionals and summary of interviews

The construction professional group responses help confirm and add context to themes identified from cadet interviews. The construction professional interviews aimed to highlight the business processes, management programs and training systems in place that may occur behind

the scenes of cadet programs. So, perceptions towards training, types of learning, culture, gender, race, language and support were discussed in all interviews at length. Interviews also shed light into how cadetship programs have been implemented into construction projects.

A regular concept from all interviews that involved people working with cadets on-site was a lack of time and resources to adequately implement the program, spend time with cadets, or delegate others to support cadets. The responses of many of the professionals working with cadets are reflected in the words of one project manager: 'I don't spend enough time with the cadets. I'm just too busy these days.'

Industry professionals were also very interested in improving learning in cadets, because they placed value in cadets. Many noted that these young workers were the future of the company. They wanted to instill skills and technical ability, but there was also a strong focus on worker retention and loyalty. For instance, five of the senior managers had spent long periods of their early careers in the same company working as cadets and this experience had informed their own implementation of cadetships.

All companies prided themselves on a cadetship program. Yet when viewing all of the data it appears these programs were rarely implemented as intended. On paper and in the early sections of the interviews, construction professionals were proud of their respective cadetship programs, and noted that they wished their own experience as cadets had been as structured. Many felt they had been treated poorly during their own cadetships:

> 'The industry's changed a fair bit, a lot more paper-work oriented these days I find. Back in the day it was more about getting bricks and mortar down to get the progress claim in, and there's a bit of a rough induction, huge hours, not many resources. I think we built a 25-million-dollar project when I was started as a cadet with site manager, myself and a foreman and a crane crew and that was it. These days you'd probably have two or three times the amount of guys on-site, so what that gave me was exposure to everything, but the pay-off there was huge hours, and it made me miserable. I was doing two and a half full-time jobs while studying. Obviously on-the-job training which was a benefit and I was able to grasp the industry pretty quickly. So that learning was the benefit, that was the payout I guess.'

Cadet program design certainly lacked important learning considerations. Apart from experiential and informal learning, there appears to be limited thought given to the types of learning that should be involved in best practice WIL, particularly structured learning and guided learning. No programs involved regular monitoring and assessment of cadets. The only programs

that did attempt to monitor cadetship learning did this across the entire two to three-year cadetship program. All programs were designed as one-size-fits-all, but site-based construction professionals explained how they relied on their own experiences and exposures to inform how they practically implement cadet programs, allocate different work tasks to cadets, and track progress of cadets. Professionals also noted the difficulty of applying one-size programs to specific projects, due to timing of projects, trades involved, and contract structure. The disconnect between cadetship programs on paper and in projects was noted to be due, in certain areas, to key performance indicators designed by someone in Human Resources, or someone who was not completely aligned to the reality of building. As one manager explained:

> ‘Cadets from this job are a bit more fortunate because there's only two of them, so they get spread across a wide range of different areas so they get more of a rounded learning. Whereas you go to a bigger project where there's lots of cadets, one will look after HSC, one will look after document control, one will look after contracts administration, so they'll have more of a silo, if that makes sense. Whereas smaller project, less cadets, still lots of things to be done, they'll be spread across each of those functions. We try to split it up to an admin role versus site engineering role, and then we’ll swap them over and normally when the contracts are over, we'll normally send that cadet out onto the site as well, towards the end of the project when it's only project claims that we worry about.’

Indeed, many on-site construction professionals admitted to either customising programs to fit projects, based on their own experience and status of their projects, or to neglect the program entirely, as they deemed it was not relevant to their cadets. Implementation was also impacted because these professionals were so time poor; they expressed confusion in identifying channels within their organisation for assistance, structuring and teaching cadets. All construction professionals agreed that they felt their company and project teams needed to do more to support and integrate processes to better teach cadets. No cadetship program involved in this study was structured or implemented in collaboration with universities, professional bodies or unions. Indeed, there is a notable disconnect from what the literature recommends as being good WIL, via clear and structured collaborations with other stakeholders.

Billett’s (2001b) three pedagogical elements that are critical to successful, intentional structuring of guided learning at work were not consistently adhered to by construction professionals. During sections of the group interviews related to understanding educational techniques applied by organisations, construction professionals were asked about specific ways

in which they teach cadets, and ensure cadets are learning at work. Billett's first dimension, the structuring of work and the provision for guidance for learning during that work, appeared, in some cases, to be integrated into business processes and implemented on specific projects via structured and collaboratively designed cadetship programs. Yet, all of the builders interviewed prided themselves on a flexible cadetship program. They generally held the consensus that 'cadets needed good rotation and exposure to all aspects of the building process', so used terms like 'flexibility' and 'customisation' as a way to describe the cadetship. They also noted the downfall in implementation of the nature of cadet programs related to how cadets, treated as a form of labour rather than as learners, became inserted and then locked into a project. Being 'stuck on a project' that was nearing completion was a common problem for cadets, as it limits exposure to building concepts and principles relevant to that project at that particular moment in time.

The teaching techniques construction professionals use and the way in which work is structured for cadets did not meet Billet's second dimension required for adequate workplace learning (Billett, 2001a, 2001b; Billett & Boud, 2001). There was limited capacity for construction professionals who directly worked with cadets to provide cadets with serious extended guided or structured learning. Many construction professionals admitted they did not have sufficient time to closely observe cadets while they are working; this was reinforced during the observations. It is critical to have the second dimension to the guided learning approach in WIL programs, to help ensure learning in workplaces is relevant and impactful. Billett's third dimension claims workers need to engage in learning activities that, over time, develop deep knowledge, skills and an understanding of projects. In ensuring these steps, the guided learning that takes place can then be reviewed, documented and techniques further developed to ensure effectiveness of the learning. Indeed, the third dimeson was mostly only apparent in the seven structured cadetships, and even in those cases were formalised feedback or assessment was rarely provided.

Meanwhile, some construction professionals exhibited hostility to the state of current building courses. There was a consensus that the cadetship was essential, while university was not essential but still generally useful.

> 'You had more people from who've gotten probably proper tertiary education going into this industry and I think in so many ways education hasn't quite caught up in a way to make sure that we're bridging the gap between understanding what's going on-site in the same way that you would as a tradesman'.

Some professionals discussed how current BCPM programs were not teaching construction students enough practical skills. Specific skills that were noted included ‘how to read drawings’, ‘how to actually build things’, and ‘know the details of building’. Rather, university was seen as a place that was still important, but would not alone adequately equip students for productive work on-site or in the head office. As one professional succinctly quipped: ‘You don’t really need a degree to be doing this kinda work.’ Or as another explained;

> ‘Oh yeah you can do it, but a construction degree is a bit of a quasi-professional degree anyway … It's learning and there's probably a lot of degrees at universities that you don't necessarily need to do to be able to go and get a job. It's horses for courses really.’

When quizzed about their dream cadet, organisations were very reluctant to say they would promote a cadet because they were always going to be limited as being an ‘unreliable worker’ and therefore unable to be fully integrated into a specific role, because of their university commitments. Meanwhile, the term ‘green’ was raised many times; while not used in a derogatory sense, it had undertones of inadequacy. This helped to reinforce the hierarchy that places cadets without power to negotiate their own conditions or be seen as respected workers.

5.4 Participant Observations

Days when shadowing was to occur were selected to be purposive. This involved a great deal of planning with organisations, project teams and cadets themselves. One ethnographic observation had been planned on the day of a large concrete pour; the day before, the researcher was approached via phone by the site engineer directly responsible for the cadet and asked to postpone, on account of potentially distracting the cadet who had a lot of work to do. During the observation a week later, it was revealed the cadet and team had worked 13 hours on the day of the concrete pour.

Table 5.1 shows the breakdown of cadets that were observed during a full working day. Given that many of the sites and offices where the research took place had numerous cadets working, it was rare to have a cadet working in isolation. Four cadets from reputable Tier 2 Australian head contractors agreed to be shadowed, after all parties, including the construction professionals and cadets, had previously been interviewed.

Table 5.1: Shadowing of cadets – demographical and working information

	Duration	Gender	Ethnicity	Site or office
1	1 full day (6:45am – 5:45pm)	M	Australian born Lebanese	Site
2	1 full day (6:45am – 6pm)	M	Australian born Caucasian	Site and office
3	1 full day (7:15am-3pm)	M	Australian born	Site
4	1 full day (8:00am-3:30pm)	F	Australian/Sri Lankan	Office
	4 full days (approx.) 40 hours			

The four cadets were shadowed from the moment they began their working day until they left either the site or office for home. Throughout the shadowing period, the researcher was involved and asked questions that often prompted a running commentary from the person being shadowed. The running commentary described anything, from relating the duties the cadet was completing to explaining some inside jokes that were made around the office. Throughout the shadowing, ongoing notes were taken; in most cases, by the end of the shadowing period, the researcher had a comprehensive dataset which gave a detailed, first-hand and multidimensional picture of the role, approach, philosophy and tasks of the cadet being observed. The written data collected throughout the shadowing were then analysed in the same way as any other qualitative data (McDonald, 2005).

The three construction sites involved in the observations were commercial in nature, with total contract values ranging from 10 million to 30 million AUD. These sites encompassed a wide variety of construction projects, all commercial buildings, with conventional formed reo pour concrete and precast concrete structure. These projects are substantial and significant, involving multiple stakeholders, complex logistics and a large diverse workforce from a range of trades and disciplines. In addition to being present on their respective construction site, travelling to head office was also part of two cadets' daily routine. The cadets needed to move between construction site and office, running errands as part of their responsibilities. These errands could

involve a variety of tasks, such as delivering documents, attending meetings or coordinating with different departments.

The movement between construction site and office suggests a dynamic work environment, with the cadet needing to adapt to different settings and tasks throughout the day. This experience would provide the cadet with a broad understanding of the construction industry, from on-the-ground operations at the construction site to administrative and management tasks at head office. On the whole, the cadets shadowed had numerous opportunities for informal learning and experiential learning via observing and participating in various construction processes, such as concrete pouring, site management and technology use. The observations also highlighted the importance of understanding the work of subcontractors and the challenges cadets face when communicating with contractors, from a range of backgrounds. This was problematic in a few instances where cadets were unable to answer subcontractor questions, because project team information had not been disseminated to cadets.

During the shadowing, high-value tasks completed by cadets as described in interviews were witnessed as being valuable by other members of the project teams. For instance, during the site visits, site teams involved cadets as much as possible in day-to-day work and kept them constantly working. Cadets were always busy and had formal tasks to complete that were interrupted by requests from the project team and even, in a few cases, by subcontractors. Cadets did not seem to have their own integrated role into a particular process; they were instead exposed to a range of tasks that were delegated informally and formally by more senior workers. Across all four observations and reinforcing themes identified in the interviews, it appeared that anyone on-site, including tradespeople and subcontractors, were able to rely on a cadet's labour to help out with particular tasks.

All on-site cadets observed started the day with site inductions, where they would meet tradespeople. Cadets were observed communicating and helping a number of tradies, moving materials, sending messages or delivering equipment across site; other daily tasks involved coordinating with other team members, planning and organising events, meetings and logistics, without significant guidance or support. There were also significant low value tasks that cadets would complete. One cadet spent a vast majority of the day of shadowing collecting deliveries from the basement to head office, to help the front office staff. Throughout the day, the researcher and cadet travelled 18 times in the elevator doing small trips to bring equipment into the office.

Cadets would regularly confer with one another, providing guidance to each other. This suggests that communication and collaboration are important aspects of the cadet's daily tasks. One outstanding observation was the frequency that cadets mentored other cadets. Three cadets were observed managing cadets throughout the day on specific tasks. For instance, one cadet explained they had been shown how to process a document by a CA, and so was authorised to spend time teaching other cadets how to complete the task, and then proceeded to delegate subtasks to other cadets. The lead cadet thereby became co-involved in the learning process, not as a student, but as the teacher, albeit in an unguided and informal way (Freire, 1970).

The shadowing revealed interesting dynamics in the way individuals adapted their behaviour, based on the gender of their colleagues. In interviews, some cadets and construction professionals reported that they would react differently if the other person involved in a conflict, or being shown a particular process, was a female. This aligns with observations made that site workers would distinctly alter their language and demeanour when women were present, indicating a level of self-awareness and adjustment. Some workers on-site during the observation continued to use inappropriate language and exhibit certain behaviours, regardless of whether a woman or a man was present.

5.5 Coding framework and process

While some aspects of coding have been challenged as not being essential to qualitative research, there remains a wide consensus among quantitative researchers that some form of data reduction is an important strategy for qualitative researchers (Attride-Stirling, 2001), and increasingly, qualitative researchers are providing more specific details on those processes to help build trustworthiness within qualitative research. This section therefore provides specific examples of how the data has been coded via the Attride Stirling (2001) process to create basic themes, interconnected to organisational themes, which then lead to the global themes that from the analysis in chapter 6.

The procedures that were built into the process of data analysis ensured that the findings of the research were not merely constructed in isolation, but were also seen as relevant by the researcher's peers. The processes listed below in step-by-step accounts are heavily informed by Attride-Stirling's thematic analysis. Although the results reported are acknowledged to be shaped by the researcher's world view, reflexivity has previously been fully disclosed in Chapter 4, to instill confidence that interpretations of the data are understandable and have been

reviewed by others. Indeed, due to continued feedback and presentation of this research, themes developed were transparent to, and understood by, those outside the research process.

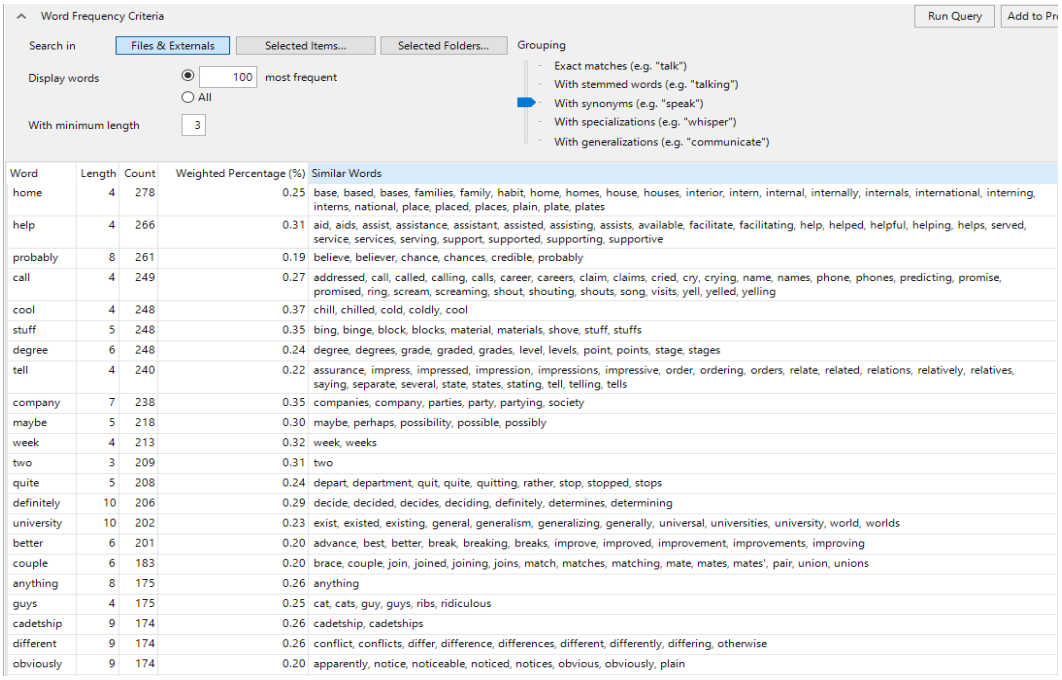
The analysis of all three data categories carefully followed a thematic analysis approach, as detailed by Attride-Stirling (2001). According to Attride-Stirling, this approach acts as a highly robust and highly sensitive technique that relies on already well-established qualitative analyses. The thematic networks that this analytical tool prescribes are web-like illustrations, using coding software that can help visually identify the main themes emerging from the data. Thematic analysis is capable of capturing nuances and deeper meanings and allows a latent (interpretive), rather than semantic (explicit or surface), approach to be taken (Braun & Clarke, 2006). Given the widespread adoption of Attride-Stirling's approach across numerous social sciences, the method has also come to be a frequent tool used in WIL research. (See recent examples: Lasen et al., 2018; Scott & Willison, 2021; Walters, 2021).

5.5.1 Stage A analysis: coding

There are three steps involved in the first stage of analysis. First, in Stage A, the transcripts were read to gain an understanding of the overall meaning and context, then a sense of the global themes related to the research objectives were theorised. Next, data was imported into NVivo, where it was dissected and coded into smaller manageable segments with the use of basic coding principles. This step of coding the transcripts was based on the researcher's own hypotheses, which are informed by indications in the literature and reflexivity. The hypotheses for theorising global themes were further guided by the theoretical framework informed by the research questions and on the basis of any outstanding anecdotes in the text. The intention here was not to begin a formulation of intricate themes, but to simply categorise the text, based on any similarities or interests that the research objective dictated. Themes in the interview data provided the researcher with the tools and knowledge to formulate a guideline for the ethnographic observations, in order to provide more targeted and succinct observation periods.

This first phase of the analysis involved three specific steps. Firstly, a coding framework had to be devised. A coding framework is typically developed using the theoretical interests guiding the research questions, or is built up using significant issues within the data. In the case of this research, both were employed. In other words, the dissection of the text relied on initial codes that were broad and abundant, sometimes using theoretical influences outlined in Chapter 3, while other codes identified basic information related to demographics, or highlighted particularly interesting and novel findings. For example, a code called 'extraction of surplus value' was initially used to group data from cadets who talked about how they felt they were

underpaid, or that they contributed to the benefit of the organisation; another code, simply labelled ‘theft’, was applied to text where cadets described stealing and selling materials from site. Initial word frequency analysis in NVivo helped to inform the coding framework, by identifying relevant words or codes relevant to the research questions. Figure 12 provides an example of this analysis for one key theme: ‘culture’.



Word	Length	Count	Weighted Percentage (%)	Similar Words
home	4	278	0.25	base, based, bases, families, family, habit, home, homes, house, houses, interior, intern, internal, internally, internals, international, interning, interns, national, place, placed, places, plain, plate, plates
help	4	266	0.31	aid, aids, assist, assistance, assistant, assisted, assisting, assists, available, facilitate, facilitating, help, helped, helpful, helping, helps, served, service, services, serving, support, supported, supporting, supportive
probably	8	261	0.19	believe, believer, chance, chances, credible, probably
call	4	249	0.27	addressed, call, called, calling, calls, career, careers, claim, claims, cried, cry, crying, name, names, phone, phones, predicting, promise, promised, ring, scream, screaming, shout, shouting, shouts, song, visits, yell, yelled, yelling
cool	4	248	0.37	chill, chilled, cold, coldly, cool
stuff	5	248	0.35	bing, binge, block, blocks, material, materials, shove, stuff, stuffs
degree	6	248	0.24	degree, degrees, grade, graded, grades, level, levels, point, points, stage, stages
tell	4	240	0.22	assurance, impress, impressed, impression, impressions, impressive, order, ordering, orders, relate, related, relations, relatively, relatives, saying, separate, several, state, states, stating, tell, telling, tells
company	7	238	0.35	companies, company, parties, party, partying, society
maybe	5	218	0.30	maybe, perhaps, possibility, possible, possibly
week	4	213	0.32	week, weeks
two	3	209	0.31	two
quite	5	208	0.24	depart, department, quit, quite, quitting, rather, stop, stopped, stops
definitely	10	206	0.29	decide, decided, decides, deciding, definitely, determines, determining
university	10	202	0.23	exist, existed, existing, general, generalism, generalizing, generally, universal, universities, university, world, worlds
better	6	201	0.20	advance, best, better, break, breaking, breaks, improve, improved, improvement, improvements, improving
couple	6	183	0.20	brace, couple, join, joined, joining, joins, match, matches, matching, mate, mates, mates', pair, union, unions
anything	8	175	0.26	anything
guys	4	175	0.25	cat, cats, guy, guys, ribs, ridiculous
cadetship	9	174	0.26	cadetship, cadetships
different	9	174	0.26	conflict, conflicts, differ, difference, differences, different, differently, differing, otherwise
obviously	9	174	0.20	apparently, notice, noticeable, noticed, notices, obvious, obviously, plain

Figure 11: NVivo queries and codes applied to interview transcripts

Secondly, themes were abstracted from the coded text segments. The abstracted themes were refined for clarity and precision. This interpretive procedure of coding has been challenged by a number of quantitative researchers. They claim that coding is not necessary to understand or reduce a data source, and that other approaches like phenomenology or thematic analysis are more useful, because they approach the data or story as a whole. Despite ongoing debate about the importance of coding and concerns regarding the standardisation of qualitative analysis methods, there's remains a broad consensus that simplifying data remains a crucial approach to qualitative research (Lee & Fielding, 1996). In the context of the analysis of the data collected and outlined above, the coding process are a helpful practical technique, used as a first step to begin to deconstruct the data in the Nvivo thematic analysis.

Indeed, the creation of a robust coding framework is a crucial step in qualitative data analysis. The codes should have clear boundaries or definitions, to ensure they are distinct and not interchangeable or redundant. This specificity allows for a more accurate and nuanced analysis

of the data. Limiting the scope of the codes and focusing explicitly on the object of analysis also prevents the coding process from becoming overwhelming or unmanageable. It ensures that the coding remains focused on the key themes and patterns in the data, rather than attempting to code every single sentence in the original text. After rereading the transcripts, the coding framework was further developed and refined. Codes were grouped together or broken up, to begin to build what Attride-Stirling defines as 'basic themes'. Within the coding framework, a basic theme is only identified and treated as such if it occurs across four or more data sources.

Thirdly, in the first stage of analysis, another rigorous examination of the dataset is required. The refined themes were then organised, based on their interconnections and relationships. Subsequently, basic themes were selected from the arranged themes, and these basic themes were further rearranged to form organising themes, highlighting the underlying patterns and associations within the data. From these organising themes, global themes were deduced, representing overarching concepts that encapsulated the key findings discussed in Chapter 6. The global, organising and basic themes were then visually illustrated within NVivo as a thematic network, providing a comprehensive representation of the qualitative data analysis. Finally, the thematic networks underwent a thorough verification and refinement process, to ensure accuracy and completeness in capturing the multifaceted aspects of cadetships within the construction industry.

Codes were collated from all data and eventually 60 basic themes were identified from thousands of codes within the data. The intended outcome from this initial application of the coding framework was to dissect the text into logical, manageable and meaningful segments that could, in turn, be grouped together. There was no limit on the size of text included in the initial codes, so entire passages, quotations and single words were included in the first readings and coding.

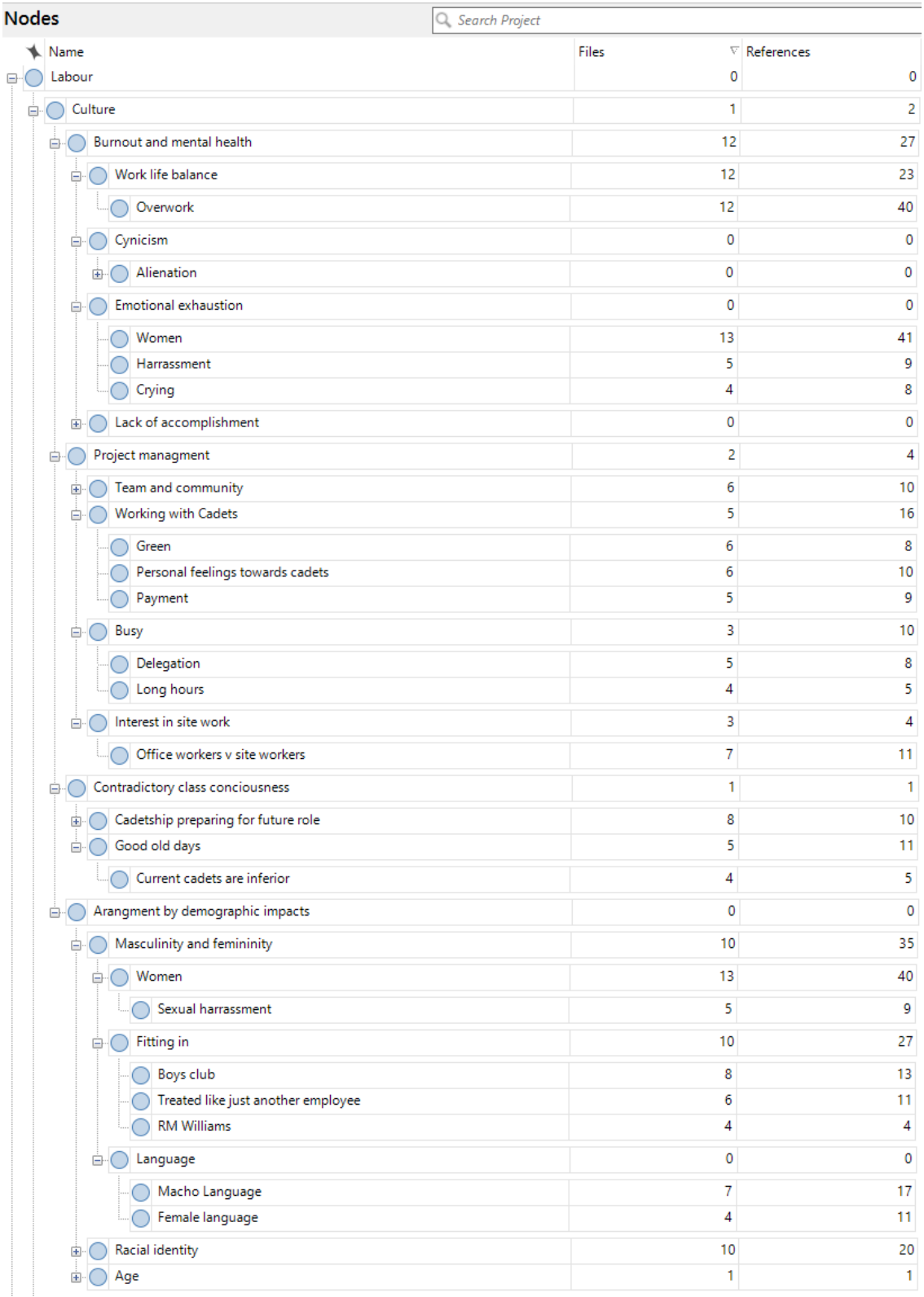
5.5.2 Stage B analysis: describing and summarising themes

The thematic network was then subjected to a detailed description, where its various elements and components were thoroughly examined and outlined. The thematic network was also systematically explored to uncover its depth and intricacy. This exploration aimed to gain a more profound understanding of the network's complexity and to reveal nuanced insights and patterns within the data.

Over multiple readings, relevant words and phrases were queried, based on frequency. Word maps and other visual aids were used, to help generate more developed codes in NVivo software. To do this, segments of text were categorised into basic and organising themes,

abstracting and refining the text through multiple readings. These techniques, while extremely time-consuming, allowed the researcher to reframe the reading of the text, which enabled the identification of underlying patterns and structures (Attride-Stirling, 2001). This visual process is considered part of best practice in identifying and properly understanding data, noted by qualitative researchers to be helpful, yet in-depth and significantly time-consuming (Silverman, 2013).

Next, the thematic networks were summarised to provide a concise overview of the themes and their relationships. Figure 12 is an example of how networks were joined and organising themes built up from basic themes. Basic themes on the lowest level of the networks were drawn from hundreds of codes that have been excluded from the diagram due to sensitivity of the codes. An example of 'cleaned' and desensitised basic codes leading to an organisational theme, 'culture', are shown in the following figure.



Name	Files	References
Labour	0	0
Culture	1	2
Burnout and mental health	12	27
Work life balance	12	23
Overwork	12	40
Cynicism	0	0
Alienation	0	0
Emotional exhaustion	0	0
Women	13	41
Harrassment	5	9
Crying	4	8
Lack of accomplishment	0	0
Project managment	2	4
Team and community	6	10
Working with Cadets	5	16
Green	6	8
Personal feelings towards cadets	6	10
Payment	5	9
Busy	3	10
Delegation	5	8
Long hours	4	5
Interest in site work	3	4
Office workers v site workers	7	11
Contradictory class conciousness	1	1
Cadetship preparing for future role	8	10
Good old days	5	11
Current cadets are inferior	4	5
Arangment by demographic impacts	0	0
Masculinity and femininity	10	35
Women	13	40
Sexual harrassment	5	9
Fitting in	10	27
Boys club	8	13
Treated like just another employee	6	11
RM Williams	4	4
Language	0	0
Macho Language	7	17
Female language	4	11
Racial identity	10	20
Age	1	1

Figure 12: Networks built up from basic codes and grouped into organisational themes

Through a series of cross-referencing NVivo coding queries, alongside mapping and producing visual branch-like network diagrams, the researcher then began to describe and arrange the themes. Queries were run, to understand the networks and patterns that had begun to take shape. This process to validate themes was arduous and involved analysing each network in turn, viewing the structure of the network, identifying the minimum references, and the quality of contents supporting the description. Organisation of the branch-like structures was considered. The wider networks were explored and any underlying patterns, similarities or repetitions of concepts that began to appear were noted. To help identify patterns in the themes, some queries were run in NVivo to cross-reference and compare how respondents' gender and other demographical aspects were linked to common or unique themes.

5.5.3 Stage C analysis: integration of exploration

The third and final stage of analysis involved only one step. Here, segments of text were categorised into basic and organising themes, abstracting and refining the text through multiple readings. Themes, networks and patterns that had begun to take shape were arranged, by taking each network in turn and describing its contents, supporting the description with text segments. The networks were explored and intersections between these networks were considered. Any underlying patterns that began to appear were also considered.

This in-depth and exhaustive three-step process for analysis was completed three separate times for each data group, only after each method of data collection had been completed. In terms of interviews, two global themes and thirteen organising themes developed from this analytical process, which are further elaborated on in Chapter 6. As overarching category themes, these organising themes act as main categories that contain approximately 60 basic themes. Once all data from the cadet interviews and construction professionals had been analysed, there was a final cross-reference of themes with the analysed data from the observations. Each interview has been associated with at least 35 basic themes, with a mean of 70 codes per interview.

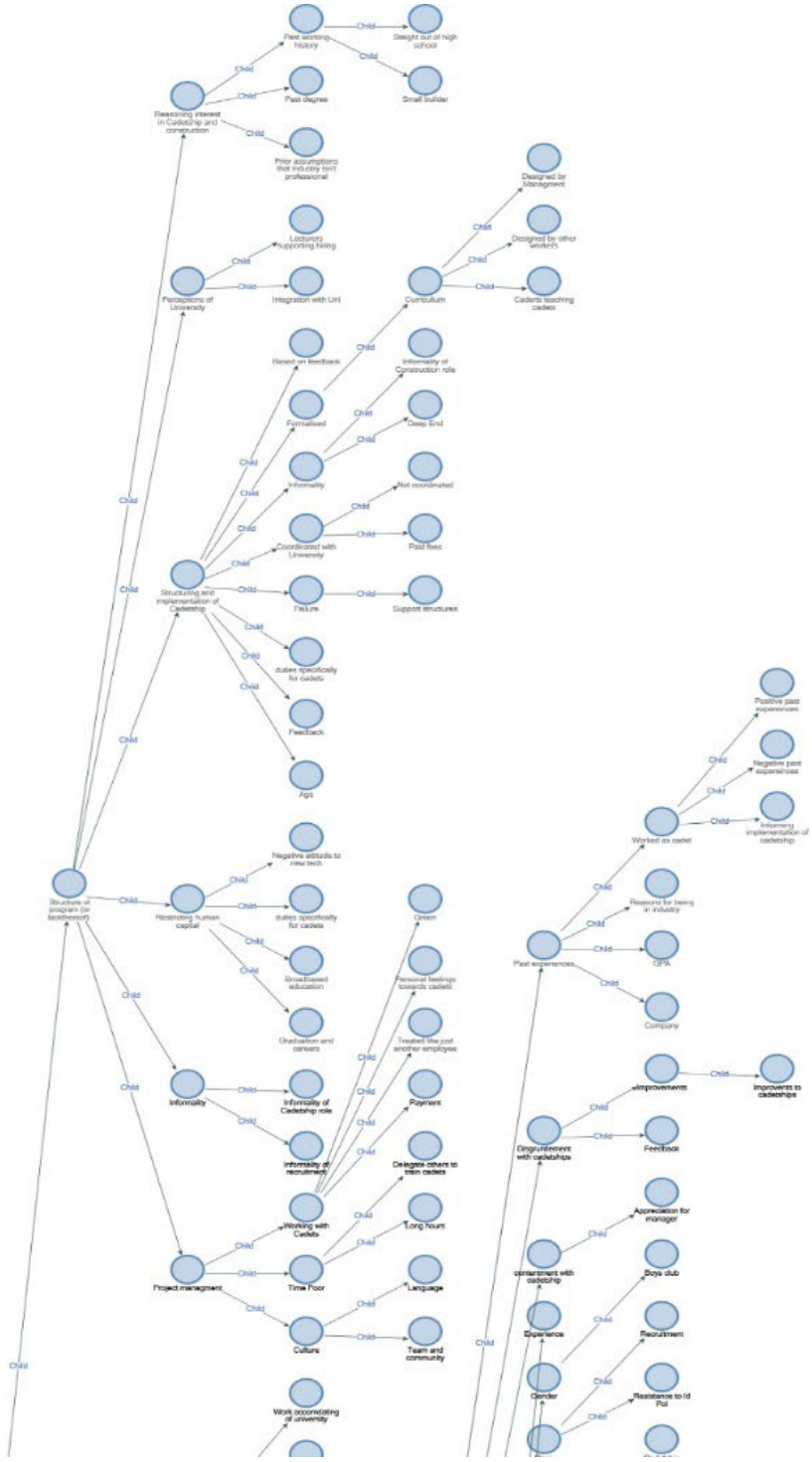


Figure 13: A example of branch-like structures in NVivo software

Figure 13 shows an example of part of the network diagrams generated through the analysis. The aim of the figure is to show how branch-like structures have been created to visualise the themes from the data. It reflects just one of the many network diagrams used to analyse data from each method of collection. These visualisations helped inform an understanding of

relationships, overlaps and patterns that were in the data. The entire detailed network diagrams are constructed in NVivo and follow a similar structure to this example, where codes and basic themes have been derived from in text, starting on the right, then link together towards the organisational themes in the middle section. Moving left, organisational themes then lead towards the 2 global themes. Detailed network diagrams have not been included within this thesis as they contain confidential participant information restricted by ethics requirements. Showing these in full, would breach ethics guidelines and potentially reveal the identity of participants and organisations involved in the study. In any examples of branch structures, or breakdown of nodes, as in Appendix 2.1, or throughout this chapter, all information presented have been anonymised.

5.6 Framing the data

Critical reflection on the data and the choices made while the research is in progress is noted by Cassell and Symon (2004) to be an important part of reflexivity. Being transparent in reflection can also help establish trustworthiness. To this end, it is important to outline how the researcher defines quality research and details the processes, during and after the research methods, that were taken to achieve quality data.

Importantly, and most central to this idea, the researcher engaged in regular reflections and discussion with all PhD supervisors throughout different stages of data collection. Here, because the sampling for all data categories was purposive, these reflections with the supervisory panel entailed discussing responses in the interviews, strategising questions for further interviews and planning observations. As Maxwell (2010) advises, there is some value in including these interpretations and reflections of the raw data, as they can help improve the integrity of the analysis, and in this case the political economic analysis in Chapter 6.

5.6.1 Quality in the research

The data collected is not independent of the researcher (Holmes, 2020). In fact, the constructivist character of the work necessitates that the criteria used to evaluate the quality of research, and specifically this research, be articulated in order to develop confidence in the findings (Eriksson & Kovalainen, 2008; Holmes, 2020; Nowell et al., 2017). Therefore, the four assessment criteria established by Lincoln and Guba (1985) are examined: credibility, transferability, reliability and confirmability. All four criteria will be reviewed, in relation to the data presented so far in this chapter.

The credibility and reliability of this research is based on two aspects of the work. The researcher is an experienced university lecturer with some knowledge of the research environment and the ways that WIL is used and discussed in the construction industry. The researcher experienced their own cadetship in two organisations, and has taught construction students for nearly 10 years. In the past 4 years, the researcher has supported and mentored several current construction students through their own cadetships, many of whom have gone on to have very successful careers. In this time, the researcher has also consistently engaged with industry, visited construction sites and been involved with a number of digital construction industry short courses, where cadets and entire project teams are taught how to implement digital construction technologies. The researcher's knowledge of the working environments, both on-site and within the site office, has informed this work.

Additionally, the use of three methods of data collection also hopes to bring credibility to this work, by ensuring that numerous stakeholder perspectives are examined. Indeed, the insider perspective of this researcher can affect the approach and biases involved in coding the data into themes, known as informant bias. What participants share in an interview or focus group will be influenced by their relationships with the researcher; then the analysis, however thorough, will be biased, based on the researcher's own experience inside and outside of the research context (Dwyer & Buckle, 2009).

In terms of transferability, this research is not relevant to scenarios other than those investigated in the study. In other words, the findings are not applicable to all construction cadets participating in WIL, or even to groups connected to the participants. It is noted that the results reached are based on a small number of examples, therefore claiming that the same outcomes apply to others would be improper. The thorough methodology outlined in Chapter 4, the research design, and the reflections in this chapter should make it possible for other researchers to be informed, to assess how well the findings apply to any future specific setting (Lincoln & Guba, 1985).

Confirmability implies that the researcher is responsible for providing readers with knowledge about the complete process and that the method is rational, traceable and recorded. Confirmability requires that the findings and interpretations be connected to the data to assure the reader that the results and conclusions are not the result of the researcher's imagination, according to Eriksson and Kovalainen (2008). The processes used in data collecting and analysis have been described in Chapter 4 and throughout this chapter. This should show that the techniques used were 'logical, traceable, and documented' (Eriksson & Kovalainen, 2008).

5.6.2 Context, data collection issues, lessons learned

To minimise biases related to the interpretation of the data (Silverman, 2013), theoretical influences from an institutionalist approach are utilised; in particular, the notion that the social, historical and economic context of the data is important to consider when interpreting the work (Kinsella, 2006). This consideration is particularly relevant, given how Covid-19 occurred after all data was collected and analysed. The context of the data collection was not strictly impeded by Covid-19 or lockdowns, and any data collection occurred face-to-face and within prescribed and approved ethics limitations. However, the few semi-structured interviews conducted post Covid-19 with cadets were implemented in a safe Covid-19 way, that was in line with state and federal regulations. In some cases, participants were informed at the beginning of the interview that they could wear a mask, if preferred.

Given the researcher's reflexivity to the subject and consistent interaction with cadets, there were no notable issues with data collection related to cadets. However, that was not the case with some of the group interviews. Many of these participants were senior management and so had committed to interviewing in small groups; however, on the day of the interviews many were too busy to attend or unavailable to interview for longer than one hour. Significant planning had gone into organising these meetings, sometimes months in advance, but due to the nature of the construction project and as a reflection of how busy and fast-paced the industry is, a few professionals had to cancel interviews. In all cases, the decision was made to continue with interviews, even if there were not enough people in the room to form a 'group' as intended. Nevertheless, in these individual interviews some rich data still emerged, as interviewees were able to provide longer and more thorough responses.

On reflection, another factor that has likely impacted the context of data collections is that the researcher was aware of how they presented themselves and made modifications for the audience they were interviewing. The researcher exhibited a formal and expert demeanour while conversing with construction industry experts, often dressing in a button-up shirt and/or suit jacket, especially when in large offices. However, for interviews with cadets, appearance and demeanour were more laid back. Professionalism was still maintained, yet not to the extent displayed in the professional interviews. This deliberate change in appearance shows that the researcher is aware of how crucial context and audience are, especially when interviewing 'business elite' or in fast-paced, short turnaround business encounters (Liu, 2018).

One example of an unplanned impact on the context of the research setting occurred during an initial meet and greet before the first construction professional group interview took place with

three senior professionals. During the introduction, the researcher noted their interest in Marx, referring to a previous title of a draft of this thesis and other work that had been produced related to this research. From this point on, the construction professionals acted noticeably differently. The researcher felt that after Marx had been mentioned, the atmosphere within the boardroom changed. In this situation, the researcher had not taken thorough care to understand how to interview 'elites' using techniques described in the literature, but particularly by Morris and others (Morris, 2009; Scally et al., 2021). While Morris notes that the researcher should appear well-educated on the topic, there was little mention in the literature about how particular terminology, and ideological caution should also be considered when interviewing elites. As a direct result, Marx was not referenced in any future construction professional interviews, and the work has since turned to a wider political economy framework. More care in following group interviews was taken to ensure that, at the beginning of the interview, the elites were reminded that they could opt out at any point or choose to have the transcripts removed or revised if they felt uncomfortable.

5.7 Conclusion and key data takeaways

The quality of data is important, but so too is the quality of data analysis. How datasets are analysed can make or break analytical rigour. Detailing the process of data analysis is pivotal to both processes. Thus, this chapter has tried to shed light on the data collected and how it was framed, organised and analysed.

A total of 20 semi-structured interviews were conducted, with durations ranging from 44 minutes to over 2 hours. The cadet interviewees were a mix of males and females, with diverse ethnic backgrounds, aged between 19 and 26 years. The interviewees were in different years of their degree programs and had spent varying amounts of time in their cadetships, ranging from 6 months to 36 months. The total duration of all interviews was approximately 30 hours, yielding transcripts around 250,000 words. Four full-day shadowing/ethnographic observation sessions were conducted, each at a different construction general contractor. The sessions involved observing one cadet at each company, with a mix of males and females of diverse ethnic backgrounds. The observations took place both on-site and in the office. The total duration of these sessions was approximately 40 hours, yielding around 30,000 words of notes.

Meanwhile, seven additional group interviews were conducted with 11 professionals in the construction industry, including Project Managers (PM), Construction Directors, a Digital Manager, a Chief Estimator, and a Senior Contract Administrator (CA). These interviewees had

varying years of experience, ranging from 10 to 47 years. The total duration of these group interviews cumulatively was just over 10 hours, yielding around 60,000 words of manual transcriptions.

Finally, the chapter outlined the steps taken in the analysis process, from coding the material and identifying themes to constructing thematic networks and interpreting patterns (Attride-Stirling, 2001). The analysis was completed three separate times for each data group, only after each method of data collection had been completed (& Clarke, 2006). Branch-like coding structures within a thematic analysis approach were refined. Doing so is useful to capture and identify nuances and deeper meanings, allowing for an interpretive rather than a semantic approach to the data (Attride-Stirling, 2001).

After presenting the data, this chapter acknowledges the potential for bias due to the researcher's own experiences and worldview, but argues that the triangulation with existing studies, use of three methods of data collection, and regular reflections and discussions with the PhD supervisors, publications and conferences throughout different stages of data collection have helped to establish credibility (Charmaz, 2014). The chapter acknowledges the importance of context, and notes that the social, historical and economic context of the data is important to consider when interpreting this work (Charmaz, 2014). This is particularly relevant, given how fluctuations in an economy or other destabilising events like Covid-19 can shape how precarious work is structured and treated. The chapter also emphasises that the findings are not applicable to all construction cadets participating in WIL, or even to groups connected to the participants.

Chapter 6: Findings, Analysis and Discussion

6.1 Introduction and chapter outline

This chapter analyses the data presented in Chapter 5, that has been deconstructed and analysed through the aforementioned analytical processes. The political-economic-WIL framework developed in Chapter 3 is operationalised in this chapter to bridge the data in a way which contends with the social, political, and economic discussions that have arisen from within the themes within the data.

Chapter 6 is broken into three major parts, aligned with the key pillars of the framework in chapter 3; historical materialism, critical pedagogy and intersectionality. Applying the framework to the data, the first two sections are thus structured around the identified global themes within the data: education and labour. The impacts of these two global themes frame the analysis and discussion and help to group the respective organisational themes construction from within the data. In the initial sections of this chapter, for each global theme, three key organisational themes are discussed and triangulated against existing WIL and political economy literature. Indeed, each organisational theme discussed below can be seen as an impact on a cadet's WIL in their own right, ultimately contributing to shaping the political economy of the cadetship for the students involved. In line with the dialectical paradigm that has been used throughout this thesis, the third and final section of the chapter seeks to build a synthesis of the education and labour themes, triangulating against literature within other WIL fields and drawing heavily on the conceptual framework outline in Chapter 3.

While the data does show cadetships have potential to enhance technical and practical skills of construction students, the analysis in this chapter highlights that they frequently lack structured programs, support mechanisms and distinct role boundaries, resulting in informal, inconsistent and inefficient learning outcomes and experiences. This, in turn, leads to precarity, and detrimental learning outcomes. Indeed, the negative impacts to students are not the result of individual malicious decisions of actor's cadets engage with, and it should not be construed from the following analysis that construction organisations and professionals neglect cadet's education and training on purpose. Rather, as outlined in Chapter 3, different stakeholders are forced into actions by their own work pressures, organisational structures and wider structural pressures. All organisations and professionals involved in this research wanted the best possible outcomes for their cadets, yet as this chapter shows, learning within the workplace can consistently be undermined by the organisation's constant short-term pursuit of profit.

There is a paradoxical nature of cadetships uncovered in the analysis, in which students may learn less and earn less. Moreover, the positive impacts of cadetships are not universal; there are significant gender, racial, age and social class disparities. This analysis also outlines labour-related impacts related to overwork, fatigue and a lack of work-life-study balance, which can have a negative impact on the mental health and retention of students in the construction industry (Patrick et al., 2008). This can contribute and reinforce discrimination, alienation and patriarchal cultures within the construction industry. Cadet programs that are supposed to monitor, rotate and support cadets, when implemented by time poor on-site teams become under-resourced, leading to exploitation and exclusion of cadets. This is consistent with Marx's circuit of capital, and other Marxist key concepts like alienation. These findings are aligned with research on paid and unpaid WIL in the Australian construction disciplines (Funnell, 2016; Han, 2015; Lingard et al., 2021; Lucas, 2012; Rodino-Colocino & Berberick, 2015; Smith, 2015; Turner et al., 2019; Zhang et al., 2021). Recognising the workplace as a dynamic setting where learning opportunities and obstacles lead to both deliberate and accidental outcomes, the examination in this chapter further proposes that enhancing the learning conditions for cadets is achievable through the incorporation of Freirean critical pedagogy, which may help counter the existing uncritical education faced by cadets.

The key finding that cadet education impacts are one-sided, or industry driven, is based on data that show cadets face limited integration and overlap between learning at work and learning at university. Cadetship structure appears to have minimal involvement from other stakeholders. The one-sided, business-driven approach to this WIL has strong roots in neoclassical human capital ideology, and means construction students are taught primarily technical skills, without a broader recognition or comprehension of the contextual historical, political, social, economic and ecological aspects how their labour contributes to the built environment. This lack of comprehensive education, linked to Marx's concept of alienation, Freire’s culture of silence and banking education concept prevents cadets from fully understanding their function within construction projects and the urban political economy (Marx, 1995 [1867]; Marx & Engles, 1978 [1848]; Freire, 1973). Indeed, as others have shown, wholistic and critical education in undergraduate degrees can help inform students how to break out of these oppressive structures (Bridges & Hartmann, 1975; Obeng-Odoom, 2017; Stilwell, 2012).

6.2 What are the educational related impacts of the cadetship?

The framework's three core elements, previously identified as historical materialism, critical pedagogy, and intersectionality, play a direct role in shaping the interpretation of educational impacts. These key organisational themes drawn from the analysis of the data have been identified as key impacts to the cadetship and include; (1) structure and style of workplace learning; (2) labouring to learn and learning to labour; and (3) the banking concept of education. Each of these key themes are seen as key educational impacts of the cadetship to construction students, aimed at answering the first research question of this thesis.

6.2.1 Structure and style of workplace learning

The workplace has so far been viewed as a setting conducive to learning because it offers individuals the chance to engage and collaborate in social activities and practices (Billett, 2001a). This perspective moves beyond the individual-focused learning theories of behaviorism and cognitivism, which are typically associated with formal education settings, emphasising instead that WIL is a socially embedded process. In the context of labour, including its structures, activities, and social relationships, is therefore crucial for both understanding and enhancing WIL. At the heart of this approach is the notion that to comprehend how individuals evolve into what Lave and Wenger (1991) describe as 'knowledgeable practitioners,' the analysis must concentrate on the CoP where the activities take place and from where knowledge, skills, and understandings can emerge. However, this does not imply that all workplaces provide uniform learning opportunities (Billett, 2001a). For example:

> ‘It has helped form my career. I think it's very important. But I think that nothing in this world is fair or equal. And what I mean by that is some people are very fortunate to work with very good people and have a great cadetship, others are not. Some people are very fortunate to have great teachers and lecturers that help in being educated the right way, others are not so lucky.’

Cadetship education can be diverse, and cadets can perceive WIL as beneficial for self-development (Grant-Smith & McDonald, 2016), aiding with industry connections, potential permanent placement with sponsoring companies, clarification of career choices, and an increase in self-esteem. Effective cadetships also offer students other competitive advantages and provide them with a chance to test the water, before committing to the profession. Benefits and positive learning impacts were noted during the interviews.

As noted in Chapter 3, Vygotsky’s zone of proximal learning has been used to analyse how informal, guided and experiential learning happens during WIL experiences for students, both in

terms of acquiring knowledge of practical, technical skills and employability skills, but also deeper behavioural and cultural attitudes. Importantly, learning in cadetships was generally seen to be a positive experience by all participants of this study; all cadets involved in the research, even if they were unhappy, identified learning at work as being significant. In this lens, cadets can learn and complete practical necessary day-to-day office duties, site duties and specific construction related competencies like software workflows through participating and working in project teams, to contribute to the successful delivery of the project. In addition to mastering occupation-specific skills, workers in the 21st century must also have information-processing skills and various generic skills, including interpersonal communication, self-management and the ability to learn, to help them weather the uncertainties of a rapidly changing labour market (OECD, 2013, p. 46). According to the UTS BCPM teaching principals, education is entrenched in social constructivism and the process by which students are integrated into a knowledge community, as explained by Vygotsky:

> … the students are central to the learning process … To further strengthen the student-centred teaching-learning approach and development of skills and disciplinary knowledge, SBE envisions to continuously increase experiential learning (a methodology within social constructivism) as part of our teaching-learning approach and strategy.' (Vygotsky, 1980, p.57)

Data generally showed that the learning taking place in cadetships could be experiential-based, informal, situated (Lave & Wenger, 1991), immersive, guided and transformative (Foley et al., 1995; Forsythe, 2012; Mezirow, 1997). Organisations can mediate all types of learning, and in some cases, the data showed the construction organisations involved in the study were able to provide clear structures and processes that catered to immersive and guided cadetship programs with formalised teaching techniques. Generally, most cadets believed this immersion and these experiences were, through the zone of proximal learning, slowly building their competency and improving their understanding of working on construction projects, even if there was no monitoring, feedback or assessment embedded into their cadetship program. While these reflections are important, they also result in a pedagogical approach that sees cadets self-guide their own learning experience. Cadets can also receive training from the entirety of the project team, including workers outside of the company and subcontractors. This was seen to be valuable for cadets in terms of learning diverse communication skills and having specialist instructors for specific tasks.

Yet, as a whole, there was generally limited learning or training provided in a guided way to cadets by organisations. Indeed, the cadetships studied were mostly commonly geared around an experiential-based and informal-based learning style. There are elements of day-to-day work, and immersion that contribute to broader and long-term workplace learning, but due to the continued formlessness of the cadetship, any tailored or structured moments of learning typically became the cadet's own responsibility to pursue. A body of empirical research indicates that informal workplace activities may promote more effective learning for adults compared to other approaches. However, the highly informal nature of cadets' learning has concerning implications, including deteriorating working standards and increased vulnerability to wage theft and exploitation (Eraut, 2007; Felstead et al., 2009; Melick, 2015). The persistent informality surrounding cadets' development enables the erosion of appropriate working conditions, while simultaneously exacerbating the potential for cadets' economic exploitation, illustrating the problematic repercussions of informal learning mechanisms.

Informal learning shared a common theme of being 'thrown in the deep end'. This was a consistent response by cadets and the professionals to questions aimed at determining the level and structure of training or education provided by employers. Given that almost all of the cadets interviewed claimed they were in structured cadetships and that they were learning, there were still many participants who could not detail any specific coherent training, curriculum or ongoing structured guidance they had received during their cadetship. Cadets generally received very little feedback and had limited testing or reviews to document or reinforce any type of learning that may have occurred during their placements. However, many were adamant that their cadetship work was a priority compared to their university studies, and this view also echoed in the construction professional interviews. As one cadet explained:

> 'My degree isn't technical. We aren't tradies but we are also not engineers or architects. So, we actually don't have any technical skills. So everything that we learn, and everything that we do has to do with people and being on-site, and that's something you can't really learn in university because it's such a controlled environment.'

Cadets recognised that, as young and inexperienced workers, they were exposed to new tasks, experiences and situations on a daily basis, in the context of busy, fast-paced projects with colleagues who are time poor. The Interviews with construction professionals directly involved with training cadets noted that pressures on workers meant project teams were often too time poor to adequately support and teach cadets in a hands-on, guided or supportive way. The observations confirmed how these informal and experimental day-to-day unstructured tasks

made up significant portions of a cadet's daily duties and how cadet training was marred by project team members being too busy to spend adequate time with cadets. On one side, the construction manager, project manager, site managers, foreman, or tradespeople that form the CoP that engage with cadets were often overworked, time poor and have limited educational training themselves.

A significant concept raised in the data is that cadetship programs were inconsistently applied within organisations. As one project director commented: 'It's centralised, so they (cadet programs and structures) come from Head Office, and then on site we tailor them to be project-specific.' Cadetship programs appeared to be structured and implemented in ways that favoured the beneficial outcome of the projects that cadets were working on, rather than a focus on building competency. In such cases, cadets' rotations through programs and departments could be put on hold or neglected entirely, so that a cadet could remain working for one particular team or project, typically for the business imperative. This limits the cadet's potential pursuit of human capital, and was done in an informal way which reinforced existing boys' clubs, and other gendered and racial dimensions. For example, as one professional noted;

> 'Cadets from this job are a bit more fortunate because there's only two of them, so they get spread across a wide range of different areas so they get more of a rounded learning. Whereas you go to a bigger project where there's lots of cadets, one will look after safety, one will look after document control, one will look after contracts administration, so they'll have more of a silo, if that makes sense.'

A notable finding is that cadets who were supposed to be in a structured program were not actually completing the program on time, and the work they were doing on a daily basis was not structured or connected to the cadetship program. In some cases, the organisation ignored their own programs and rotations, to place and keep cadets on particular jobs. This mentality can create barriers to exposure and experience-based learning; for cadets in these cases, there were some interesting correlations between their perceived value of learning at work. Cadets who tended to have more informal workplaces with less structured cadetship programs held more extreme views relating to the value of learning at work, and placed less value on learning at university. Some cadets openly discussed how university was being sacrificed to work, because they felt workplaces were better learning environments for them. For example:

> '… and I'll be completely honest, I'd say 99% of the stuff I do every day at work I have had basically not learned from uni. Uni supports and adds to it for sure, but the actual tasks I do on the job and work I do I learn on the job.'

The cadetship is riddled with informality and appears to be lacking proper integration with the course being studied. In terms of integration into universities, most cadets held the perception that work education was more important to their careers than the education they received at university; however, many still recognised the importance of their degrees. Indeed, cadets were informally integrating their learning from work back into university:

> ‘At the moment, I wouldn't say much is gone across to work, because obviously I'm just doing defects, we haven't been going through that at uni. But, yes, I wouldn't say much has come across from uni yet … On the flip side, you learn things at work that you can then implement into your assignments.’

The structure and style of education impacts the cadetship in a way that can help explain why students face such high rates of burnout and poor mental health during their WIL experience. The educational themes identified share parallels with the literature that examines workplace learning in apprenticeships and other forms of WIL in broader white-collar fields. For example, one of the eldest cadets interviewed had a previous degree and had been working in the business for close to two years. They were forced into a cadetship structure that did not cater to their previous degree or past work experience. The cadet was paid the base cadet salary that many of the more junior cadets were earning; however, this cadet felt they were informally given significantly more responsibility and duties. This cadet also indicated they were doing the role of other more experienced workers and even engaging directly with the client.

6.2.2 Labouring to learn or learning to labour?

While the technical, but informal and immersive learning structures and types have been discussed, the next section shows how, there are other deeper learnings and indoctrinations to the work relationship also occurring through a CoP and zone of proximal learning. Indeed, the concept of labouring to learn was seen as more important than learning alone in cadetships. This theme was built from a dominant ideology held by senior industry figures with a firing and hiring capacity, that generally, construction graduates who are ‘green’, or with no prior ‘real world’ experience are not adequately equipped with soft skills, mentalities, or ‘thick enough skins’ required for work upon graduation (Ayarkwa et al., 2011; Davies et al., 1999; Turner et al., 2019). One example from the cadet interviews summarised the extent to which cadetships can expose young people to situations where they are simply learning to labour, rather than receiving experiences and real training:

> ‘They've asked me to do the dishes at work and I just looked at them and I was like no. I'm not doing dishes. What do I look like? There's a site cleaner. But even she shouldn't

be doing dishes. Do your own fucking dishes. You ate the food, so you wash the fucking dish. It's not that hard. I'm supposed to be learning here.'

Cadets learning in WIL was not just technical. It also included a form of learning of the working relation where alienation, precarity, overwork and wage theft had become normalised. These learning moments are tied to specific workplace settings, but are fundamentally shaped by the extraction of surplus value inherent in the circuit of capital (Marx 1995 [1867]). There were also many serious cases of cadet's labour being used as informal labour, in a way which reinforced that workers should uncritically take instruction from bosses regardless of whether the tasks aligned with role descriptions or learning outcomes. Hence, the theme of labouring to learn was built on themes related to soft skills and employability skills that come with exposure to work during WIL. These soft skills, discussed by cadets and professionals as being key learning within the cadetship included communication, teamwork, self-management, organisation, problem-solving or integrating into office culture in ways such as presenteeism, or abiding by an informal dress code. These skills, traits and behaviours in workers are not specific to construction and as Billet (2001b) notes, they are valued by organisations across all industries and disciplines. Additionally, these skills are adaptable but still applicable to, providing long-term benefits to graduates.

Construction students' motivation to work long hours as a cadet is also spurred by the desire to outcompete their peers, a mentality common in other studies of WIL (Grant-Smith and McDonald, 2016). This level of competitiveness can create barriers to work, increasing inequality as it favours those who can afford to work for low pay. It can also encourage a race to the bottom for labour conditions generally (Perlin, 2011). Further detrimental to broader labour standards is that the miscellaneous tasks that cadets do, could otherwise be completed by more expensive labour. As one cadet explained, they were well aware some important learning occurring in their cadetship was simply learning how to interact on site and in offices and learning to get used to 11 hour working days:

'… well because we learn a lot of the theory at universities. So we learn about things like the Security of Payment Act and you know historically what's happened with legal issues or legal terms, or how to do basic accounting. But uni doesn't teach you the things that you would need to do from day dot as a cadet … Things like how to sit in a meeting and take minutes properly or how to actually put together a site establishment plan, write up a methodology, or how to adjust to all of these things that you can only really learn

on the job. Or how to cope with 11-hour working days. I think it's sometimes hard to put all those practical skills into a university degree …'

The emphasis on 'talent' and soft skills, along with the redefinition of the value of credentials in the job market, noted by the construction professionals, challenges the conventional connection between culture and capital. Studies have also shown that students and graduates share, to a greater or lesser extent, different ideas about the job market. As the market value of credentials becomes more uncertain, the working class are finding it increasingly challenging to convert their cultural capital into valuable credentials (Brown et al., 2016). This shift suggests a revaluation of traditional pathways to success, and the need for a broader understanding of what constitutes valuable skills and knowledge in the contemporary labour market. For example, Bathmaker et al. (2017) studied how students see their employability and found that upper-class students were more likely to have access to extracurricular activities, work experiences and WIL that could help them build the personal capital they need to be readier to play the game in the graduate labour market. The researchers found that middle-class students were more aware than their working-class counterparts of the value of relational position and playing the game when competing for jobs.

6.2.3 Banking concept of education

When cadets interviewed were asked what professional, legal or union-based support they could access if they felt mistreated, none knew of any such support networks. This lack of conscientizacao, to use the concept by Freire, creates significant barriers in a student's ability to take advantage of industrial action and collectively bargain to increase wages and change working conditions (Freire, 1970, p. 74). Marx's concept of alienation can partly explain why construction cadets allow this drip feeding of knowledge and exploitation to occur without protest. Many scholars have pointed out that neoliberalism's greater focus on profits has led to a noticeable increase in worker burnout as firms downsize, increase workloads and dependency on technology, coupled with less interaction with fellow workers (Clouston, 2014). Of course, there are clear ramifications for the lack of conscientizacao that has created a culture of overwork, burnout, and then potentially life-threatening accidents (Galea et al., 2020; SWA, 2023;).

Critical education for cadets was constantly limited, due to construction professionals being too busy to adequately have dialogue with cadets to explain, monitor and support learning new skills. Given workers are so busy, education for cadets is constantly drip fed, only during times when it is convenient within the project for team members to stop what they are doing and work to support cadets. Cadets were not always provided an education, but had to negotiate within their teams to receive an education:

> ‘But mainly because I feel like at the office, no one has a lot of time to sit down and teach. Because to them it's probably like, "Why would I waste 30 minutes teaching you how to do it if I could just do it myself in the exact time I would use to be teaching you?" But then it comes to the role of the cadet thing is, really, I'm here to learn. So whether you like it or not, I'm sorry, but you have to take that 30 minutes to show me how to do it.’

A reserve army of labour is used and abused by employers to drag and hold down basic labour standards (Obeng-Odoom, 2015, 2021; Standing, 2011 [2016]). In this specific case, WIL workers constitute, in Marxist terms, a ‘stagnant’ form of reserve army ‘comprising people in irregular employment’ (Stilwell, 2011, p. xiv). Cadets are not educated about this concept. One such example of dragging down labour conditions was explained by a cadet who felt they had limited learning opportunities in their cadetship:

> So I do a lot of admin more than actual learning things itself. I probably spend I'd say 3 1/2 hours of my day doing admin … that's work that could be done by a receptionist, or anybody else. Some of the stuff, they could essentially do themselves. But they just don't want to or they don't have the time to so they get the cadet to do it for them. Because we're in a site office, there is no reception. So basically, I'm the reception.’

Freire’s approach to pedagogy, could help construction students in cadetships begin to identify the structural foundations of these issues and at least begin to reframe their consciousness on the notions of work and study. A critical education with a Marxist understanding of how work under capitalism must be central to WIL programs. This education could explore how current WIL, fastened by neoliberal educational policy, can dehumanise labour and remove the potential for cultural and social pursuits, thereby causing workers to feel alienated, segmented and suffer from burnout.

6.3 What are the labour related impacts of the cadetship?

This section explores the labour impacts to cadets through three critical lenses: precarity and burnout, culture, and intersectionality and discrimination. First, the theme of precarity and burnout examines the instability and uncertainty that often defines the early stages of construction cadetships. The demanding nature of physical labour and shifting project-based work frequently takes a toll on young workers' mental health, requiring resilience to avoid burnout. Second, the theme of culture analyses the social dynamics and informal hierarchies that shape construction workplaces. Navigating unspoken rules, proving oneself in a “boys’ club”, and blending into the existing culture are impacts to a cadet’s labour. Finally, the theme of intersectionality and discrimination considers how factors like gender, ethnicity, and socioeconomic status intersect to create varied experiences within the cadetship. Despite increasing diversity, construction culture often perpetuates certain biases and barriers facing minority groups. Together, these three themes provide a multidimensional perspective on the challenges, strengths, and realities confronting Australia's next generation of builders.

6.3.1 Precarity and burnout

Due to the nature of the cadetship, there can be significant variance in impacts to an individual depending on the organisation, tiers and state of employment. The literature notes, and indeed the data has shown, that the cadetship is without any formal program or structure, offering an explanation as to why there is so much variance in the role. Working in the construction industry is already noted to be marred by genderlect. There are significant trends emerging with regard to the ad hoc nature of duties and tasks cadets are completing. All of the aforementioned themes show that the cadetship can indeed be precarious – a source of social vulnerability, distress and a clear cause of burnout (Campbell & Price, 2016; Lewchuk, 2017). As one cadet mentioned, ‘I think I'd probably get more at Macca’s than I would working as a cadet.’ So, as a form of non-standard labour, the data collected from cadets shows these workers could be classified as part of the precariat, to use Guy Standing’s (2011 [2016]) conception of precarious work.

The Marxist concept of surplus value sheds some light on the hostilities of training at work and the contradictory motives of the stakeholders in educating employees. In order to maximise the productive output of their workers, firms may offer or enforce training. In this light, the learning at work is not oriented towards the development of the individual, but rather to increasing profits. Indeed, even human capital theorists admit that the training firms are likely to provide will be limited to ‘specific training’ (Becker, 1962); such training is only relevant to an individual

workplace, so that firms do not lose their competitive advantage by training workers that could be employed by their competitors.

While the data shows cadets are being thrown in the 'deep end' in terms of developing industry-specific skills and technical practice, they are also made to sink or swim within their commodified work relation. Here, cadets described similarities to precarious labour, face minimal collectivisation, and are not aware of the moral, social and political ramifications of how their labour is being allocated. Unions are perceived as not necessary, nor are cadets aware of any historical struggle in the construction industry that has helped improve the conditions in which they find themselves.

Cadets consistently discussed having more flexibility in their already informal cadetship experiences:

> 'I think an ideal cadetship should be flexible for one. Very flexible. They shouldn't expect cadets to work 40 plus hour weeks. Because they have to remember that one, we are still very young. We're still learning. Half the time we're doing cadetships to find out which part of the industry we fit best in. And if you're putting someone under that much stress, that much pressure to get stuff done, you're not really giving them a chance to explore other options. So what they may be better suited towards. You're kinda be like okay, we need to get this much done, but you figure it out. But then you also find what you like the best and then you let us know.'

6.3.2 Culture

Existing literature that examines cadet experiences has shown that these workers can face exploitative working conditions, underpayment and must work long hours, thereby sacrificing time dedicated for study to their work (Lingard, 2007, 2012; Moore & Loosemore, 2014). Deemed as a cohort to be especially more susceptible to burnout, these findings are in line with broader media claims and research on paid and unpaid WIL (see, for example, Funnell, 2016; Han, 2015; Lucas, 2012; Rodino-Colocino & Berberick, 2015; Smith, 2015). Moore and Loosemore's (2014) and Lingard's (2012) research shows construction students in Australia can have much higher rates of burnout than the other national and international cohorts (H. C. Lingard et al., 2007).

Burnout is a significant issue to address, as it can be a predecessor to other mental health problems, causes students to drop out (Vickers et al., 2003) and can, in turn, lead to broader economic and social problems. Burnout should be seen as particularly problematic, given that

mental health issues remain relatively unaddressed and stigmatised in the Australian construction industry (Turner et al., 2017). Some other studies (Abudayyeh et al., 2000; Forsythe, 2012) that focus specifically on construction students have provided brief historical accounts of the development of the pedagogical aspect of degree. While acknowledging some of the qualities of the increasingly common WIL component, they have not yet attempted to critically assess the student experiences during the WIL, nor describe any potential demographic irregularity or discrepancies to the student experience.

One example of how cadets are pushed to extremes is exemplified by the quote below:

> 'I started developing a lot of like health issues. Like there was this one time I was driving to work and I got into an accident because I completely blanked out because I was that tired and to the point one where I just blacked out in the middle of the traffic and then got into an accident and then I was just like from there I was like, okay, you know what? There's something going wrong like definitely something going wrong. So I saw a doctor and all that. Everything is fine, but he's just said you're just stressed and you need rest.
>
> *Did you take some rest? Did work hear about that and give you rest?*
>
> Yes, so that day that I got into an accident I called them obviously because I was late for work. Not only that but, I wasn't emotionally right ... Well thing is they asked me if I could go to work after that. I was crying on the phone as well and I was like I just got into an accident – I don't know if I can get to work and they were like where are you? And I'm like halfway there and the boss was like, well see if you can get back to work, if not, you know, see how you go. I was in shock so told him I couldn't go to work. But yeah, but the fact that they still pressured me even when I nearly needed to go to hospital.'

Few organisations had support processes or mechanisms for when cadets experienced problems, including mental health problems and burnout. When asked about long work hours, presenteeism, or enforcing extensive working hours on cadet's construction professionals were very aware that site workers would have long hours and that was just to be accepted. The professionals even admitted that they were aware many of their cadets would have an easier time managing social activities, and would be 'happier' if they were not in cadetships, but knew of no formal processes to support cadets. Fundamentally, these findings contrasted with Lingard's research (2007; 2012) show the impacts to construction students participating in WIL

by sacrificing time social activities, relationships and university for their work, causing higher rates of burnout, and potentially undermining their future professional careers.

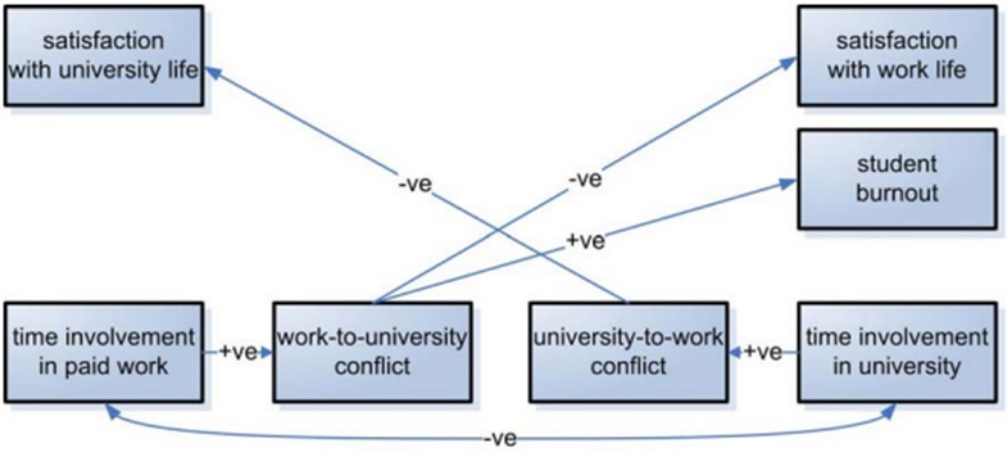


Figure 14: Model of the work–university interface tested by Frone et al. (1997) and developed by Lingard (2015) p. 93

The Figure 14 model is consistent with the data collected. There were many data points across all categories that show work-university conflict as a key and bi-directional mediating variable in the relationship students' satisfaction with work and university life. Conflict can occur bi-directionally in that. working in cadetships may interfere with university studies, while participation in university also conflicts with time available to work. Many students interviewed described high levels of emotional exhaustion, were cynical about the value of their university involvement and had low feelings of accomplishment, showing persistent common issues since Lingard's 2015 study.

A gendered intersection on burnout and precarity, noted by numerous female cadets, is that the construction work environment does not make them feel like they fit in, or they have to work harder to fit in. One example of such is how the inflexible working culture, presenteeism, and lack of flexibility in the structure of work, as documented in existing literature, doesn't accommodate personal needs or unexpected circumstances that might require a day off for personal needs. Hegemonic masculinity is present in the data collected. Hegemonic masculinity ultimately refers to the way in which a:

> 'culturally legitimate configuration of masculinity is able to establish and reproduce a gender order in which men are dominant over women and some men dominant over other men, and through which patriarchal ideologies are made to appear normal and natural, and reinforced and maintained' (Hearn, 2004, p. 54; 2012, p. 591).

In these contexts, unorthodox or different understandings and ramifications of gender are dominated and oppressed, rather than eliminated. The example noted by other researchers of toxic masculinity on a construction site aligns closely with observations made during this study's shadowing of cadets:

> 'One of the things I saw in contrast on-site to in the office was the lack of amped-up or – how I put it – try-hard masculinity that I saw from most of the guys who were university-educated site and project engineers. What I mean by 'amped-up' is the fact that the guys on-site who were doing the work didn't need to peacock around because they were physically labouring – there was nothing to prove there around their masculinity – whereas the ones in the office embodied that chest-puffing masculinity that I didn't see on-site. There was no need to puff your chest out if you've already got a shovel in your hand and you're dealing with shovelling slurry, or you're driving a backhoe, or whatever. You're doing something. Whereas [in the office], it was just a completely different masculinity, it was a put-on show. It was a performance. It was performative.' (Galea et al., 2017, p. 122).

Worker tasks and actions, such as operating heavy machinery and tools, appeared to inherently demonstrate construction workers masculinity, eliminating the need for additional evidence. Meanwhile cadets and other site workers, who were not using tools, have to prove themselves and as many cadets noted, this means proving yourself, both in terms of capability but also in terms of fitting into the team. University-educated construction students are therefore learning in their WIL how to do performative masculinity, faced by the choice to blend in or lose favour.

Observations in site sheds, as opposed to office environments, were marred by an atmosphere that was markedly noisy, busy and masculine. Swearing, and yelling was common. There were very few females on sites observed, and so the observations were mainly influenced by men. When discussing problem-solving strategies, men frequently resorted to chauvinistic and hyper-aggressive behaviour, including swearing. Site-based cadets needed to assimilate into the culture on-site quickly, or face being ostracised. The cadets interviewed who did not feel like they were fitting in their teams, experienced workplace bullying as a result where two serious cases stood out. Meanwhile the most eager to fit in would go to extreme lengths to do so, revitalising their wardrobes by wearing RM Williams, likely the cost of a week's salary. Female cadets described walking and behaving differently when in their work outfit.

A cadet's assimilation into this performative masculine environment also manifested in language. On construction sites, men displayed stereotypically masculine traits, such as being

tough, using coarse language, engaging in banter, raising their voices and being continuously active. In a zone of proximal learning lens, toxic masculinity is being informally taught to cadets. Indeed, even specific technical learning moments for cadets were communicated via hyper-masculine language, informally, and as noted during observations, typically involving swearing. Overall, a cadet's learning in these contexts, had less to do with practical technical ability, but more to do with reproducing the culture, language and attitudes that have been set as a baseline in construction. This elevated display of toxic masculinity in the workplace is consistent with other studies conducted on construction workers.

6.3.3 Intersectionality and discrimination

The study's findings indicate an absence of structured protocols for internal project recruitment in the context of construction cadetships, including the selection and assignment of employees to various projects. Instead, informal project recruitment is prevalent, with individuals such as Project Directors and Site Managers hand-selecting their teams, and frequently choosing to collaborate with the same individuals across multiple projects. This selection or sponsorship is primarily based on prior working relationships, reputation in the industry, prior experience and a system of informal referrals.

Research indicates that the lack of women's interest in the construction industry is due to its culture and a perception of being hostile towards women, often described as blokey and unwelcoming (Galea & Chappell, 2022; Galea, 2018; Tomaskovic-Devey, 1993). As documented in this research, Powell et al. (2012) also discovered that men perceive women as having some employment advantages in construction due to their gender, highlighting a complex interplay of perceptions regarding gender roles within the industry. Women faced stereotypical assumptions about their career aspirations and personal lives like other studies (Bagilhole et al., 2000; Moore & Plugge, 2008), likely helping to contribute to their limited interest in the sector. The construction professional interviews showed how current attempts to address gender disparities through formal equality policies can be viewed negatively (Galea, 2018). This study corroborates such findings in the WIL context, revealing how male professionals' contradictory attitudes towards gender issues; they regularly expressing a willingness to 'help' female cadets yet were simultaneously hesitating to diverge from business as usual in terms of recruitment or promotion (Galea, 2018).

Even after accounting for potential monetary barriers and controlling for academic performance and cadetship experience, individual cadets from privileged backgrounds, particularly males, appeared to have greater access to opportunities in their cadetship. Based on the evidence

presented in this thesis alone, the reasons for this are not wholly clear. However it may be attributed to several interconnected factors, including disparities in social capital, access to influential networks (Brown, 1995; Brown et al., 2016) and the individuals' ability to navigate the job market's unwritten rules (Bathmaker et al., 2017; Brown et al., 2004). There is also clearly the presence of unconscious bias in recruitment processes. This bias not only influences hiring decisions, but also underscores the challenges in achieving a diverse workforce, as it inadvertently reinforces existing social and professional networks' homogeneity, a phenomenon known as habitus or embodied cultural capital (Bourdieu, 1984).

The unstructured approach to project recruitment may foster favouritism or bias in team selection, which may contribute to issues of fairness and transparency in the workplace. It also calls into question the career advancement opportunities of those who are excluded from these informal networks. In the context of construction cadetships, some cadets do not receive the same learning and development opportunities as their peers, which has a negative impact on their overall experience and learning outcomes from the cadetship program.

The research findings also suggest that women are often excluded from these informal male networks or sponsorship relationships with senior male colleagues, thereby limiting prospects for career advancement. Female cadets felt they had limited female role models within their organisation, and noted limited people they could look up to for support in their career (Carnemolla & Galea, 2021). This emphasises the gender-biased nature of these informal networks and the potential obstacles they pose for women's career advancement in the sector. It also underlines the necessity for more structured and transparent recruitment and mentorship procedures that guarantee equal opportunities for all employees, irrespective of their gender.

The research conducted by Bigelow et al. (2018) provides valuable insights into the motivations and influences that guide students, both male and female, into construction management education. These studies complement the data collected in this study to highlight the importance of career prospects, internships, industry experience and familiar connections in the sector as key factors influencing students' decisions in being involved in WIL and participating within the industry. When considering these findings in the context of cadetship data, it becomes apparent that these factors play a significant role in shaping the cadetship culture.

Cadetships in the construction industry provide students with the opportunity to gain practical industry experience as well as internships, which are identified as attractive aspects of the sector. These experiences not only enhance their technical skills but also provide a clearer

understanding of the career opportunities available in the construction industry. Furthermore, the influence of family members in the sector, as noted in the study by Oo et al. (2022), can also be seen in the cadetship data. Cadets with family ties in the industry may have a more nuanced understanding of the sector and its opportunities, which could influence their decision to pursue a cadetship. In the US context, as per Bigelow, et al. (2015), the influence of family and the awareness of construction career opportunities are significant factors driving female students towards construction management programs.

Race and ethnicity have also emerged as a significant theme in the work. One specific topic under this main theme includes 'discrimination at work'. Here, multiple interviewees voiced their disgruntlement at being treated differently. For instance, one cadet explained how gender was even discussed during their interview:

> 'And I was asked that during my interview as well, "How do you feel being a female in construction?" She explained, not everything is a negative challenge, sometimes you just have to get the job done. And people will judge you. A lot of tradies will look at you like, oh, it's a female. You can kind of mess around. They don't take you as seriously, so it's up to you to change their mind … But it's dumb that you have to work to change someone's mind.'

It has predominantly been Asian people and other POC who made statements that can be categorised as discrimination. There were many people interviewed of Middle Eastern heritage, especially Lebanese, who claimed they felt they were not being discriminated against at work; but during the site observations, a very different picture emerged where people were being mocked for their accent and differences. These constituted racial microaggressions that have already been established in construction (Loosemore & Chau, 2002). The absence of empirical evidence to suggest that men or Caucasians possess superior intelligence, creativity, or strategic thinking skills compared to women or individuals from other racial backgrounds renders the prevailing gender and racial composition of leadership roles, as observed in the data, not justifiable on the grounds of merit. More needs to be done to support cadets facing discrimination as result of this. As one Black female cadet explained the importance of other stakeholders helping to minimise the negative racial and gender impacts of the cadetship:

> 'I think it's important for young women to not be afraid to have a voice and to speak out with things that make them uncomfortable. And that's something that I've definitely experienced and seen in other cadets. Even though I feel like we're basically the same age, I almost feel like there needs to be something in university that kind of helps

women deal with, just deal with approaching men, and white men. And I know it sounds almost stupid, but I honestly think a lot of people don't have the opportunity. People come from different family backgrounds as well. And some may not nurture women being outspoken or standing their ground or going after what they want. So then when they get into roles where you're surrounded by men who do not care, they struggle. So, I think that should definitely be something that's nurtured in university.'

6.4 How do these impacts shape the political economy of the cadetship?

WIL is not apolitical and has implications for politics, economics and education. The themes identified have already attempted to show these connections. Like other precarious labour, cadets can be negatively impacted by their work; they can be exploited, be discriminated against, and fall into mental ill-health.

The data shows these negative impacts of the cadetship are especially pertinent for young women, particularly women of colour. Existing studies show female retention is indeed a problem in the AEC industry, and there are already significant efforts underway to maintain young female retention. The data helps to give clear examples of matters related to 'how' and 'why' young female workers may be leaving the industry at such high rates. This data shows how, through the WIL process, female cadets and especially women of colour can feel ostracised. During the cadetship, female cadets – indeed, nearly all cadets – can also become tired, burnt out and overworked, sacrificing their studies to complete manual tasks and other low-impact learning at work. A cadet's personal pursuits, social experiences and student life are sacrificed, all in the pursuit of a promise that their WIL is necessary in order to graduate. Their university education requires them to engage in the industry.

Comparing the data categories shows similarities in attitudes, behaviours and ideology between cadets and bosses. Cadets are also potential managers, and in this sense their interests may align as 'petty bourgeoisie'. While cadets do not own or control the means of production, depending on their career path, the most determined will eventually reach the status of project manager. Under the methodical individualism of neoclassical human capital theory, cadets act entrepreneurially; while they may support each other during cadetships, they are also well aware of conflicting competitive pressures in the work environment, especially related to promotions.

Many cadets overwork themselves, as they align their interests in favour of those who have already succeeded in the industry. Despite current cadets working long hours, cadets face attitudes at work that can be summed up by one construction professional who noted: 'This is making me sound a bit older than what I am, but back in my day I probably used to do twice the hours these guys do, but these guys think they're working hard now.' The data show very clearly that regardless of this professional perception, cadets still work long hours and, in some cases, more than the legal threshold for full-time (Fair Work Act 2009, Cth). Cadets also noted poor remuneration, compared to the hours they worked.

Cadets as workers seeking higher class status may be hard to swallow for Marxists, so many theorists (Mallet, 1975; Poulantzas & Fernbach, 1975) have weighed in on the structure and formation of a professional and technical managerial class, to help re-categorise these phenomena. Historically, the professional and technical managerial classes have often been lumped together as petty bourgeoisie; yet given the contradictory nature of these workers, and with the application of Wright's contradictory locations within class distinctions (Wright 1980; 1996; 2005), identifying a rigid traditional class structure is not so straightforward, nor useful. It is not enough to dismiss this cadetship group as not being working class enough, simply because their work is knowledge-based and they attend university. Based on Wright's (1980) logic, a lowly paid construction cadet, who also has very limited access to physical capital, has a strong case for identification with the working class. This recognises that not all working roles within the modern mode of production can fall unequivocally into a distinct rigid class location, and in certain contexts will occupy contradictory locations within the three dimensions of class relations. This especially applies to cadets, given the work cadets find themselves in.

From a more distant level of abstraction, cadets' interests and motives can be viewed in respect to their relationship with the social relations of production. For construction students, applying this theory to define class means that when viewed from a close level of abstraction, professionals and technical managers, like construction students, can be opposed to a working class and are clearly in the PMC. But with their own intersectional differences, cadets can also simultaneously be part of the working class, in that their position in the social relations of production is the same as the tradespeople and apprentices who also work on construction sites. Indeed cadets, as part of the working class, remain subordinate to the ruling capitalist class.

Alienation, in the Marxist sense, means that within a capitalist society the material, ideological, and institutional processes disillusion and distance workers from others around them and the work they complete, so they are unable to rise up out of their current place into higher positions.

Workers become alienated and then begin to see themselves individually, rather than as a collective unit, which prevents them from resisting their exploitation collectively (Marx & Engels, 1965 [1845]; 1978 [1848]). Numerous cadets described that if they were unhappy at work, they did not feel any obligation to remain at that company and would look for other vacant cadet positions in the industry until they found something they would enjoy more. Perhaps this is because cadets are still early in their careers and may feel more expendable; however, the Marxist idea of a false consciousness also offers an explanation. The cadet does not attempt to improve his conditions or the conditions of his fellow cadets in the company and believes his only option is to work as a cadet elsewhere, most likely under similar conditions and remuneration schemes.

Cadetships, particularly in their informal employment structure, can be seen as a manifestation of Marx's concept of the maximisation of the working day at the expense of social and intellectual pursuits (Marx, 1995 [1867], p.149). Cadets, in their pursuit of enhancing their human capital, often find themselves dedicating extensive hours to work, leaving little time for satisfying their intellectual and social needs. This imbalance is particularly evident in the modern educational realm, where the demands of work often overshadow the pursuit of knowledge and personal development.

Marx discusses that the extension of the working day by capitalists may be through the large-scale disintegration of workers' rights, or through seemingly negligible daily requirements of overtime. Focusing on the individual worker, Marx shows 'moments are the elements of profit' (Marx 1995 [1867], p. 167), by quoting a factory owner to emphasise his point: 'If you allow me … to work only ten minutes in the day overtime, you put one thousand a year in my pocket.' (Marx 1995 [1867], p.167). Marx compares this constant 'nibbling and cribbling' (Marx 1867, p.167) of time under capitalism to a vampire, who 'will not let go while there remains a single muscle, sinew or drop of blood to be exploited' (Marx 1995 [1867], p. 195).

The concept of capital as 'dead labour that vampire-like only lives by sucking living labour' (Marx, 1995 [1867], p.149) is also relevant in the context of cadetships. Cadets, through their labour, contribute to the generation of capital for the company. However, the value they receive in return, often in the form of experience and industry exposure, may not equate to the value of their labour power. This imbalance can lead to feelings of exploitation and dissatisfaction among cadets. Furthermore, the capitalist production system, which Marx describes as 'essentially the production of surplus value' (Marx, 1995 [1867], p.300), is also evident in the structure of cadetships. The surplus value, in this case, can be seen as the difference between the value of

the cadet's labour and the compensation they receive. This surplus value is then appropriated by the company, further contributing to the capital accumulation process. The value of labour power, especially of cadets, is often underestimated in this system. Cadets, despite their status as students, contribute significantly to the operations of the company. However, their compensation often does not reflect the value of their labour power, leading to a sense of underappreciation and exploitation.

6.5 Conclusion

The analysis in this chapter has operationalised the political-economic-WIL framework to address the research questions. In terms of the first research question that seeks to understand labour and educational impacts of cadetship, the analysis of the data shows that specific educational and labour impacts of cadetships can indeed be positive to the students who use them to supplement their education. Cadets can improve their technical and practical skills through experiential learning, informal learning through a zone of proximal learning and an active COP, via their day-to-day duties in the cadetship. Positive educational impacts are especially clear when operating within a structured cadetship program that has clear role boundaries and appointed direct supervision. In some cases, there is also some guided learning impacting the cadetship, but the extent of this is limited, as other employees within head contractors are often time poor, untrained and inexperienced in designing and monitoring educational programs. Data shows professionals do not actively seek to integrate their programs into a student's university programs, nor collaborate with universities to design WIL. This can lead to negative educational impacts of cadetships as cadets learning is in isolation and without guidance.

Cadets face a range of learning environments and learning types during their WIL. In their COP, they can be exposed to and learn behaviours, processes and technical skills that will help contribute to the success of their career and develop human capital. Given the material nature of construction and the beneficial nature of learning the specific details of construction as shown in the data, from an industry perspective, the cadetship does contribute to graduate employability. To a certain extent, professionals interviewed agreed that the cadetship currently meets market needs. Construction cadets, upon completion of their two to three-year, sometimes four-year, rite of passage, receive recognition from firms and managers that enables them to apply for promotion and improve salaries.

Yet, during the cadetship, the ROI for students does not appear to be strictly tied to the specific investment students make in their human capital, rather other educational, social and political impacts can also influence WIL experiences. Here the data shows that cadets face impacts that are in common with evidence in other literature in construction, including discrimination and alienation, while the intersections of these experiences related to gender and race are significant (Ross et al., 2021; Ross et al., 2020). Women cadets find it hard to fit into a male-dominated workplace and can exhaust themselves trying to join the boys' club. Meanwhile the experiences of women cadets who are Asian include even more extreme stories of sexual harassment, abuse and difficulty receiving support, as channels are not established or non-existent, in some cases.

For those cadets who struggle to balance their social and intrapersonal activities as a consequence of burnout, there are significant educational costs to their ROI. In some cases, these costs appear to outweigh any ROI, as a number of cadets were considering leaving the industry altogether. As others have pointed out, a patriarchal and male supremacist culture exists within the construction industry; this analysis chapter also ties these problems to the informality in how cadetships are acquired, implemented and coordinated with studies.Cadets can find themselves wanting to leave the industry in their struggle with work-study-life balance. Indeed, as the analysis shows, the ROI of the cadetship does not appear to be consistent, and there are vast stratifications based on intersectional differences. Issues of retention in construction are significant and have very real economic consequences. Skill shortages in construction are expected to cost the industry significantly in the coming decade, and this analysis provides some deeper understanding of triggers that need to be addressed to help retain new labour in construction, in a way which guarantees fair working conditions and pay. For instance, the Australian National Skills Commission (2022) indicated that the skill shortage is currently prevalent across all of the construction industry, and most occupations have now been placed on the Skills Priority List.

When compared to other forms of WIL, particularly in fields like education, the arts and journalism, which typically do not include any remuneration at all, the average construction cadet does appear to be fortunate. Even if not receiving a structured or integrated WIL experience, at least the construction cadet is receiving a wage (Financial Review, 2015; Mumbrella, 2016). However, as the data and analysis has shown, paid construction cadets still suffer multiple and significant forms of exploitation and exclusion, as a result of broader issues during WIL. When contrasted against the high wages and labour experiences of 'qualified' workers in the Australian construction industry, the general treatment of cadets provides a clear example of capitalistic businesses taking advantage of vulnerable and inexperienced workers,

which is intrinsically consistent with Marx's circuit of capital (Marx 1995 [1867]) noted in the political-economic-WIL framework in Chapter 3. Generally, these findings are in line with broader media claims and research on paid and unpaid WIL across the entire Australian Architecture, Engineering and Construction (AEC) fields, with claims of corruption, discrimination, sexism, exploitation and abuse (see, for example, Funnell, 2016; Han, 2015; H. Lingard et al., 2021; Lucas, 2012; Rodino-Colocino & Berberick, 2015; Smith, 2015; Turner et al., 2019; Zhang et al., 2021). The findings and analysis add to the literature by showing that the impacts of the cadetship can be problematic to students involved, and can further perpetuate structural, social, and economic inequality.

In terms of educational impacts, the data shows construction firms have the chief role in designing the cadetship, which means the learning which takes place during the cadetship can be deemed 'one-sided'. Cadets are missing a significant 'other' side to their education, in terms of its historical, political, social, economic and ecological aspects. That is, via the banking concept of education, cadets are only learning technical skills in one-way deposits of information, in a way which prevents them from fully comprehending and situating themselves within the construction projects and the urban political economy that they work to construct. Clearly tied to Marx's concept of alienation, cadets in their junior roles become subordinated and alienated, to a point where they often do not have access to appropriate information, nor the adequate support that would enable them to see the bigger picture, improve learning outcomes, and help shape important high-level building methodologies, contract structures or digitisation of construction projects. Due to the application of the banking system of education, the helplessness and inability of cadets to see their education as a vehicle to help transform the world can be explained by Mark Fisher's term, 'capitalist realism' (2011). Capitalist realism is the idea that due to the pervasive hegemonic ideology of neoliberalism, it is easier to imagine the end of the world, than the end of capitalism. Following this notion, cadets were unable to imagine how their education, WIL and careers could shape a different urban political economy.

In their WIL, cadets are not aware of existing support structures, ranges of remuneration, minimum and maximum working requirements, how their work relation functions, historical struggles in the construction industry, and the environmental consequences of the work they do. These aspects to an education should be catered for in a holistic way (Rowe et al., 2018), especially if that education enforces participation in the labour market. To bridge this gap and have better WIL integration into a university course would be received well by construction students.

In line with studies on progressivism in younger people, cadets appear to have strong positive opinions towards social justice issues, but the university's current social corporate responsibility curriculum is not framed in a class or structural analysis. One explanation for this one-sided learning is that there appears to be a lack of university work interface frameworks or guidelines for implementing cadetships, so students are put into a position where they are forced to navigate their employment alone. Patrick et al. (2008) explained that WIL encompasses 'a range of approaches and strategies that integrate theory with the practice of work within a purposefully designed curriculum' (p. iv). In the construction student's studies, their university education was lacking any purposefully designed curriculum that properly integrated with the WIL. University learning and workplace learning have become distinctly separated places of knowledge acquisition that sometimes overlap, but provide limited scope to apply learning at work within the university setting. Many cadets even expressed that they learned most of their useful skills, behaviours and building concepts through work, further demonstrating the need for better integration with university.

Chapter 7: Conclusion, Contribution, Implications and Further Research

7.1 Introduction

The construction cadetship, a form of WIL, is a significant component of many Australian construction industry management qualifications. It aims to provide practical industry-specific skills and knowledge to undergraduate construction students. As noted throughout Chapter 2 existing literature does not critically frame students as workers, nor does it contend with the economics or philosophy behind the labour or educational impacts of the cadetship experience.

The analytical assumptions of political economy as a field are in contrast to much of the existing research on cadetships and Australian construction students, which are generally not critical of the mainstream economic perspective, nor recognise how systemic economic factors may shape the working relation of cadets, or other WIL workers (Forsythe, 2012; Forsythe & Zou, 2006; H. Lingard, 2007, 2012; H. C. Lingard et al., 2007; Loosemore et al., 2020a; Moore & Plugge, 2006; 2008; Moore & Loosemore, 2014). The mainstream analytical methods and philosophical approaches in existing cadetship literature do offer some useful insights for understanding how construction students can be impacted by their cadetships, especially in terms of burnout and overwork. It is clear that the intentions of these existing studies are with students' best interests at heart, yet the analytical processes used in these studies does not go far enough in critiquing the economic and class structures that create and perpetuate the conditions where cadets may be overworked, burnt out and too fatigued to study.

Operationalising the political-economic-WIL framework developed in Chapter 3 then applied to the data in Chapter 6, illustrates how the neoclassical human capital agenda has dominated the rationale for modern WIL programs, also invoking ownership, class and intersectional social relations. This research addresses the gaps identified in the literature reviewed (Chapter 2) using a political-economy-WIL framework developed in Chapter 3 to ask two key questions: How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour; and, how do these impacts shape the political economy of the construction cadetship?

The aim of the study has been to demonstrate and illustrate the real-world nature of the WIL relationships, explain them, and provide alternative pathways if and where necessary. Therefore, the methodology in Chapter 4 outlines how data was collected from construction cadets and their employers to provide a practical and empirical dataset targeting the research

questions. This data, then examined through the political-economic-WIL framework, using thematic analysis throughout Chapters 5 and 6, identifies cadetship educational impacts grouped in three key areas; (1) the structure and style of workplace learning, (2) labouring to learn or learning to labour, and (3) the banking concept of education. Meanwhile the analysis of the data uncovered labour impact discoveries in three key areas related to; (1) precarity and burnout, (2) culture and (3) Intersectionality and discrimination. This research has also provided insights to construction education, understanding the experiences of those in cadetships, effectiveness of cadet programs, and impacts of the cadetship to students, society and the economy (see, for example, Matherly & Tillman, 2015; Perlin, 2011; Rodino-Colocino & Berberick, 2015; Standing, 2011 [2016]). Each of these themes can directly impact cadetship experience and, collectively, the findings demarcate a political economy of the cadetship.

This chapter now summarises and concludes this thesis. The following sections summarise the research questions, objectives of this research, and then outline how the research has successfully met the specified objectives. It then outlines limitations of the research and provides some recommendations to improve WIL in construction undergraduate programs, before outlining future research that could be completed, using this research as a starting point.

7.1.1 Revisiting the research questions

Informed by existing identified research gaps that showed WIL in construction is of interest to researchers, but primarily has been discussed in relation to work life balance, burnout, or graduate employability all typically while framing WIL workers as students. Major gaps in the literature review identified in Chapter 2 show a lack of research specifically examining the construction cadetship. Therefore, this thesis set out to answer the main research questions in a multidisciplinary and political economic approach:

> *How are construction cadets impacted during their WIL, in terms of (1) education and (2) labour?*
>
> *How do these impacts shape the political economy of the cadetship?*

Based on the two main research questions, the research objectives and aims are threefold:

1. Investigate and review cadetship, WIL, political economy and university curriculum literature to inform framework and identify gaps in knowledge. Then, devise a methodology to collect data that can appropriately target (1) education and (2) labour impacts related to research agenda.

2. Consider through an intersectional and class-based analysis how these impacts may shape a political economy of construction education and labour that is involved in the cadetship. Challenge and critique the prevailing neoclassical theoretical positioning of WIL and its association with human capital theory.
3. Develop a conceptual framework aimed at understanding student impacts of construction cadetship programs, and assess their integration with other stakeholders, particularly universities. Adopt a political-economic lens, to offer a novel nuanced and multifaceted perspective on WIL within construction pedagogy.

7.1.2 Achieving research objectives

How the research objectives of this thesis have been met are now discussed in turn.

Objective 1

The literature reviewed in Chapter 2 helped to contextualise existing debates on WIL in the construction industry. The review provided an understanding of the research topic from varying levels of abstraction. The review discussed specific learning, employment and current issues facing WIL workers, and especially cadetships, on a global, national and industry scale. It also integrated a review of political economy literature that shows how education can reinforce or challenge structural and institutional forces that set the conditions for educational practice, workplace learning and the cadetship. This literature review informed the political economic framework developed in Chapter 3. Then the Data collection methods related to (1) education and (2) labour impacts on the cadetship are outlined in Chapter 4, shedding light on the potential limitations and biases inherent in mainstream cadetship approaches. How these problems impact cadets, is discussed in Chapters 5 and 6. The data collected, triangulated with the literature reviewed, shows the construction cadetship is a form of WIL that is currently unregulated, unstructured and unbalanced, in one of the premier Construction Project Management undergraduate degrees in the country. Indeed, these often-exploitative labour practices appear to be an industry norm for thousands of Australian cadets.

Objective 2

Employing a political-economic lens, this study has reviewed and triangulated literature that challenges the neoclassical human capital theoretical positioning of WIL. The research contends that the structure of the cadetship involves unbalanced involvement of industry compared to other stakeholders. This has real educational impacts to students, and can contribute to a morally and philosophically devoid education in the workplace, aligning with Freire's banking

concept of education. Data collected helps to demonstrate how neoclassical human capital theories can reinforce existing power structures and perpetuate inequalities in the labour market, by using real case studies of cadetships. These processes create a one-sided power dynamic and reinforce gendered and racial hierarchies and subordination within the workplace. The cadetship is clearly influenced by neoclassical economic principles, especially prominent via data showing how students and employers openly subscribe and pursue goals that align with the methodical individualism at the core of this economic philosophy. Through a political economic understanding of cadetships, using Freire, Marx, and Polanyi this thesis contests mainstream WIL ideologies to shed light on the broader socioeconomic dynamics and power relations at the heart of how the construction industry trains its new workforce.

Construction is not just a technical or practical field, but also a social and political one, shaped by the interplay of economic and political forces. This substantivist view of construction economics recognises that the construction industry and its workers are not neutral or passive actors, but are actively involved in the learning that occurs for WIL workers, which eventually shapes the built environment, the structures and power dynamics within the economy and society. Consequently, these substantive views allow a deeper understanding of the challenges and opportunities facing the construction industry, and can help direct and dictate how educators design curriculum to remediate current issues. By critiquing mainstream construction pedagogy, this research has highlighted some limitations of the narrow focus on individual skill development and productivity enhancement that exists within the neoclassical human capital framework, dominating the cadetship.

Objective 3

By challenging the one-sided narrative of mainstream construction pedagogy, and indeed most WIL, which neglects building conscientizacao in students, meeting the third objective of this research revolves around designing a more inclusive and transformative conceptual framework for understanding WIL. This framework addresses systemic issues and promotes a more equitable and socially just construction education. Construction education can be better, by not simply catering to extreme WIL ideologies and hardcore human capital accounting (Yarrow, 2022) measures, like technical innovation, employability or graduate outcomes, but by advancing social justice, environmental sustainability and human wellbeing. One important measure here is to build democratic structures and collective solidarity into the participation of WIL, or at the least safeguards, support mechanisms, regulations and standardised and common learning outcomes.

7.1.3 Key findings

There are four key findings of this thesis, built out of the thematic analysis which was detailed in Chapter 5. The first key finding focuses specifically on the cadetship experience and the impacts of WIL from the perspective of students. For students, the construction cadetship does not appear to correlate with 'best practice' prescriptions and law and order frameworks, as outlined in the literature. The triangulation of data from cadet interviews, interviews with construction professionals, and university policies, guidelines and handbooks exposes a lack of alignment between the integration of cadets' work experience and their university education in multiple ways.

Meanwhile cadets encounter minimal structure in their employment and education at work, have vague and unclear job descriptions, frequently do not follow a structured cadet program, and do not have their cadetship experience tied to any meaningful pedagogical frameworks that structure, maintain or assess learning at work. Indeed, there is limited evidence to support that learning at work is being integrated into the university or vice-versa. Cadets studied are only rotated through projects and teams in programs when it is in the best interests of the business, and these rotations have no correlation or coordination to specific subjects the cadets are currently sitting in the undergraduate degrees. Observing cadets at work revealed that, in terms of specific labour tasks, cadets are frequently required to perform nontechnical, manual and miscellaneous tasks that have minimal educational value or alignment with their studies, and which frequently comprise the majority of their days at work. Cadets can be subject to poor working conditions, overwork, harassment, unstructured learning, poor remuneration and wage theft.

Interview data from construction professionals who have designed cadetship programs for large Australian head contractors revealed how historically limited guidelines from governments, professional associations and bodies, universities and unions have resulted in 'tailored' cadetship programs. This historical reality appears to have helped institutionalise industry norms that construction organisations should have the dominant role in planning, structuring and implementing the cadetship. Because contractors could not consistently implement structured and monitored cadet programs, if they existed at all, the consistency of WIL results and benefits to students are skewed. In turn, these ad hoc WIL arrangements necessitate that construction students independently manage any informal and unguided learning that occurs in this industry-driven WIL, which is a significant departure from how proper WIL should be implemented and monitored.

The second key finding of this study challenges the assumption that cadetships are universally advantageous to human capital development. In this case, the cadetship employment paradoxically causes students to learn less and earn less. This finding is based on data showing the participation in cadetships could have a negative impact on engagement and time available for university studies. Like other studies in this field, consequences are linked to lower performance and engagement at university, especially in later years once cadets begin to prioritise their cadetship over studies. This finding needs to be considered along with significant data showing the impacts of construction student burnout. Due to the contradictions of the neoclassical human capital economics in theory and practice, cadets are confronted with the ironic dilemma of sacrificing their university based human capital investment by skipping lectures and tutorials, in order to work to fulfil the requirements of their university programs.

Further impeding a cadet's ability to develop their human capital, all cadets studied were effectively barred from applying for promotion beyond the entry-level cadetship role, regardless of experience, talent or capability. Many cadets were unable to seek significant salary increases due to their continued minimum 4-year status and limitation as a student. Industry professionals viewed cadets as students and thought they were not considered to be as reliable or consistently available as full-time workers. It appears that forced industry experience in undergraduate degrees, alongside implementation issues, have rendered the cadetship to be essentially a guarantee of a reserve labour army, a concept that is widely believed to reduce wages and deteriorate working conditions. For instance, one cadet explained how they felt they should have received promotion, but were held back due to their status as a cadet:

> ‘Just because of, I don't know whether it's probably an ingrained thing in companies, where there's a lot holding you back as a cadet. Like you can't really progress. You're always held by that ... student status. So that's kind of frustrating at this point after the first six months or year. It's kind of like, your kind of wanting to go, getting more responsibilities, but it's just like, I don't know, you're seeking a bit of recognition. A job title and a change. The boss has given me a great six-month review, is my salary going to go up? No, because that’s part of the graduate program. That is a little bit frustrating.’

The third key finding of this thesis expands on the second finding, by discussing how the experiences of cadets in acquiring human capital through WIL are neither consistent nor guaranteed across the data, and that there are significant fluctuations associated with cadets' intersecting gender, race, age and class identities. Despite the fact that a short-term individualistic perspective on human capital may emphasise the immediate benefits of cadetship

employment, such as the development of specific workplace skills or graduate competencies, these benefits do not necessarily apply equally to all cadets. During cadetships, the experiences of young women, particularly those of Asian or African descent, can be particularly negative, resulting in a desire to leave the industry before commencing their careers. The research documents evidence of widespread workplace bullying of cadets, as well as significant gender and race-based discrimination, cracking the view that the labour market is freely competitive and without discrimination.

Economists have argued that a number of changes in the labour market have led to an eroding of traditional pathways from education to employment; young people increasingly face lengthening and individualised transitions, often with increasing precarity (Morris et al., 2022; MacDonald, 2016; Standing, 2011 [2016]). The findings presented in this thesis fit in with this view, and show that there are significant variances in precarity based impacts when gender, age and race of cadets are considered. Meanwhile, through the lens of activity theory, the cultural and economic issues faced by cadets are representative of the wider construction industry. Cadets can learn and reproduce behaviour through the construction industry's harshly individualistic and male supremacist CoP, also tainted by resilient, institutionalised and structural gender and race dogmas. A broad-based cadetship program should therefore, strive to address these social, cultural and economic issues as part of holistic WIL. Yet the current cadetship structure, and stakeholders in the construction education in Australia appear to be doing very little to meet these requirements in an intersectional way.

The fourth and final significant finding of this study is that the cadetship at its present structure will produce an increasingly unskilled, incapable and uncritical labour force. This will be detrimental to the urban political economy, built environment and wider society in the long term. This finding aligns with literature from numerous disciplines claiming employability attributes and graduate outcomes, are part of a wider employability agenda that waters down degrees and removes any deep moral or philosophical content from them, by aligning to industry interests (Baptiste, 2001). WIL has contradictory effects on cadets' learning and skill development, as poor working conditions, overwork and exhaustion induce or exacerbate poor mental health and cause widespread burnout, thereby diminishing students' learning efficiency and capacity. These factors can impact students, and society, as cadets become less emotionally healthy, less socially available, have less time with family and friends, and are less academically interested. Burnout, alongside other mental ill-health has direct social and family consequences and, as social economists have shown, it also can put cost pressure on governments, health systems and even impact GDP (King & Lamontagne, 2021; Ross et al., 2020; Turner et al., 2017).

The severe alienation of cadets during their WIL prevents them from learning 'conscientizacao'; consequently, they are unaware of how their labour contributes to reinforcing the existing issues within construction. Cadets are not exposed to an education that shows how their WIL labour and prospective careers contribute to reinforcing and reproducing the social relations that create and maintain the urban political economy. Cadets who are overworked as a result of their unbalanced WIL are missing out on essential social and emotional experiences that should come with being a university student, and which can play a crucial role in developing class consciousness or 'conscientizacao'. Indeed, much learning within the cadetship, both at work and even at university, aligns with Freire's banking concept of education. It is therefore flawed, in that it lacks a moral or deeper philosophical purpose and is only focused on drip-feeding short-term goals, like graduate skills, employability, and the need to reproduce a new working class to promote profit through a neoclassical human capital ideology. Consequently, the cadets involved in this study are currently incapable of holding the instruments necessary to resolve these issues. The effects of a construction education pushed to its neoliberal extreme, by mandating a work-to-learn format that is almost exclusively industry-driven, will continue to foster an environment with poor working conditions for cadets, and continue to leave the present gender racial and class issues relatively unaddressed.

7.1.4 Limitations of findings

Meanwhile, these results do, of course, have certain limitations. One particular limitation is the research's skewed viewpoint of only including organisations in the study. To further understand impacts of this WIL, workplace culture and how cadet learning is supported at work, more study might be conducted to examine the viewpoint of universities, and also from the unions and professional bodies that help regulate and accredit the degrees and WIL programs in construction.

The sample size of this study has limits as well. Since data was only gathered from one out of the 19 Australian universities that provide undergraduate construction education or similar, it is not possible to generalise the findings to the total population of construction students in Australia. On the other hand, the in-depth qualitative research that narrows the focus to study a specific undergraduate degree that requires WIL, may also be able to shed light on the degree's structure, the impact of cadetships on academic performance, and other work-to-university conflicts in the Sydney context. Extensive national research may be helpful in this situation.

Another limitation is how this work has not noted any impacts on international students. International students often do not qualify for cadetships, due to their visa related work

limitations of only 20 hours per week. Construction professional interviews confirmed that cadets were expected to work significantly over these hours, and less than 20 hours per week would not be valuable to the business. Given this discrimination and literature that shows international and migrant workers already face some precarious employment in construction, there is significant research to pursue in the context of WIL. For instance, the impact of WIL on international construction students may be of interest to colleges. Any research that does involve international students may benefit from using this study as a base and considering an intersectional analysis of WIL when examining curriculum, timing, impacts and experiences of the WIL activity.

7.3 Contributions and recommendations from findings

The dominant ideas and practices in the construction industry, that shape the building processes to create the built environment and urban economy around us, have been outlined by many researchers across multidisciplinary fields. Cadetships of many formats appear to share similar problems that indicate a connection to a wider cultural trend in the industry. As Lingard noted in 2005, construction students in Melbourne, would study for three years, then enter the industry full for a 12-month industry placement and then return to the university for a final year of study. Yet, 'in recent years, the extent to which BPC students are working during semester time has become a source of concern. In some cases, students report working up to 39 hours each week in paid employment during semester time. Anecdotal evidence from staff suggests that many students are missing lectures and tutorials because of work commitments.' (Lingard, 2005, p. 41).

Other have of course proposed solutions. For instance professional bodies, like the Australian Construction Association (ACA), imagine the industry changing via 10 simple steps. The council states:

> Government, industry and unions must leave behind the baggage of history and collaborate like never before. If they do, construction could be an industry where both projects and workers are free and able to productively work the hours that best suit them. Construction could be an industry of choice and equal opportunity for all genders, nationalities and ages. It could be an industry that constructs resilient infrastructure without damaging the environment. It could be an industry at the forefront of technological advancement. Construction could be a profitable industry that rewards

> collaboration over conflict and innovation over status quo and an industry prepared to take risks on new ideas rather than unknown ground conditions. Australia's construction industry could be the envy of the world, delivering high value infrastructure at a greatly reduced cost, for the benefit of all Australians … What are we waiting for? (ACA, 2022, p. 20)

While this view is exciting, it neglects the importance of education in shaping industry practice. The ACA suggesting that government, industry and unions should collaborate and leave behind their historical baggage also shows there is not a full understanding of the underlying power imbalances and conflicts of interests between these stakeholders. The emphasis on collaboration and innovation is framed in a way that suggests that the construction industry needs to increase its productivity and efficiency, to generate more surplus value, or profit. It follows the neoliberal logic of individualising and commodifying labour to pursue continuous and expansive growth; the emphasis is clearly prioritising the interests of capital over labour, by reinforcing the exploitation of workers through dogmas of greater productivity, increased surplus value extraction, competition, alienation and continued precarious employment through WIL.

Given that cadets, and all construction professionals involved in this study were already reporting significant working hours, often well above legal thresholds, and calls for more productivity and efficiency are not helpful. Indeed, the collaboration proposed by the ACA is likely to benefit the interests of capital in the construction industry, rather than the workers, because the class-based mode of production remains unchallenged. Alternative and structural views must also be considered by the ACA and other Australian construction and building professional associations when dealing with these issues. There are viable alternatives to neoliberal hegemonic ideology. These alternative approaches and strategies can address, challenge and transcend the mainstream methods that have already been recommended by researchers, practitioners and the governments. There are a few specific recommendations from this research that may help to improve key aspects of the cadetship.

7.3.1 The decommodification of WIL

The concept of decommodification of labour, (Polanyi 1944), refers to the process by which workers are removed from the market and provided with a guaranteed income and job security, regardless of their employment status. This is seen as a way to protect workers from the insecurity and inequality inherent in the market, and to ensure that they have access to the basic necessities of life, such as food, housing and health care. Decommodification of labour is often

associated with social welfare programs and policies, such as unemployment benefits and job training programs, which provide support and opportunities for workers who are unable to find or maintain employment.

The process to ensure the right to education is closely linked to the concept of decommodification, and helps to explain the need for educational entitlements enshrined in the welfare state. Polanyi claims it is one's status as a citizen that is the prerequisite for welfare entitlement, not participation in the labour market. Applying this logic to decommodify education implies that access to a good education should not be dependent on the ability to pay, and that free education entitlements must be protected even in times of economic hardship. It also emphasises the importance of making sure that there are no barriers preventing people from accessing their right to an education, such as prohibitive fees, a lack of resources or enforced participation in the labour market through WIL. A neoliberal and commodified education enacts barriers to participation. The cadetship data extends these perceptions to show that WIL can also enact barriers to education and promotes only a one-sided education.

All stakeholders, but especially professional bodies and associations, have an obligation to ensure equal opportunities for all when it comes to education by providing adequate funding, implementing effective policies and regulations, and ensuring accountability systems are in place. This approach recognises that the welfare state has a role to play in promoting social justice and equality in construction, and that access to welfare should not be restricted based on arbitrary criteria, such as labour market participation.

WIL should help students develop a sense of social responsibility and commitment to the broader community. By working on projects that have a positive impact on the environment or on underserved communities, students could gain a deeper understanding of the importance of creating sustainable and equitable development. Furthermore, WIL should provide students with the opportunity to work with organisations that prioritise the decommodification of labour, via democratic structures like profit share, or other commons-based approaches used by leading co-operative organisations like MonDragon (See Mondragon educational mission at https://www.mondragon-corporation.com/en/we-do#negocioConocimiento). Through a co-operative social-based WIL experience, students could learn about alternative models of economies and working structures while behaviours within a CoP that value workers and prioritise worker solidarity, wellbeing and learning, rather than a formalist focus on project success and profit maximisation.

7.3.2 Imagining a critical education in the cadetship

Some negative and positive educational impacts on cadetships have been explored as part of this research in Chapters 5 and 6. Existing literature indicates, and this research confirms, high rates of student burnout and mental ill-health among construction students are caused by the onerous requirements forced on students by universities and employers. Students must perform a balancing act in order to juggle their studies and extreme working hours without missing out on social experiences that would likely contribute to the development of soft skills and communication, which were perceived as crucial knowledge for construction by all parties interviewed. For cadets, WIL is often a necessity, both for earning a living, for having important and beneficial learning experiences at work, and also to simply to pass an industry stigmatised rite of passage.

If WIL remains high on the agenda in construction, which is likely, then more needs to be done to integrate workplace learning into learning at university. Construction students in the cadetships face inadequate integration or crossovers between the 'work' in cadetships and the 'learning' from university. There are numerous WIL educational frameworks suggested in the literature, but none appear to be widespread or applied to the cadetship. There are also limitations of the proposed educational frameworks in terms of how education and labour should be specifically structured within the workplace during WIL. The literature review confirms there is a gap in construction curriculums nationally in this area.

Construction students also face limited critical pedagogy in existing curriculum and are not fully able to situate themselves within the world as change makers. Adopting a political economic perspective into construction curriculums would be a fair acknowledgement from universities that when students are forced into work as part of their education, they should also be taught about the working relation – how their labour contributes to broaden and reinforce capitalist structures and ideology through the built environment and, indeed, within the boarder urban political economy (Obeng-Odoom, 2017). Indeed, the literature review in Chapter 2 has found very few WIL programs existing where students integrate a political economic perspective and critically examine their own employment during their education.

This research can help inform recommendations for improvements in this regard. Construction undergraduate degrees which have some curriculum that includes a political economy of WIL, give universities an opportunity to equip cadets with the tools and theories to help them challenge and transform these systems. By doing so, construction students would be better equipped to understand the underlying structures that shape their projects, workplaces, and the

wider construction industry. Integrating WIL-based work experiences into university subjects is considered best practice.

If construction higher education continues to encourage or enforce participation in the labour market, then it also has a responsibility to better support students in their WIL as cadets. It also has a duty of care to better educate students on their working rights and facilitate a learning space where students situate their own labour and class status, within a class-based and antagonistic economic structure. Addressing these needs can be built on some foundational application of political economy to urban economics undergraduate subjects (Obeng-Odoom, 2017). Building on Obeng-Odom's innovation in building political economy into property development degrees, there is scope to leverage WIL and better integrate learning from work back into university subjects. Such goals could be delivered through a BCPM subject with a focus on critical pedagogy in WIL. This would permit students to learn about the historical and continuing role of unions and worker organisations in terms of advocating for better working conditions and wages. It would also provide students with a political perspective on their own WIL and help to clarify and demist the structural forces that shape their work experiences on site and in site offices. Using a political economic approach can also play a pivotal role in educating students about pertinent workers' rights and minimum pay rates. It can facilitate introductions and networking opportunities with industry bodies that are committed to supporting women and other minority groups in the construction industry. Additionally, a political economy WIL subject imbedded in a university curriculum would promote dialogue and also involve interaction with the construction industry's practical problems and cultural issues in a way which ties these topics to different economic systems and the political ideologies that underpin them. Doing so could help students develop a political economic understanding of construction, the urban political economy and their place within it.

Furthermore, WIL subjects can serve as a platform for students to discuss, share and strategise solutions to problems they encounter at work. These issues could be technical or social in nature. By fostering an environment of open dialogue and collaborative problem-solving, WIL can empower students to address workplace challenges effectively, proactively, and most importantly, collectively. Collectivisation could be achieved by encouraging students to share updates about their work experiences with their peers. Such a practice would promote a culture of shared learning and mutual growth, thereby enhancing the overall educational experience of the students.

In this specific case, any curriculum design for subjects built into core offerings of the UTS BCPM, studied in this thesis, should involve a Freirean critical pedagogy that focuses on empowering students to think critically and actively engage with the world around them. It could involve a collaborative and participatory approach to learning, where students are encouraged to reflect on their own experiences and perspectives, as well as those of others. The curriculum could incorporate a range of interactive and experiential learning activities, such as group discussions, role-play and problem-based learning. It could also incorporate opportunities for students to apply their learning to real-world issues and challenges, such as community development and social justice, through their cadetships and integration in WIL. Overall, the curriculum would aim to foster a sense of agency, empowerment and social responsibility among students.

Furthermore, the issue of burnout and overwork of cadetships suggests a need for better WLB policies from all stakeholders in the cadetship process. One key suggestion here is that universities better back their students by developing a Student Bill of Rights. This bill of rights would be collaboratively designed by all relevant stakeholders; unions, professional bodies, universities and cadets. The Bill could be used as a blueprint for construction organisations to revise, re-design and re-implement cadetship programs. The bill would stipulate key requirements for the cadetship and these collaborations could use this thesis's finding as a starting point. Much like the French tripartite arrangement for WIL workers, a Cadetship Student Bill of Rights would ensure that cadetships only exist in construction organisations who are prepared to meet the requirements of the Bill. The onus would be on the organisations to show that they were capable of delivering key educational and labour requirements like specific minimum pay rates, working conditions, rotations, learning, training, feedback, structured and resourced support networks. This could reduce the informality students face in recruitment and also help to increase consistency, standardisation, integration and support for cadets. The Bill would also require head contractors to implement flexible work arrangements, provide tangible support for stress management, and enforce efforts to promote a positive culture that values work-life balance. This recommendation is aligned with other studies in the field. It could help alleviate the risk of burnout and overwork of cadets, and hopefully improve the retention rate of female cadets.

7.4 Implications and future research

Critically examining the political economic assumptions and priorities of the construction industry leads to more equitable, sustainable and democratic ways of building, working and

educating. This is crucial, not only for the wellbeing of those working in the industry, but also for the communities and environments affected by construction projects. Some implications, limitations and future areas of research related to these findings are discussed in the following sections.

7.4.1 Implications

One possible implication for practitioners and governments is to develop the cadetship into an accredited structured program which stipulates training and education, salary, duties and working conditions, much like the Australian apprenticeship scheme. From the perspective of firms and universities, the benefits of this could be significant. Yet the apprenticeship scheme, although carefully structured and regulated, is still faced with problems due to the inherent economic and social forces that mediate WIL. As Knight (2012) notes, the rigid apprenticeship scheme lacks the capacity to adapt to quickly changing marketplaces, and the early periods of training leave young people with little economic remuneration. The apprentice scheme cost the government $2.9 billion in 2008-09, and that figure today is closer to $4 billion. It appears that even within this well-funded and nationally recognised training program, promoted by community, employees, unions, employers and government, mass inequality and exploitation of the youngest workers still exists.

Implications of this study for universities involve reforming curriculums to incorporate the teaching of workers' rights, as well as increasing communication with other stakeholders to ensure the needs of students are being met. There could also be further legislated integrated learning, similar to France's Cherpion Law, which puts universities in tripartite employment contracts for WIL, ensuring higher education institutions have a voice in structuring and guaranteeing specific WIL programs. Yet, this legislation has been criticised as an incomplete way to ensure standards for WIL workers, has enacted additional barriers to work, and even been capitalised on by universities, who now can charge a fee for the services of being involved in the WIL (Stewart & Owens, 2013; Stewart et al., 2021).

From the perspective of professional associations and bodies, their responsibilities can be extended to enacting affirmative re-engagement with stakeholders by revising their own regulations to include award wages and other financial incentives (Obeng-Odoom et al., 2011). A study conducted in Ghana by Obeng-Odoom, and Ameyaw (2011) supports the premise that professional organisations manage industries for the good of society, and that their own regulations, rules and interests should reflect this. The study examines the effect professional associations can have on enhancing the experiences and working circumstances of young

planners, whose experiences of managing work and study are comparable to those of cadetships. It is suggested that the Ghana Institution of Surveyors should take affirmative action and re-engage with stakeholders to lead efforts to improve the conditions of workers, by revising their own regulations to include award salaries and other monetary incentives (Obeng-Odoom, & Ameyaw, 2011, p. 279).

These obligations could be extended to professional associations in other disciplines and are applicable in Australia, particularly to the aforementioned institutions that are supposed to help regulate the cadetship at UTS. In the cadetship process, that could extend to certifying and encouraging specific arrangements that have been deemed to be beneficial to students. As one respondent who was in a carefully regulated and organised cadetship pointed out, balancing work and study was not so draining, when doing well at university was enabled and even rewarded in the workplace.

7.4.2 Future research

Because there has been very little specific research into the experiences of construction cadets, there is a very broad area that could be further clarified through systematic research. Firstly, research could be made with a stronger legal framework, to better determine the extent of illegally underpaid cadets. This would involve examining the rates, hours worked and contractual commitments that cadets are exposed to. It would also be appropriate to examine any legal repercussions for cadets who are being underpaid, and which stakeholder in the cadetship process may be able to support such action. Doing so would encourage discussions and create a greater awareness of the responsibilities that are currently being shirked by stakeholders of cadetships.

The challenge of balancing work and academic commitments, as highlighted by the findings, suggests a need to further develop and apply research related to work-life balance in construction cadetships. One tactic could involve exploring the strategies that cadets use to manage their work and academic commitments, the support provided by universities and employers, or the impact of work-life balance on the wellbeing and academic performance of cadets. Future studies might look at this issue by studying cadets and workers to see how issues like abuse or prejudice can emerge in the workplace, and using this work as a place to start understanding how young people are currently being impacted during their cadetships.

Secondly, given the importance of mentorship in the workplace, future research could explore the role of mentorship in construction cadetships. This could involve investigating the types of mentorship that cadets receive, the impact of mentorship on their learning and career

progression, and the characteristics of effective mentorship in the construction industry. This could involve exploring how cadets develop adaptability, the challenges they face in adapting to new roles and responsibilities, and the impact of adaptability on their career progression (Dainty et al., 2005). This research could also explore how mentorship practices can be improved to better support construction cadets.

Thirdly, a greater legal understanding of the cadetship as a form of WIL could be a space for further research. Industrial relations and legal matters relating to informal employment and informal pay for cadetships should also be better understood in the literature. By understanding the variations, complexities and legal frameworks of this form of employment, one may then be able to draft a framework that could be adopted by all stakeholders, so that the needs of construction cadets are catered for and they are appropriately educated, engaged and supported when at work.

Finally, future research could also investigate methods for fostering gender equity within the informal networks within the industry, and the significance of mentorship in aiding women's career progression in the industry. Some online WIL-based learning has been noted to reduce informality and integrate better cooperation between industry and universities (Bowen, 2020; Quinn et al., 2019). These online WIL experiences, through Virtual Reality (VR) and augmented reality (AR), may eventually remove the need to labour to learn in industry. Online WIL learning may not be so negative for the capacity of construction undergraduates since Hauck et al. (2000), who examined construction management students' academic performance in regards to grade point averages, found no statistically significant increase in performance among the surveyed undergraduates who had undertaken WIL on construction sites.

The calls made by other academics to better regulate and enforce WIL frameworks for stakeholders to adopt is relevant to construction cadetships. The implementation of a consistent, structured program that provides adequate education, training and more suitable rewards will be paramount in addressing many of the issues discussed in this thesis. All of the above recommendations for future study could include this thesis and data as groundwork to begin exploring alternatives, especially political economic alternatives, to what is currently practised within the construction industry today.

7.5 Conclusion

Overall this thesis has demonstrated and illustrated that in the context of labour markets shifting away from historically standard employment relationships (Lewchuk, 2017; Stanford, 2017), the application of neoclassical economics human capital theory is blurring the barrier between student and worker. One example of this shift is WIL. WIL describes the integration of academic learning from higher education institutions with practical knowledge from the workplace, realised in arrangements like a construction cadetship. This thesis has assessed suggestions in international research and media that the modern construction cadetship experience is overdemanding, exploitative and, on that basis, problematises the student impacts related to education and labour due to the growing trend of WIL in the Sydney Tier 2 construction industry.

However, perhaps the most effective gateway to ensuring improved conditions and wages for cadets within the Marxian tradition is for students in WIL to start to collectivise and eventually unionise. Here, stakeholders should aim to revise and implement stronger supporting structures for cadetships and WIL generally, so that students are able to represent themselves collectively. Collectivisation has its own limitations, of course, as leading Marxists such as Leo Panitch (2009) have shown. However, as the experiences shared by Jim Stanford (2017; 2022) and Stewart & Stanford (2017) illustrate, a collective union of construction cadets may, at the least, ameliorate their problem of labouring for little or nothing.

Appendix 1: Ethics Documentation and Evolution of Interview Questions

A1.1 Cadet interview invitation letters

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

PRINTED ON UTS (and/or joint) LETTERHEAD

INVITATION LETTER

The Political Economy of Australian Construction Cadets

Dear student

My name is Christopher Brown and I am a research student at the University of Technology, Sydney.

As part of my PhD, I am conducting research on the experiences of construction cadets and would welcome your assistance. The research will involve an audio recorded interview and should take no more than two hours of your time. I have asked you to participate because you are likely working in industry as a cadet or similar role

If you are interested in participating in the interview, there is also the option to participate in further research. That (optional) research would involve being observed in your workplace. Further details about the observations will be communicated in the interviews if you are interested.

This research is for my studies in PhD in the Built Environment faculty at UTS.

If you are interested in participating, I would be glad if you would contact me via email at christopher.brown-1@uts.uedu.au.

You are under no obligation to participate in this research, and your involvement or not, will have no consequences within the faculty, or in any future subjects. If you have any concerns about your participation affecting your course work please contact my supervisor Dr. Michael Er though his email; Michael.Er@uts.edu.au.

Yours sincerely,

Christopher Brown.
Doctoral Candidate.
Building 5c. Level 3. Built Environment Office
christopher.brown-1@uts.uedu.au

NOTE:
This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: +61 2 9514 2478 Research.Ethics@uts.edu.au), and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Letter 2:

Dear students of CPM,

A PhD student in the faculty is undertaking a research project entitled The Political Economy of Construction Cadetships [ETH1-82562] and as part of that research is undertaking a number of interviews with individuals currently employed as construction cadets in the wider Sydney region.
The research primarily focuses on construction cadet's experiences at work, the level of learning, the effectiveness of the role as a gateway to a career in project management, and how the role may be conducive or hinder the progression the field of construction project. It is also concerned with how the intersectionality of race, gender and age may affect the experiences of the individuals involved.

You are invited to participate in a casual audio recorded 1 hour semi-structured interview that will be conducted on campus. If you are interested in participating in the interview, there is also the option to participate in further research. That (optional) research would involve being observed in your workplace. Further details about the observations will be communicated in the interviews if you are interested.

You are under no obligation to participate in this research, and your involvement or not, will have no consequences with regards to the researcher, the faculty, or in any future subjects. If you have any concerns or reservations about your participation please contact Dr. Michael Er though this email; Michael.Er@uts.edu.au.

Further details about the research can be found on the information sheet attached to this email, or if you have any questions please contact me immediately. Please reply directly to this email if you have any interest in getting involved in the research.

Note: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer (ph: +61 2 9514 2478 Research.Ethics@uts.edu.au), and quote the UTS HREC reference number. Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

A1.2 Cadet research interview participant information sheet-consent form

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

INTERVIEW PARTICIPANT INFORMATION SHEET:
The Political Economy of Construction Cadetships in Australia
ETH18-2562

WHO IS DOING THE RESEARCH?
My name is Christopher Brown and I am a research student at UTS. My supervisor is Dr Michael Er.

WHAT IS THIS RESEARCH ABOUT?
This research is about better understanding of how construction cadetships operate and the impact this specific type of work form has on students, society and the economy. Specifically, this thesis aims to determine through the experiences of cadets, if the construction cadetship is an effective form of work integrated learning.

WHY HAVE I BEEN ASKED?
You have been invited to participate in this study because you are likely currently employed as a cadet. Your contact details were obtained by UTS faculty email list, your company, or through other industry networks.

IF I SAY YES, WHAT WILL IT INVOLVE?
If you decide to participate, I will invite you to participate in a 1-hour semi-structured interview that will be audio recorded and transcribed. After the interview, if you are interested we can discuss further observational research in your place of work over a two-day period. All information will be de-identified and will not be included in any publication resulting from this research in a way that can identify the participant.

ARE THERE ANY RISKS/INCONVENIENCE?
Yes, there are some risks/inconvenience:

- The interview will take up to 60 minutes of your time.
- The interview will be audio recorded. All interviews are anonymous. The reason for audio recording is to ensure that responses are accurately transcribed.
- There are risks related to the possibility that you may feel discomfort while being interviewed. That will especially be the case if we discuss embarrassing or past experiences at work that may have been unfair or have caused distress. In this case, if you request, we can stop the interview.

DO I HAVE TO SAY YES?
Participation in this study is voluntary. It is completely up to you whether or not you decide to take part.

WHAT WILL HAPPEN IF I SAY NO?
Participation (or not) will have no impact on assessment marks or course progression. If you decide not to participate, it will not affect your relationship with the researchers or the University of Technology Sydney. If you wish to withdraw from the study once it has started, you can do so at any time without having to give a reason, by contacting Christopher Brown on Christopher.Brown-1@uts.edu.au.
If you withdraw from the study, your transcripts, notes and any audio recorded will be destroyed.

CONFIDENTIALITY
By signing the consent form, you consent to the research team collecting and using personal information about you for the research project. All this information will be treated confidentially. The purpose of this research is to only identify participants in terms of their professional role and not by name. However, beyond the researcher, the possibility of associating individuals with their quotes will be minimal. Any publications or other work resulting from the thesis will not link the identities of the people with their information.

All data collected will be desensitised to ensure anonymity of participants. Data will be stored in Cloudstor, which is encrypted and secured by login. Further, a hard copy backup will be saved to an external hard drive that will be stored in a lockable locker provided to me by UTS. This locker is located

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

CONSENT FORM
The Political Economy of Construction Cadetships in Australia
ETH18-2562

I _____ *[participant's name]* agree to participate in the research project **The Political Economy of Construction Cadetships in Australia** *[ETH18-2562]* being conducted by Christopher Brown [UTS building 5C.03.02].

I have read the Participant Information Sheet or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or the University of Technology Sydney.

I understand that I will be given a signed copy of this document to keep.

I agree to be:
☐ Audio recorded

I agree that the research data gathered from this project may be published in a form that:
☐ Does not identify me in any way
☐ May be used for future research purposes

I am aware that I can contact Chris if I have any concerns about the research.

_____ ____/____/____
Name and Signature [participant] Date

_____ ____/____/____
Name and Signature [researcher or delegate] Date

A1.3 Construction professional invitation letter and consent form

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

INTERVIEW PARTICIPANT INFORMATION SHEET:
The Political Economy of Construction Cadetships in Australia
ETH18-2562 HREC APPROVAL NUMBER

WHO IS DOING THE RESEARCH?

My name is Christopher Brown and I am a research student at UTS. My supervisor is Dr Michael Er.

WHAT IS THIS RESEARCH ABOUT?

This research is about better understanding of how construction cadetships operate and the impact this specific type of work form has on students, society and the economy. Specifically, this thesis aims to determine through the experiences of cadets, if the construction cadetship is an effective form of work integrated learning.

WHY HAVE I BEEN ASKED?

You have been invited to participate in this study because you are currently employed as a construction professional and work with cadets. Your contact details were obtained by personal and industry networks.

IF I SAY YES, WHAT WILL IT INVOLVE?

If you decide to participate, I will invite you to participate in a 1-hour semi-structured interview that will be audio recorded and transcribed. After the interview, if you are interested we can discuss further observational research of a currently employed cadet in your place of work over a two-day period. All information will be de-identified and will not be included in any publication resulting from this research in a way that can identify the participant.

ARE THERE ANY RISKS/INCONVENIENCE?

Yes, there are some risks/inconvenience.
The interview will take up to 60 minutes of your time.
The interview will be audio recorded. All interviews are anonymous. The reason for audio recording is to ensure that responses are accurately transcribed.
There are risks related to the possibility that you may feel discomfort while being interviewed. That will especially be the case if we discuss embarrassing or past experiences at work that may have been unfair or have caused distress. In this case, if you request, we can stop the interview.

DO I HAVE TO SAY YES?

Participation in this study is voluntary. It is completely up to you whether or not you decide to take part.

WHAT WILL HAPPEN IF I SAY NO?

If you decide not to participate, it will not affect your relationship with the researchers or the University of Technology Sydney. If you wish to withdraw from the study once it has started, you can do so at any time without having to give a reason, by contacting Christopher Brown on Christopher.Brown-1@uts.edu.au.

If you withdraw from the study, your transcripts, notes and any audio recorded will be destroyed.

CONFIDENTIALITY

By signing the consent form you consent to the research team collecting and using personal information about you for the research project. All this information will be treated confidentially. The purpose of this research is to only identify participants in terms of their professional role and not by name. However, beyond the researcher, the possibility of associating individuals with their quotes will be minimal. Any publications or other work resulting from the thesis will not link the identities of the people with their information. All data collected will be desensitised to ensure anonymity of participants. Data will be stored in Cloudstor, which is encrypted and secured by login. Further, a hard copy backup will be saved to an external hard drive that will be stored in a lockable locker provided to me by UTS. This locker is located within the School of Built Environment- access to which is restricted to staff and research students. Your information will only be used for the purpose of this research project.

It may be likely that the results will be published in relevant research journals, or conferences. However, the nature of information released will be desensitised so that no identifiable information is disclosed. In any publication, information will be provided in such a way that you cannot be identified.

WHAT IF I HAVE CONCERNS OR A COMPLAINT?

If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us:

Christopher Brown [Researcher]: Christopher.brown-1@uts.edu.au
Dr. Michael Er [Supervisor]: Michael.er@uts.edu.au

Participants who want to stay in touch and learn about the progress of my thesis, as well as the research findings, can provide their email address.

You will be given a copy of this form to keep.

NOTE:
This study has been approved by the University of Technology Sydney Human Research Ethics Committee [UTS HREC]. If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au], and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

CONSENT FORM

The Political Economy of Construction Cadetships in Australia

ETH18-2562 HREC APPROVAL NUMBER:

I _____ *[participant's name]* agree to participate in the research project **The Political Economy of Construction Cadetships in Australia** *[UTS HREC approval reference]* being conducted by Christopher Brown [UTS building 5C.03.02, Christopher.brown-1@uts.edu.au].

I have read the Participant Information Sheet or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or the University of Technology Sydney.

I understand that I will be given a signed copy of this document to keep.

I agree to be:

☐ Audio recorded

I agree that the research data gathered from this project may be published in a form that:

☐ Does not identify me in any way

☐ May be used for future research purposes

I am aware that I can contact Christopher if I have any concerns about the research.

_____ ____/____/____

Name and Signature [participant] Date

_____ ____/____/____

Name and Signature [researcher or delegate] Date

A1.4 Ethnographic Observation and third-party information and consent form

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

3rd PARTY INFORMATION SHEET:
The Political Economy of Construction Cadetships in Australia
UTS HREC ETH18-2562 APPROVAL NUMBER

WHO IS DOING THE RESEARCH?
My name is Christopher Brown and I am a research student at UTS. My supervisor is Dr. Michael Er.

WHAT IS THIS RESEARCH ABOUT?
This research is about better understanding of how construction cadetships operate and the impact this specific type of work form has on students, society and the economy. Specifically, this thesis aims to determine through the experiences of cadets, if the construction cadetships is an effective form of work integrated learning. To do this a cadet will be observed at your place of work for up to 2 full working days in the coming weeks.

WHAT DOES THIS MEAN FOR ME?
You will likely have minimal involvement in the research. This research is focused on the cadet, but some data will be collected based on the cadet's interactions in and around the work place. Here, you are encouraged to interact normally with the cadet during the observational period while data is being collected. If you do interact with the observed cadet you will not be identified by name, role, and will remain anonymous.

The researcher will not advise you on your work, nor will communicate your routine or interactions with any other employees. All data collected will be confidential, anonymous and primarily concerned with the cadet's daily tasks and interactions.

DO I HAVE TO SAY YES?
Participation in this study is voluntary. If you have an objection to the research being conducted during your interactions with the observed cadet, then please let the research know through replying to this email or verbally during the data collection. No reason is required for non-participation.

If you decide not to participate, it will not affect your relationship with the researchers or the University of Technology Sydney.

CONFIDENTIALITY
All this information will be treated confidentially. The purpose of this research is to only identify participants in terms of their professional role and not by name. However, beyond the researcher, the possibility of associating individuals with their interactions will be minimal. Any publications or other work resulting from the thesis will not link the identities of the people with their information. All data collected will be desensitised to ensure anonymity of participants.

It may be likely that the results will be published in relevant research journals, or conferences. However, the nature of information released will be desensitised so that no identifiable information is disclosed.

WHAT IF I HAVE CONCERNS?
If you have concerns about the research that you think I or my supervisor can help you with, please feel free to contact us:

Christopher Brown [Researcher]: Christopher.brown-1@uts.edu.au
Dr. Michael Er [Supervisor]: Michael.er@uts.edu.au

NOTE:
This study has been approved by the University of Technology Sydney Human Research Ethics Committee [UTS HREC]. If you have any concerns or complaints about any aspect of the conduct of this research, please contact the Ethics Secretariat on ph.: +61 2 9514 2478 or email: Research.Ethics@uts.edu.au], and quote the UTS HREC reference number. Any matter raised will be treated confidentially, investigated and you will be informed of the outcome.

UTS UNIVERSITY OF TECHNOLOGY SYDNEY

CONSENT FORM
The Political Economy of Construction Cadetships in Australia
ETH18-2562 HREC APPROVAL NUMBER:

I _____ *[participant's name]* agree to participate in the research project The Political Economy of Construction Cadetships in Australia **ETH18-2562** being conducted by Christopher Brown [UTS building 5C.03.02, Christopher.brown-1@uts.edu.au].

I have read the Participant Information Sheet or someone has read it to me in a language that I understand.

I understand the purposes, procedures and risks of the research as described in the Participant Information Sheet.

I have had an opportunity to ask questions and I am satisfied with the answers I have received.

I freely agree to participate in this research project as described and understand that I am free to withdraw at any time without affecting my relationship with the researchers or the University of Technology Sydney.

I understand that I will be given a signed copy of this document to keep.

I agree to be:
☐ Audio recorded
☐ Non-identifiable photography

I agree that the research data gathered from this project may be published in a form that:
☐ Does not identify me in any way
☐ May be used for future research purposes

I am aware that I can contact Christopher if I have any concerns about the research.

_____ ____/____/____
Name and Signature [participant] Date

_____ ____/____/____
Name and Signature [researcher or delegate] Date

A1.6 Ethics committee and Dean's approval for research

Christopher Brown

From: Research.Ethics@uts.edu.au
Sent: Friday, 11 January 2019 2:08 PM
To: Michael Er; Christopher Brown; Research Ethics
Subject: HREC Approval Granted - ETH18-2562

Dear Applicant

Thank you for your response to the Committee's comments for your project titled, "The Political Economy of Construction Cadets". The Committee agreed that this application now meets the requirements of the National Statement on Ethical Conduct in Human Research (2007) and has been approved on that basis. You are therefore authorised to commence activities as outlined in your application.

You are reminded that this letter constitutes ethics approval only. This research project must also be undertaken in accordance with all UTS policies and guidelines including the Research Management Policy (http://www.gsu.uts.edu.au/policies/research-management-policy.html).

Your approval number is UTS HREC REF NO. ETH18-2562.

Approval will be for a period of five (5) years from the date of this correspondence subject to the submission of annual progress reports.

The following standard conditions apply to your approval:

- Your approval number must be included in all participant material and advertisements. Any advertisements on Staff Connect without an approval number will be removed.

- The Principal Investigator will immediately report anything that might warrant review of ethical approval of the project to the Ethics Secretariat (Research.Ethics@uts.edu.au).

- The Principal Investigator will notify the UTS HREC of any event that requires a modification to the protocol or other project documents, and submit any required amendments prior to implementation. Instructions can be found at https://staff.uts.edu.au/topichub/Pages/Researching/Research%20Ethics%20and%20Integrity/Human%20research%20ethics/Post-approval/post-approval.aspx#tab2.

- The Principal Investigator will promptly report adverse events to the Ethics Secretariat (Research.Ethics@uts.edu.au). An adverse event is any event (anticipated or otherwise) that has a negative impact on participants, researchers or the reputation of the University. Adverse events can also include privacy breaches, loss of data and damage to property.

- The Principal Investigator will report to the UTS HREC annually and notify the HREC when the project is completed at all sites. The Principal Investigator will notify the UTS HREC of any plan to extend the duration of the project past the approval period listed above through the progress report.

- The Principal Investigator will obtain any additional approvals or authorisations as required (e.g. from other ethics committees, collaborating institutions, supporting organisations).

- The Principal Investigator will notify the UTS HREC of his or her inability to continue as Principal Investigator including the name of and contact information for a replacement.

I also refer you to the AVCC guidelines relating to the storage of data, which require that data be kept for a minimum of 5 years after publication of research. However, in NSW, longer retention requirements are required for research on human subjects with potential long-term effects, research with long-term environmental effects, or research considered of national or international significance, importance, or controversy. If the data from this research project falls into one of these categories, contact University Records for advice on long-term retention.

You should consider this your official letter of approval. If you require a hardcopy please contact Research.Ethics@uts.edu.au.

If you have any queries about your ethics approval, or require any amendments to your research in the future, please do not hesitate to contact Research.Ethics@uts.edu.au.

Yours sincerely,

Dr Tim Luckett
(Acting) Chairperson
UTS Human Research Ethics Committee
C/- Research & Innovation Office
University of Technology, Sydney
E: Research.Ethics@uts.edu.au

REF: E38

On 1 Nov 2018, at 9:16 am, Elizabeth Mossop <Elizabeth.Mossop@uts.edu.au> wrote:

Dear Michael
Consent given.
Professor Elizabeth Mossop
Dean, Faculty of Design Architecture and Building
University of Technology Sydney
Level 5, 702-730 Harris Street, ULTIMO NSW 2007 (PO Box 123)
T +61 2 9514 8707 | E Elizabeth.Mossop@uts.edu.au | W http://www.uts.edu.au

For appointments please contact Robert Keigthley, +61 (02) 9514 8712

From: Michael Er
Sent: Wednesday, 31 October 2018 5:20 PM
To: Elizabeth Mossop <Elizabeth.Mossop@uts.edu.au>
Subject: Ethics application with attachments for approval

Hi Elizabeth,
One of my PhD Students is about to undertake research which looks at Work Integrated Learning.
Contained in this email are the:

- Ethics application
- Doctoral assessment
- Informed consent form(s)
- Participant Information Sheet(s)
- Survey(s)/questionnaire(s)/outline of question(s)
- Explanations of any technical terms used

As part of his ethics application he is required to get approval from you to undertake research which involves current UTS students. We will ensure as per the ethics application, that all details associated with individual students is de-sensitised. The research focuses on the work integrated learning associated with the Construction Project Management course and student experience at work - not at the university.
As the final requirement for this application we require written consent from the Dean for participation of UTS students. Could you please provide your written consent for this valuable research.
Thanks,
Michael
Dr. Michael Er
Director of Higher Degree Research Programs

Faculty of Design Architecture and Building,
University of Technology, Sydney PO Box 123,
Broadway, NSW 2007, Australia Ph. +61 2 9514 8031 Fax: +61 2 9514 8051

Appendix 2: Interview questions and thematic analysis

Appendix 2 contains an example of some interview questions, then to help give some context to the analysis, some of the Nvivo code exports have also been outlined, in a fully desensitised way. In doing so, there are many nodes that have to be omitted from sections 2.2 and 2.3 so these diagrams should only be seen a partial representations of the extent of the nodes in the analysis, and only a partial application of the coding framework outlined in Chapter 5.

A2.1 Cadet interview questions

Below, in table A2.1 is an example of some of the questions asked in the first interviews with cadets. These questions were the basis for the semi-structured interviews. Due to an active research methodology the questions, order and format of the interviews were revised over time to become more targeted and refined, eventually leading to four series of questions. Table A2.1 below shows the original questions asked in many initial the interviews while table A2.1.1 shows the development of these questions by the fourth revision.

Demographic bracket related:
• How old are you?
• What gender do you identify as?
• What year of studies are you in?
• Have you been doing it full time so far?
• And what year of your cadetship are you in?
• Are you working part time or full time?
• Do you have any other experience in the construction industry?
• What type of company is your cadetship in?
• What's your ethnicity?
• Are you born in Australia? Are you from Sydney?
• Do you speak any language other than English at home?
• Do you live with your family?
• Are you financially supported by your family?
General experience at work:
• Why did you become a cadet?
• Do you enjoy going to work?
• If so, what do you enjoy about it?
• What project are you currently working on?
• Is it going well? What part of the project are you in?
• Do you work with many women?
• What do you think it's like for women in the industry?
• What do you think it's like for racial minorities in the industry?
• Do you feel like you are treated differently because of your age?
Learning:
• Have you been able to manage work with university so far?
• Are you part of a structured cadet program? What's that like?
• Have you ever had any company training?
• If so, what has that training been like?
• Do you feel as if people at work are accommodating of your university requirements?
• Do you feel as if people at uni are accommodating of your work requirements?

• Is the learning you do at university helping you at work?
• Do you usually get good marks at uni? What is your GPA off the top of your head?
• Do you know if your university makes it compulsory for industry experience?
• Do you think that university adequately prepares you for work?
• Do you think your academic performance at uni has improved since being a cadet?
Labour:
• When you're given a task, do you believe the work you do contributes to the company?
• Do you feel your deadlines are unrealistic?
• Do the other employees treat you with respect?
• When dealing with other businesses do you feel respected?
• Have you been to any work-related events? Do people treat you kindly at these events?
• Do you think your boss or management are supportive of your university commitment?
• Do you feel like you're a valued member of the team?
• Have you ever been asked to do a job when you weren't sure what to do?
• If so, how did you go about completing that task?
Impact of labour and learning related:
• What's your average working week? Or what's the average working day?
• How long are you at university per week?
• Do you think you work hard?
• Do you feel more motivated to work on uni assignments?
• Do you have some time for hobbies with this schedule?
• Are you proud of being a cadet and maintaining this workload?
• Have you received any praise or credit for the work?
• Has your boss come up to you and said you've done a really great job on this? Or has one of your colleagues said something like you're a really fast learner?
• Do you have a work life balance?
• If you felt uncomfortable or burnout from your cadetship, who could you speak to?
• Are you aware of any unions that you could join for support?
Concluding questions
• Do you think it's necessary to be a cadet? Why?
• Have you enjoyed being a cadet?
• Do you want to remain a cadet?
• Do you think the cadetship process could be improved?
• How can it be improved?
• Do you feel like you're getting paid fairly for this work?
• What type of contract are you on? Annual salary or paid per hour or casual?
• How much are you paid per year?
• Do you know of any other cadets from your place of work that might be interested in being in an interview?
• What would be the best way of getting in touch with them?
• Is there anything that you would like to say before finishing the interview off?

Table Appendix 2.2: Questions from first phase of semi-structured in-depth interviews

A2.1.1 Cadet interview question development

This section shows how the question evolved from the initial interview stage. The analytical process was active, and so, the thematic saturation was reached after four repetitions or similarities in the data. Many questions below varied greatly across the final few interviews, as by this point data saturation had mostly been reached and questions either probed more depth into existing ideas or were broad and open-ended to generate discussion.

Demographic bracket related:
• How old are you?
• What gender do you identify as?

- What year of studies are you in?
- Have you been doing it full time so far?
- And what year of your cadetship are you in?
- Are you working part time or full time?
- Do you have any other experience in the construction industry?
- What's your ethnicity?
- Does this ever help you at work?
- Are you born in Australia? Are you from Sydney?
- Do you speak any language other than English at home?
- Do you live with your family?
- Are you financially supported by your family?
- Does that mean you are time poor?
- Why did you become a cadet?
- Do you feel like you're getting paid fairly for this work?
- What type of contract are you on? Annual salary or paid per hour or casual?
- How much are you paid per year?

Alienation and General experience at work:

- Run me through a day in the life of you at work?
- Do you enjoy going to work?
- If so, what do you enjoy about it?
- What project are you currently working on?
- Is it going well? What part of the project are you in?
- Do you work with many women?
- What do you think it's like for women in the industry?
    - Have you noticed any boys club at work?
    - Is your boss a Man?
- What do you think it's like for racial minorities in the industry?
- Do you feel like you are treated differently because of your age?
- What's your average working week? Or what's the average working day?
- How long are you at university per week?

Acquisition of human capital

- Do you think you work hard?
- Do you feel more motivated to work on uni assignments?
- Do you have some time for hobbies with this schedule?
- Have you been able to manage work with university so far?
- Are you part of a structured cadet program? What's that like?
- Have you ever had any company training?
- If so, what has that training been like?
- Do you feel as if people at work are accommodating of your university requirements?
- Do you feel as if people at uni are accommodating of your work requirements?
- Is the learning you do at university helping you at work?
- Do you usually get good marks at uni? What is your GPA off the top of your head?
- Do you know if your university makes it compulsory for industry experience?
- Do you think that university adequately prepares you for work?
- Do you think your academic performance at uni has improved since being a cadet?
- When you're given a task, do you believe the work you do contributes to the company?
- Do you feel your deadlines are unrealistic?
- Do the other employees treat you with respect?
- When dealing with other businesses do you feel respected?
- Have you been to any work-related events? Do people treat you kindly at these events?
- Do you think your boss or management are supportive of your university commitment?
- Do you feel like you're a valued member of the team?
- Have you ever been asked to do a job when you weren't sure what to do?
- If so, how did you go about completing that task?

Burnout related:

- Are you proud of being a cadet and maintaining this workload?
- Have you received any praise or credit for the work?
- Has your boss come up to you and said you've done a really great job on this? Or has one of your colleagues said something like you're a really fast learner?
- Do you have a work life balance?
- If you felt uncomfortable or burnout from your cadetship, who could you speak to?

• Are you aware of any unions that you could join for support?
• Have you enjoyed being a cadet?
• Do you want to remain a cadet?

Table Appendix 2.1.1: Table showing how questions were adapted during later phase of semi-structured in-depth interviews (Version 4)

A2.2 Construction professional interview questions

As like the cadet interviews, the construction professional interviews were not identical as each question was not be asked to every participant in order to maintain the flow of dialogue, however these discussions still conformed to this basic outline:

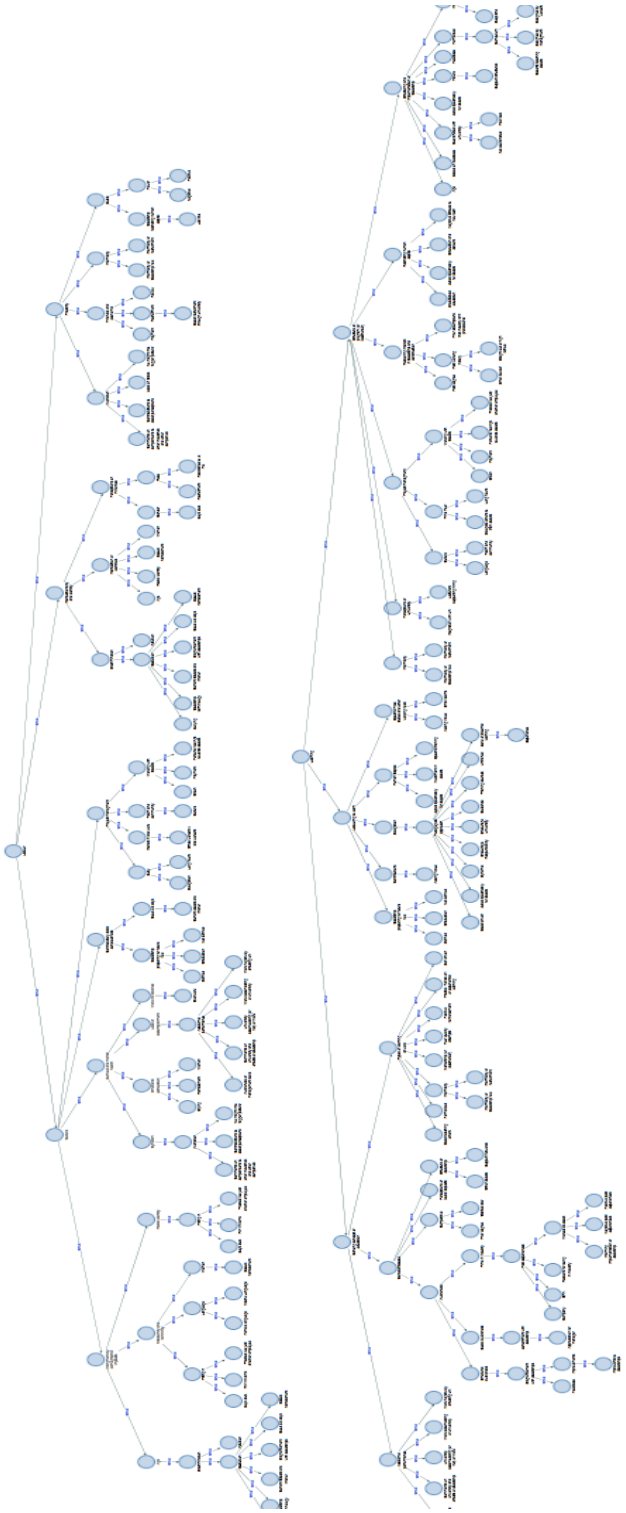
Demographic background and prior industry experience:
• What is your role?
• Age, gender, ethnicity?
• How long have you been in this role?
• How long have you been involved in the industry?
• Have you ever been a cadet?
• What was that like?
• Have you worked closely with cadets much?
• What project are you currently working on?
• Size, scope, culture, location, subbies
• How have your cadets been performing?
Company Cadetship Process:
• How do you typically recruit cadets?
• Does your company have a structured cadetship process?
• Can you please explain that process? Do you know much about that process?
• Who writes this policy?
• Does the company have ties with university or professional bodies to help structure the program?
• If so, how does the company tailor its program?
• If not, then how does the company ensure cadets are learning?
• What systems do you have in place to track cadets' learning?
• How do you make sure those who are training cadets are using appropriate educational methods?
• What support structures are in place to ensure cadets do not fall behind?
• If a cadet is falling behind, how dynamic is this process and what type of safety net is there?
• Do those systems apply consistently to every job?
• How does the company look after cadets?
• Is there a pathway for cadets leading up to graduation?
• Do you regularly push cadets who are capable but haven't completed the training into graduate roles? Can you give me an example of someone?
• Do you retain cadets after graduation? Can you give me an example of someone?
Personal attitude towards cadetships:
• Do you find yourself or the company grooming particular cadets to succeed, or take a specific career trajectory?
• Do you think this process throws cadets in the deep end?
• Are cadets doing critical work?
• What are the benefits of doing a cadetship?
• How do you treat your cadets?
• Do you have a good relationship with your cadets?
• Do you encourage them to attend meetings, after work drinks or other subbie events?
• Are you frustrated when they need to go to university or take too many days off for exams?
• What is it like to work with a cadet?
• Are they helpful?
• What type of tasks do you assign them?

• What methods do you use to ensure they are being taught things properly?
• Have you designed any structured curriculum?
• Do you encourage other colleagues to help cadets?
• Do you like working with cadets?
• Do you think the cadet system is useful?
• Are cadets helpful?
• Do you think they are paid fairly?
• Should cadets be paid more?
• Having a female cadet in the office, does it change the way you behave?
• What actions have you taken to ensure she is being supported?
Concluding questions:
• Do you believe cadets are treated differently and is this justified?
• Do you think it's necessary to be a cadet? Why?
• Do you think the cadetship process could be improved?
• Is there anything that you would like to say before finishing the interview off?
• Do you think cadets are necessary for you to achieve your goals at work?
• What would you change about your cadets?
• How could your cadetship process be improved?
• Do you believe university has a more involved role to play in forming the cadetship?
• Do you have any suggestions to improve the structure of cadetships?

Table Appendix 2.2: Table showing basis of semi-structured group interviews with construction professionals

A2.3 Attride-Stirling (2001) thematic branch structure example

The following figure gives a high-level insight into the extent to which branch-like structures were created in the data. The figure specifically shows how labour impacts in the data were devised and constructed from right (basic themes and codes) to left (organisational themes and global themes).



A2.2 Individual codes and breakdown of nodes used to construct themes

Please note that significant additional coding has not been included in below coding outline, as they contain sensitive information that is restricted by ethical requirements of this research. All the remining codes below have been cleaned; desensitised of any identifying or confidential information.

Hierarchical Name	Nickname
Nodes\\Labour	
Nodes\\Labour\Culture	
Nodes\\Labour\Culture\Burnout and mental health	
Nodes\\Labour\Culture\Burnout and mental health\Crying	
Nodes\\Labour\Culture\Burnout and mental health\Overwork	
Nodes\\Labour\Culture\Burnout and mental health\Work-life balance	
Nodes\\Labour\Culture\Contradictory class consciousness	
Nodes\\Labour\Culture\Contradictory class consciousness\Cadetship preparing for future role	
Nodes\\Labour\Culture\Contradictory class consciousness\Cadetship preparing for future role\Defined	
Nodes\\Labour\Culture\Contradictory class consciousness\Cadetship preparing for future role\Graduation	
Nodes\\Labour\Culture\Contradictory class consciousness\Cadetship preparing for future role\Not defined	
Nodes\\Labour\Culture\Contradictory class consciousness\Good old days	
Nodes\\Labour\Culture\Contradictory class consciousness\Good old days\Current Cadets are inferior	
Nodes\\Labour\Culture\Demographic impacts	
Nodes\\Labour\Culture\Demographic Impacts\Age	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Fitting in	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Fitting in\Boys club	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Fitting in\Racial identity	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Fitting in\RM Williams	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Fitting in\Treated like just another employee	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Language	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Language\Female language	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Language\Macho Language	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Language\Toxic Masculinity	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Women	
Nodes\\Labour\Culture\Demographic Impacts\Masculinity and femininity\Women\Sexual harassment	
Nodes\\Labour\Culture\Project management	

Hierarchical Name	Nickname
Nodes\\Labour\Culture\Project management\Busy	
Nodes\\Labour\Culture\Project management\Busy\Delegation	
Nodes\\Labour\Culture\Project management\Busy\Long hours	
Nodes\\Labour\Culture\Project management\Interest in site work	
Nodes\\Labour\Culture\Project management\Interest in site work\Office workers v site workers	
Nodes\\Labour\Culture\Project management\Team and community	
Nodes\\Labour\Culture\Project management\Team and community\Culture	
Nodes\\Labour\Culture\Project management\Working with Cadets	
Nodes\\Labour\Culture\Project management\Working with Cadets\Green	
Nodes\\Labour\Culture\Project management\Working with Cadets\Payment	
Nodes\\Labour\Culture\Project management\Working with Cadets\Personal feelings towards cadets	
Nodes\\Labour\Intersectionality and identity	
Nodes\\Labour\Intersectionality and identity\Discrimination	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Bullying	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Cadetship terminology	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Current Cadets are inferior	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Disgruntlement with cadetships	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Good old days	
Nodes\\Labour\Intersectionality and identity\Discrimination\Exclusion\Sexual harassment	
Nodes\\Labour\Intersectionality and identity\Discrimination\Inclusion	
Nodes\\Labour\Intersectionality and identity\Intersection of identities	
Nodes\\Labour\Intersectionality and identity\Intersection of identities\Age	
Nodes\\Labour\Intersectionality and identity\Intersection of identities\Racial identity	
Nodes\\Labour\Intersectionality and identity\Intersection of identities\Sexual harassment	
Nodes\\Labour\Intersectionality and identity\Intersection of identities\Women	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities\Gender	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities\Gender\Boys club	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities\Race	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities\Race\Recruitment	
Nodes\\Labour\Intersectionality and identity\Perceptions on minorities\Race\Resistance to Id Pol	
Nodes\\Labour\Precarity	
Nodes\\Labour\Precarity\Alienation	
Nodes\\Labour\Precarity\Alienation\Comments on comparisons to other industries and other companies	

Nodes\\Labour\Precarity\Alienation\Contradictions to cadet perceptions
Nodes\\Labour\Precarity\Alienation\Ideas on class
Nodes\\Labour\Precarity\Alienation\No insight into 'bigger picture'
Nodes\\Labour\Precarity\Financial and economic

Hierarchical Name	Nickname
Nodes\\Labour\Precarity\Financial and economic\Payment	
Nodes\\Labour\Precarity\Financial and economic\Recruitment	
Nodes\\Labour\Precarity\Financial and economic\Recruitment\Cadet recruitment through university	
Nodes\\Labour\Precarity\Financial and economic\Review	
Nodes\\Labour\Precarity\Informality	
Nodes\\Labour\Precarity\Informality\Informality of Cadetship role	
Nodes\\Labour\Precarity\Informality\Informality of recruitment	
Nodes\\Labour\Precarity\Social	
Nodes\\Labour\Precarity\Social\Cadetship restricting human capital	
Nodes\\Labour\Precarity\Social\Cadetship restricting human capital\Job title	
Nodes\\Labour\Precarity\Social\Power	
Nodes\\Labour\Precarity\Social\Power\Negative	
Nodes\\Labour\Precarity\Social\Power\Positive	
Nodes\\Learning	
Nodes\\Learning\Banking concept of education	
Nodes\\Learning\Banking concept of education\Academic performance	
Nodes\\Learning\Banking concept of education\Academic performance\Awareness of management skills	
Nodes\\Learning\Banking concept of education\Academic performance\Comments on university and effects of cadetship	
Nodes\\Learning\Banking concept of education\Academic performance\University accommodating (or not) of Work	
Nodes\\Learning\Banking concept of education\Academic performance\Work accommodating of university	
Nodes\\Learning\Banking concept of education\Academic performance\Work negatively affecting uni	
Nodes\\Learning\Banking concept of education\Conscientizacao	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Emotional awareness	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Emotional awareness\Disgruntlement with cadetships	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Emotional awareness\Disgruntlement with cadetships\Feedback	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Emotional awareness\Disgruntlement with cadetships\Improvements	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Emotional awareness\Disgruntlement with cadetships\Improvements\Improvements to cadetships	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Social awareness	

Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Social awareness\contentment with cadetship	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Social awareness\contentment with cadetship\Appreciation for manager	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Company	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\GPA	

Hierarchical Name	Nickname
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Reasons for being in industry	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Worked as cadet	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Worked as cadet\Informing implementation of cadetship	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Worked as cadet\Negative past experiences	
Nodes\\Learning\Banking concept of education\Conscientizacao\Awareness\Time in Industry\Past experiences\Worked as cadet\Positive past experiences	
Nodes\\Learning\Banking concept of education\Conscientizacao\Competitive	
Nodes\\Learning\Banking concept of education\Conscientizacao\Competitive\Prior degree	
Nodes\\Learning\Banking concept of education\Conscientizacao\Competitive\'Started late'	
Nodes\\Learning\Banking concept of education\Conscientizacao\Perceptions of social aspects	
Nodes\\Learning\Banking concept of education\Conscientizacao\Structure of cadetship	
Nodes\\Learning\Banking concept of education\Conscientizacao\Structure of cadetship\Other cadets	
Nodes\\Learning\Banking concept of education\Conscientizacao\Structure of cadetship\Support networks	
Nodes\\Learning\Banking concept of education\Types of learning at work	
Nodes\\Learning\Banking concept of education\Types of learning at work\Cadet teaching others	
Nodes\\Learning\Banking concept of education\Types of learning at work\Formalised	
Nodes\\Learning\Banking concept of education\Types of learning at work\Informality	
Nodes\\Learning\Banking concept of education\Types of learning at work\Informality\Informality of Cadetship role	
Nodes\\Learning\Banking concept of education\Types of learning at work\Informality\Informality of recruitment	
Nodes\\Learning\Banking concept of education\Types of learning at work\Mentorship (or lack thereof)	
Nodes\\Learning\Banking concept of education\Types of learning at work\Poor quality attempts	
Nodes\\Learning\Banking concept of education\Types of learning at work\Positive reinforcement	
Nodes\\Learning\Banking concept of education\Types of learning at work\Practical, 'hands-on', or experiential learning	
Nodes\\Learning\Banking concept of education\Types of learning at work\Self driven	
Nodes\\Learning\Labouring to learn	

Nodes\\Learning\Labouring to learn\Cadetship preparing for future role
Nodes\\Learning\Labouring to learn\Cadetship preparing for future role\Defined
Nodes\\Learning\Labouring to learn\Cadetship preparing for future role\Graduation
Nodes\\Learning\Labouring to learn\Cadetship preparing for future role\Not defined
Nodes\\Learning\Labouring to learn\Contributions
Nodes\\Learning\Labouring to learn\Contributions\Adding Value
Nodes\\Learning\Labouring to learn\Delegation
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Cadet driven
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\duties specifically for cadets
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Dynamic

Hierarchical Name	Nickname
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Encourage Responsibility	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Encourage University	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Guidance	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Training courses	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Untrained	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Zone of proximal learning	
Nodes\\Learning\Labouring to learn\Delegation\Pedagogical approach\Zone of proximal learning\Experience	
Nodes\\Learning\Labouring to learn\Human capital	
Nodes\\Learning\Labouring to learn\Human capital\duties specifically for cadets	
Nodes\\Learning\Labouring to learn\Human capital\Investment in cadets	
Nodes\\Learning\Labouring to learn\Human capital\Specific training	
Nodes\\Learning\Labouring to learn\Specific misc. Duties and other working roles	
Nodes\\Learning\Labouring to learn\Specific misc. Duties and other working roles\Adding Value	
Nodes\\Learning\Labouring to learn\Specific misc. Duties and other working roles\Small teams	
Nodes\\Learning\Structure of program (or lack thereof)	
Nodes\\Learning\Structure of program (or lack thereof) \Informality	
Nodes\\Learning\Structure of program (or lack thereof) \Informality\Informality of Cadetship role	
Nodes\\Learning\Structure of program (or lack thereof) \Informality\Informality of recruitment	
Nodes\\Learning\Structure of program (or lack thereof) \Perceptions of University	
Nodes\\Learning\Structure of program (or lack thereof) \Perceptions of University\Integration with Uni	
Nodes\\Learning\Structure of program (or lack thereof) \Perceptions of University\Lecturers supporting hiring	
Nodes\\Learning\Structure of program (or lack thereof) \Project management	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Culture	

Nodes\\Learning\Structure of program (or lack thereof) \Project management\Culture\Language	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Culture\Team and community	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Time Poor	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Time Poor\Delegate others to train cadets	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Time Poor\Long hours	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Working with Cadets	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Working with Cadets\Green	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Working with Cadets\Payment	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Working with Cadets\Personal feelings towards cadets	
Nodes\\Learning\Structure of program (or lack thereof) \Project management\Working with Cadets\Treated like just another employee	
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction	

Hierarchical Name	Nickname
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction\Past degree	
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction\Past working history	
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction\Past working history\Small builder	
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction\Past working history\Straight out of high school	
Nodes\\Learning\Structure of program (or lack thereof) \Reasoning interest in Cadetship and construction\Prior assumptions that industry is not professional	
Nodes\\Learning\Structure of program (or lack thereof) \Restricting human capital	
Nodes\\Learning\Structure of program (or lack thereof) \Restricting human capital\Broad-based education	
Nodes\\Learning\Structure of program (or lack thereof) \Restricting human capital\duties specifically for cadets	
Nodes\\Learning\Structure of program (or lack thereof) \Restricting human capital\Graduation and careers	
Nodes\\Learning\Structure of program (or lack thereof) \Restricting human capital\Negative attitude to new tech	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Age	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Based on feedback	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Coordinated with University	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Coordinated with University\Not coordinated	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Coordinated with University\Paid fees	
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\duties specifically for cadets	

Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Failure
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Failure\Support structures
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Feedback
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Formalised
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Formalised\Curriculum
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Formalised\Curriculum\Cadets teaching cadets
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Formalised\Curriculum\Designed by Management
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Formalised\Curriculum\Designed by other workers
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Informality
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Informality\Deep End
Nodes\\Learning\Structure of program (or lack thereof) \Structuring and implementation of Cadetship\Informality\Informality of Construction role

Hierarchical Name	Nickname
Relationships\\Alienation (Associated) Comments on comparisons to other industries and other companies	

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