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*STAND LIKE A BOXER: IN DEFENCE OF VOCATIONAL EDUCATION*

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A thesis submitted in partial fulfilment of the  
requirements of the University of Sunderland  
for the degree of Master of Philosophy  
by Existing Published or Creative Works

A thesis submitted in partial fulfilment of the requirement of University of Sunderland  
for the degree of Master of Philosophy

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## ABSTRACT:

### Stand Like a Boxer: In Defence of Vocational Education.

Abstract:

*“Vocational Education is a great thing.... For other people’s children”*

Coughlan, 2015.

*This thesis explores the existence of a vocational-academic divide. The works of Hyland (2018) and (2019) are used to introduce key issues in the debate. Hyland traces the origins of a vocational-academic divide, back to Ancient Greece, the social class stratifications and political, cultural and power relations which prevailed there and how these continue to influence Vocational Education in the UK and elsewhere today. Carr (1995) points to how the acceptance of this false divide has led to the construction of another questionable division ... the separation of theory and practice. This study examines accounts of lived experiences of vocational education through the close observation of two particular apprentices, their actions and interactions. It considers how a construction craft skill is taught, learned and developed in context. In this thesis, the focus is upon the lived experiences of these students of Vocational Education as well as my own experiences in vocational education contexts. The research builds upon a previous study and contributes to a larger study. Both studies were completed as part of the ETF sponsored customised MPhil Practitioner Research Programme. The work of Hyland (2018:19) is helpful in drawing attention to important issues in the debate, including the social class stratifications and political, cultural and power relations which continue to influence Vocational Education in the UK today. Through accounts experience and observation, as well as data collected from questionnaires, a key purpose of this thesis is to bring to life how the development of craft skills and theoretical knowledge are perceived by those learning and teaching them. The cases which form the central focus of the thesis, are explored in considerable depth. These cases aim to tell the story (if not the whole story, then at least some of it) of two construction craft students studying plumbing at different times and stages in their development. One, a 1st year full-time Study Programme student, the other a 4th year apprentice student. The above works of Hyland alongside the works of Sennett (2008) and Biesta (2010) are used to remind us of the embodied nature of vocational education and the dignity of work throughout history. The processes underpinning the acquisition and development of craft from the Middle Ages to the 21st century are also explored. Questions of what we mean by ‘good work’, what we mean by theory and what we mean by practice, are also considered. In addition, this thesis critically examines our understanding of the nature of a practice, the processes through which a practice improves and the stages through which a practice develops.*

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## CHAPTER 1:

### Chapter Overview

This chapter challenges the existence of a vocational and academic divide. The works of Hyland (2017) and (2018) are used to introduce key issues in the debate. Hyland traces the origins of a vocational-academic divide back to Ancient Greece, the social class stratifications and political, cultural and power relations which prevailed there which continue to influence Vocational Education in the UK and elsewhere to date.

The work of Sennett (2009) is used to draw attention to the dignity of work and the embodied processes underpinning the acquisition and development of craft from the Middle Ages to the 21<sup>st</sup> century. Sennett notes how these traditions have become marginalised in systems of Vocational Education in the UK and the USA, through a particular understanding of what we mean by 'good work'. Both of these authors acknowledge the contributions to this debate made by Dewey (1933) which itself builds upon the work of Aristotle in relation to accounts of different ways of knowing and different forms of practice.

Avis (2010) highlights how government intervention in Vocational Education through policy reforms and "top-down targets" have contributed to the perceived lack of value, low status and prestige of vocational education compared to its academic counterpart.

### Introduction to the Thesis

This Chapter traces the construction of a vocational-academic divide back to the social and cultural divisions in Ancient Greece. It points to how the acceptance of this false divide has led to the construction of another questionable divide ... a separation of theory from practice.

It explains how these divisions have shaped the history of the development of curriculum theory, curriculum design and assessment practice in programmes of vocational education for the construction industry in a college of General Further Education (GFE) in England today.



The title of this thesis 'Stand Like a Boxer' refers to aspects of vocational practice, which involve not only cognitive, but also affective and psychomotor domains of learning in educational research. The importance and the consequences of this neglect are discussed more fully in Chapter 2. The imagery of a boxer is purposefully used to foreground the relative neglect of embodied learning including psychomotor and affective aspects of human learning in education in general and in vocational education in particular. This Chapter also explores the theory and practice of curriculum design and development in vocational education contexts in England.

This thesis builds upon a small-scale research study which was completed in partial fulfilment of the assessment requirements of a MA Short Course at the University of Sunderland in 2017-18. Preliminary findings from this study indicate that while there is much discussion about employer engagement in discourses surrounding education today, understandings of what this means and how this engagement can be achieved vary considerably. This thesis explores the actualities of the theory and practice of curriculum design and development in vocational education contexts in England in contemporary circumstances.

In the context of this thesis, let me begin by introducing myself. I am Faculty Manager for the department in which the students of vocational education which form the main focus of this thesis are studying. This study is therefore an 'insider' research project. In order to strengthen the authenticity and credibility of this study, checks and balances are employed to help present research findings which are as balanced and measured as I can make them. As the nature of this research means that it is essentially 'insider' research, I am aware that I need to be sensitive in ensuring that my findings and my arguments are moderated and clearly supported by evidence. This presents both opportunities and threats in relation to the authenticity and credibility of my findings and the strength of the warrant of the claims that I am able to make.

This thesis also critically examines problems and possibilities in the debates surrounding the notion of the dual professional and dual professionalism in terms of the practices of teaching and plumbing. It also explores the extent to which we should encourage vocational students to see themselves in such binary terms, a notion which Dewey (1933) would neither recognise nor accept. Another intention of

this thesis is to pursue and develop understandings of what we mean by relevant and coherent curriculum design and good pedagogical practice in relation to full-time Study Programmes for Construction Craft students in England.

### Research Questions

The central research question underpinning this study, invites us to address the issue of what a good vocational educational curriculum might look like in practice. This research also raises a subsidiary question of how teachers can integrate theory and practice in ways which ensure learners in vocational education contexts are equipped with the necessary skills and knowledge to not only progress onto New Apprenticeships but also to move into the next level of study within their chosen vocational area?

### Structure of the Thesis

This thesis is organised into 6 chapters.

Chapter 1 presents the background to the study and why this research is important. It also introduces the research questions, the research problem and aims and objectives of the study.

Chapter 2 provides a review of the literature that forms the basis for the thesis and the thinking and debates that surround it. I also introduce myself to you as the researcher.

Chapter 3 details the epistemological, ontological and methodological positions adopted in this research.

Chapter 4 illuminates lived experiences of craft and how craft is developed and taught through data collected from discussions with vocational tutors and workshop observations of students.

Chapter 5 describes the processes of data analysis and highlights the findings that emerged in the conduct of the thesis. It outlines the design of the research, the sampling plan, the questionnaires used and data collection and analysis processed. This Chapter also reports on the key aspects of the thesis including a discussion of

the empirical findings of the thesis related to the existence of a vocational-academic divide and the separation of theory from practice in Vocational Education.

Chapter 6 begins with a summary of the thesis as a whole and provides a conclusion to the thesis including some recommendations.

## Context

This thesis focuses upon practitioner-research in a field of study in which Hiim (2017) and Hyland (2017) both argue that more research is urgently needed. Potential risks are minimised as the project is focussed on learners within my organisation and within the reach of my everyday professional practice. I am Faculty Manager with responsibility for the College Department in which the sites and the research population of this study are situated. This thesis is therefore an 'insider' research study. To eliminate potential bias, checks and balances are made to help present balanced and measured research findings. Due to the nature of the research study being "insider research", I need to remain sensitive in ensuring that my findings and my arguments are balanced and as clearly supported by evidence as possible. This presents both opportunities and threats in relation to the authenticity and credibility of my findings and the strength of the warrant of the claims I am able to make. The thesis builds on two previous pilot research projects funded by the Education and Training Foundation (ETF). The first two years of this research was supported by the customised research MPhil programme funded by Foundation and supported by the University of Sunderland's Centre for Excellence in Teacher Training (SUNCETT).

This thesis builds upon a previous small-scale study conducted within the context of my own professional practice which, brought to light some of the ways in which colleges of Further Education could begin to work collaboratively with employers in new ways. These included employers and the College working together to co-operatively design a vocational educational curriculum for building service engineers. Through a pilot implementation phase, findings from the previous study showed improvements in student attendance, retention and achievement. However, the small-scale nature of the previous study means that its findings have to be treated

with some caution and considerable care. This includes understanding more fully the factors influencing improved attendance, retention and achievement so that these insights might be extended incrementally to a broader group of students.

These pilot studies described above provided the impetus for this thesis and informed the development of a larger research project conducted across all three campuses within my organisation. An ultimate aim of this thesis is to contribute to the development of a new qualification and curriculum delivery model that might be implemented across the construction departments.

Two more colleges joined the organisation within the first 6 months of the start of the research. The new qualification/curriculum was intended to be introduced on these new campuses as well, however this was not planned and achieved until September 2019. This new qualification aims to meet the needs of all Level 1 Full-Time Study Programme students, studying a construction trade qualification within my organisation. This new qualification and model of curriculum delivery aims to allow teachers more creativity in designing vocational education projects and to support teachers in developing their students for the world of work enabling them to progress more students onto apprenticeships and Level 2 study. As an organisation, we have noted that not enough students progress onto apprenticeships or their next level of study. The 2013 report of the Commission on Adult Vocational Training and Learning (CAVTL) highlights the importance of teachers to be “Dual Professionals”. While on the face of it, this proposal is intuitively appealing, it requires careful scrutiny. If we take this term to mean that in the compound noun vocational education, the educational is as important as the vocational, then the term itself may be less problematic. If however, it is taken to mean that both are separate, then this framing maybe troublesome. This proves to be the main crux of the argument for both Hiim (2017) and Hyland (2017).

Coughlan (2015) highlights in the introduction to this Chapter how vocational education is largely regarded as a good thing but (and he points out that there is always a but) ... for other people’s children, signalling that most parents regard academic education as being the superior option with vocational education relegated to second class status.

The motivation for conducting this thesis is essentially pragmatic in that I want to explore different types of learning in Vocational Education and how these are framed in terms of a vocational – academic divide. There are also aspects of my own practice that I want to understand more fully so that I can begin to improve them. For example, I want to research the relationship between theory and practice. I find it troubling that the construction of vocational-academic divide and the resulting separation of theory from a practice are both divisions of phenomena that may not be well served by being divided.

This thesis is conducted within a large GFE in the South of England and in other sites of Vocational Education in other regions of England. The focus of the study is spread across three campuses including two more campuses joined the organisation in September 2019. The participants within the project are all students who are 16-19 years old. All members of the research population attend a GFE College to study a full-time Study Programme in a construction industry related crafts in the following disciplines:

1. Carpentry or Joinery: Wood Occupations
2. Plumbing and Electrical installations: Building Services Engineering
3. Bricklaying: Trowel Trades

The full-time Construction Craft Study Programmes are offered by the GFE College initially at Level 1, a basic introduction to craft hand skills including the theoretical knowledge needed to become a skilled craftsman in the chosen field of study. The progression route offered after Level 1 is Level 2 Full-Time Study Programmes or Apprenticeship.

According to the DFE report (2017) less than 7% of 16-19 year olds studying on a full-time vocational study programme at a UK GFE College, gain an apprenticeship in their chosen vocation. This is a startling and worrying statistic, especially in the light of a report by the Careers and Enterprise Company (2017) which identified that the South of England and in particular, Thames Valley Berkshire area, as the most promising area in the UK for employment encounters. In view of this, there should be no excuse for students in the research population to not experience effective employer relationships by completing work experience with the aim of gaining an

apprenticeship. Jessup (1991) notes that on the job training was the most important way for a vocational student to learn their craft and this viewpoint is further supported by the Richard Review (2012) and Hiim (2017). In undertaking this research, I investigate how introducing a new qualification and employer focused curriculum delivery in construction departments in my organisation impacted upon student progression onto Apprenticeships or Level 2.

Mann (2017) draws attention to the fact that vocational students within Further Education are 86% more likely to become Not in Employment, Education or Training (NEET) if they receive less than four employer encounters throughout their time studying in FE. It is likely that the relevance and coherence of the curriculum may have something to do with this as Hiim (2017) suggests.

Many researchers and scholars support this view including Mann (2017), Rehill (2017), and Elnaz (2018). For years, the same scholars have argued that educational courses strengthened by employer engagement produce the best learner experiences. However, the history of failed attempts at employer engagement suggest it is not as simple as that. This thesis aims to highlight some of the enduring practical and educational issues, which have prevented employers from engaging with curriculum design and pedagogy within vocational education in England to date.

Policy initiatives which aim to secure employer engagement within vocational education are widely evident across the sector and have been for decades. The success of these initiatives has however proved to be at best patchy and often disappointing. There is therefore an urgent need to understand why this is happening and what can be done about it. This need is even more pressing in the light of latest policy initiatives regarding New Apprenticeships, their development and assessment, Richards Review (2012).

### Research Population

As discussed briefly above, the students in the research population in this thesis are all studying Level 1 full-time construction craft courses. The thesis follows their progression either into Level 2 or Apprenticeship in their chosen construction trade.

The study is based in a large GFE in the south of England, in sites across 3 campuses. The research population for the study includes 27 construction teachers and over 350 construction craft students.

Study Programmes were introduced in GFE Colleges across the UK in September 2013 for all students between the age of 16-19 who were not in full-time employment, an apprenticeship or studying A Levels in a Grammar School or their equivalents. Study Programmes were introduced following Professor Alison Wolf's (2011) report into Vocational Education delivery in the UK. In the report, Wolf claims that Vocational Education is not good enough in the sense that hundreds and thousands of students are doing vocational courses that do not lead to university or a job. She recommends that in order for young people to enhance their employability skills they need to gain a real experience and knowledge of the workplace. Since then, FE Colleges across the country have been working towards providing their learners with as many effective employer encounters as possible. The aim here is to help students transition successfully from education to employment. In the same report, Wolf also concludes that GCSE English and Maths levels of 16-18 year old students were also not satisfactory. A consequence of this is that students who have not achieved a Grade C/4 or higher must now re-sit GCSE English and Maths examinations.

The Level 1 provision now on offer to the research population studied in this thesis is 40% practical study conducted in a specially designed workshop. The purpose of this is to facilitate and accommodate the necessary demands of the student's chosen occupation and link these workshops experiences to real experience in industry as much as possible. Around 60% of the course delivery is completed inside a traditional classroom where the theoretical knowledge of the chosen craft is delivered alongside designated GCSE English and Maths lessons. Level 1 qualifications are offered to 16-19 year-old students who have not yet gained an apprenticeship in their chosen craft and would like to learn the basic practical skills and theoretical knowledge, with a view to gaining employment and an apprenticeship in their preferred area of vocational practice. The traditional progression routes for these learners are normally onto a Level 2 full-time course or an apprenticeship in their chosen vocational area.

Over 95% of the research population are male British citizens. The remaining 5% are female or non-British nationals. Table 1.1 below illustrates the breakdown of the research population involved in the thesis.

Table 1.1: The research population enrolled for academic year 2018/19:

<b>Campus</b>	<b>Discipline</b>	<b>No. Of Classes</b>	<b>No. Of Teachers Delivering</b>	<b>No. Of Students on course</b>	<b>No. Of Directors Per Campus</b>
A	Wood Occupations	2	3	32	1
A	Trowel Trades	1	2	19	
A	Building Services Engineering	2	3	37	
B	Wood Occupations	1	2	17	1
B	Trowel Trades	2	2	17	
B	Building Services Engineering	2	3	22	
C	Wood Occupations	1	1	16	1
<b>Total</b>		<b>11</b>	<b>16</b>	<b>160</b>	<b>3</b>

Destinations of the students in the research population at the end of the academic year after their Level 1 study of the academic year in June 2019 are tracked. Tables



1.2 and 1.3 below present destinations for the previous cohort of Level 1 and Level 2 studying in 2017-18 academic year.

Table 1.2: Level 1 student destination in academic year 2017/18:

2017/18 Academic Year Technology Faculty Student Destination (Level 1 Study Programme)	
<b>Destination</b>	<b>% of overall learners</b>
Continuing with full-time FE	55.30%
Paid Employment >16hrs	17.10%
Apprenticeship	14.30%
Other	13.30%
Total	100%

Table 1.3: Level 2 student destination in academic year 2017/18:

2017/18 Academic Year Technology Faculty Student Destination (Level 2 Study Programme)	
<b>Destination</b>	<b>% of overall learners</b>
Continuing with full-time FE	50.00%
Paid Employment >16hrs	18.90%
Apprenticeship	17.20%
Other	13.90%
Total	100%

Traditionally just over 50% of learners continue studying in FE after their academic year has ended. This thesis explores and discusses the barriers to students progressing to the next level of their learning.

### Overview of the Research Problem

The thesis focuses on three dimensions of the research problem and the enduring educational issues which underpin them:

- 1) The perceived divide between Vocational and Academic education is a vast subject that has had many commentators but as yet not a great deal of consensus regarding the nature of practice and how practice develops.
- 2) The perceived existence of this divide then leads to a false separation between theory and practice.
- 3) The third issue relates to the prevalence of a technical-rational worldview and how this manifests itself in approaches to the implementation of educational policy, educational evaluation and improvement in the form of top-down targets, outcomes driven funding coupled with external inspection.

### Problem 1: The Vocational Academic Divide

Hyland (2017) illustrates how vocational education has been subjugated to its academic counterpart as a consequence of the historical and political construction of a false divide between vocational and academic curricula. Traces of this can be found as far back as ancient Greece. Hyland (2017, p. 307) lists five points, which form the basis of his assertion that vocational Education in England is often regarded as being second rate in relation to academic education as follows:

*“Structural – rigid curriculum divisions between vocational and academic subjects (Walsh, 1978; Silver & Brennan, 1998; Pring, 1995; Hyland, 2014); restrictive apprenticeship training models (Fuller & Unwin, 2011); centralist planning and control in England as opposed to the state partnership models on the Continent (Keep, 2006).*

*Historical – aristocratic ethos derived from Ancient Greek ideas held by powerful interests which defined and established state education systems, and still control their direction (Castle, 1967; Schofield, 1972; Green, 1990; Corson, 1991).*

*Cultural – social class interests differentiating curricula in terms of intellectual and manual pursuits (Kenneth Richmond, 1945; Lewis, 1991; Hyland, 1999).*

*Biological – manual pursuits directly linked to evolutionary survival became less valued than intellectual/aesthetic activities far removed from everyday toil (Pinker, 1997; Hickman, 1990; Hyland, 2002).*

*Philosophical – deriving from the ideas of Plato and Aristotle, the intellectualist thrust (with its attendant devaluing of practical studies) of much of mainstream Western philosophy upon which modern education systems were built (Curtis & Boulwood, 1970; Wilds & Lottich, 1970; Hickman, 1990).”*

These five points, although not set in stone Hyland argues, are the main reasons for the persistence of a dichotomy between vocational and academic pursuits. He points out that these are very much relevant and evident in the general attitude and perceptions which, the public may unconsciously have towards vocational education.

For example, whilst thinking about perceptions of vocational education, my own mother’s instructions to me as a child whilst undertaking GCSE’s and A-Levels of “Go to university, get a degree and get a good job!” This definitely resonates Hyland’s historical and political points where he notes the widely held notion that a “good job” could only be achieved through an academic education. It also shows that there may be students who might wish to pursue vocational courses however are being discouraged from doing so due to their perceived low status and lack of prestige of Vocational Education. Schumpeter (2014) echoes Hyland where he observes that European students are put off from studying vocational courses due to their “low status” and “lack of prestige”. Subrahmanyam (2014) underscores this point by inferring there is a presumed “bias against vocational education” in the Finnish educational system. Following on from Hyland’s location of the creation of a vocational-academic divide, Carr (1995) illustrates how the creation of a theory-practice divide was almost inevitable.

## From the creation of a Vocational-Academic divide to the creation of a Theory-Practice Divide

### Problem 2: Models of Quality and What we mean by Good Work in Vocational Educational Contexts

Sennett (2009) contends that for good Vocational Education to occur, three fundamental questions must be considered.

Firstly, what do we mean or consider by good quality work including how to make standards of good quality work explicit, meaningful and workable in practice as well as how we can know it?

Secondly, how to encourage dynamic problem-finding, problem solving, critique and curiosity in practice.

Thirdly, how to create conditions where a shared experience of resistance and ambiguity becomes the basis of a critical dialogue which enables and encourages people to work together in realising the highest standards of practice.

These are discussed and developed in more depth in Chapter 2.

To coin something of a pun in the context of this thesis, Sennett's three key suggestions may just be a pipe dream that is unachievable in Construction Craft courses in its current format and as they are currently delivered as they are limited in comparison to their academic counterparts. Limited in the sense that they are bound by examination and narrow forms of practical assessment. For example, there is no opportunity for Construction Craft students to research the history and traditions of their chosen sector or to speculate on how they might better or advance it. These matters are left to, or seen to be, the academic's role i.e., engineers/scientists qualified with university degrees. Construction Craft curricula are currently caught in a vice as Gregson (2019) argues – a vice made up of bewildering checklists and minimal understanding of competency rather than assessment of mastery of skill or knowledge of the practice of the whole person.

### Problem 3 – Government Policy and Interventions

Avis (2010) states that government intervention in Vocational Education and “Top-Down Targets” are not a new phenomenon and may have contributed to the social divide. Avis (2010) examines the impact of the 2010 coalition government between the Conservative Party and the Liberal Democratic Party which was the first “Hung Parliament” in the UK since 1974 and the influences it had on Vocational Education. Avis (2010) drawing upon the work of Ranson (2008), suggests that the “duality of policy” offers a resolution to the issue of class antagonisms that come to fruition in social formation. Avis (2010) observes how the coalition government of 2010 moves towards localism in FE and away from more centralist perspectives. Seddon (2008, p. 157) states that a move away from historical approaches to FE could “reconfigure educational practices in new ways.”

This move towards localism suggested by Avis can now be seen in government policy. The 2015 government policy paper “Reviewing of post-16 Education and Training Institutions” which looked at the possibility of FE providers within a locality merging. The purpose according to this policy document is to, “*Ensure that we have the right capacity to meet the needs of students and employers in each area, provided by institutions which are financially stable and able to deliver high quality provision*” (2015, p. 3). According to the Association of Colleges (AOC), there are currently 251 further education and sixth form colleges in England (as of April 2019). This compares to almost 450 when colleges were incorporated in 1993. Since the 2015 general election, there has been an increase in the number of college mergers. The government's post 16 area review programme required every college to consider their future and provided official encouragement for mergers. The latest state of play is, as of April 2019:

*53 college-to-college mergers have taken place (1 in 2015, 11 in 2016, 29 in 2017, 12 in 2018)*

*1 university-college merger took effect in August 2018 (though the college was designated as an FE institution under the FE and HE Act 1992)*

*9 college-college mergers took place in 2019*

*1 university-college merger took effect in February 2019 (though the college was designated as an FE institution under the FE and HE Act 1992)*

*More mergers are planned for 2019*

*23 sixth form colleges have converted to become 16-19 academies (17 in 2017, 3 in 2018, 3 in 2019)*

*1 more sixth form college is due to convert in 2019*

These college mergers could be a result of a lack of funding in FE per student. It could even be the knock-on effect of Tony Blair's Labour Conference speech in 1999 when he announced that *"In today's world, there is no such thing as too clever. The more you know, the further you'll go."* A direct plea for students to carry on with education at the highest level, Blair stated further, *"I set a target of 50 per cent of young adults going into higher education in the next century."* This was a direct appeal aimed at students, parents, schools and everyone involved in education, that the future of the UK was dependant on students educated via the academic route. The way government and the general public view Further Education establishments is evidenced in these mergers and in previous mergers where some Further Education Colleges have had to close. It is interesting to note that if Universities and Schools had to undergo the same level of scrutiny and impending closure of operations, there would be more of an outcry or backlash from the general public to prevent it. Since Blair's speech at the Labour Conference in 1999, the percentage of Post -16 students staying on in school and studying A-Levels and going onto university has increased according to the Higher Education Statistics Agency ([www.hesa.ac.uk](http://www.hesa.ac.uk)). Indeed, a UCAS report on A-Levels results day in 2018 documented *"A record 16.1% of people from the most disadvantaged backgrounds have been accepted into Higher Education, a rise of 0.4 percentage points on 2017"*. Traditionally this percentile of students would have been regarded destined for FE, however, these statistics reveal how many of these students are now being educated in HE.

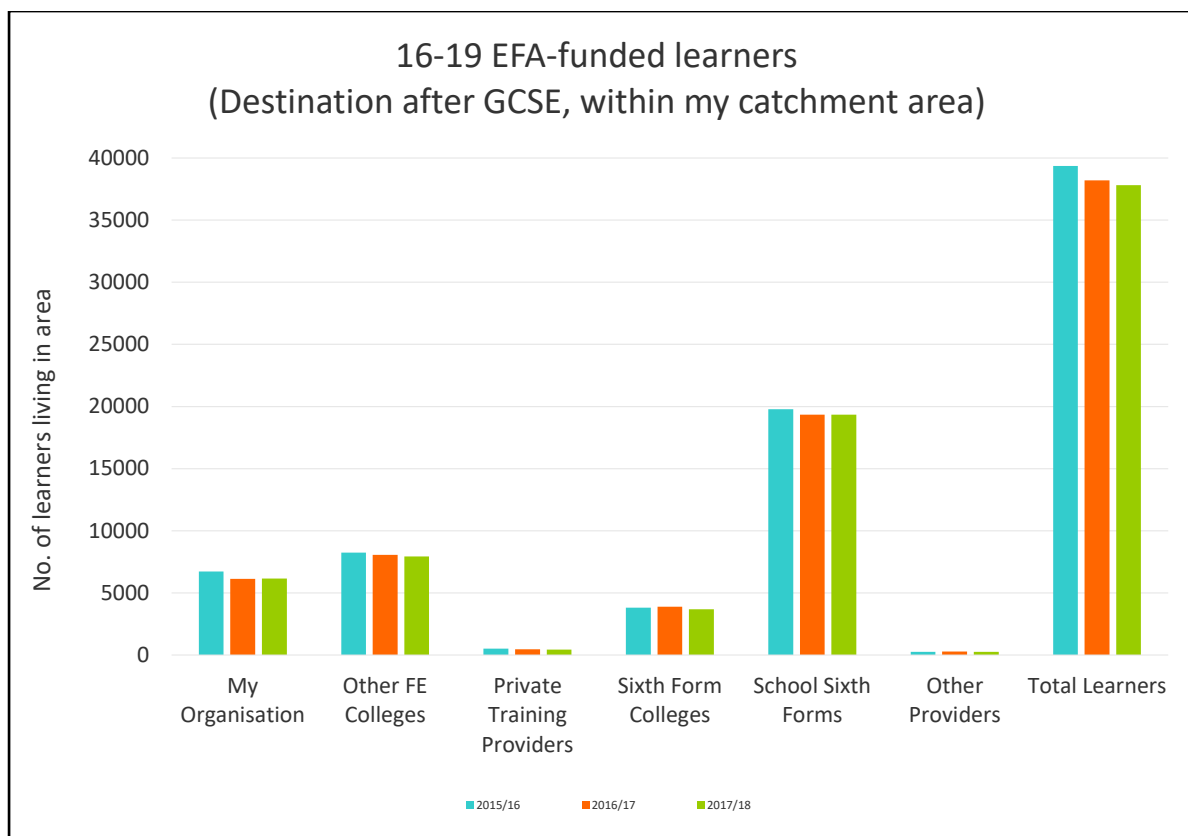
Within the context of this thesis, which is based in the South of England, I have looked at the market share of 16–19-year-old students who complete GCSE/A-Levels and where their destination after secondary school study has completed. This

has been traced back over the previous 3 academic years. The table below (table 1.4) and bar graph (graph 1.1) detail the proportion of students within the thesis catchment area who have transferred to my organisation, other FE colleges within the area, private training providers, other training providers or have stayed on with their academic studies in either sixth form colleges or schools after completing GCSE and Secondary education.

Table 1.4: Student destination within the catchment area

	<b><i>My Organisation</i></b>	<b><i>Other FE Colleges</i></b>	<b><i>Private Training Providers</i></b>	<b><i>Sixth Form Colleges</i></b>	<b><i>School Sixth Forms</i></b>	<b><i>Other Providers</i></b>	<b><i>Total Learners</i></b>
<b>2015/16</b>	6730	8240	520	3820	19780	260	39350
<b>2016/17</b>	6140	8060	470	3900	19350	270	38190
<b>2017/18</b>	6160	7940	440	3670	19350	250	37810

Graph 1.1: Student destination within catchment area



Over the 3-year cycle the total number of 16-19yr old students within the thesis' catchment area has decreased by 1,540. Sixth Form Schools and Colleges still hold the vast market share with 23,020 students electing to stay on with their academic studies in 2017/18, compared to 14,100 who enrolled at GFE's to study Vocational Courses.

The increased number of students enrolling in UK Universities has resulted in improved funding for students in Post Primary and Higher Education. According to the Fiscal 2018 figures published (see graph 1.2 below)

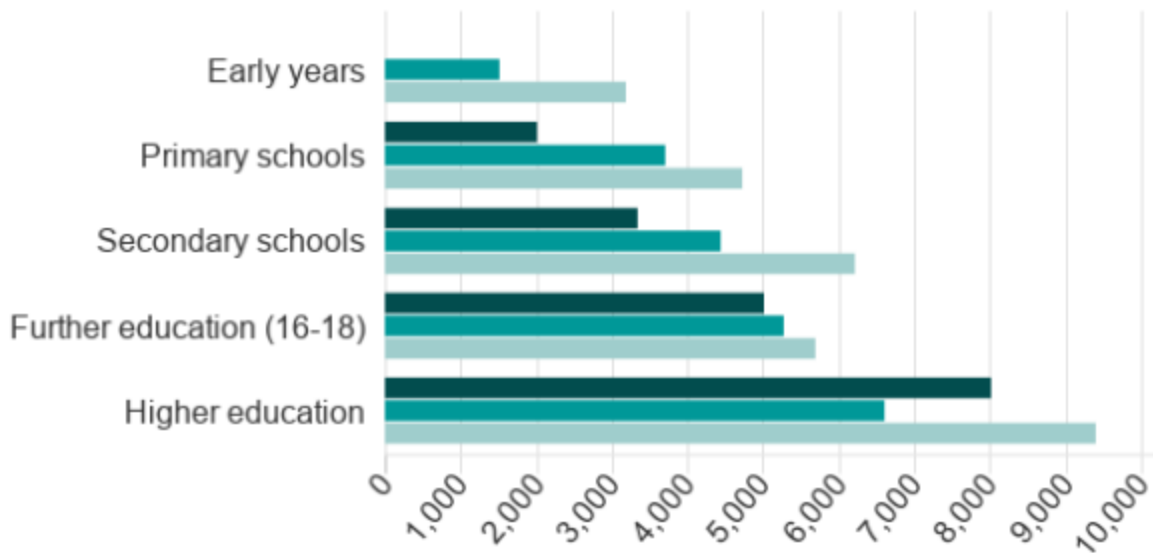
Graph 1.2: Funding by student



## Spending per student at different stages of education

Spending in £ at 2018-19 prices

■ 1990 ■ 2003 ■ 2017



Source: IFS

BBC

Sibieta 2018

Since 1990, there has been an increase of 91% for funding per student in secondary schools. In the same period spending per student in Further Education has increased by 16% and since 2003, spending per student in Higher Education receives 42% more. The spending per student in secondary schools now outweighs the spending per student in Further Education. Secondary schools receive 7% more per student than FE in 2017 compared to 1990 when Further Education receives 36% more per student than secondary schools. Higher Education in 2017 receives 65% more funding per student compared to Further Education. These figures show the uneven playing field in which Further Education is operating in relation to its counterparts in compulsory education. It may also suggest that to accommodate the upsurge in students taking A Levels and enrolling onto university courses, government money that was previously spent in Further Education is now being used to subsidise Secondary and Higher Education.

Government intervention with the Further Education sector became more prominent in the 1980's during Margaret Thatcher's Conservative Party era which saw the introduction of National Vocational Qualifications (NVQs) in 1986 in the form of competence-based model of vocational 'training'. Wilkins (2002) drawing upon the work of Harrison (1997) states that a NVQ represents a statement of competence confirming that an individual can perform to a specified standard at one of five levels in a range of work-related activities, and has the related skills, knowledge and understanding that makes that performance possible in a work setting (Harrison, 1997). The NVQ is competence-based, work-based and job specific qualifications. NVQ's promote a specific style of assessment and learning through a portfolio of work-based evidence to capture a student's competence and knowledge against assessment criteria. Wolf (1998) observes that, the portfolio of competency was destined to become the centrepiece of the NVQ, for demonstrating the necessary knowledge and skills to achieve a qualification. However, she goes on to argue that students need to be highly motivated, with good information, communication and technology skills to produce a successful portfolio as it is a fairly complicated and time-consuming process.

The introduction of NVQs was intended to help solve a skills shortage in the UK workforce and to move away from the Youth Training Schemes (YTS) of the 1970's and 1980s replacing other existing vocational qualifications. NVQ's were designed to help employers train young people to develop the skills needed to be successful in their chosen industry. Unfortunately, through time the market became saturated with NVQ qualifications which, may have contributed to the de-valuation. The NVQ system is practical and employment-led. Its architects were employer representatives and the resulting qualifications were characterised by the vast majority of training and assessment being conducted largely in the workplace. Smithers (1999) suggests a qualification that is solely focused on work related competency could potentially be its own downfall as it renders itself completely useless to those not in employment or preparing for employment including 14–16 year-olds. Beaumont (1996) supports Smithers' viewpoint as he concludes that the fact NVQs are work based means those not in work are prohibited from obtaining the qualification.

The nature of the training and assessment required to achieve an NVQ has rendered it open to criticism for being too narrow in focus, too time consuming, expensive and bureaucratic to implement and fundamentally not satisfying the ever-evolving demands and requirements of industry. At their introductory stage, there were 5 levels of NVQ. However, the majority of awards achieved are at the lowest levels and have not contributed to improving the perceived higher level skill shortages in the UK. For example, while the vocational qualifications systems of France and Germany do not have a low skills level that corresponds to NVQ Level 1, some 18 per cent of NVQs achieved in the UK have been at Level 1 and 59 per cent at Level 2 (QCA, 2001). Coffield (2007) suggests that the government obsession with wave after wave of radical change to the UK system of vocational education is disruptive and that the language and thinking constantly used in government reform, such as “upskilling and reskilling the workforce”, are both ugly and misinformed.

### Vocational Curricula Discussion

The work of Hiim (2017) is particularly helpful in drawing attention to the importance of relevance in vocational curricula which include the integration of college and work-based components. This involves careful consideration of arguments which point to the existence of a vocational-academic divide and/or a divide between theory and practice. Hyland (2017) is critical of the existence of such dichotomies and urges professionals in vocational education to do the same. He points to what he describes as a kind of snobbery or elitism inherent in such bi-polar framings of vocational and academic education. This is explored further in Chapter 2.

### Chapter Summary

This Chapter provides insights into the research problem at the centre of this thesis and the context in which it emerged. It highlights some of the previous research conducted on the perceived vocational and academic divide. In doing so, it is hoped that this thesis will contribute to the broader literature on Vocational Education’s status within the UK Educational System. The Chapter also reflects on the uneven playing field in which Vocational Education is competing with Post-Primary and

Higher Education in regards to student numbers, student funding and student perceptions. This in itself stands in testament to the second-class status of Vocational Education in the UK. Constant “Top Down” reform from Governments has not helped to improve Vocational Educations standing. It is also interesting to note that these reforms have mostly all been initiated by academics educated in the academic route via Higher Education facilities and not in Vocational Education establishments. Chapter 2 provides a detailed background for the study in terms of my own experiences of teaching and learning in Vocational Education whilst training to become a Building Service Engineer. In Chapter 2, I reflect on research and literature surrounding the relationship between theory and practice including a discussion on the works of Aristotle (384BC – 322BC), Sennett (2009) and Biesta (2010).

## CHAPTER 2 LITERATURE REVIEW:

### Chapter Overview

This Chapter draws upon the work of Aristotle to explore philosophical understandings of the nature of a practice and how a practice evolves and improves. Aristotle's forms of knowledge of *Techné*, *Poiesis*, *Phronesis* and *Praxis* (among others) are used to contribute to discussion of the nature of a practice and to argue that all forms of life are a form of practice. Building upon my own experiences of training to become a Building Services Engineer and upon my experiences as a teacher of Building Services Engineering, this research challenges the separation of theory and practice in curriculum design and pedagogy in Vocational Education in a number of ways including the study of cases and critical incidents. It also questions the legitimacy of the existence of a vocational academic divide. The works of Hyland, 2017, 2018 and Carr (1995, 1998) in the UK, Hiim (2017) in Norway and De Bruijin (2010) in Holland contribute to the discussion of curriculum design in Vocational Education. The works of Sennett (2009) and Biesta (2010) are also used to advance the discussion.

### Becoming a Building Service Engineer

Aristotle in his *Nicomachean Ethics* refers to a form of knowledge he describes as practical wisdom - "*Some people who do not possess theoretical knowledge are more effective in action (especially if they are experienced) than others who do possess it*" (Book VI 1141 68-27). This form of knowledge is something that many craftspeople and engineers possess. However, it is striking that this form of knowledge is neither well understood nor directly taught in the UK system of Vocational Education. Practical wisdom can be an influencing factor in the decisions that students make in determining their choice of career. In my own experiences of interviewing and speaking to potential and current construction students in my current role, their narratives often reflect a devaluation of practice and an undervaluing of themselves. For example, some of the main reasons cited for pursuing a career in construction trades are:

*"I am not good at the books, so I want to do a trade."*

*“I don't like studying I am better with my hands.”*

*“I want to make money.”*

This suggests that a notion is instilled in young people throughout their early lives that you only pursue a vocational craft if you are not 'good' enough or intelligent enough to be an academic, so it is very much a second choice and careers in craft are assumed to rely solely on hand skills and nothing else. Sennett (2009) points out that craft workers are only deemed to be worthy of the title once they have mastered a set of complex skills and routines involving the exercise of good judgment in context. He goes on to argue that all craftsmanship involves good judgement and that good judgement involves much more than mastery of technique. Following Sennett (2009) I refer to the term craftsman in this thesis a generic way to describe all craft workers. Sennett argues that all craft is founded on a high degree of skill which typically involves practice built around approximately ten thousand hours of experience. Sennett suggests that the development of technique rather than theoretical knowledge is a basic but central first step in the development of craft and the foundation stone of the development of Vocational Education students' practice:

*“Craftsmen take pride in skills that mature. This is why simple imitation is not a sustaining satisfaction: the skill has to evolve. The slowness of craft time serves as a source of satisfaction; practice beds in, making the skill one's own. Slow craft enables the work of reflection and imagination – which the push for quick results cannot. Mature means long; one takes lasting ownership of the skill”.*

Sennett, 2009, p.295.

Sennett draws attention to stages in the development of skill of craft i.e., observation, mindful repetition, imitation, co-operation, dialogue and critique being the most important elements in the development of the skilled craftworker. Sennett challenges the narrative that Vocational Education and in particular, construction trades are based on technique alone. Following Aristotle, Sennett argues for the existence of different kinds of knowledge not just propositional, procedural knowledge or the logic of maths and science.

This notion of craft can also help to support the idea that vocational courses are an option for students who are drawn to thinking by doing. Crawford (2009) supports Sennett's argument that craft skill must be practised over a long period of time and that craftsmanship is not restricted to a specific occupation or skill. Arguably, too much emphasis is placed on technique in Vocational Education and not in enough emphasis placed on the development of practical wisdom through the aspects of practice development, described by Sennett (2009) above.

Craft workers know much more than technique, which Aristotle described as *techné*. Craft workers know what to do, when they don't know what to do in that they know how to problem-find and problem-solve; they know how to observe the consequences of their actions and they know how to recover from mistakes and how to repair what has been damaged. The epistemic nature of craft is therefore mindful, pragmatic and incremental, not mindless or mechanical. Craft workers as a whole have the knowhow to translate different techniques into different situations in the workplace seamlessly and can make good judgments in complex and unfolding situations.

In view of the above, Vocational Education therefore should not and cannot be instrumental, rigid and tied down or reduced merely to lists of atomised skills and specific techniques. Although technique is undoubtedly an aspect of practice, it is certainly not all of it. Students of Vocational Education need to acquire and develop the traditions and practices of their chosen profession in ways which encourage the mastery of their skill and the development of good judgement in context. Hyland (2018) discusses Plato's distinction between "genuine" knowledge achieved through rational reflection of logic and mathematics and mere "opinion" achieved through applied knowledge used for specific purposes. He notes that Plato's "genuine" knowledge of maths and science is often reserved for academic curricula and pursuits only and cannot be associated with Vocational Education which it is assumed are based on instrumental or applied knowledge, regarded in Plato's terms as mere "opinion".

Aristotle in the Nicomachean Ethics describes a number of forms of knowledge, as follows:

*Techné* – The simple English translation of this Greek word is technique. The Dictionary of Philosophy (<http://www.ditext.com/runes/t.html>) defines *Techné* as: “The set of principles, or rational method, involved in the production of an object or the accomplishment of an end; the knowledge of such principles or method; art.” *Techné* resembles episteme in that it implies knowledge of principles, but differs in that its aim is making or doing, not disinterested understanding.

*Poiesis* – The simple translation of this word is “to make.” It can also describe the activity of creating, making or transforming. Plato says, “Whatever passes from not being into being is a *poiesis*.” This involves making something where the end is known. For example, a loaf of bread, a shoe or a cello.

*Phronesis* – Often translated as “practical wisdom” although in today’s language many people, including McEvelley (2002), argue that the best translation is “Mindfulness.” Carr (1995) indicates that *phronesis* is paramount for a person in a practical situation to help them develop from a shrewd guesser to a critical thinker. Carr, expanding on the works of Aristotle notes, “*Phronesis is the supreme intellectual virtue and an indispensable feature of practice*” (1995, p. 71). *Phronesis* is therefore a combination of knowledge of a situation or skill and having the mindfulness or ethical principle to act consistently on this basis. Carr (1995) believes that practical wisdom distinguishes good practice from instrumental cleverness where the solution does not become an intellectual exercise or detached discussion.

*Praxis* – is the application of skill distinguished from theory and when you get to a point and doing something well not because it is good for you, you do it, as it is the right the right thing to and gives you happiness. The dictionary of Philosophy defines *praxis* as; “Activity that has its goal within itself; conduct, distinguished from *poiesis*, or production, which aims at bringing into existence something distinct from the activity itself.” Dunne defines *praxis* as:

*“Conduct in a public space with others in which a person without ulterior purpose and with a view to no object detachable from himself, acts in such a way as to realize excellences that he has come to appreciate in his community as constitutive of a worthwhile way of life”.*



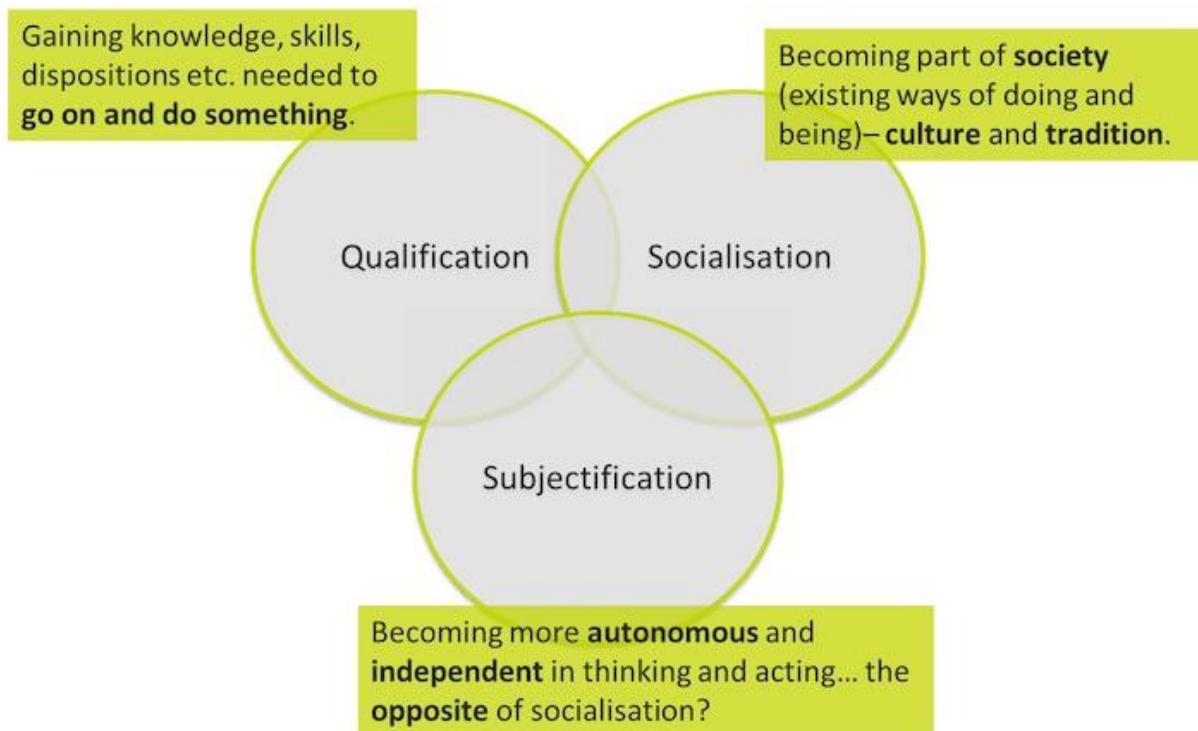
Dunne, 1997:10.

For Dunne, *praxis* involves doing the right thing, at the right time, not in the pursuit of your own interests but in the interests of the public good.

*Episteme* – is a philosophical term derived from an Ancient Greek term, which refers to knowledge, science or understanding. The Oxford dictionary defines episteme as “*Scientific knowledge, a system of understanding; specifically (Foucault's term for) the body of ideas which shape the perception of knowledge in a particular period.*”

Biesta (2010) when posing the question of how we learn or what learning looks like, goes beyond Sennett’s repetition and imitation of skill. Biesta points to the importance of developing the whole person arguing that there are three functions or purposes of education. Biesta summarises this in a Venn diagram (see graph 2.1 below).

Graph 2.1: Biesta’s Venn diagram



Biesta 2010

Drawing upon Biesta's Venn diagram, I can see examples of my own journey through craft. Here Biesta is referring to dimensions and functions of education. Sennett (2009) through his work regarding the development of a craftsman focuses more heavily on the "Socialisation" element of Biesta's Venn diagram which might in French be described as, *savoir etre - to know how to be* (... a carpenter, a teacher, a plumber, a philosopher etc.,). Sennett in using the examples of a carpenter, lab technician and a conductor as craftsmen, argues that craftsmen are defined by doing something well for its own sake and that craftsmen are dedicated to producing good work for its own sake. This was particularly true in my own journey through craft and the various craftsmen (and they were all men) that I encountered. All the craftsmen I worked with on my journey through craft possessed a common human trait which Sennett describes as being "*the special human condition of being engaged.*" For me this means that craftsmen immerse themselves in their work and take great satisfaction and pride in the quality of what they do. None more so than the experience of fault -finding and fault-finding that previous tradesmen have failed to diagnose and fix. Sennett (2008, p. 211) draws attention to Plato's saying, "*Whatever passes from not being is a poiesis.*" Sennett further describes this phenomenon as a sort of wonder stage a craftsman must endure on their journey towards mastery.

For me there is a link between Sennett's emphasis on wonder and Biesta's subjectification function or purpose of education in his Venn Diagram. Biesta notes that subjectification involves highlighting that all humans are unique and view the world in a different way. Subjectification involves the independence of an individual rather than a group effort and this is commonplace in craftsmanship - the hallmark of a particular craftworker - their way of doing things.

Sennett highlights the lonesomeness and individualism required of a craftsman to achieve 10,000 hours towards mastery of a craft. Certainly, there is an element of lonesomeness and individual work involved in achieving 10,000 hours, however there are also elements of collaboration and team working.

Biesta's idea of subjectification, leads us into another argument that technical skill has become devalued in modern perception and in education. Subjectification

therefore focuses on learning that does not consist of predefined content or competence. Subjectification is a way of arranging education to provide the students with space and time to challenge existing orders and rhetoric in order to adapt and advance existing practices and achieve new perspectives regarding an issue in, or aspect of a craft, leaving opportunities for the students to explore their own rationale and position in relation to existing discourses. Sennett supports Biesta's function of subjectification in education and the importance of opening up liminal spaces to ensure that the development of craft is not suppressed by mindless rule-following and predetermined outcomes:

*“At different moments in Western history practical activity has been demeaned, divorced from supposedly higher pursuits. Technical Skill has been removed from imagination, tangible reality doubted by religion, pride in one's work treated as a luxury. If the craftsman is special because he or she is an engaged human being, still the craftsman's aspirations and trials hold up a mirror to these larger issues past and present”.*

Sennett, 2008:22.

Both Biesta and Sennett are making important points here where they draw attention to how technical skill should never be restricted to predetermined skills and prescribed outcomes. The arguments presented by both of these authors stand in stark contrast to construction craft curricula as they are currently being designed and taught in Further Education Colleges in the UK. All construction craft curricula included in this thesis involve the use of checklists for the assessment of competency or the achievement of a skill. There is no room within these checklists for the development of wonder, subjectification or imagination.

Itemised checklists are a cause of disagreement for many of the tutors sampled within the research population. This is discussed in more detail in Chapters 5 and 6 of this thesis. It is therefore very important for the development of craft that Awarding Bodies make room for critical thinking and subjectification within their specifications. In the concluding chapter of this thesis, I provide recommendations regarding how tutors might make room for subjectification, critical thinking and analysis in vocational curricula and pedagogy.

Although I have made connections and links between Sennett's work in *The Craftsman* and Biesta's *subjectification*, there is some contradiction in Sennett's work. As stated previously Biesta's subjectification relates to an individual's uniqueness, Sennett (2008, 2012) draws attention to the importance of working together. In, *The Craftsman*, he draws attention to the importance of critical dialogue and discussions between peers in the advancement of craft. Sennett (2012) highlights the advantages of cooperating with each other to succeed where we could not succeed alone. The passing of craft knowledge and skills to future generations can only be achieved he argues by cooperating with each other and allowing our knowledge and traditions to be passed on and taken forward.

In my journey through craft, I learned through cooperating with my co-workers, through observation, repetition, critical dialogue and problem-solving discussions. In my career in teaching a craft, I always found observing other tutors, including those outside my subject specialism, to be incredibly powerful for my own development. Observing other craft students in the workshop is another powerful technique for tutors to utilise for their own development. Similarly, to Sennett's principle of the young craftsman observing the master craftsman, here the more experienced craft worker is observing the inexperienced craft workers to learn from them and to notice and help them as and when they begin to make mistakes.

### A Journey into Craft:

Drawing upon my own experiences of training and becoming a Building Services Engineer provides opportunities to explore the ideas of Aristotle, Sennett and Biesta discussed above in practice, in terms of how these have played a significant role in my own development of skill and learning a craft.

I started my career in Plumbing in March 2005 after dropping out of Higher Education and a university course in Human Resource Management. I was always fonder of practical based teaching and learning rather than book study. Turning my back on Higher Education was a brave move as being the youngest in a family of academics and the son of a Headmaster of the local secondary school, there was an

expectation that I would go to university and gain a degree that would, as my mother constantly declared throughout my teenage years, would help me to get “a good job”.

Upon leaving my university degree after 6 months of study, I decided I wanted to become a craftsman and in particular a Building Services Engineer (a plumber). This decision was made upon completing work experience at the age of 16 with a local electrician and then with a plumber. I also was intrigued by the nature, complexity and variety of the plumbing industry. I liked the idea that there is quite a lot of science behind plumbing and no two days would be the same, compared to my perceived notion that a bricklayer would be laying bricks day in day out, or a painter would be painting walls day in day out. I required a craft that would be challenging both physically and mentally. I felt plumbing was it.

I approached a local self-employed plumber who happened to be a family friend back in rural Northern Ireland for a job/apprenticeship and he thankfully agreed. Sean has been a plumber for a lifetime and he is the main plumber in our local area. Although he has been plumbing for 40 years, with the exception of his two sons and two brothers, he has only trained and mentored four other plumbers including myself. For the first 6 months all of my training was carried out “on the job” until I enrolled in the local Further Education College to study Plumbing in September 2005 on a four-year Apprenticeship scheme. I had to attend college where I had theory and workshop lessons two days a week for two years to achieve my NVQ Level 2 and then, one day a week for the final two years, to achieve my NVQ Level 3. The other three/four days of the week, I gained on the job knowledge in the workplace.

Although Sean works in the present era, there is a connection between himself and the craftsmen of the Middle Ages. Sean is a family-oriented craftsman providing a service for the community. Like the master craftsman, he doesn't just take on anyone, only people who value and care about traditions of the craft, are accepted, quite like the craftsmen of the Middle Ages who only accepted workers with whom they could live and work together.

Traditionally, dating back to the Middle Ages, craftsmen learnt and honed their craft in a workshop which was their home where they slept, ate and raised families. A

common preconception for those not involved in craftsmanship is that a craft is taught, learnt, practised, developed and honed within the confines of a small traditional workshop. Through the centuries, the nature of a workshop being a “home” for a craftsman developed from a place where they raised families to a separate entity away from the family home which retained the concept and title of being a craftsman’s home.

Vocational Craft courses have been taught in GFE Colleges since the 1960’s as result of the Industrial Training Bill 1964 and the creation of the Construction Industry Training Board in 1964. It is valid to say that construction craft workshops within GFE Colleges have not radically developed since the 1960’s. They are very much of the same layout, an open plan workshop consisting of workbenches, work bays, an area for specially designed machines/power tools for that craft and an area for hand tools. The tools, materials and techniques are all potentially standardised throughout GFE Colleges in the UK. This kind of college workshop is where modern craftworkers learn their trade, generally one day a week in a GFE College or private training provider which consists of the “off the job training” and the rest of the working week out with their employer, learning their craft in its natural environment. The vast majority of an apprentice craftsman’s training is completed in the workplace i.e., on a building site or in a customer’s home. The modern craftsman is not confined to the traditional workshop of the past, their “workshop” is now the workplace as this is where skills are taught, honed, developed and mastered, through problem-solving, problem-finding and critical dialogue, Sennett (2009).

The initial stages of my training were very much reflected in Sennett’s detailed descriptions of learning a skill through imitation and repetition. Two of the main skills for a building service engineer to learn are copper pipe bending and copper pipe lead soldering. These skills form the basis of a daily job, but when done correctly, accurately and neatly are very aesthetically pleasing to not only the trained individual but to the untrained eye. Copper pipe bending is a skill that takes time and patience to master. Bending copper for the first time is a very unnatural process for the body and mind. The arms move in a way they very rarely do due to the scissor motion of the bender, the hips initially want to thrust outwards, but you need them to move inwards which straightens the back to allow the shoulders to be square and creates

a pivotal pressure to manipulate the copper to the degree required. Through time, the bender becomes an extension of the hands, for the first few weeks/months of bending, the hands and mind could not be more detached from the copper during the process of bending. Juggling with the copper pipe bender in one hand whilst the other arm of the bender rests somewhere on the midriff, trying to place the pencil mark in the correct position on the former, whilst getting the copper pipe clamped in securely so it doesn't fall out, then sliding in the copper slide all the while eyeing the copper up, so it is parallel with itself, not off plumb and then a final checking with the measuring tape. The first few bends are a struggle as the elbows point outwards, shoulder blades compress back and together nearly touching, as the struggle to bend the copper past its tensile breaking point and it stretches instead of collapsing in on itself and breaking. The more compressive force placed on the body seems to have the adverse the effect on the copper. Eventually it does bend, but not in one clean swift motion, it is in jolts and the copper is crinkled on the outside radius of the bend. Through time, repetition, and understanding the scissor movement of the bender and the tensile strength and movement of the copper, everything that seemed so alien, becomes so natural.

Sennett (2009:9) draws attention to the “intimate connection between hand and head.” In this instance, we are seeing intimate connections between head, hand, tool and material. The relationship between the mind, body, tools and material could be seen as a contrast to Bloom's Taxonomy (1956) and the linear and static notion of domains of learning and educational objectives. Bloom's Taxonomy has become largely focused on the cognitive domain. The notion of the relationship between mind, body, tools and materials is focused often neglected the psychomotor domain.

Sennett (2009) dedicates a whole chapter to the importance of the hand in craft development. The hand and its relationship with our brain, eyes, ears and nose is vitally important in the advancement of a craft. Hyland (2018) through the works of Strawson (2016) introduces the notion of “panpsychism” which coincides with Sennett (2009) and his notion of material consciousness in craft development. Hyland (2018) through his discussion of embodied learning indicates that the psychomotor domain of learning is underestimated, undervalued and underdeveloped in Vocational Education. These notions of panpsychism and

material consciousness were new concepts to me, only discovered through completing this thesis.

At first, I will admit I thought these notions was a load of mumbo jumbo, dreamt up by academics who never worked on construction sites and therefore would not know about the materials construction workers are exposed to. Sennett (2008:120) states *“as might be imagined, ‘material consciousness’ is a phrase that causes philosophers to salivate.”* Unfortunately, I cannot envisage too many construction craft workers or students drooling with excitement when material consciousness is mentioned; rather a look of bewilderment would be more fitting. However, in saying all of that, once I got over my own bias and arrogance and started to understand the concepts and the principles of panpsychism and material consciousness, I realised the importance of panpsychism in construction craft development. Material consciousness in craft development for me now, after gaining knowledge and exposure is vitally important.

In keeping with the boxing analogy used in the title of this thesis, I feel material consciousness and panpsychism in craft development have the potential to have the same impact as CTE (Chronic Traumatic Encephalopathy) has had on contact sports. Head trauma, because of repeated impacts to the head was a widely known downside of the sport of boxing and other sports where body collisions are part and partial of the sport, such as American Football. CTE, before it gained its official name, was once referred to as “Punch Drunk Syndrome.” However, after a lot of scientific research spearheaded by Nigerian-American neuropathologist Dr Bennet Ifeakandu Omalu, “Punch Drunk Syndrome” was officially diagnosed as CTE. In many contact sports, particularly American Football, head-to-head collisions are now banned as a result of protecting players against CTE. Athletes, coaches, trainers, referees, fans and everyone involved in sports are now aware of the lasting impact repeated head trauma can have on a human being. However once CTE received its official name, it became widely accepted and garnered the respect and attention from all sectors involved in sport. I feel in my own journey through developing craft as a student and a teacher, I was aware of the properties of the material I was working with, such as whether it was a ferrous or non-ferrous metal as this is on the curriculum. In my own experience I feel I was somewhat aware of material



consciousness; however, I did not have words in which to think about or discuss it with others. There is a general lack of awareness of the importance of material consciousness and its impact in vocational education contexts. This possibly due to the fact it does not have a name within lexicon and grammar of craft. That does not mean that it is not embodied or 'felt). In my own craft journey, copper was the material of choice in my chosen occupation. To fully master the fundamental practical skills of plumbing, one being copper pipe bending, plumbers have to be aware of how the copper pipe will react when it is manipulated through bending and heating. Plumbers and craftsmen have to fully understand how their hands and mind interact with their tools, how the tools then interact with the material and how the material is going to interact with the tools. There is a three- way relationship involved in craft development that is potentially overlooked and undervalued in construction craft education. Once all relationships between the craftsman's mind, body, tools and materials are in unison and in complete harmony with one another, then the conditions for Aristotle's form of knowledge which he describes as *phronesis* begin to align in ways enable *phronesis* to flourish and be realised in practice. Sennett (2009) draws attention to how the technical aspects of skill development have been demeaned and therefore separated from higher pursuits at various points in western history. There is potential to argue the point if panpsychism and material consciousness were given more credence in craft development, then technical skill would not be regarded as being so far removed from higher pursuits in society:

*"This is the craftsman's proper conscious domain; all his or her efforts to do good-quality work depend on curiosity about the material at hand".*

Sennett, 2008:120.

### Theory and Practice - Across the Great Divide:

*"A practice.... Is never just a set of technical skills... What is distinctive of a practice is in part the way in which conceptions of the relevant goods and ends which the technical skills serve – and every practice does require the exercise of technical skills – are transformed and enriched by those*

*extensions of human and by that regard for its own internal goods which are partially definitive of each particular practice”.*

Carr, 1995:60.

Carr (1995), in the above quotation, is drawing attention to the make-up of a practice, helping us to see that it is neither straightforward nor clear. He is demonstrating that practice is a lot more than just common sense. Here Carr is also highlighting that the notion of a practice can be used in different and sometimes incompatible ways. One way a practice in education can be used is through a teaching practice, as an activity to assess competencies and skills and then a practical practice, which is an activity of doing with hands to create an artefact.

Carr suggests that the common perception of the relationship between theory and practice is one of binary opposition. An oppositional viewpoint of theory and practice Carr argues is viewed as, “practice is everything that theory is not” (Carr 1995, p. 60). This is potentially a viewpoint I would have held myself when starting out my career in construction craft. It is also a viewpoint I can see a lot of construction craft students holding, as they’re potentially accustomed during formal education to theory being pen and paper and practice being a practical subject that involves tools and materials different to pen, paper and textbooks. Upon thinking more clearly, I feel that Carr is alluding to the transfer of skills required for both theory and a practice and both are very similar, particularly for construction craft students whose learning is not confined to either the workplace or a Further Education college.

Jessup (1991) when discussing the introduction of the NVQ’s can perhaps add a little context for Vocational Education to Carr’s alluding of a skill transfer between theory and practice. Jessup suggests that NVQ’s help to provide context and evidence for skill transfer in construction craft education:

*“One factor which would seem significant to skill transfer is the variation in performance required between contexts. If, for example, the function specified by an element of competence could be achieved by applying the same procedure, irrespective of context, transfer between contexts might reasonably be assumed. If, on the other hand variations between contexts*

*resulted in significant variation in performance requirements then transfer would not be a straightforward matter”.*

Jessup, 1991, p. 122.

Jessup (1991) furthers the discussion in relation to knowledge and skills transfer by adding the context of occupational competency and the different environments that may affect performance of theory and practice knowledge in the workplace:

*“A person who is described as competent in an occupation or profession is considered to have a repertoire of skills, knowledge and understanding which he or she can apply in a range of contexts and organisations. To say that a person is competent in a job’, on the other hand, may mean that their competence is limited to a particular role in a particular company.”*

Jessup, 1991, p. 33.

It would be remiss of me, not to mention that Jessup (1991) could be in danger of potentially over simplifying knowledge and skills transfer. Eraut (2004) draws attention to knowledge and skill transfer in the workplace. Using the metaphor of an iceberg, Eraut discusses knowing what and when to do it, is the 1/8<sup>th</sup> of the iceberg, which is above the water. This is visible to everyone. The other 7/8ths beneath the water that is not visible he argues, is the new learning, the new forms of knowledge you have to develop to put an idea or a theory into practice, such as Aristotle’s forms of knowledge.

The transfer of theory and practical knowledge into workplace brings us onto the works of Hiim (2017) and De Bruijin (2010). Although the works of Hiim and De Bruijin were carried out in Europe, in Norway and Holland respectively, their impact and findings can relate to the perceived theory practice divide within the research question posed in this study. Hiim and De Bruijin are both firm believers in creating pathways of participation in social practice. Hiim (2017) states the priority of Vocational Education “is to develop a curriculum that gives students the opportunity to develop vocational knowledge in an occupation for which they wish to qualify.” Many of the early problems Hiim observed in Norwegian Vocational Education courses were also evident in this study and are expressed by tutors and students in

Chapters 5 and 6. These similarities between the construction craft Vocational Education courses studied in this thesis and in the Norwegian Vocational Education and training courses Hiim sampled, are as follows.

1. The curriculum in apprenticeship focuses heavily on and consists primarily of practical work.
2. There is a lack of coherence between the classroom, the practical workshop and the workplace.
3. Curricula that are not relevant to industry or employer needs.
4. A high dropout rate potentially appears to be related to a lack of relevance in the curriculum.

It is quite possible that these four key points found by Hiim and in this thesis, in two different countries, would indicate that these are common issues across Vocational Education and training courses in different European nations.

Hiim (2017) suggests that one area in which Vocational Education is failing, is that vocational knowledge is viewed within educational structures and curriculum as a “sum” of different academic and vocational subjects. Vocational knowledge and understanding therefore it is assumed, can be developed in separate theoretical and practical environments. De Burijin (2010) counteracts this problem by introducing “powerful learning environments” into Vocational Education. This model of powerful learning environments was to precisely identify a competence-based curriculum that focuses on acquiring knowledge within a social and functional context. This model ensures learning is performed in practice going beyond specific situations so meta-cognitive skills and flexibility are acquired. This model of Vocational Education would be of benefit in the UK as Wolf (2011, p. 7) notes with some irony, “the staple offer for between a quarter and a third of the post-16 cohort is a diet of low-level vocational qualifications, most of which have little to no labour market value.” Among 16- to 19-year-olds, Wolf estimates that at least 350,000 students get little to no benefit from the post-16 education system.

Wolf (2011:33) views knowledge gained in the workplace i.e., the UK construction vocational apprenticeship programme, as being more relevant than construction education solely executed in a college-based environment with no on-site experience. “*A genuine workplace teaches both general and specific work-skills more effectively than any education-based simulation can however hard it tries*” (2011, p. 33).

Hiim (2017) observes that Norway has navigated this problem by introducing the 2+2 model that includes regular periods of learning in vocational firms. These workplace placements are systematically planned, followed up on and worked on afterwards at school. That school subjects are related to the work placements and assessment both allows and stimulates multidimensional vocational knowledge. De Burijin (2010), like Hiim’s model, provides a development of vocational identity and provides reflective, authentic and constructive competence-based learning, theoretical concepts and principles validated by practice.

### Ancient Greece and its influence on Modern Day Construction Sites:

Using my experiential learning and lived experiences of working on modern day construction building sites in the UK and interacting with the many fascinating characters that are found working on construction building sites, I am under no illusion that if I went into a canteen/hut at 10am tea break on a Monday and asked the workers for their opinion on how Aristotle and Plato have influenced their skills, I would be greeted with a few expletives. Very much in the same way as the notions of panpsychism and material consciousness are lying dormant and unearthed in construction craft, so too are the influences of Ancient Greek philosophers. As mentioned earlier *phronesis*, *poiesis*, *praxis* and *techné* are all forms of knowledge originally described by Aristotle.

I now turn to the literature of Carr, Hyland and Sennett introduced above, to link each of these terms to modern day constructs in Vocational Education in construction. I will look at how these terms have potentially lost their way in modern day construction craft development and delivery of construction craft in Vocational

Education. A consequence of these terms straying out of our vocabulary in construction craft development, is that this has caused the pursuit of Vocational Education to lose its attraction for teachers and students alike compared to what are regarded as higher academic pursuits in the general education landscape.

*Phronesis*, discussed earlier, which we now translate as “Practical Wisdom” is described by Carr (1995:71) as follows, “*Phronesis is the virtue of knowing which general ethical principle to apply in a particular situation.*” Winch, (2006) observes that *phronesis* is concerned with social interaction, which subsumes technical knowledge interactions between man and nature. Every construction craft worker, whether willingly or unwillingly, knowingly or unknowingly, is working towards achieving *phronesis*. Carr goes on to point out, “*For Aristotle, phronesis is the supreme intellectual virtue and an indispensable feature of practice*” (1995, p. 71). I would tend to agree with both Carr and Aristotle, that practical wisdom is vitally important in any craft person’s development of skill and understanding. Sennett (2009) draws attention to how *phronesis* is developed through observation and repetition in Vocational Education into a deliberate intellectual exercise:

*“Without practical wisdom, deliberation degenerates into an intellectual exercise and ‘good practice’ becomes indistinguishable from instrumental cleverness”.*

Carr, 1995:71.

Carr is implying here that anyone can repeat and copy another person’s actions, however to understand the complexities and morality behind the action requires *phronesis*.

During my career as a construction craft tutor, one of my methods of teaching craft skill is to demonstrate the skill to the students and for the students to then repeat the skill they have been shown. I have now realised that I and potentially many construction craft tutors practising in the UK are doing a disservice to our students. Construction craft tutors are potentially not teaching the practical wisdom behind a craft skill. One might argue that it is the confines that of curriculum and itemised checklists in assessments that are restricting the possibility of *phronesis* being taught

and/or achieved in construction craft across General Further Education Colleges in the UK. These checklists of competency (Sennett (2009) argues encourage mediocrity and complacency) are merely rule following based a predetermined sets of rules which potentially take away freedom of thought and the capacity to exercise good judgements in vocational education contexts which aspire to the development of craft. Carr also warns us of the dangers of restricting the development of craft to a limit determined via checklists:

*“Judgement is an essential element in practical wisdom. But it is not the judgement of the umpire impartially applying a set of codified rules. Rather, it is that form of wise and prudent judgement which takes account of what would be morally appropriate and fitting in a particular situation”.*

Carr, 1995:71-72.

I personally take *phronesis* within the context of my chosen construction craft - plumbing - to mean that anyone can mechanically repeat the skill of copper bending and connecting copper pipes after some careful observation and mindful repetition, which I agree with Sennett, is vitally important in craft skill learning. However, to understand what that copper pipe's purpose is within the plumbing system whether it be the central heating pipework or hot and cold-water services, can only be achieved through deliberation and critical dialogue. Both Sennett and Carr underscore the development of understanding and discussion related to improving a practice.

*“Deliberating well is a mark of phronesis, and phronesis is the union of good judgement and action”* (Carr 1995:72). The quest of craftsman to become *phronimos* (the man of practical wisdom) must ever be at the forefront of teaching and understanding, not only in Vocational Education but also in education more generally.

Carr's writings on *phronesis* have made me appreciate how the vast majority of construction workers operate ethically and morally, supporting Sennett's argument that craft workers are dedicated by the *“desire to do a job well for its own sake”* (2008, p. 9). Carr's take on this is that, *“The man who lacks phronesis may be technically accountable, but he can never be morally answerable”* (Carr 1995:71). Carr is drawing attention to what separates honourable and committed construction

craft workers from those who are portrayed in the media as “cowboy builders.” The potential appeal of “cowboy builders” for mainstream media and television channels over the last 30 years may potentially be one reason why construction craft vocational courses are currently deemed to be lesser than other educational pursuits.

Although there are popular television shows which highlight negative aspects of craft working, there are many other television programmes celebrating and highlighting the positive aspects of craft working. Television programmes such as *Grand Designs*, *Great British Bake Off* and *The Repair Shop* to name but a few. Hyland (2021) reminds us that *The Repair Shop* celebrates the true nature of craft:

*“The overarching message is that craft and manual work is valuable, rewarding, aesthetically pleasing and conducive to community harmony and collaborative enterprise.”*

Hyland, 2021, p. 460.

Plato who was Aristotle’s teacher uses the term *poiesis* which, as discussed earlier, which Sennett (2008 p. 70) translates as “*Something where before there was nothing.*” Carr (1995) defines *poiesis* as “*making action*” and “*is action whose end is to bring a specific product or artefact into existence.*” Now if we take this at face value in the context of this thesis, based around construction craft education, it could be argued that all construction craft skill is *poiesis*.

*Poiesis* has a known or fixed end and follows a species of rule action through purposive rational action or instrumental action. *Poiesis* is know-how that is non-reflexive, as the techniques involved do not change, Carr (1995). To relate *poiesis* to a plumbing context, I would envisage that *poiesis* is used by the plumber who specialises in the annual planned preventative routine service of central heating boilers in domestic buildings. Each boiler service, depending on the fuel source e.g., gas, oil, renewable energy, generally follow the same set of instructions to ensure the boiler will run safely and efficiently for the next 12 months. I take this to be *poiesis* in a plumbing craftsman’s sense.



*Poiesis* is not to be confused with *praxis* which most closely translates into English as “practice”. Although potentially similar in ways to *poiesis* as both are action that is directed towards achievement of some end, *praxis* differs as it is responsive and reflexive in complex and unfolding social circumstances where the end is often not known and the process of arriving at a judgment in situations where it is unclear what to do next, often involve a moral dimension . *Poiesis* lends itself to action that has a known or a fixed end, in *praxis* however; the end is not known or fixed and the possibilities for and consequences of action are constantly in flux.

Carr (1995, p. 68) offers the following descriptions on how *poiesis* and *praxis* differ in several crucial respects. Firstly in relation to *praxis*; “*The end practice is not to produce an object or artefact but to realize some morally worthwhile ‘good.’*” Secondly; “*Practice is not a neutral instrument by means of which this ‘good’ can be produced. The ‘good’ for the sake of which a practice is pursued cannot be ‘made’, it can only be ‘done’. Practice is a form of ‘doing action’ precisely because its end can only be realized through action and can only exist in the action itself.*” Thirdly; “*practice can never be understood as a form of technical expertise designed to achieve some externally related end. Nor can these ends be specified in advance of engaging in a practice.*” Lastly; “*praxis is different from poiesis precisely because discernment of the ‘good’ which constitutes its end is inseparable from a discernment of its mode of expression.*”

Now to try to place this into the context of construction craft. *Praxis* is a doing action rather than a making action. *Praxis* in a construction craft viewpoint is the action we take to completing a task and to doing a job well for its own sake. It is the knowledge we have gained from others who have previously carried out the job or done something similar and involves using their assumptions along with our experience and assumptions to then take on the action.

*Techné* is the last of the ancient Greek Aristotelian forms of knowledge discussed in this Chapter. *Techné* translates as technical skill/knowledge or expertise and one that many may feel is most linked to construction craft development and teachings. For Carr (1995) *techné* is what guides *poiesis*. *Techné* for construction craft workers is what connects *phronesis*, *poiesis* and *praxis* altogether. Without *techné* to

contextualise and guide all the other concepts in our craft, then the craft development could possibly not happen without *techné*.

For construction craft workers, especially those who are involved in breakdowns and fixing of systems, particularly plumbers and electricians, the idea of problem- finding and problem-solving can come down to “educated guesswork.” Carr (1995) however introduces the idea of practical syllogism as an action. Syllogism is a form of reasoning in which a conclusion is drawn from two given assumed premises such as all dogs are animals. Carr suggests that deliberate reasoning and moving premises to conclusions, therefore eliminates shrewd guesswork or pure chance. Once again, in the context of construction craft and my own experience, I feel it is important to bring in Sennett’s work on the craftsman’s development of the eye, nose and ear. In my career as a plumber, a number of times a week, I would be sent to an emergency breakdown job. The only instructions or diagnosis received from my employer or the customer was a vague general description “my heating isn’t working.” To fault-find and problem-solve sometimes involved what I thought at the time was guesswork through carrying out different tests and fixes on the system until one worked. I am now of the understanding, due to my craftsman’s ear, nose and eyes being developed, the different tests and fixes I was carrying out to eliminate certain problems to provide a system diagnosis, I was actually drawing conclusions which although seeming like shrewd guess work, were not. I now know that it was practical syllogism. Aristotle would call this process “practical wisdom” and Biesta would describe it as “intelligent action.”

## Chapter Summary

I might possibly be stoking the fire to say that those entrusted with furthering construction craft skill (and I include myself in this remit as a teacher of construction craft skills) I have done a disservice to Aristotle, Plato, Sennett and Hyland by not building upon their work in teachings and making students aware of the concepts and teachings. I for one, know when I was first introduced to these concepts, I felt that they were above me or too intelligent and only for those with a philosophy background. There was a certain level of anxiety and fear of looking stupid by not

understanding the concepts. Construction craft workers and students are all in one form or another implementing and enacting, *phronesis*, *poiesis*, *techné*, *praxis*, practical syllogism, panpsychism and material consciousness. However, as described earlier, they are unaware that they are engaging with and indeed, embodying, these terms in action. A recognition of these terms and concepts within construction craft curricula could lend greater substance to the Vocational Education courses and increase their standing, value and ultimately contribute to the further development of construction craft skill. However their introduction would need to begin with a skilled discussion of experiences of these phenomena in practice rather than through an abstract or theoretical discussion of these which as argued above through the works of Aristotle, Dewey, Carr and Hyland, would undoubtedly be the wrong place to start! This chapter provides an insight into the key literature underpinning and informing this thesis. Chapter 3 focuses upon the methodology, ontology and epistemology framing the thesis. The works of Coe, Waring, et al (2017), Scott, and Usher (1996) are used to help guide the discussion of the ontological and epistemological stances adopted in the thesis.

## CHAPTER 3: METHODOLOGY

I'll Dig With It:

*“Between my finger and my thumb,  
The squat pen rests.  
I'll dig with it.”*

Seamus Heaney, *Digging*, 1966.

This chapter discusses the epistemological and ontological stances behind the educational problems examined in this thesis namely:

- 1) The historical and cultural construction of a division between vocational and academic education.
- 2) The consequences of the acceptance of this divide to concepts of practice in particular, the separation of theory from practice.

In the above quotation, the Irish poet Seamus Heaney (1966), alludes to contradictions and ambiguities in our concepts of the instruments of work and divisions of labour. The family generations before Heaney all worked the land as farmers. A spade was their instrument of work and it was expected that Heaney would assume their role and work the land. Heaney instead used a pen as his instrument of work. Anyone who has ever struggled with writing a large body of work knows the problem Heaney describes in his poem. I know all too well from my own experiences of completing this thesis that the pen can feel a lot heavier than the spade.

Here Heaney is also reminding us that practical manual work in a craft or trade can be considered to be creating art or craft just as Heaney's words are perceived as artistic artefacts. Through his poem, *Digging* (1966), Heaney notes how shared lived experiences and storytelling are paramount in our working lives no matter our occupation and that there are vital tools in the development of anyone's

occupation/craft. For Heaney, what is important here is the ability of human beings to share experiences so as to make sense of the world.

This thesis argues that the construction of a divide between Vocational and Academic education as between the spade and the pen is an historical, cultural and social phenomenon - a contrived and false divide which has led to the unhelpful separation of theory from practice. This construction of a divide between the academic and the vocational raises interesting, but also problematic epistemic issues relevant to this thesis regarding forms of knowledge and the processes of their acquisition.

This thesis is a study of lived human experience. Its purpose is to explore understandings of subjective experience. It is therefore essentially an act of communication, which has to be accessed by subjectivity, not objectivity. The motivation for the study is pragmatic in that I hope the experience of this research and the interpretation and understanding that I make from it, will not only be of use in developing my own educational practice, but that it might also be of interest and use to others.

Using accounts of lived experiences and observations of practice, this thesis examines the nature of a practice and the processes through which a practice actually improves. The intention here is to show how a particular technical-rational worldview is distorting concepts of practice while diverting attention away from a much older and more coherent understanding of practice (Carr 1995). One way of demonstrating how technical-rational worldviews distort concepts of practice is to examine accounts of learning skills and developing craft through the lived experiences of students and tutors. The works of Dewey (1933) and in particular his pragmatic epistemology, are used to investigate the educational problems explored in this thesis. My harnessing of lived human experience as my rich layer of data, is influenced by Dewey. Dewey are at one where we support the view that experience should be the starting point of research and theory development. Dewey regards lived experience, as both social and personal, due to both being mutually present in the human condition. The relationship between individuals and the social settings

they are involved in, can have a bearing on the individuals experiences (Clandinin & Connelly, 2000). I am aware that I need to be mindful of the social settings involved and also be aware that Dewey suggests as continuity is a key principle of experience. Each participant within the research has at many points in their lives learned from experiences that have led to new experiences. Dewey points to the importance of continuity and that all experiences are produced from previous experiences which subsequently move us into more and new experiences (Clandinin & Connelly, 2000).

Drawing upon the works of Khun (1970), Usher (1996), Crawford (2009) and Coe et al (2017), this chapter draws attention to the ontological processes and epistemological assumptions contributing towards advancing our understanding issues surrounding the nature of skill and the development of craft, which sit at the forefront of this thesis:

*“Science is a human activity. Therefore, whatever we as scientists do as we do science has validity and meaning as any other human activity does only in the context of human co-existence in which it arises”.*

Maturana, 1991:30.

In Vocational Education programmes for the Construction industry, theory and practice are regarded as the dynamic and vital cogs in the development of student learning and understanding. The above quote from Maturana reminds us that science is a social practice which is heavily dependent on social context; Maturana points out that science takes place within the context of human co-existence. The research problem discussed in Chapter 1 alerts us to the historical construction of a divide between Vocational and Academic education which subsequently led to a separation of theory from a practice alongside assumptions that learning a craft skill can be achieved through a simple set of reductive methods, skills and procedures of a defined plan, which will achieve a definite predictable and controllable ‘scientific’ outcome. This thesis argues that this may not be the case and that no one has ever acquired and developed their craft by mechanical rule following or meeting the

requirements of a long, prescribed, narrow and linear tick-list of knowledge, skills and attitudes.

Marchand (2016) argues that craft belongs to a “polythetic category” of concepts, which are messy and “not absolutely fixed.” This is evident in the accounts and observations of the shared lived experiences of the research population within the study. All craft development differs. One type of craft may involve meticulous planning and systematic execution, such as woodworking. Another craft may involve relatively spontaneous creation, such as plastering. While another, such as plumbing, involves the use of materials, tools and theoretical inventiveness and imagination.

Craft students’ and tutors’ interpretations and lived experiences are used to support this argument in later Chapters of this thesis. Drawing upon the works of Usher (1996) and Coe et al (2017), the focus of this Chapter is centred upon a critical exploration of the philosophical underpinnings of educational research, particularly the ontological and the epistemological assumptions that underlie different research traditions. It goes on to present a justification for the epistemological and ontological positions adopted in the study.

The primary methodology for this thesis focuses on the circular process of interpretivism (Scott and Usher, 1996), through student lived experiences. The critical dialogues and collective thoughts of tutors and students are used to illuminate processes and stages in the journey of craft development. Sennett (2009) foregrounds the importance of critical dialogue and discussion in craft development and improvement. This thesis sits in the interpretivist paradigm, as summarised through O’Donoghue (2007):

*“This approach emphasises social interaction as the basis for knowledge. The researcher uses his or her skills as a social being to try to understand how others understand their world. Knowledge, in this view, is constructed by mutual negotiation and it is specific to the situation being investigated”.*

As discussed above, this thesis presents accounts of lived experiences and observations of practice and as such, it is an act of communication, which can only be accessed through subjectivity and intersubjectivity regarding interpretations of reality and truth (Coe et al., 2017).

Issues in the selection of research methods and notions of research as a social practice and what we mean by trustworthiness and credibility in the conduct of educational research, are also considered.

Drawing upon the works of Khun (1970), Usher (1996) and Coe et al., (2017) this Chapter draws attention to the ontological processes and epistemological assumptions used towards developing and understanding the nature of and the issues in skill and craft development spearheading this thesis. It examines the notion of research in the field of skills and craft development as a social practice. It considers the extent to which craft and skill development can be understood through positivist technical-rational worldviews and the rules and procedures, which accompany that worldview as well as the extent to which it cannot. The construction, or perhaps more accurately the legitimacy of the fabrication of a dichotomy between theory and practice development is also challenged.

Coe et al. (2017) draw attention to methods of social practices within educational research which seek to maintain authenticity, validity and remove unconscious bias and assumptions before findings are concluded. The works of Descombe (2017) also contribute to the discussion regarding data collection and analysis. Research methods are also discussed and justified in relation to the research question and subsidiary questions.

### [To Scatter New Potatoes that We Picked – Research Paradigms:](#)

Research paradigms are scattered throughout discourses surrounding research methodology and methods in education like Heaney's new potatoes, referred to



above. It can be difficult for a beginner researcher like myself to understand which ones to pick and which ones are mature enough and which ones need to be left alone for another day. It is important to make the point here in the selection for an interpretivist research paradigm, I am not discounting a positivist research paradigm for other research purposes. It has its place but not in this thesis, as this thesis is based upon and aims to interpret lived experiences.

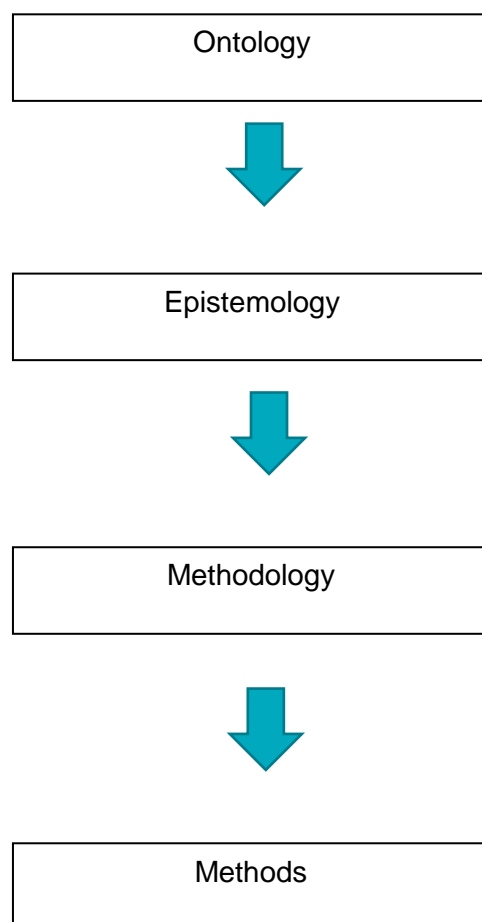
From the interpretivist paradigm within which this thesis is positioned, Walcott (1995) notes that interpretivists believe knowledge is socially constructed and seeks to explore and understand how the meanings that people bring to situations or issues are formed through and in culture. In his discussion on finding a theoretical position Waring (2017) argues that effective research must be critical but must also maintain a balanced and disciplined enquiry. Waring suggests that educational research carried out by insiders can be uniquely powerful. He goes on to argue however that it can also prove to be problematic as assumptions can be made by 'insiders' before findings are systematically arrived at and findings may be unconsciously skewed by the bias of the researcher or assumptions about scientific method.

Knowledge viewed from the perspective of the interpretivist paradigm is socially constructed and seeks to explore meanings and understanding arrived at in the situations and context of the research or cultural influences (Wolcott, 1995). Qualitative data derived from lived experiences, critical dialogue and discussion are used in this thesis in favour of the adoption of a quantitative approach to data, which is more aligned to positivist research positions. Positivist researchers tend to use a hypothesis as a starting point. As an interpretivist researcher, I hope to gain a deeper understanding of the social phenomena being studied through a hermeneutic approach (Crotty, 1998).

Geertz (2000) draws our attention to the difference between a positivist and interpretivist researcher by suggesting that positivist researchers often adopt mainly quantitative research methods, which allow them to gather large sample sizes and test the hypotheses and form generalisations from a large quantity of evidence. Researchers like myself, positioned in the Interpretivist paradigm, use data collection

methods that enable the gathering of qualitative data, to provide in depth description and interpretation of what is being studied.

According to Coe et al (2017) assumptions are key to understanding and framing research in the natural or social sciences. In this study, lived experiences including the experiences of the researcher, are drawn upon to illuminate how skills are required and developed and how practice improves. Waring (2017) contends that educational research can be categorised into four building blocks.



Waring (2017) reminds us that we need to understand the importance of ontology and epistemology in educational research. Ontological positions adopted in educational research say much about the researcher's view of the nature of the social world, while their epistemological starting points reveal their positions regarding how what is assumed to exist in the social world can be known. Ontology

aims to identify what is real within the parameters of the research while epistemology helps us to determine what is assumed to exist can be known and how we can know it.

The research paradigm guiding this study is constructivist in its ontology in that it does not subscribe to a singular notion of reality. Instead, it asserts that there are multiple realities influenced by the context. It is important to acknowledge these realities and different viewpoints and understand them. The ontological starting point of this research topic is examined further throughout this Chapter. However, we also have to be aware that there are many past researchers on the same topic who hold various viewpoints and beliefs regarding vocational and academic pursuits including those who have studied the creation of a dichotomy between theory and practice. Waring (2017) notes that understanding the ontological aspects of the research allows researchers to ask the epistemological questions, which in turn allows assumptions to be articulated and explored.

Epistemology is the study of knowledge acquisition and development. It involves an awareness of ontological reality and considerations of what is known and how it is known, the knowledge of knowing. Epistemology addresses a number of enduring issues in social and cognitive sciences, cultural studies and in the history of sciences.

Methodology is the processes, procedures and logic applied to assumptions based on ontological and epistemological assumptions, it is often confused with methods. Methodology helps understand that assumptions made and gained through the research are formed through philosophical historical, political and socio-cultural origins and whether deductive or inductive logic is being followed. Each of these have to be aligned to the focus of the research and cannot automatically be restricted to one singular viewpoint and outcome. The context of how we know and the journey of knowing is, and can be, more important than the outcome. Positivist methodological research, privileges objectivity and outcomes above human experience and subjectivity. However, the key factors of the context and how the outcomes were achieved are often underestimated or overlooked. Interpretivist

methodological research is always open-ended and changing, acknowledging that two or more people may possess different views based upon their own assumptions.

Research methods are the most common and easily recognisable aspects of a research project such as this. Methods are techniques and a way of collecting and analysing knowledge, data and experiences within a research project. When deciding on methodology, the methods used must be appropriate to the research questions which the research seeks to address. The data and information collected through research can be quantitative (measurable and presented as hard data, usually through facts and figures) or qualitative (viewpoints expressed by participants, usually through interviews, observations or focus groups).

Upon deciding which paradigm my thesis sits, Waring (2017) illustrates some basic assumptions fundamental to positivist and interpretive paradigms. Table 3.1 below illustrates assumptions underpinning the adoption of different research paradigms in educational research. The ontology I have adopted in this thesis is largely constructivist, as consider the social world to be individually, mutually and collectively constructed. Therefore my epistemology is interpretivist as it is based the interpretation of lived experiences and the meaning or sense that we make from these experiences.

Table 3.1:

<b>Assumptions</b>	<b>Positivism</b>		<b>Interpretivism</b>	
<b>Ontology</b>	<b>External Realist</b>	Knowledge gained through scientific fact. Usually through means of hard data gained through testing and test results. Scientific knowledge trumps knowledge gained through experience or observation. Findings through positivism can be replicated and they are backed by scientific fact and empirical data.	<b>Internal – idealist, relativist (Local and specific constructed realities, holistic and dynamic)</b>	Context and outcomes are on equal playing field. There can become outcomes without context. Assumptions and knowledge gained through experience are as valuable and weighted as scientific fact. Knowledge is real and values and beliefs cannot be separated as they have shaped the context of what we live in.
<b>Epistemology</b>	<b>Dualist Objectivist</b>	Accepting that scientific knowledge is more important than context. Findings are true and accurate, there is one outcome, if you do this, then this will happen. There can be no contradictory explanations as there is a singular outcome. The outcome is objective.	<b>Subjectivist, transactional, interactive</b>	It is not a one size fits all. Different people, places and environments will experience different results. Results are developed through the insiders/practitioners as all we have are experiences and interpretation of our experiences is what defines us.
<b>Methodology</b>	<b>Nomothetic, Experimental, Manipulative: Verification of Hypotheses</b>	Tailored conditions to suit the desired outcome/audience. Usually in the form of a robust test or examination. It is a one size fits all.	<b>Ideological, dialectical hermeneutical</b>	Through failure and success, the necessity to improve and not to settle for a desired outcome. Conversation of experience interpretations of experience and respect and acknowledgement of other view points as valuable as your own. Context is important to help shape understanding and help develop improvement.
<b>Enquiry Aim</b>	<b>Explanation, Prediction and Control</b>	Hard data used to argue, convey and convince. Findings that can be used to predict outcomes in other situations.	<b>Understanding interpretation and reconstruction</b>	Experience breeds knowledge, through time it is refined, improved and developed and is not fixed on a singular outcome, it is open to challenge, and is developed through differences not in spite of differences.

Waring in Coe et. al 2017:18.

## When the Spade Sinks Into the Gravelly Ground - Theory/Practice Divide:

The line from Heaney (1966) above, helps draw attention to how the separation of theory from practice might be likened to a spade sinking into gravelly ground. The separation might be there but only so far as the spade stays in place. The ground is still a coherent whole.

As already discussed, research paradigms tend to sit at either end of a continuum between positivism and interpretivism. Positivism applies the natural science model of research to investigations of the social world. This claims to allow a researcher a disconnected objective view of the social phenomena being studied. Social reality and physical reality are taken to exist independently and the assumption is that the principles of natural science can be equally applied to both social reality and physical reality. Positivist paradigms are closely affiliated with the use of quantitative data and statistics. One of the main concerns of positivism is that the outcomes of research are solely based what are regarded as being true and objective facts and figures relating to phenomena in the social world. For what is assumed to objective and real, it is also assumed to be true. This thesis questions the value of positivist dictates, dogmatic imperatives, procedures and techniques in understanding social practices and social phenomena. This chapter contends that context is vitally important in credibly and authentically interpreting data related to human experience in educational research in a way that can be seen to be trustworthy.

Waring offers the following definition of the Positivist paradigm:

*“Existing within a realist ontology, positivism sees it as possible to achieve direct knowledge of the world through direct observation or measurement of the phenomena being investigated”.*

Waring in Arthur et. Al, 2012:16.

This thesis critically examines the processes and stages through which a skill is acquired, developed matured and eventually mastered. Skill acquisition and

achievement takes place within both a taught and an assessed environment. Sennett (2009) illustrates the importance of *praxis* in craft and skill development, through problem solving, problem finding and undertaking ethically sound work:

*“Conduct in a public space with others in which a person, without ulterior purpose with a view to no object detachable from himself, acts in such a way as to realize excellences that he has come to appreciate in his community as constitutive of a worthwhile way of life.”*

Dunne, 1993:10.

Although I have previously used the above quote by Dunne previously in this thesis. I do feel it is important to reiterate it here, in context of this thesis, Dunne is describing that for a construction tradesman, diagnosing a fault and fixing it rather than replacing the whole boiler is the moral thing to do. Dunne is highlighting that construction tradesmen are prepared to do the right thing at the right time not only for the good of the craft but also for the good of those who practise it. Hyland’s pansychism and Sennett’s material consciousness are vitally important elements in this development of knowing the material, being able to work with it and solving the problem, rather than the easy, lazy way of replacing everything. All of the above aspects of practice combine *praxis* and practical wisdom in action.

Usher in Scott and Usher (1996) highlights the importance of *praxis* in conducting research and insists that *praxis* must go beyond the mere technique or *techné*. Usher highlights the importance of the researcher in ensuring the creation of conditions for critical dialogue to be valuable within the positivist paradigm “*only a condition of emancipatory action since praxis encompasses dialogue and action*” (1996, p. 24).

Enduring issues in the creation of the separation of theory from practice and the subsequent separation of Vocational and Academic education are central to this thesis, as is Aristotle’s form of knowledge *praxis*. Kemmis, in the prologue of Carr (1995) warns us that we may become accustomed to viewing and thinking of a practice in any form of life as no more than an activity, however he argues that

practice is much more than an activity. For Kemmis, the meaning and significance of practice, including educational practice, is constructed socially, historically and politically and can only be understood interpretatively and critically. Carr's (1995) epistemological position complements the views of Usher where he argues that context is paramount, the act of doing is not the sole descriptor of practice and requires more than observation to be fully understood. Usher (1996) supporting Gadamer's (1975) interpretivist viewpoint is also endorsed by Carr (1995) who extends the notion of practice development through entering a cycle of interpretation with others means that an understanding of practice can be achieved that is situated precisely and reflexively within our individual context:

*"It's meaning and significance is not only subjective (a matter of the perspectives and self-understanding of practitioners), it is also something interpretively understood by others, and framed by history and tradition, as well as by ideology".*

Kemmis in Carr, 1995, p. 6.

Hyland (2018) extends the discussion of practice development and the critique of the creation of a dichotomy between theory and practice through consideration of a transformative epistemology which illuminates the importance of the psychomotor domain through the correlation of the mind and body in theory and practice development. This idea is also endorsed by Sennett (2009) where he emphasises the importance of the hand. This resonates with my own thoughts through body positioning "standing like a boxer" which is discussed further in Chapter 4. In the same vein, regarding the creation of a false dichotomy between theory-practice, where Kemmis traces the historical development of this divide and as a consequence the rise of, "*a rationalistic theory or action in which actions were seen as the expression and realization of ideas*" (Kemmis in Carr, 1995, p. 9).

Kemmis points out how this led to professionalisation of science and a division of labour between scientists (whose task it is to know), representatives of the state (whose task it is to make decisions) and the general public (the object of scientific knowledge and decisions), locking them in a relationship of power where theory



came to be regarded as a precursor and a guide to practice obscuring the ways in which theory is predicated upon practice. In this way, Kemmis reveals how the rationalistic theory of action is now deeply embedded in the conceptions of what it means to be an educational theorist or researcher...as distinct from what it means to be a practitioner thereby demeaning practitioners as sources of ideas (theory).

Such technical-rational views of the relationship between theory and practice are based upon worldviews, which ultimately are unhelpful in understanding the development of skill and craft. Sennett (2009) expresses concern that history has divided practice from theory and technique from expression and notes that modern society suffers as a result of this historical inheritance. This binary framing of theory and practice is perhaps most evident in Construction curricula in Further Education Colleges where it is assumed that theory is largely taught in college and practice is developed in the workplace and where assessment is conducted using instrumental checklists. Practice, constructed as atomised checklists, can be traced back to the introduction of NVQs in Vocational Education in the 1980's where knowledge, theory and practice were construed in more oppositional terms than Aristotle would have recognised or accepted. Sennett reminds us to "*conduct life with skill*" drawing attention to the open ended and unfolding aspects of craft which cannot be restricted to and are not well represented in the form of checklists.

This view of the above discussion of technical-rational approaches to the development of policy and practice in Vocational Education this mechanical world view can be contrasted with Biesta's (2014) application of Dewey's discussion of knowledge and curriculum. Biesta is mainly focused on how Dewey's transactional approach cuts across the either/or of objectivism and subjectivism. Drawing upon the works of Gadamer (1975) and Usher (1996) Biesta supports this argument, by highlighting the technical-rational over-simplification of educational problems and their potential solutions that are at work in paradigms that insist upon the separation of subject and object.

Scott and Usher (1996) note that "*the subject and object of research, commonly located in pre-understood worlds cannot therefore be separated*" (Usher in Scott and

Usher, 1996:19). The assumption that one cannot extract subject from object and object from subject in their assumed contexts can be seen as a positivist critique of interpretivist ontology. As discussed above, Waring defines the positivist paradigm:

*“Existing within a realist ontology, positivism sees it as possible to achieve direct knowledge of the world through direct observation or measurement of the phenomena being investigated.”*

Waring in Arthur et. al. 2017:16.

In the context of this research of construction craft development, I take Waring’s (2017) description to mean that from a positivist perspective there is an expectation that the subject and object in educational research should remain distinct entities at all times. Usher points out that when describing positivist epistemology, it is expected that when all observers are shown the same data, the observers will all draw the same conclusions. In Construction Craft development where subject and object remain together, the subject understanding the objects patterns, movements, and material make up, any number of different methods and techniques can be used to create a practical task. Hyland highlights the importance of material consciousness in craft development and argues that this understanding cannot be achieved within a positivist paradigm, where subject must not interfere with object in the pursuit and discovery of the objective truth (Usher, 1996).

I have already presented a justification of why the paradigm for this research is of an interpretivist nature and how the ontological stance is one of constructivism, therefore it would be impossible to achieve an objective perspective of craft development in this thesis through using a positivist epistemology:

*“To the absolutist in every craftsman, each imperfection is a failure; to the practitioner, obsession with perfection seems a prescription for failure.”*

Sennett, 2009:45-46.

Therefore, each craftsman and each practitioner cannot be bound to the same set of rules. Each craftsman and each practitioner will have different interpretations of imperfections and perfection in their craft. Crawford (2009) agrees with Sennett in that personal and intuitive knowledge and that human activity of thinking and doing are not separated. However, it is important as a researcher to not totally dismiss the influence of positivist epistemologies in the context of the research into and study of research problems as they have their place in some forms of educational research where the ability to quantify the recurrence of phenomena matters.

### By God, The Old Man Could Handle a Spade- Research Methods:

In the above line from the same poem, Heaney is drawing our attention to understanding of being able to judge what the best tool for the job is. In relation to this research, this involves me in inferring that the research methods selected for the study are aligned with the research problem, the research question, the overarching methodology and the methods framing the study.

Sennett (2009) advises us to understand craft and its development over a period of time, where we are required to see the many different forms of craft in action. Sennett (2009:213) notes, "*You can't understand how wine is made simply by drinking lots of it.*" This is one of the reasons I employ a variety of different interpretivist qualitative research methods in this study including:

1. Observation of Practice
2. Student Forums
3. Tutor Forums
4. Questionnaires

Through my position as a craft worker and a teacher of craft (Plumbing) I already had good experience of craft maturity and observation. This view of craft development was refined through the lens of my experiences as teacher or a practising craft worker, never before this as a researcher but now as an insider researcher I am able to have unfiltered access to any of the campuses' practical

workshops where practice is being developed. This allowed me to understand Sennett's (2009) warning "*we are more likely to fail as craftsmen due to our inability to organize obsession than because of our lack of ability.*"

As a teacher of craft, my obsession is student achievement. As a craft worker, my obsession is to complete the job to the highest standard and obtain payment for this work. As an insider-researcher, I was able to set these obsessions aside for a time. I therefore, in the interpretivist paradigm, was able to enjoy and drink in craft as Sennett intended through critical dialogue, problem-solving, problem-finding, imitation, repetition and critique, with colleagues and students. When the shackles of the curriculum restraints are removed and one is observing craft in its infancy and watching craft and the craftsman mature, it is a glorious sight to behold.

The craftsman in his obsession for perfection, moves onto the next craft problem Sennett (2009). In the social world and through an interpretivist paradigm raw emotion be accessed by observing students as they develop their practice through conversation, in dialogic and open-ended ways which encourage the students to think for themselves in action. As the students interact with the tools, materials, objects, surroundings and colleagues in the context of their practice and through collaborative learning they can address often complex, unexpected and unfolding problems at work. This is a greatly beneficial aspect of practice for even the most experienced craftsman to perform (CAVTL, 2013). Data of this nature can be accessed and understood more readily using in an constructivist ontology in combination with an interpretivist epistemology.

Observations of students in action and on action, were deemed a very suitable methods for data collection for the purposes of this thesis as stated by Layder (1993: 40) as this , "*allows the closest approximation to state of affairs and occurs when the researcher enters the everyday world of those being studied.*" Being an interpretivist researcher through observation of practice, I was able, within the context of the college workshops and classroom, to closely observe and progressively discover more granular aspects the social world of tutors and their students in their natural settings, guided by exploratory orientation (Hammersley in Layder 1993).

As an experienced craftsperson and an experienced tutor of craft, it was important to keep in mind as Teddlie and Tashakkori (2009) recommend four researcher roles when carrying out student observation:

1. Complete participant — observers become full-fledged members of the group they are studying
2. Participant as observer
3. Observer as participant
4. Complete observer — the researcher is removed entirely from the interaction with the participants.

Due to my methodological approach employed in this study, I adopted the participant as observer approach. This allowed me to not have direct impact on the students, but still able to interact and communicate with them without disturbing their normal working practices and interactions. Denscombe (2017) locates this approach in the field of phenomenology where social phenomena are studied and interpreted.

Student and tutor forums are used in this research to triangulate and analyse data from the observations carried out. Clausen (1986) cautions that when carrying out focus groups and forums, the accounts provided would all be recollections of the past and we need to be wary of retrospective views.

*“It is dangerous to accept retrospective accounts as gospel, and well-meaning persons may be quite unable to reconstruct the past in an unbiased manner, or even to remember it accurately.”*

Clausen, 1986:14.

As the researcher conducting this study, I appreciate that knowledge and accounts as valuable but using my interpretivist view of the world, I am mindful that the views presented are reconstructions of how things were in the past

viewed from how things are in the present, Denscombe (2017). I am using group forums rather than one-to-one interviews as I feel one-to-one interviews may limit the number of views and opinions, I am able to access, whereas group forums might stimulate more fruitful discussion. The more views gathered will enhance the representativeness of the data and ensure that a broader spectrum of people is included and therefore differing views and experiences are captured. It is important for me to explore social and psychological aspects of groups, as Denscombe (2017) notes group behaviour could impact views of participants who might, due to peer-pressure, respond as part of the group rather than individuals. To counteract this, group discussions are kept relatively small and within each participant in the research's own field of expertise. The carpentry tutors are interviewed together separate from the plumbing tutors. Morgan (2006) suggests that having participants with similar shared experiences not only increases the participants' contributions, but also provides opportunities to explore why they think the way they do.

Questionnaires are also used in the research to help bring an overview of all campuses within the research population. The questionnaires are intended to provide another layer of data in the research. Questionnaires are not intended to change people's minds, attitudes or provide the participants with information, questionnaires are designed to extract and collect information solely for data analysis, Denscombe (2017).

### [Through Living Roots Awaken in My Head - Qualitative Versus Quantitative:](#)

In the above line, Heaney is remembering the roots of his family and possibly even his country, farm work and digging. Here I am reminded that the living roots of this research are in the data.

Qualitative research is synonymous with an interpretivist approach in educational research, particularly to insider researchers. Scott and Usher (2011) remark that even though qualitative research is becoming more widely accepted, it does come

with its own problems. Within a positivist approach using quantitative data generalisation and immutability are prevalent and different observers should be able to come to the same conclusions. This cannot be said for those carrying out research within the interpretivist paradigm using qualitative data. The context, surroundings and backgrounds of each researcher have a unique bearing on the conclusions drawn from qualitative data.

Denscombe (2017) indicates that qualitative research in the social sciences involves collecting data in the form of words whether spoken or written. He does not confine qualitative data solely to the spoken and written word and notes that qualitative data can be visual and based on artefacts and images. A lot of the qualitative data captured in this thesis is visual, collected through observation, due to the nature of craft development. Denscombe (2017) warns that qualitative data is raw and can tend to be irreplaceable, so notes must be protected and duplicated. Qualitative data is open to interpretation unlike quantitative data. Denscombe highlights one of the main attractions of quantitative data is that numbers are taken to provide a definite and precise measure of the topic being researched. This, as Stevens (1946) highlights, is only correct when the data is used correctly. Stevens warns that numbers can stand for different kinds of things. Through his argument, Stevens identified nominal, ordinal, interval and ratio scales of measurement within quantitative data. Interval and ratio data are real numbers which lend themselves to mathematical analysis whilst ordinal and nominal data require caution as they're subject to restriction. Quantitative data is more akin to large-scale research projects, and quantitative researchers usually "think big.", while this is a small-scale research project carried out across 3 campuses and only involves Construction Vocational students and teachers.

Glaser and Strauss (1967) identify grounded theory as a method for social analysis, and this, according to Douglas (2003), is one of the more popular methodologies for enquiry in educational research. Waring in Coe et al (2017) implies that even though Glaser a positivist, and Strauss a pragmatist, had two different epistemologies, they do not however make their ontological and epistemological assumptions on grounded theory known. This is why this thesis, operating in the interpretivist

paradigm, will use a more systematic approach to qualitative analysis which will become evident over the upcoming chapters. Systematic data analysis is used to explore and identify themes that become the dominant trait of the phenomena underpinning the study.

### Going Down and Down for The Good Turf - Method analysis:

In the quote above, Heaney alludes to the struggle to find the good nutrient rich turf, by having to dig further down and down before it can be reached. This quote is helpful to me in conducting research as we have to dig down and down into our data to reach the rich layer of informative data.

As discussed above, the investigation into the perceived divide between Vocational and Academic educational pursuits and craft development is at the forefront of this thesis, so it is important that the research methods selected align with an interpretivist and constructivist viewpoint. I have already alluded to the trend of craft being assessed to a checklist within Construction Vocational Education; this to me is restrictive and places a cap on craft development. This positivist method of craft assessment is discussed in more detail in the upcoming chapters and suggestions are offered to tutors on how to question, challenge and hopefully arrest this trend. Sennett (2009) directs us to the Isaac Stern rule of the “The better your technique, the more impossible your standards.” This interpretivist and constructivist ontology from Stern sits in complete contradiction to what is currently happening in Construction Vocational Education at present. Students are being potentially capped, restricted and even suppressed in their craft development due to assessment based upon crude outcomes, captured in checklists and multiple-choice examinations. The interpretivist nature of the research means that no one method of research data collection is employed. Observation of craft within the campuses’ workshops and classroom observations are the most common form of data collection methods used. The observations of craft and lessons are supplemented with informal tutor and student forums, backed up with student questionnaires and critical incidents.



Denscombe (2017) suggests that multiple methods used in the social sciences provide the researcher with more information to interpret and discuss in contrast to a researcher who just conducts interviews. Silverman (in Pole and Morrison, 2003) support Denscombe by indicating that to achieve a greater view of the reality of the educational setting, multiple methods should be employed to give the research arguments plausibility, authenticity and credibility.

### Nicking and Slicing Neatly – Ethical Considerations:

Just as Heaney's father nicked and sliced the grass sod neatly to prevent untold damage to the cut sod and to protect it, so the turf field can return to its original state after the turf is cut, dried and brought home. So, when conducting research, I too must be careful with my data and protect those within the research population. Conducting research ethically requires me to be mindful that participants are not damaged or harmed in any way by ensuring information is private and kept private and only information that is meant for public consumption is published.

The research is carried out in accordance with BERA Guidelines 2018 and GDPR 2019. Ethical approval has been received for the study before commencement of data collection. This study is an insider research in a social context, one of the core ethical principles of any study is that no harm should be inflicted on, or suffered by, the research population. There were no possible harmful effects to the population participating in the study, due to research methods and strategies being carefully planned to ensure the participants are no worse off after the study than they were before the commencement, nor will there be any longer-term repercussions. Participation in the research study was voluntary and all participants had given informed consent prior to the research study commencing.

As the researcher, I did my utmost to operate with integrity throughout this research to ensure all data collected, whether it be quantitative or qualitative, be collated and analysed using the highest terms of professionalism and honesty and not to manipulate or distort any of the outcomes with my own assumptions.

For craftwork to succeed and realise the full potential of new and experiences craftworkers, Marchand (2016) urges researchers to be “ethical and guided by high standards of quality.” Craftsmen particularly those involved in the social domain working for public consumers in private dwellings, are required to work within basic ethical values through pride of work and providing a service to the wider community, Sennett (2009). In Adopting a constructivist-interpretivist qualitative research approach to this research, I had to ensure during my observations of practice that I did not obstruct the development of practice in any way or make it unethical. Adhering to the BERA (2018) Guidelines, I developed a voluntary participation opt-in consent form for all participants. This ensured that practice development would not be harmed or effected during my observations.

All participants had the opportunity to opt-into the research and also had the right to withdraw from the study at any time if they so wished, this was made clear to the participants. All participants were granted anonymity and confidentiality. All participants wishing to gain access to the study after submission are welcomed and able to access the finished research on request in line with the BERA (2018) guidelines. Verbal consent was also received during my observations of practice and before all tutor and student discussions and forums.

Anonymity of participants and colleges is vital for ethical purposes when undertaking and writing up the thesis. Punch (in Malin, 2003) expresses concerns regarding participants being able to identify themselves in the research and potentially others trying to identify people within the research, who maybe potentially identified wrongly. To avoid this happening, pseudonyms were created for all participants and colleges. There is a female tutor involved in the study, to protect her identity, she has been given a male pseudonym. No potentially harmful or incrementing information, if disclosed during the research, is printed or noted in my field notes. All sensitive information is dealt with accordingly and no judgements or conclusions regarding observed teaching, learning or assessment practices are aired, therefore ensuring that no participants are portrayed in an unethical light. Organisational and potentially personal grievances were aired during tutor discussions, however these again did not make it into the final thesis in any identifiable way, although they are included in

the field notes. All field notes used when writing up the thesis are kept securely and will not be made available to the public.

Any negative information disclosed to me during tutor and student discussions was not forwarded onto to the affected parties. There were very few negative comments made during the discussions and critical conversations. All dialogue was conducted in a supportive and developmental way, with the intention of improving teaching, learning and assessment. The number of negative remarks were generally centered around elements beyond the tutors' realms of influence, such as course funding, awarding body expectations and curriculum content. Nevertheless, comments made were not discussed within other groups. Scott and Usher (2011) warn that information should not be simply taken at face value, but handled with care and treated within a framework which recognises, that the views expressed are an interpretation and therefore require interpretation.

Scott and Usher (2011) suggest that the most appropriate response dealing with interpretations is to use critical ethnography as:

*“An example of a contemporary approach that attempts to address these problems by foregrounding the textuality of research and the place of writing, in the broadest sense, within the research process.”*

Scott and Usher, 2011:20.

Although this thesis is more of an ethnographic snapshot of three campuses rather than a traditional ethnographic research, which would focus on one location for a prolonged period of time by using *“a descriptive and explanatory snapshot of reality”* (Crabtree and Miller, 1992:3) of the three campus sites, enabled me to document multiple perspectives Hammersley (1992).

By being an insider researcher and using an ethnographic style approach, I am able to use my background as a construction craft worker and a teacher to interpret the interpretations and viewpoints presented to me. Through understanding the language, context and culture of the research population I was observing,

Hammersely (1992), rather than judging interpretations as merely true or false, I aimed to understand the perspectives deeply and see the symbolic nature of the perspectives on the empirical world in dealing with and understanding situated processes, relationships, motivations and group life (Woods 1996).

Another ethical aspect which I had to be mindful of was that I am researching educational topics towards which I hold strong viewpoints and feelings. Craft development is an area of my own professional life as a plumber which I spent a long time working at and as a tutor, it is one area within the college practical workshop to which I devote a lot of time and effort. The perceived Vocational-Academic divide is another area that is close to my heart and my own experience as a “University drop-out”. I needed to be aware and mindful that my viewpoints did not infiltrate or inadvertently influence the viewpoints of the research population. Garrick (1999) warns that there is a potential risk of the insider researcher marginalising viewpoints that they are supposedly highlighting due to the researchers own stance. Malone (2003) argues that the disequilibrium of power be considered to avoid marginalising those with the least power, such as the students. I have done my best throughout this thesis not to allow my positionality in the research to increase any disequilibrium of powers – indeed I have tried wherever I could to flatten existing power structures as far as possible in the research.

### [The Squat Pen Rests, Snug as a Gun - Chapter overview](#)

Here Heaney’s line is helpful for me in sharpening my focus for the study and understanding the ontological and epistemological issues surrounding its conduct. So, whilst I won’t be so arrogant to say it sits as “snug as a gun”, it does however sit a lot more comfortably than it did at the start. All headings within this chapter are lines from the poem *Digging* by Seamus Heaney. This poem has a deep personal meaning for me, as my GCSE year group studied Heaney’s poems for English Literature. I could not regale any of Heaney’s literature or poems upon leaving school, apart from the stanza quoted at the start of this chapter.

Subconsciously in the social world, even at a younger age, I must have known that my career was not going to down the path carved out for me by my parents and siblings and that I would use instruments for work that were not common in our family. To me, this poem sits within the interpretivist paradigm and very much involves the hermeneutic of interpretation. This chapter outlines the ontological position of the research and the epistemological stance underpinning the thesis. The next chapter, through the consideration an illuminative case of lived experiences, documents key incidents traces students' and tutors' journeys into and through craft development.

## CHAPTER 4: DATA COLLECTION AND ANALYSIS

### DATA FROM DISCUSSIONS WITH VOCATIONAL TUTORS AND STUDENT OBSERVATIONS

Chapter 3 explains that this thesis is essentially a study of human experience in relation to the development of practice, skill and craft and justifies the methodology and methods adopted in this investigation.

This Chapter presents and analyses data collected from discussions with vocational tutors and classroom observations in the course of the thesis. It represents lived experiences of the learning processes involved in acquiring a skill and the stages involved in the development and advancement of a craft. These are presented in the form of an in-depth of a case combined with critical incidents captured through rich description in the context of Construction Trades Apprenticeships. Individual and forum discussions are also reported and analysed. As discussed in Chapters 1 and 2, central to the thesis are questions of the nature of practice and how a practice evolves and develops.

Dunne (2005) offers the following definition of a practice as:

*“A coherent and invariably quite complex set of activities and tasks that has evolved co-operatively and cumulatively over time. It is alive in the community who are its insiders (i.e., its genuine practitioners) and it stays alive only so long as they sustain a commitment to creatively develop and extend it – sometimes by shifts which may at the time seem dramatic or even subversive. Central to any such practice are standards of excellence, themselves subject to development and redefinition, which demand responsiveness from those who are, or are trying to become practitioners.”*

Here Dunne is reminding us that practice is developed by its insiders and that practices are coherent and complex. Dunne also helps us to see how practice evolves slowly and co-operatively and cumulatively over time. For Dunne, Dewey (1933) and for Aristotle before him, a practice evolves and is developed in the action

and on the action and always takes place in context, on the job in the act of making and doing.

In Chapter 2, through the work of McIntyre (1981), Carr (1995) invite us to note that a practice can never be just a set of technical skills. A key aspect of understanding a practice is foregrounding the relevant goods and ends which the technical skills of a practice serve. While every practice requires the exercise of technical skills, these skills are transformed and then enriched by their realisation in human action with a regard to internal goods, what we mean by good work in that practice or in that form or way of life. As we also saw in Chapter 2, Carr goes further to argue that practice is not the step-child of theory but its ancestor-parent.

The consequences of this for vocational education are profound.

No longer can we assume that theory and practice are separate. No longer can we uncritically accept the now taken for granted dichotomy of “on the job” and “off the job” training. Indeed, it could be argued that it is the intuitive appeal or lure of the legitimacy of this false dichotomy is that it remains at the very core of the persistence of enduring problems and issues in vocational education in the UK today.

The following case is offered by way of illustrations of different ways of seeing. Different ways of approaching and developing a practice. Different kinds of technical and practical reasoning at work.

The metaphor and language of boxing are used once more to foreground the embodied nature of learning in Apprenticeships. As also discussed in Chapter 2, Hyland (2018) argues that all learning is embodied and that distinctions between intellectual and manual pursuits are false and can be traced back to the economic and social stratifications of Ancient Greece.

### Research Population: Tutors

#### Discussions with Vocational Construction Trade Tutors.

A wide range of vocational construction trade tutors currently teaching construction craft full-time and apprenticeship courses in four different Further Education College campuses in the South of England, stretching across three different counties and

over 180 miles apart, have helped to form the qualitative data collected to inform this research. All the construction tutors spoken to for this research meet the following criteria.

- All tutors are deemed qualified in their chosen construction trade by completing a time-served apprenticeship.
- All tutors have at least 7 years' experience in their chosen trade.
- All tutors have obtained or are studying towards a recognised teaching qualification.
- All tutors teach their specialist subject.
- All tutors complete CPD in their chosen subject to keep up to date with latest trends and technologies.
- All tutors have provided consent to be part of the study.

In accordance with British Education Research Association Guidelines (BERA, 2018), all participants in the research were made aware of their right to withdraw at any point. The anonymity of all participants in the study is protected through the use of synonyms and all data is collected and stored in accordance with the General Data Protection Regulations (GDPR, 2018).

Participation within the research was on a voluntary basis. All members of the research population were able to opt in and opt out if they wished to do. I explained the research question to all tutor participants personally via group discussions and team meetings. Each tutor was provided the freedom to participate into the research study. No participant was forced or coerced into participating. Participation by the tutors via an opt-in basis rather than an opt-out basis would ensure the tutors views are more authentic and valid, due to a desire to participate in the research. The tutor conversations were held over a period of 12 months. The initial conversations held were to introduce myself and the study and to gain permission from each individual tutor on whether they wished to participate or not.

I decided to hold a number of tutor forums of no more than four tutors in a forum. The initial tutor forums were held by subject area in each campus; for example, only wood occupation tutors in a forum or only plumbing tutors in another forum. I felt this



would allow the individual subject knowledge to flow well and each tutor would be accustomed and familiar to the others in the forum as they work as part of the same team in the campus. Due to timetabling and scheduling restraints, it was also easier to meet subject tutors together as their timetables were generally similar. I decided to hold two of each of these subject specific forums, to allow time for deliberation and understanding between the first and the second. Using my anonymous notes and feedback gathered from the subject specific forums, I held a tutor forum in each campus consisting of one tutor from each subject area, to try to unearth any follow up information and to discuss emerging themes in more detail. To further eliminate bias or a reluctance to speak within a group forum, a number of tutors were spoken to via one-to-one open discussion. I held a preconceived notion before the tutor forums that there is a potentially popular generalisation of construction craft occupations, one of, although different on paper and in skill variation, construction craft occupations possibly conduct themselves to the same principles and beliefs of how knowledge is gained and how a skill is practiced and developed.

Prior to commencement of the first round of tutor forums, I decided the focus points for these forums would be centred around the perceived Vocational/Academic divide. The following key questions were going to frame the discussions. Where a specific construction craft occupation is mentioned in a question, the relevant construction craft occupation for each discipline is inserted.

1. Do you view yourself as a plumber who teaches, or a teacher of plumbing?
2. Do you regard yourself as an academic or a vocational tutor and why?
3. Do you teach the practical aspect of qualification, or the theoretical aspect of the qualification?
4. What aspect between theoretical and practical delivery do you prefer to teach?
5. Which aspect is more important in a student's development?
6. Do you feel the theoretical and practical aspects of your trade are separated or valued different by students and employer?
7. Do you feel a construction craft course is viewed as prestigious?

I deemed these seven key questions to be the fulcrums for my discussions around vocational and academic divide. These questions helped form and dictate the follow

up tutor forums regarding this subject matter. For the second round of tutor forums, I decided to focus on skill craft development. The following questions formed the structure of my discussions, again where a specific occupation is mentioned, this is changed to suit the tutor specific audience.

1. Are hand skills viewed as important in your trade craft area?
2. What are the key attributes you look for /notice first in a new student's work?
3. What do you feel are the main differences between a brand new first year student completing/undertaking a practical task/assessment compared to a fourth-year student?
4. How important is the relationship between a student and their hand tools?
5. How important is the relationship between a student and their material?
6. How do you feel craft skill development matures?
7. How important is material consciousness?

It was deemed that tutor interviews, rather than tutor questionnaires, would be more appropriate and possibly provide clearer examples and rationales than questionnaires. Due to the number of tutors involved in the research population, it was also a lot more feasible to do tutor interviews. Face to face interviews allowed clarity of answer and enabled follow up questions to expand on answers provided as well as opportunities for response and counter argument or agreement from the other tutors present. All tutors were known to me before commencement of the tutor interviews, as an insider researcher I felt I could interact and respond without bias or prejudice. I felt the tutors would be more honest and open in a forum like setting and could possibly "click their way through" an online form.

The initial tutor discussions were very enjoyable and well received by tutors. A lot of the tutors expressed desire to meet up more often. One tutor exclaimed after the initial conversation.

*"That felt so good, we are usually that busy, or focused on helping my students achieve, we never make time to just sit down and talk about our craft. I have worked with my colleagues for 6 years but this is the first time we have sat down and really thought about our teaching styles and how students develop their craft, we are too focused with completing assessments."*

The initial question of “*Do you see yourself as a tradesperson who teaches, or teacher of a trade?*” generated the same rapid response from every one of the tutors, and this was regardless of their teaching experience: One carpentry tutor is in his 33rd year of teaching and his response was the same as a tutor with only 3 months teaching experience.

*“I’m a chippy” “I am a brickie” “I am a plumber” and “I am a sparkie”,*

These were all the initial responses provided to the question asked. This was interesting and opens up a debate on would a Geography, English or Maths teacher respond to the same question so purposefully with, “*I am a geographer*” “*I am a wordsmith*” or “*I am a mathematician.*” It was quite evident that all the construction craft tutors are very much aligned and hugely loyal to their trade occupation. A high number of the construction craft tutors in the research population still complete work in their off time in their relevant trade.

### Research Population: Apprentices

To capture the view of the students within the research was going to prove more difficult due to the sheer number of students involved. Unlike the tutors, who are all based at their respective campuses Monday to Friday, the students within the research population attend college on different days. Due to the structure of construction craft courses within the FE Colleges on which the research population are studying, it would be impossible to get all students present on campus on the same day. The attendance structure of the courses the research population are studying is as follows:

- Day Release – students attend college one day a week for their “off the job training”, the other four days of the week are spent gaining their “on the job knowledge” with their employer. Day release is the preferred course structure for construction apprenticeship courses offered by the colleges within the research population.
- Block Release – one of the college campuses offers block release to one of their construction craft apprenticeship cohorts. Students on block release attend college for their “off the job training” for one

continuous week in every 4 weeks. The other 3 weeks in the four weeks are spent gaining their “on the job knowledge” with their employer.

- Full-Time – Full-Time courses offered to the students within the research population are for students who have not gained an apprenticeship placement with an employer and attend college 3 days a week to study their chosen construction craft trade.

An online questionnaire was sent to each student who agreed to be part of the research study. I spoke individually to as many groups as I could, I also recorded a short introduction video for tutors to play to the groups I couldn't physically see. The questionnaire was structured to gain students views on the following:

1. Their views of the course.
2. Why they chose a vocational pursuit rather than an academic pursuit.
3. Their views on academic courses.
4. The relevance of their course to their employment.
5. The relevance of the practical lesson to their employment.
6. The relevance of the theory lesson to their employment.
7. How the students have developed their skill.
8. How important is material consciousness?

The questionnaire needed to be framed slightly different for students studying apprenticeships and students studying full-time non-apprenticeship courses, due to full-time students not having an apprenticeship employment placement. I decided that the questionnaire would provide a vast range of answers and hopefully provide a “majority view.” I felt that one problem with the questionnaire could be that students wouldn't articulate their answers as well with written answers compared to verbal answers. I decided that focus groups would need to be held sometime after the questionnaire and also observation of students in the workshop and the classroom would be extremely helpful in providing an insight into the perceived theory/practice separation. I decided that informal drop in-observations to practical and theory sessions would provide a more natural and real observation. The drop-in observations would only last 5 to 10 minutes at the beginning to allow students and

tutors to become familiar with me and the process. I did not carry a note pad and for practical sessions, as an insider, I made sure to dress appropriately i.e., in the same personal protective equipment as the students and tutors.

I felt from my own teaching experience, students and tutors are sometimes intimidated by inspectors or lesson observers entering their learning environment and possibly don't behave or interact as they normally would without observation. I felt that, to keep the authenticity of the students and tutors' natural behaviour the more frequently I visited the workshops and classrooms the more authentic my observations would be. I would also build up some rapport with the students by observing and informally talking to them whilst they carried out their activities.

Upon undertaking the research study, it was hoped and planned that all apprentice construction craft students would be invited to participate in the study. This was the initial case, although upon commencement it was proving difficult due to the large numbers involved, also geographical and time constraints. A possible downside to insider research is finding the time to allocate to the study whilst undertaking your day-to-day work activities and commitments. After the initial logistical problems arose, I decided to concentrate on the apprentices in my base campus for observations, as they would be more familiar with me personally and I would be more familiar with them, their surroundings and the staff. It would also mean I could drop into sessions more freely as I am situated in the campus for my working day. The apprentices studying in other campuses would still be able to participate in the questionnaires and student focus group, the same as the students in my base campus.

### [Approach to Data Analysis](#)

The main source of data presented in the research will be qualitative data captured through a case of lived experiences. Nowell et al (2017) express the need for qualitative data to be trustworthy. Nowell (2017) through the works of Lincoln and Guba (1985) emphasise that trustworthiness of quantitative data, is through its validity and reliability, then qualitative data can achieve parallel level of trustworthiness through its credibility, transferability, dependability and confirmability.

To ensure the trustworthiness of the data presented, I set to achieve trustworthiness of the data through the following:

**Credibility** – All of the observations of the students presented in the case take place inside a Further Education College’s construction workshop. It is a controlled environment with heavy emphasis on health and safety of all students within the workshop. By frequently observing the students it would allow the recollection of their lived experiences to be more credible and not just provide a snapshot.

**Transferability** – Detailed descriptions and accounts of the lived experiences are provided and can be transferred to other vocational courses, depending on interpretation.

**Dependability** – The case is clearly documented and the data is triangulated through tutor and student focus groups.

**Confirmability** – Through data analysis all interpretations and findings for the study will be derived from the data collected.

### **The Case: Sebastian.**

Sebastian is a 17-year-old British male student studying a full-time plumbing course. Sebastian has done exceptionally well in his GCSE’s achieving 9 passes including English and Maths. Sebastian is therefore an excellent candidate to continue with an academic route and by his own admission, was encouraged by school and home to pursue with his studies and enrol on A-Levels and sixth form at his current school. A-Level study didn’t work out for Sebastian. It did not excite or engage him. He possessed no desire to go to university even though he was more than capable. Sebastian decided to leave sixth form after one year of study and enrol on a plumbing course to fulfil his desire to become a fully qualified plumber. He felt that a practical skill and working with his hands in an active environment was more suited to him rather than studying behind a desk for another 4-6 years.

Sebastian is in his first year of plumbing studies. In his build he is very typical of a 17-year-old. He is of average height for his age and of slim narrow build with no

great deal of weight or muscle on his teenage body. If you saw Sebastian on the street, you would be unlikely to be label him as a traditional construction worker. Sebastian achieves the highest score in the class in all his exams. Sebastian excels in the classroom. However, he is not as strong in the practical workshop as he is in the classroom. Sebastian is a quiet student with a close friendship group of two other students. He lacks confidence and doesn't mix with any of the other students outside his friendship group. He shies away from and avoids more extrovert and loud students. Sebastian lacks confidence in his practical decision-making ability. He is reluctant to ask questions. A tutor will have to approach Sebastian and offer to help him. He won't ask for help. Sebastian is shy. Sebastian can sometimes seem passive in a busy working environment. He comes and leaves without much fuss or interaction. Tutors' attention and time can be drawn to louder and more boisterous students in the workshop. Sebastian starts to blend into the background.

#### Sebastian Falls Behind:

Sebastian's lack of progress only comes to light 4 weeks into his first year of studying plumbing. The very first task all students undertake when they begin their training in the workshop, is a marking, measuring, cutting and filing exercise. This entails each student cutting two pieces of half inch low carbon steel pipe with a senior hacksaw 150mm long. The ends of each pipe have to be filed level and smooth after cutting by a metal hand file hand tool. Once this is completed, the next stage is to file an oval shape on one end of each pipe and then marry the two ends up together and get them to stand vertically on top of each other unassisted. The purpose of this starter exercise is to allow students to be develop hand skills when using hand tools, develop measuring skills and also to develop patience when working with a material. Cutting the pipe is slow and arduous. Filing the pipes to create a smooth edge can be even more slow, monotonous, repetitive and boring to some students who have not yet "found their feet" in plumbing. Tutors observe students closely as these tasks are completed. The underlying purposes of these activities are to develop effectiveness in increasing their patience and in acquiring a sense of and respect for materials and tools, as well as cultivating the psychomotor skills required to complete these tasks successfully.

## Analysis:

The start of term can be very hectic, tutors have a lot on their plate and it is a very stressful time. Some tutors could be teaching up to 100 new students, getting to know students' names can take time. The louder and more demanding students can take centre stage and quieter students like Sebastian can blend into the periphery and therefore his struggles are not highlighted straight away. A quiet student struggling in the workshop at the start of term is very much like a person under water appearing to be breathing fine. Through experience, as the years progress, tutors become more adept at identifying struggling students earlier and in providing support and guidance sooner than new and inexperienced tutors.

## Round 1: Sizing up the Opponent

At this stage (Round 1), tutors observe students closely to garner a sense of which students are meticulous in their planning, thinking and working and which students rush ahead with no real thought or meaning behind their actions and hope that it turns out for the best through pure guess work. This activity generally takes students up to 4 lessons to complete. Sebastian completes his task in 8 lessons. He is meticulous to the millimetre with his measurements. He takes great pains to measure. He measures the same section of pipe up to 10 times before marking it, measuring again and again. He does not have confidence in his own judgement to make a cut on the piece of pipe. He needs reassurance from the tutor that he is indeed correct. Sebastian spends a long time eyeing up his work and using gentle non purposeful cutting strokes, using the same motions and rigour as if he is carefully petting a mouse. Sebastian uses gentle cutting motions that are just making a scratch on the pipe surface due to his indecisiveness and lack of confidence. He has marked the pipe out correctly, however it is the fear of doing it wrong and making an incorrect cut that is prohibiting him from being more assertive in his decision making. This could possibly be from Sebastian's educational background, he has never completed any hands-on vocational craft subjects before, nor has he any hands-on experience of construction hand tools. Sebastian lacks the confidence to ask for help, even when the tutor is going around each student individually and asking, "*are you ok?*" "*Do you need help?*" Sebastian responds with a beaming smile saying, "*Yes thank you. No, I am ok.*" At this early stage in his training, the tutor



takes this as an honest answer, as time progresses in the workshop the tutor realises that Sebastian does indeed require help and will provide help without asking, as the tutor is able observe from afar.

#### Analysis:

Confidence in ability, decision-making and confidence to seek help and not feel diminished in any way, are all important stages in any young trainee's career. Sebastian does not ask for help, probably because he feels he does not need help because he potentially feels he should not require help as the majority of the group are getting on with the task with no assistance from the tutor. This may be seen as male showmanship or possibly even naivety from the student. Craft development depends on its insiders to develop, students must learn from others, whether through observation, imitation or critical questioning.

#### Round 2: No room to Manoeuvre

Sebastian's work area is cluttered with offcuts of pipe, fittings, tools and sheets of paper he does not require. He forgets which pipes he has cut previously and which pipes he is currently working on. The array of tools confuses him as to which one is best suited to carry out the task. He is unsure himself of the correct tool and therefore brings too many over to his work station.

#### Analysis:

Organising and detailing the job at hand before commencement of activity is very important in craft development. Tool and material selection is vitally important. A popular saying in the construction trade is "always have the correct tool for the job." By cluttering the work area with different tools and materials that are not required, he is disadvantaging himself from achieving his goals.

#### Round 3: Stand like a Boxer

Sebastian cuts each pipe, using the senior hacksaw tool. Each stroke of the blade is slow but not deliberate. It is tentative with no real force or purpose behind each

stroke. It is as if he does not want the pipe to be cut, as he is afraid it will be done wrongly due to a lack of confidence in his own ability and judgement. Reassurance is provided that he is on the correct track. As Sebastian cuts one pipe he realises he has not cut straight. This is most likely due to his body shape and positional stance not being correct during the cutting process. Upon tutor observation of his incorrect body shape whilst cutting, he is told to “*Stand Like a Boxer.*”

When I think of boxers I think of strong, firm, upright athletes standing purposely and proudly with broad straight firm back and shoulders, standing with intent and purpose but light and majestic on their feet. A boxer’s body weight will be equally proportioned across both feet. One foot in front of the other, hips straight in line with the opponent and back straight, ready to pounce or ready to dodge all in a split second. This is the stance trainees need to take whilst cutting, threading or bending pipe.

When cutting pipe, if trainees are right-handed, they must adopt a “southpaw” boxing stance. This requires the right side of the trainees’ body to be parallel to the workbench and vice where the pipe is safely secured. Their left foot stationed in line with the cut mark on the pipe, with the right foot slightly behind. All body weight is equally proportioned across both feet; they are in a stable position for cutting. The left shoulder leans forward more than the right, allowing all power on the forward motion for cutting to be generated by the stronger right arm. Shoulder blades are square and not touching. This stance allows the trainee greater control of the blade and greater control of their whole body. It will mean that the cut is accurate and straight and there is no overreaching, stretching or compressions of the limbs. The risk of injury is severely reduced when adopting this stance. Sennett relays the importance of the hand in mastery of skill, in this instance the body stance allows greater control of the midriff and shoulders which allow the hands the opportunity to complete the skill mastery. Sebastian adjusts his body position, his cutting strokes become more purposeful and he now cuts the pipe a lot straighter than his first cut. He becomes more confident in his ability upon correctly completing an action after struggling. For first time, Sebastian oozes a sense of accomplishment and confidence in his ability.

## Analysis

A strong powerful stance is important when undertaking craft development. The body, especially the torso mid-section, controls the movement and direction of arms and shoulders.

### Round 4: Pillow Fists

Through observation and working closely with Sebastian, I start to notice that he has a slight “tick” whenever he is struggling with a concept, it is fascinating to observe. His left hand forms a fist, as if he is gently holding a feather, not a tightly clenched fist and he quickly shakes his lightly but controlled closed hand in a quick up and down motion. His face does not grimace, nor do his teeth grind or meet. This happens every time he is processing information that he cannot get to grips with. It is not a form of aggression and through observation, it seems he is unaware that he is doing it. When it is a very simplistic concept, he is struggling with his tick becomes faster and more frequent when being instructed on a supportive one to one basis. This could possibly be a reaction to being placed under pressure or in the spotlight. It is fascinating to see as once it is noticed, it cannot be unnoticed. I did not notice Sebastian’s “tick” for 2 months, however now I have noticed it, I can see it on a daily basis. Sebastian is a gentle person, a very well-mannered and softly spoken student. This is why his reaction with a gentle softened shaken fist becomes so fascinating to observe and understand. It seems to only happen when he is struggling with processing information that appears straightforward, but he has his own way of processing information and carrying out measuring tasks that really flummox him on a daily basis. When Sebastian makes a mistake, or is struggling to complete a task or struggling to understand a process concept and the tutor seeks clarification on a one-to-one basis, by questioning Sebastian on his thought process or methods, his tick becomes more frequent as he becomes confused and unsure of what process he went through. The tick is more frequent but ever so gentle and non-aggressive.

### Analysis:

This tick is unusual in students, one that I have never seen before. It is fascinating to behold. Sebastian’s tick is only evident when he feels under pressure or has made a

mistake. This again could be linked back to the very start (round 1) and to lack of confidence in his own ability and decision making.

### Round 5: A New Opponent

The next obstacle for Sebastian after completing training and assessment on low carbon steel pipe is working with copper pipe. A lot of the same techniques and principles that are common to working with low carbon steel pipe are applicable to working with copper pipe. Skills such as marking and measuring centre to centre measurements. The majority of measurements in plumbing are from centre of one pipe to centre of another pipe. This is known as working out the “X dimension” when using copper, plastic and waste fittings and the “Z dimension” when using low carbon steel fittings. For example, the centre-to-centre measurement between two fittings could be 150mm wide, this does not mean the piece of pipe required in between the two plumbing fittings will be 150mm long. The pipe when placed into a fitting does not go the whole way to the middle of the plumbing fitting, therefore a mathematical equation, mainly subtraction, is required to work out the “x” and “z” dimensions, or it can be solved by placing the two plumbing fittings 150mm centre to centre apart and then marrying the pipe up to it and marking one of the pipes that needs to be cut. Sebastian struggles with this process.

Sebastian has a Grade 4 in GCSE Mathematics, however he is quick to point out *“it took me 3 attempts to pass maths”* and *“this isn’t proper maths anyway.”* The process of working out x dimensions is alien to him and he struggles with the process and over complicates it. Sebastian’s work area continues to be very messy and cluttered with offcuts of pipe, tools, fittings and various other objects not required. When completing a copper frame, consisting of four pieces of pipe being connected together in a rectangular shape 250mm wide by 220mm, Sebastian cuts his pipe and leaves it on the workbench alongside his other bits of pipes. He gets frustrated and finds himself in a muddle (his gentle left fists shakes) as he forgets what pipe he has already cut and which pipe he is working on. The work area becomes even more cluttered and disorganised as he brings over more pipe to cut. It becomes a real struggle for Sebastian and he examines the drawing of the copper

frame specification thoroughly, trying to figure out where he has gone wrong, but he cannot find a solution.

### Analysis:

The statement “this isn’t proper maths anyway” is very interesting. Students learning a craft skill can be oblivious to the amount of mathematics they are actually completing, whether it is through working out angles, lengths or dimensions. In my experiences, every year at least 60% of all students enrolled on construction courses do not hold a recognised maths qualification and therefore have to study towards one whilst enrolled on their construction course. Construction is one career that relies heavily on mathematics, however students sometimes struggle to collate and link what they complete in the workshop to mathematics they study in the classroom.

### Round 6: A Sparring Partner:

Jack, an apprentice in his fourth and final year as a trainee apprentice, notices Sebastian struggling and walks casually over to Sebastian’s work station to help. Jack doesn’t ask whether Sebastian needs help, he has been quietly observing Sebastian for a number of weeks and knows that this young man requires additional support and needs a friend. Jack engages Sebastian in small talk and then immediately clears Sebastian’s work area of unwanted tools and materials. Sebastian, still focusing on the small talk, is glad of the interaction with another older student. Sebastian is unaware of Jack’s intentions and does not even realise he is clearing the workstation. Jack begins to focus Sebastian’s mind on the task at hand and the practice of one task at a time.

It is important not to underestimate what Jack is doing here:

- He notices Sebastian is struggling
- He cares about another human being (an insider to his craft) who is struggling
- He is sensitive to the situation
- He has been observing Sebastian for a number of weeks
- He decides to act
- He moves into Sebastian’s presence

- He cooperates with him
- He diffuses the situation by engaging Sebastian in small talk
- He subtly clears the workspace making the conditions for Sebastian easier to succeed
- He focuses Sebastian's mind on the task in hand and the practice one task at a time
- He asks Sebastian questions to jog his memory when he has overlooked something
- Jack knows Sebastian's Journey he has travelled the path himself
- He takes Sebastian under his wing
- Their friendship and trust build up throughout the year

All of the above provide clear examples of the processes and stages described by Sennett (2009) in the development of skill and craft.

Apprentices in their fourth and final year share the workshop with the first-year full-time study programme students. This is to provide aspiration to the 1<sup>st</sup> year students and also for the 4<sup>th</sup> years to help, develop and coach the 1<sup>st</sup> year students. The 4<sup>th</sup> years will hopefully have apprentices of their own, so this is a good way of building their coaching and developing skills in a safe controlled environment. Jack is 22 years old, a strong block of a man with broad shoulders to go well with his 6-foot 2-inch frame, a very confident young man who is excelling in his college course and on site with his employer. He has a lot of “homers” which are jobs for himself outside of his employment at weekends and evenings. These “homers” include basic domestic plumbing maintenance work such as repairing leaks, taps, toilets and servicing systems. He is also starting to get bigger jobs, such as bathroom and heating system installations, as his reputation grows through word of mouth. Jack is hoping to have enough work and to have built up enough of a client base that he can go self-employed and work for himself after he completes his apprenticeship college course.

Jack knows and understands the journey that Sebastian is on, being himself a former standout Level 1 study programme student who, after completing the Level 1 full-time course, succeeded in securing an apprenticeship with a local plumbing and heating firm. He wants to help Sebastian, this is out of experiential understanding

that plumbing is a difficult trade to master, one that takes time, dedication and a deep understanding of the materials and tools, that can only be achieved through observation, practice, repetition and discussion. Jack, throughout the academic year, takes Sebastian under his wing, their friendship and trust builds throughout the year.

### Analysis:

Observation, imitation, repetition and discussion are all essential to craft development. By having a partner who is slightly more experienced, a new trainee can bounce ideas and techniques off easier than they maybe feel they can with a tutor. This is potentially because of the tutor/student boundary. Having a fellow student as a critical partner allows for more fluidity and freedom in expression.

### Round 7: Tactics

Jack, although not a fully qualified plumber, is developing “the ear,” “the eye,” “the touch” and “the nose” every good tradesman possesses. This means that he can hear sounds in the material that he knows are not correct. For example, when someone is screwing a screw into the wall and is not applying enough pressure to the cordless drill to help it screw into the wall, the gears inside the drill make a screeching, grinding and repetitive sound which is the screw head turning on the screw and not the screw moving. The body particularly the shoulder blade, elbow and the hip need to be directly behind the drill to exert enough pressure on it to correctly screw into a building surface without damaging the screw head. The adoption of a boxer’s stance is important for correctly and safely screwing and drilling into building fabric. When a cordless drill has the correct pressure applied to the rear of the drill, the screw screws into the building fabric correctly and safely in one swift motion and the noise from the gears of the drill is smooth, gentle and a continuous humming like sound.

The same applies to the skill and art of lead-free soft soldering used to connect and join two copper pipes together. Soldering is one of the more traditional and most commonly used method of joining copper pipes together in the plumbing trade. Soft soldering is used extensively in the plumbing industry, due to this method being more secure against water leakages compared to other methods used in the industry

such as compression, threaded or push fit. A handheld gas blow-torch is required to heat up the pipe. The most common gases used in soldering are propane gases. The plumbing workshop has lots of propane gas bottles and they're used on a daily basis. When students become more familiar and experienced with soldering, they start to understand the importance of the flame from the blow torch. Sebastian as a 1<sup>st</sup> year trainee has not developed "the ear" or "the eye" just yet and possibly does not understand the importance or relevance of "the ear" or "the eye."

Sebastian is soldering 15mm copper pipe, Jack is within earshot, he hears the roar of the gas torch which can only mean that the gas is open fully and gas is burning at its hottest. The roar of the flame is a piercing sound but one only an experienced or developing ear can notice and understand. The gas torch will roar when it is over gassed. The flame is longer, wider and dances ferociously and uncontrollably coming out of the gas torch. The flame has a hint of a blue flame at the bottom but is dominated by a rampaging orange flame. Jack again realises the inexperience and possible naivety of Sebastian. He glides gently over for a large man and gently touches the gas nozzle on the regulator to turn down the gas. A gentle movement of the index finger and thumb and slight turn of the wrist is required to adjust the gas torch nozzle to achieve the desired flame colour, length and noise. If the nozzle is turned down too much the flame will extinguish. Jack sets the flame to a gentle, smooth, hypnotic and precise blue flame perfect for soldering. Adjusting the gas torch to correct flame is only one of the processes of soft soldering with which Sebastian is struggling. The process of successful soft soldering of copper pipes is as follows.

1. Cut copper pipes to desired length.
2. Clean end of pipes with wire wool.
3. Apply a small amount of flux to the end of the pipe you wish to solder.
4. Apply a small amount of flux to the inside of the fitting you wish to solder.
5. Insert the pipe into the fitting, twisting the one full rotation to ensure the flux has gone around the fitting and pipe fully.
6. Unwind the solder from the roll, around 15cm of solder wire and bend the first 4cms to a 90-degree angle. Hold the roll of solder in your stronger hand.



7. Apply heat to area of the fitting you wish to solder then smoothly moving the gas torch to the middle of the fitting.
8. Touch the solder to the pipe at the end of the fitting opposite to where you are applying the heat. If the solder melts it ready to solder.
9. Remove flame from the fitting and quickly add about 1cm - 2cm of solder to the joint.
10. Clean the fitting by wiping the joint with a damp rag.

Sebastian struggles with remembering the process and also struggles with the psychomotor hand skills involved in soldering. Jack shows Sebastian his technique and how he solders. Sebastian watches and then imitates, however during the process Jack asks “do you need to flux the inside of the fitting” Sebastian has forgotten to complete this part of the process. Sebastian’s left-hand shakes “Yes” is the reply as he removes the pipe and applies a thin layer of flux to the inside of the fitting.

#### Analysis:

The development of all senses is critical in skill craft mastery. The ear, nose and eye are all as important as the hand. A familiar saying regarding construction craft workers is that the worker is “good with their hands.” It is true a good construction craft worker requires good hands, however mastery can only be achieved when all other senses, as well as touch, work together and are developed in sync.

#### Round 8: Punching through the guard

Having worked alongside Sebastian for a number of months, social barriers are being broken between the two. Sebastian now trusts Jack. There is also some evidence that admiration and even idolisation is starting to build. Jack wants to find out more about Sebastian. He asks him about his interests and hobbies which mainly focus around computer gaming and watching sports. Jack, having observed Sebastian for a while, notices a lack in confidence in both his interpersonal relationships and his own decision making and practical ability within the workshop. Sebastian when focused and with step-by-step instruction by someone, will complete excellent work in a very timely manner. However, when left alone problems occur.

He over complicates simple tasks, often doubting himself that he has measured correctly and is reluctant to cut, bend or solder pipe in case a mistake is made. Jack probes a little into Sebastian's home life and also his motivation and desire to become a tradesman and in particular to become a plumber. Sebastian explains his home life and it becomes apparent, without boasting or bragging, he is from an affluent area and a wealthy family. Both parents have exciting and 'highfalutin' jobs. Sebastian has only one sibling which is an older sister.

"My sister is very smart; she can read a book and remember it all whereas I can't" Sebastian innocently but proudly explains never breaking eye contact.

"Oh yeah, what does your sister do?" Jack asks.

"She's in university studying to be a brain surgeon", with a smile of pride breaking through Sebastian's face.

Jack, a little taken back by this development says "Oh gosh, a brain surgeon, oh crikey and what made you then want to be a plumber?"

The smiling slowly disappearing but still gleaming, Sebastian explains to Jack "Well when it became clear I wouldn't be able to go to university to study medicine, my family decided that being a tradesperson would be the best option for me. My mother works in property and felt plumbing was the best trade. My dad felt because of my size plumbing would suit me best".

"How did they know you wouldn't go to University?" Jack is puzzled by this new information.

"Oh, it took me three times to get my GCSE Maths and I can't remember things as well as my sister." Sebastian says sheepishly.

"If your family want you to be a plumber, what do you want to be?" Jack asks in a caring but purposeful manner.

Sebastian hesitates whilst looking away to his left "A plumber" he says softly.

Jack, knowing that this is the end of the conversation and not wishing to probe further, proudly and defiantly exclaims, "You'll make a great plumber Seb!"

Jack and Sebastian continue to work together and Jack asks his employer to bring Sebastian out for some work experience with the possibility of a gaining an apprenticeship. Sebastian, through trial and error in safety and regulated workshop area in his college of his practice development, is able to be of benefit to his employer but only for small remedial jobs on site, such as preparing sanitary appliances for installation, or chasing/cutting building surfaces during the “first fix”. Sebastian, at this early stage in his development and learning, cannot be left unsupervised to complete work nor can he complete any of the installation work. He is known as a “Plumber’s Mate” on site. As Sebastian progresses through his apprenticeship he will be trusted more. To gain the trust of an employer it is necessary to watch experienced plumbers in action, take notes, ask questions, to understand, to diagnose, to problem solve and develop an ear, a nose, an eye and hands for the job.

A “Plumbers’ Mate” is a term usually provided to trainee plumbers when they first enter the industry before the apprenticeship programme officially begins. Plumbers then progress to “Apprentices”, to an “Improver”, to finally becoming “Qualified”. A “Plumbers’ Mate” could also be a person who has no formal plumbing qualifications with no real desire to become a fully qualified plumber but can complete remedial jobs and support and help the qualified plumbers. To separate a “Plumber’s Mate” from a “Qualified Plumber” think of it this way; a “Plumbers’ Mate” could prepare copper pipes for installation running up a wall across the roof space and into the boiler room. The “Plumber’s mate” could do all of this and do it well, however this person would not be able to understand or know what each individual pipe is doing or its purpose within the house. A “Plumber’s Mate” would not be able to connect the pipes to the boiler with the necessary pumps and controls, nor would this person be able to fault find, diagnose or repair, if a fault developed on the system. A time served “Qualified Plumber” could do all of this as they have gained the knowledge, skills and experience through an apprenticeship. This aligns itself with Sennett’s (2009) observation that:

*“We share in common and in equal measure the raw abilities that allow us to become good craftsmen; it is the motivation and aspiration for quality that takes people along different paths in their lives. Social conditions shape these motivations.”*

### Analysis:

Sebastian's development has taken time, it has also required a lot of input from different key stakeholders:

- Including his classmates through observation and imitation.
- Another trainee who is more experienced and has been through the same stages quite recently.
- His tutor to provide expert guidance and knowledge.
- Finally, Sebastian himself.

### Chapter Summary

This Chapter has provided accounts of the case of lived experiences of vocational tutors and trainees at different stages of their construction craft career. Through the presented case, of lived experiences in a college workshop, it has highlighted critical incidents that help form and develop a construction craft skill. This chapter introduces the qualitative and quantitative data acquired from the research population. In Chapter 5, a more in-depth analysis of the data is detailed and examined to provide further information and clarity regarding the research question.

## CHAPTER 5, DATA ANALYSIS:

### Student and Tutor Experiences and Perceptions of the Existence of a Theory and Practice Divide in Programmes of Vocational Education for the Construction Industry.

This Chapter analyses quantitative data collected from student and tutors during academic year 18/19. It explores student and tutor perceptions of the existence of a divide between vocational and academic education. It also investigates the extent to which such perceptions encourage the separation of theory from practice in the design of and educational experiences supported by vocational curricula. As explained in Chapter 3, data collected in the study are drawn from across three of the colleges' campus sites.

Chapter 2 discusses how popular views of academic education often refer to education centred on the sciences, mathematics and the humanities, whereas vocational education is routinely seen as an education that is job focused and centred on job specific skills.

Chapter 2, through the work of Jessup (1991), draws attention to the argument that knowledge of theory is gathered through a variety of means including, dialogue, conversation, questioning, writing and that this knowledge culminates in practice as skills that demonstrate a competent performance. While data in the form of comments and contributions to this research made by individuals, groups of students and tutors who constitute the research population in this study, often reflect more integrated aspects of the theory and practice descriptions put forward by Jessup (1991). In practice, the undertow is of one the separation theory and practice. The question then becomes why this contradiction exists.

This Chapter explores recurring themes in the data repeatedly raised by tutors and students regarding a perceived academic-vocational divide and the separation of theory and practice in practice. These include repeated reference to obstacles preventing the collapsing of divisions and hierarchies between vocational and academic education and between theory and a practice, including perceived financial

restraints, historical approaches to curriculum design in vocational education and the problems generated by such designs in practice. In addition, data from the thesis points to a lack of continuity between practical activities, knowledge and skills acquired and developed in the workplace and theoretical knowledge (which it is often assumed is and should) be delivered within a college. A lack of practical on-site work experience for full-time learners is also often identified as a major factor in the erection of a divide of theory and practice in Vocational Education in Construction subjects and curricula for full-time students.

The trustworthiness, credibility, transferability, dependability and confirmability of data are discussed above through the work of Lincoln and Guba (1985) together with themes emerging from data analysis.

Nowell et al (2017) introduce six phases of thematic analysis which they argue can help to establish trustworthiness of the data collected. According to Nowell et al (2017) these six phases are;

Phase 1: *Familiarising yourself with the data*: This Nowell et al argue, is achieved through prolonged engagement with the data. Immersing yourself with the data by repeatedly reading the data in an active way to find patterns and meanings. They caution researchers at this stage to be mindful of their preexisting beliefs and to do their best to minimize the influence of these upon the data being collected. They advise researchers to read through the data in their entirety at least once before subjecting data to processing and coding.

Phase 2: *Generating Initial codes*: In this phase Nowell et al encourage the researcher to embark in active engagement with the data in order to begin to identify what is potentially significant and interesting in the data. Through this reflective process, they describe how qualitative coding of data can be achieved. Coding they argue, allows data to be simplified and distilled into specific characteristics. Too many codes they point out, can be counterproductive as data analysis can become muddled and clarity of data difficult to achieve.

Phase 3: *Searching for themes*: During this stage, data are collated and coded and different codes are identified and compared. All potentially relevant codes are then extracted into themes. In identifying a theme, key components in an experience or view are brought together, as small amounts of data viewed in isolation can be potentially meaningless. Themes, once identified Nowell et al claim, can then be linked and large portions of the data coalesce into significant concepts. Nowell et al draw attention to how a theme does not depend on a quantifiable measure for validity or credibility but upon systematic and careful interpretation. Using a number of predetermined codes they contend, will assist the researcher in identifying themes and help guide analysis. They foreground how It is important as a researcher not to deep dive into every theme with the same amount of rigor as it is more beneficial to select and identify the themes from the codes that are of most relevance to building an understanding of the phenomena being studied and to answering the research question.

Phase 4: *Reviewing themes*: They go on to show how, once a set of themes have been identified and devised, further refinement and analysis is required to consider if the themes form a coherent pattern. They demonstrate how themes need to be reviewed to evaluate if there is enough data to support the theme or if the data supporting the theme is too diverse so that data that are too diverse can be reduced and summarised into more manageable themes. On completion of reviewing the themes, they claim that a clearer picture will have emerged on how themes knit together and the story they tell.

Phase 5: *Defining and Naming Themes*: At this point the researcher is concerned with modifying and redefining themes. Nowell et al take pains to make to clear that this can possibly be an endless and ongoing task, so it is important to identify the aspects of the data are of most importance and what makes them interesting. It is important during this phase that the themes link to the research question, because by the end of this phase all themes will be clearly identified and defined and that each theme will have data supporting it and will be succinctly described in terms of what it is and what it is not.

Phase 6: *Producing the Report*: For Nowell at all, the final phase involves the presentation of a concise, coherent and interesting account of the thematic analysis of the data. A valid argument therefore must then be crafted in order to identify each theme and to make sure that each is supported by critical discussion of relevant literature. The credibility and trustworthiness of the data Nowell et al argue, will come through in the authenticity, trustworthiness and credibility of the report. They conclude that it is important to challenge perceptions which will include results and findings, both expected and unexpected. The main findings are then critically analysed, discussed and reported upon.

### [Theory and Practice, a Marriage of Convenience? Tutor Voices.](#)

The first of the tutor forums was carried out in Campus A which is the largest of the three campuses in terms of student enrolment numbers, volume of teaching staff and range of courses offered. Campus A has a dedicated Construction department in the rear of the main college building. Campus A's construction teaching staff are all qualified teachers with one teacher who has been teaching at the campus for 30 years while another has been teaching at the campus for just less than 3 years. All teachers based at Campus A have over 5 academic teaching years' experience at either this institution or another. Campus A is the most successful of the three campuses in terms of student recruitment, student attendance and student timely achievement.

### [Data from Tutor Forums](#)

I planned to carry out my first tutor forum in September 2019. With hindsight, this turned out to be a rather naïve assumption as it is fairly predictable that in the busy and often chaotic first term in any academic year, tutors' attentions focused on student behavioural problems and logistical issues and this dominated their discussion in the early forums. I therefore decided to allow the courses and the tutors to settle into the new academic year before I asked them to focus their discussions on curriculum issues, in the hope that their views would possibly hold more relevance for the issues at the heart of this thesis and not be hijacked by operational problems arising that day/week. I made it clear at the start of each of the teacher



forums that this was not a forum for venting anger or raising issues or problems that staff had with students, colleagues or management, which were beyond my control. These parameters were set out before the start of each forum. This was in the light of the negative experience from conducting the first tutor forum where I had first-hand experience of the problems encountered by insider researchers. For example, my close working relationship with the majority of tutors in the research population, particularly those at campus A, when I was conducting the first ill-fated tutor forum, was that tutors tended to focus on the recent problems they had with managerial decisions and would back their arguments up with statements such as:

*“As you well know!”*

*“As you know yourself!”*

I made the decision that this forum could not continue in its current format as the data being collected was more concerned with issues that staff had with the management culture in the college, than with the enduring educational issues that gave impetus to this thesis.

Once the objectives were set out and agreed more clearly, data collected in the tutor forums began to be more focused upon educational issues in the vocational curriculum.

Table 5.1 below indicates the number of staff involved in the research population.

<b>Campus</b>	<b>Discipline</b>	<b>No. Of Staff delivering on course</b>	<b>Actual number who completed questionnaire</b>
A	Wood Occupations	3	3
A	Trowel Trades	2	2
A	Building Services	3	3

	Engineering (Plumbing Only)		
B	Wood Occupations	2	2
B	Trowel Trades	2	2
B	Building Services Engineering (Plumbing & Electrical)	3	2
C	Wood Occupations	2	2
<b>Total</b>		<b>17</b>	<b>16</b>

### The Metaphor of Marriage

During tutor focus groups in all campuses, “marriage” was used constantly used as a metaphor to describe the relationship between theory and a practice. All tutors agreed that both theory and a practice were vitally important cogs in the success of the learner journey and the turning of the wheel of practice. One tutor in campus A made the following comments when talking about difference between theory and a practice within the plumbing industry:

*“Anyone can install pipes, anyone under simple instruction can put clips on a wall and run a pipe from A to B, however only a trained plumber understands the purpose of the pipe and what its importance is within your heating system and how it links and interacts with all the components and pipework within the system. A trained plumber also understands what components such as valves and pumps are needed to be added to the pipework to allow for successful*

*operation. This can only be achieved through theoretical knowledge and understanding, within a classroom environment.”*

(Tutor Mark, CA).

This is an interesting analogy and certainly one that on paper holds a lot of relevance in the debates surrounding the relationship between theory and a practice. Here Mark is describing that a craftsman has a deeper understanding of the process at work in the relationship between theory and practice alongside a recognition of the dynamics through which a practice moves forward including key moments and stages in the development of craft. This returns us to Aristotle’s identification of the role of technique (or *techné*) and practical wisdom (*poiesis*) in the development of craft. This also resonates with Mark’s view on the development of craft, where he refers to craft as involving a ‘marriage’ of theory and practice in its development. The pipework is creative and expressive, however there are mindful rules and reasoning behind the installation of the pipework and not just for aesthetic purposes. Each pipe has its own purpose and sense of belonging.

This viewpoint is echoed by quite a number of tutors across all three colleges when describing the importance of theory within their chosen occupation. In Campus B an electrician tutor stated:

*“To wire a 3- pin plug is very simple, however to be able to wire a fuse board is completely different and you need to have a detailed understanding and theoretical knowledge of wiring systems to be able to do so.”*

(Tutor Gary, CB).

This particular viewpoint from Gary (CB), the electrical tutor, is very similar to that of Mark – the tutor from the plumbing course. Both make assumptions that anyone with no great deal of understanding of their trade can carry out basic techniques or aspects of their trade to a certain level of success. However, to undertake and successfully complete complex aspects of different forms of practice they argue, requires a great deal of theoretical knowledge acquired in practice. However, Mark (CA) later goes on to arguably contradict this where he places a lot of emphasis on classroom delivery and understanding the theory underpinning the vocational course he teaches.

It is worth noting how Mark's (CA) viewpoint was countered in the same forum by Duncan (CA) another plumbing tutor who also conducts the NVQ on-site assessment with apprentices:

*"I don't agree with that, I don't believe that being able to understand and fault find in heating systems can only be learned in a classroom."*

(Tutor Duncan, CA).

Taken at face value, this viewpoint could be viewed as quite dismissive of the theoretical aspects of a vocational course, it might also be influenced by the different context in which each of these two tutors currently work. Duncan (CA) teaches the practical aspect of the course solely within the college workshop environment and completes NVQ on-site assessments for apprentices. Mark (CA), on the other hand, does most of his teaching within a traditional classroom focusing on the classroom learning. Although he does teach practical elements of the curriculum, his teaching timetable is mainly 80% classroom-based. It is interesting that Duncan does not regard theory as being derived from practice as Sennett (2009) suggests, through problem solving, problem finding and critique in the workplace. Duncan (CA) expands this viewpoint where he comments:

*"We only teach basic understanding of heating systems at Level 2 you don't fully learn them until Level 3 which is 3 or 4 years into your apprenticeship. I learned far more about heating systems from working on them and installing them. My boss taught me more about the workings of a system than my tutor did when I was apprentice."*

(Tutor Duncan, CA).

Here, tutor Duncan (CA) is describing a distinct lack of continuity between on and off the job learning. This is very prominent in vocational courses in Construction and especially in 'trades' that are complex and vast, such as Electrical Engineering and Plumbing. It becomes increasingly evident through the tutor forums that it is impossible to design a construction course that will be tailor made for, and meet the needs, of every employer. Construction courses delivered in General Further Education colleges are wide-ranging and often umbrella-like in order to cover a wide

range of topics and aspects of the chosen trade. When a construction trade is so vast, employers can focus on one aspect of the trade. Some employers concentrate on domestic dwellings others concentrate on commercial properties. A student who is working with an employer who only focuses on installing bathrooms will struggle to gain the necessary off the job knowledge on heating systems and therefore has to rely on what knowledge is gained through their off the job training at college. This aspect of Vocational Education in the construction trades, it could be argued provides justification for college-based aspects of vocational college-based education.

Carpentry tutor Mark (CA) who has been teaching for 30 plus years, feels that changes in patterns of delivery have had an impact on the theory practice divide:

*“When I first started (teaching) we taught in blocks, students were in college for one week every month and with their employers the other 3 weeks.”*

(Tutor Mark, CA).

This method of delivery is only evident in one of the campuses, Campus B but is however only present in one of their courses which is bricklaying. The carpentry tutors in Campus A feel there is not enough time to deliver theory effectively. The tutors also suggested that employers place more emphasis on hand skills rather than theoretical knowledge:

*“We only get an hour and half a week to teach theory, the rest of the day is practical. It is very difficult to teach and expect students to retain knowledge when we teach a unit for a term have an exam and move onto the next unit.”*

(Tutor Mark, CA).

Here Mark is almost describing “a teach to the test” structure that is evident due to the structure of curricula from the Awarding Bodies, a downside of college-based education. A massive contradiction to what the tutors experienced when they were learning to what they are doing now.

*“Hand skills is easier for a student to learn and retain as we spend longer on it and more repetition and they are doing it in the workplace. I am not sure how long or if any of our students discuss theory with their bosses or colleagues.”*

(Tutor Daniel, CC).

This viewpoint is important as it supports the work of Sennett (2009) where he argues that a craft is taught, acquired and developed through observation, repetition and dialogue. It also underscores the importance of the work of Dunne (1993) where he argues that practice in any craft or indeed any walk of life, develops and improves through its insiders who are committed to moving that practice forward through the challenge, critique and refinement of existing practice and established routines.

Data from this study suggest that the modular nature of the contemporary curriculum design of Construction courses is possibly contributing to a separation of theory and a practice. During the teacher forums, I asked tutors about factors they perceived as contributing to a separation between theory and a practice. Many of the tutors across the three campuses highlighted the modular nature of curricula as being of great benefit in fulfilling the administrative aspects of the course for the purposes of the College but not so the educational side, thus helping tutors to ‘get through the week’ by meeting the College’s demands but in the process, diminishing the vocational aspects of the course in developing theory and practice ‘hand-in-hand’. The highly structured approach of modular curricula allows tutors to focus more on administrative tasks at hand to the potential detriment of the development of practice. The construction courses being delivered across the 3 campuses which form the sites of this study are all module based in terms of their curriculum design and the ways in which the theoretical aspects of these courses are taught. Students have to sit five multiple choice exams in order to pass each academic year of their course. Exam dates are set at the beginning of each academic year and students are provided with a yearly planner with a brief scheme of learning and exam schedules:

*“I like teaching this way, as it’s structured. I know what I am doing and the students know what we are doing”.*

(Tutor Mark, CA).

The majority of the tutors agreed that the module-based structure allowed for a more streamlined planning and a structured scheme of learning, one that didn't have to be re-designed or re-written each and every academic year. The modular based delivery did mean that once teaching guided learning hours were complete on a module and students had taken their examinations, it was then simply a case of moving on to the next module. This highly organised structure helped tutors plan and deliver their lessons accordingly and allowed for clear lesson aims and objectives for students. This was an aspect I encountered regularly on lesson observations. Many tutors felt this structure helped them with the growing logistical demands of the job on a daily basis. Although this is not that educationally sound, it works for the purpose of completing administrative job duties and evidencing coverage of the syllabus, however regarding the actual development of a craft it leaves a little to be desired:

*"I have my scheme of learning, my lesson plan, my PowerPoints and I am ready to rock. Even if a student cuts himself and I have to deal with that, or we have behaviour issues, one-to-one developments to do, RAG-Rating, (Red, Amber, Green) attendance chasing. I can do all the administration side of the job as I have all my lesson prep done from the previous year."*

(Tutor Daniel, CC).

Administrative aspects of education are potentially in danger of taking centre stage according to Daniel (CC). To align the theoretical delivery with practical delivery was an area many of the tutors felt was difficult to achieve on a daily basis throughout the entirety of the academic year. One tutor found it a lot easier to embed than the rest of the tutors, this was the Brickwork tutor who teaches block release in Campus B. This tutor also completes the off the job NVQ practical assessments in the workplace:

*"I have full control and responsibility for my students."*

(Tutor Alex, CB).

Running through this data is the contradiction between what the tutors are saying regarding theory and practice and what the curriculum design and assessment regimes are compelling them do.

Alex (CB) is the only tutor across the 3 campuses who delivers all three aspects of the course to his students. Alex (CB) delivers theory for 2 of the Block Release days and delivers practical for the remaining 3 days of the week. Alex (CB) has responsibility for the recording and assessing of on-the-job training in the workplace. Alex visits the workplace to carry out on-site reviews with the student and employer present and then completes on-site NVQ assessments. The curriculum design and structure for this course is historical and as Alex (CB) states:

*“We’ve always done it this way, the employers know that and want it. I have taught the majority of the employers now a days. If we didn’t do block release employers wouldn’t send their apprentices to us, they’ve told me that.”*

Dunne (2005) reminds us that a practice moves forward through critique and challenge. It is also important to remember tradition and to make sure we don’t throw out tradition with the bathwater as some aspects of “tradition” e.g., observation, repetition, dialogue, co-operation, are all integral aspects of a practice. A well-established historical approach is difficult to break. This is especially so if it is successful and there is demand for it. Interestingly, Brickwork courses in Campus B have a higher student attendance and student success rate than Brickwork in Campus A. Campus A however does have more students enrolled on their Brickwork course. This is potentially due to a number of factors. The Brickwork Tutors in Campus B are well established in the organisation, both have been teaching the course together for over 15 years, while in Campus A there is a high turnover of staff in the Brickwork department. The block week attendance and having one staff member teach and assess is also important for consistency and ownership for students:

*“Look at what Alex does, he knows exactly what his students are doing on site and what they’re struggling with and he can focus on that. I can’t do that, we don’t even have an on-site assessor.”*



(Tutor John, CA).

Tutor John (CA), who delivers Brickwork in Campus A, laments that the curriculum he teaches does not have the same design and structure as the curriculum in Campus B:

*“If I could do the site assessing as well, I could teach these boys far better.”*

(Tutor John, CA).

Tutor John (CA), is highlighting the separation of teaching from assessment, another dichotomy. The structure of Construction courses within the three campuses whereby all but one of the construction courses offered have separate staff for the in-college delivery and the on-site NVQ site assessment. This again demonstrates the construction of a divide between theory and a practice. The weight that employers and the industry give theoretical achievement and practical ability is not only a historical problem but also one driven by industry requirements. Daniel (CC) makes a very valid point regarding the priority and value placed on theory by the construction industry and employers and in particular, “one man bands” within the construction industry:

*“No employer has ever contacted me looking for an apprentice and said, give me the student who has done the best in their exams. They will always ask for a student with the best hand skills and the best attitude, never ask about theory achievement.”*

(Tutor Daniel, CC).

This was a viewpoint I asked all the tutors about and not one tutor said that when employers are looking for potential apprentices from the full-time student cohorts, theoretical success is never one of the requirements:

*“I know from when I was employing apprentices, I wanted someone who I could depend on to turn up on time, work hard and contribute to the business. I never wondered about the theoretical knowledge as that can be gained on site through experience.”*

(Tutor Mark, CA).

During the tutor forums, all tutors claimed that they want to “marry up” theory and practice within their delivery and some spoke of the “disservice” they were providing to the students by not aligning theory and practice more. A number of these issues have been discussed already which including a modular based approach, timetabling, employer/industry needs.

Tutor Terry who teaches in Campus C was the first tutor to mention class size being an issue in the divide between theory and practice:

*“When I first started teaching over 20 years ago, we had 8 to 10 students’ maximum, in a group and there was always two of us (teachers) in the workshop. We could focus on more on joining theory and practice better in the workshop and make theory more relevant in the workshop. We could also relate what on site tasks individual students were undertaking in the workplace and go through the theory behind it to increase knowledge. Now however it’s just me in the workshop and over 16 students in the workshop. I am fire-fighting at times as it can be very dangerous.”*

(Tutor Terry, CC).

An enlarged class-size number has been evident in all three campuses over the last 10 years and in particular, the last 6 years. A reduced number of teaching staff, due to restructuring as a result of reduced government funding and along with increased student numbers, has seen a more umbrella one-size-fits-all approach. This is not what the teachers want but they do understand that a lack of funding has had a huge impact on contact time, resources, teaching staff and class numbers. All these factors construct divisions between theory and practice influencing the very design of the curriculum itself.

As explained in Chapter 1, as a result of the Wolf Report (2011) full-time Study Programmes were introduced into colleges. A number of the tutors mentioned the difficulty in linking theory and practice on these courses due to the students’ lack on on-site experience:

*“Virtually impossible”*

(Tutor Mark, CA).

Exclaims tutor Mark (CA) when asked if theory and practice can be embedded in full-time curricula. Tutor Mark (CA) is highlighting experiences of practice, the amount of experiences of practices different students have on different courses. He does have a follow up point, which is quite interesting:

*“I can see it with my first-year apprentices, a lot of them are “go-fors” are work, they are sent to the van to collect materials or there to hand tools or hold pipes. The first-year apprentice is quite similar to a full-time Study Programme student, only they can relate theory to their practice more as they’re living it.”*

(Tutor Mark, CA).

Lived experiences are vital for a practice to grow as indicated by Dunne (2005), Sennett (2009) and Hyland (2018). Moreover, lived experiences then allow the theory behind a practice to grow, develop and be more aligned and intertwined through observation, questioning and discussion. Nick, a tutor on Campus B, felt that as apprentices develop and grow, they can also develop thought-provoking and critical thinking skills as they advance their knowledge, experience, skills and powers of reasoning:

*“What I have noticed is 1<sup>st</sup> Year apprentices ask questions somewhat blindly, they know what they want to know but don’t really understand the answer, as they haven’t the knowledge. A 3<sup>rd</sup> or 4<sup>th</sup> apprentice has the knowledge, knows what they want to know when asking a question and then can understand the answer and develop the answer with more questioning and thoughtful reasoning.”*

(Tutor Nick, CB).

Tutor Nick is highlighting the importance of dialogue and questioning in furthering craft and knowledge. He is also highlighting practical wisdom through problem solving, problem finding and critique. All tutors’ comments reveal their conviction that theory and practice should be more aligned together in curricula. Following their

experiences of engaging in tutor forums, a number of tutors have expressed a desire to be more mindful with curriculum planning in order to ensure a closer relationship between theory and practice:

*“I never really thought too much about it, I just kinda done it. From tomorrow on I am going to be more mindful and ensure theory is linked with practice and vice versa in my delivery as this is important.”*

(Tutor Daniel, CC).

The more traditionally ‘scientific based’ nature of the vocational subjects taught, tutors’ comments reflected the view that theory could be seen as more important than the practice. In subjects like Plumbing and Electrical, tutors expressed opinion that it was more important to have the theory rather than hand skills. This is potentially due to nature of practice in these two occupations, water can do a lot of damage to a property if installed incorrectly and electricity can be fatal. The Bricklaying and Carpentry tutors felt that theory was important, however hand skills and a practice took precedent. This again could be aligned to the nature of these occupations. Carpentry and Bricklaying are very aesthetically pleasing and generally on show within a building, whereas plumbing and electrical, pipework and wires are hidden.

The materials used in construction are vitally important to development of a practice and a craft. Material consciousness, as illustrated through the work of Hyland (2018), Sennett (2009) and Marchand (2016), describes material craftwork as:

*‘One that is ethical, guided by high standards of quality, and characterised by direct, unmediated connections between mind, body, materials, and the environment.’*

Crawford (2009) notes that skilled crafts people have gained expert knowledge on the “ways” of materials:

*“Not important or even relevant”*

(Tutor Gary, CB).

Tutor Gary is very dismissive of materials consciousness. Gary teaches Electrical studies:

*“Oh God yes! I know what you mean, yes it’s very important you have to know your timber, from the smell, the touch and the way it moves, the way it breaths.”*

(Tutor Daniel, CC).

For both carpentry tutors in Campus A material consciousness is an integral part of their practice and they ‘teach’ material consciousness to students, although they do not call it teaching:

*“I never thought of it in that way or calling it that, but knowing the behaviour and properties of copper and low carbon steel is very important in developing your craft, you have to understand how to manipulate it.”*

(Tutor Mark, CA).

Data from Plumbing tutors supports the argument that to master the craft you must understand how the material operates and manipulates when bending or jointing. Data from the Bricklaying tutor also supports the works of Hyland, Sennett and Dunne, where they argue that material knowledge is vitally important:

*“A cold brick will chip different than a brick at room temperature. Red brick will bed different than a cement block and stone is a completely different art form altogether.”*

(Tutor Alex, CB).

### Student Views:

To gain a more rounded view and inside view of Construction courses, I felt that student input would be vital data to achieve. I set out to gain the views and knowledge of every student enrolling on Construction courses within the 3 campuses. I planned to collect this data via student forums and student

questionnaires. I planned to hold student forums of 4 students from each class whilst also gaining the views of the whole class via questionnaires. I also planned to personally visit every class. As an insider researcher, who is currently working full time in one of the campuses in a managerial position, this proved quite difficult compared to the Tutor Forums. As the vast majority of classes finish around 4pm and every Wednesday at 3pm, this allowed me to easily schedule time easy to meet tutors outside of lesson time across the 3 campuses. Due to timetabling and the students all being in on different days or similar days, this proved to be logistically very difficult to meet all students within the research population. Also, gaining the views of all students proved almost impossible as not all students agreed to be part of the research and that was perfectly acceptable as all students had the freedom to choose to participate or not.

When conducting student questionnaires, it also proved difficult to obtain the views of students who were absent on the day I visited the class. On some occasions, I relied on the teaching staff to distribute the questionnaire for me due to the logistical problems described above. The success of these questionnaires was debatable. Even though a video was played to the students explaining the purpose, I was not there personally to offer further clarification or explanation regarding the purpose of the questionnaire or any queries the students had in understanding how it should be completed. I originally planned to sample Level 1 year 1 full-time students only, however the opportunity arose to sample Level 2 students in the second year at the college after completing Level 1 the previous year, so I decided that it would benefit the research to access data from this additional student group. Questionnaires were issued first with the student forums taking place afterwards. The information gathered from the questionnaires formed the crux of the student forum conversations. I decided to hold apprenticeship student forums only instead of both questionnaires and forums. I felt that apprenticeship student forums would be more beneficial than questionnaires. This was due to apprentices having more experiences and further on in their careers than the full-time students.

Table (5.2) The research population of full-time study programmes sampled:

<b>Campus</b>	<b>Discipline</b>	<b>Level</b>	<b>No. Of Classes</b>	<b>No. Of Students on course</b>	<b>Actual number who completed questionnaire</b>
A	Wood Occupations	1	2	32	28
A	Wood Occupations	2	1	18	17
A	Trowel Trades	1	1	19	16
A	Trowel Trades	2	1	8	8
A	Building Services Engineering (Plumbing Only)	1	2	37	35
A	Building Services Engineering (Plumbing Only)	2	1	21	21
B	Wood Occupations	1	2	17	10
B	Wood Occupations	2	1	8	5
B	Trowel Trades	1	2	17	11
B	Trowel Trades	2	1	11	6
B	Building Services	1	3	40	22

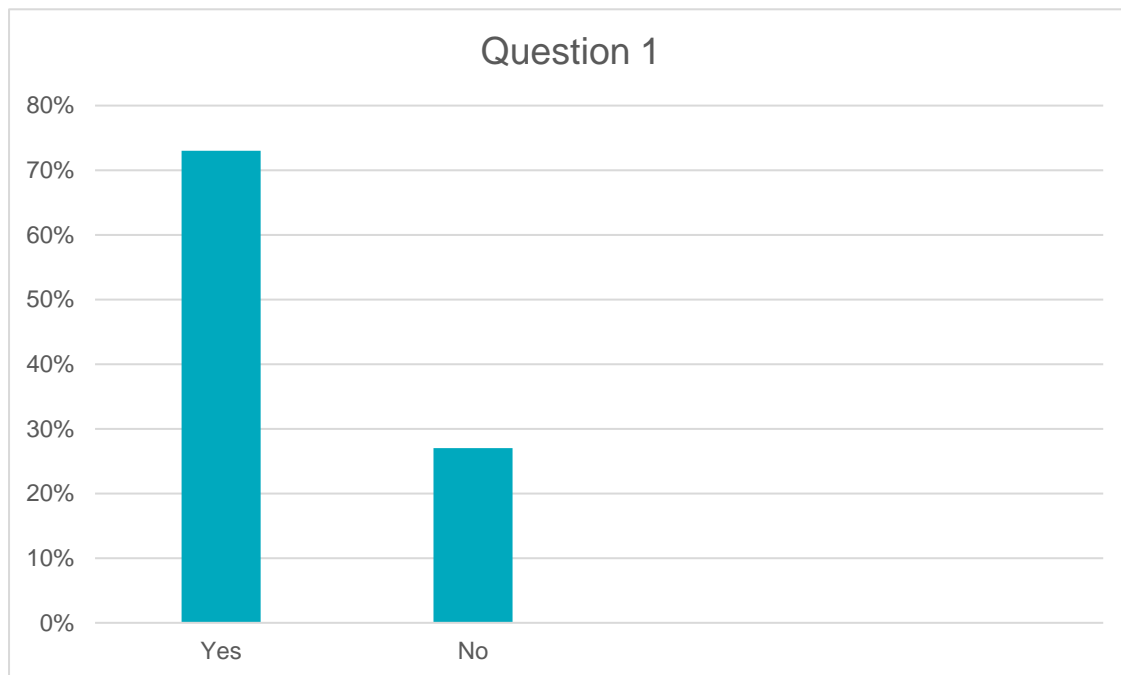
	Engineering (Plumbing & Electrical)				
B	Building Services Engineering (Plumbing & Electrical)	2	3	28	15
C	Wood Occupations	1	1	11	9
<b>Total</b>			<b>21</b>	<b>267</b>	<b>203</b>

The questionnaire is mainly multiple choice. This has its limitations in gathering information and clarity, even though there is space to expand on their answer, the vast majority of the students selected an answer and did not provide an explanation. Due to the lack of explanations, the student forums would provide further clarity and discussion.



### Question 1:

*Do you feel that the course you are enrolled on is providing you with the necessary skills to be successful in your chosen career? (please explain your answer below)*



The majority of students did feel that the full-time study programme which they are enrolled on is providing them with the necessary skills and experiences to be successful in their career. A number of the responses provided included:

*"I am learning how to pipe bend and solder which is needed."*

*"I am learning about the carpentry industry and the difference between a career in bench joinery and site carpentry."*

*"This course is very useful, I can build to measurement and design and I couldn't do that before."*

*"No we spend too long on health and safety and GCSE's and not enough time in the workshop."*

*"I don't like maths."*

*"We are only doing frames and then taking them apart."*

The responses didn't provide exact reasoning and this could be attributed to the wording of the question. The response regarding maths was quite interesting and one that should be expected in study programme students who have not achieved a pass grade in their GCSE Maths and English and therefore require to re-sit the exam. One important response that was reported in different ways across the Construction Crafts, was the lack of real-life experiences in the workshops. Students complete practical frames and are assessed on these. However, students felt these frames were not real-life experiences or examples of work in the workplace.

#### Question 2:

*Why did you choose to enrol on a construction vocational course and not on an academic course?*

This question is a far-reaching question, again a number of answers were short and blunt with "dunno" and "because I have to", "I couldn't get into any other course as it was full", mentioned a number of times. The most popular answers were:

*"I want to be a qualified tradesman and own my own business"*

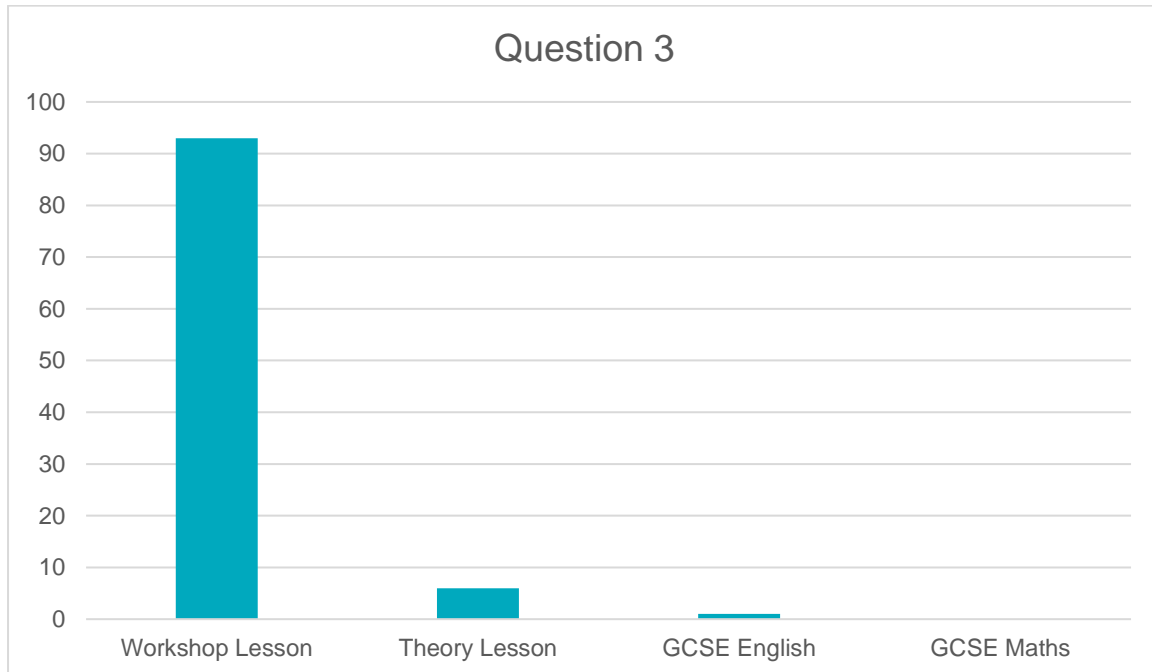
*"I wasn't good school but I am good with my hands"*

*"I want to do a practical subject"*

Other popular answers included family members, school teachers and career's officer advising to go down the vocational route. A number of students suggested that they are on the course due to not being able to find full time employment.

### Question 3:

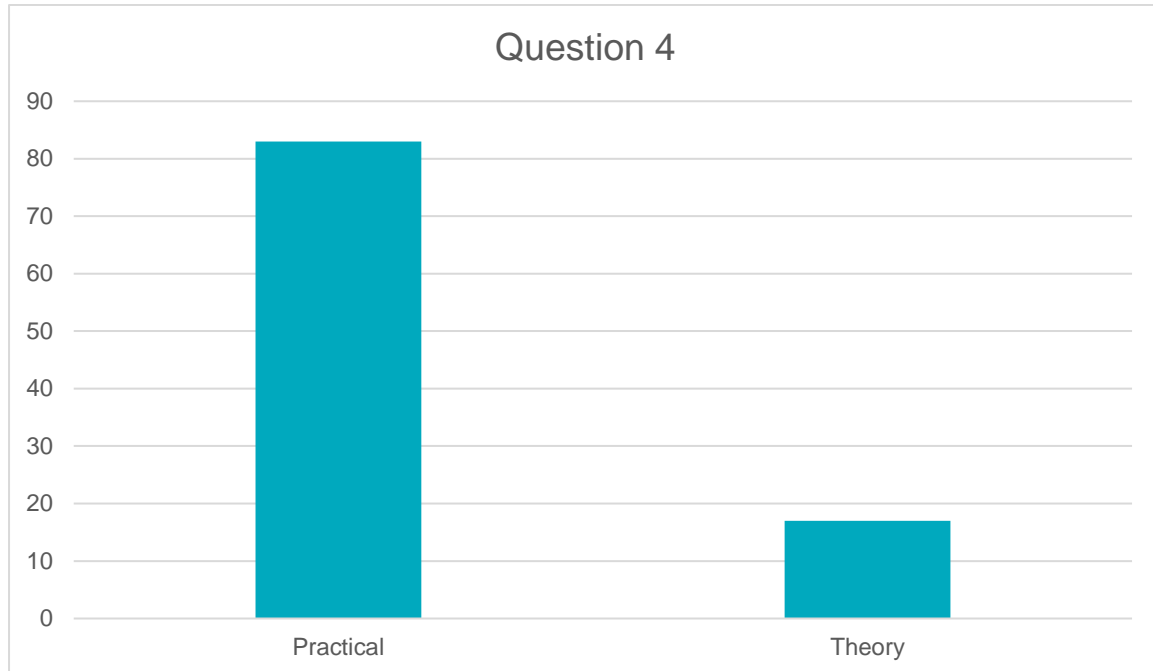
*What element of the course do you find most beneficial to your chosen career?*



Unsurprisingly, the workshop lesson proved to be the most beneficial with the classroom-based elements of theory, English and Maths proving to be very unpopular. This was expected due to the practical motivations of the students. The vast majority enrol on a construction course to complete practical activity.

#### Question 4:

*In relation to chosen craft, which element do you feel is most important? Please explain below*



The students felt that it was more important to have craft skills than theoretical knowledge of their craft. Some of the answers provided indicated that not being able to complete a practical task to a high degree of skill meant that the task wouldn't be completed:

*"If you can't lay bricks, you can't be a brickie."*

*"To be a plumber you have to be able to pipe bend and solder."*

*"You can't be a chippy and not know how to cut and joint timber."*

A number of students did suggest that the theoretical aspect was more important.

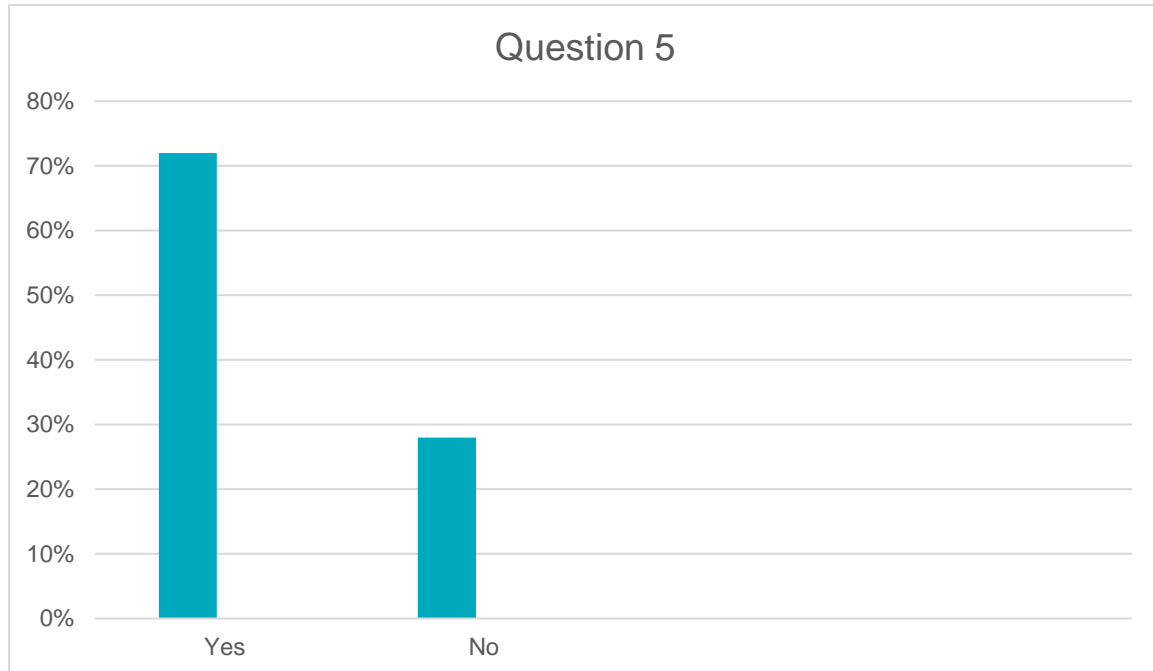
*"I could kill someone if I didn't know how to wire a fuse board correctly."*

*"To be qualified you have to know how heating systems and boiler work."*

*"You have to understand what you are doing."*

### Question 5:

*Is the college-based learning beneficial to you in improving and furthering your career and knowledge?*



Students whilst in their college-based learning do complain about it when in general chit chat with their tutors and colleagues. Therefore, it was pleasing to see that over 70% of the students found their college-based education to be of benefit. Some of the responses indicate why:

*"I learn practical skills like soldering and bending in college but not on site as we use plastic."*

*"I am not trusted yet to complete some practical activities at work so I get to complete them at college."*

*"It's good to learn the theory behind electrical regulations, we aren't really taught this at work, just through conversation of do's and don'ts."*

Other students felt that their college-based education was not of benefit:

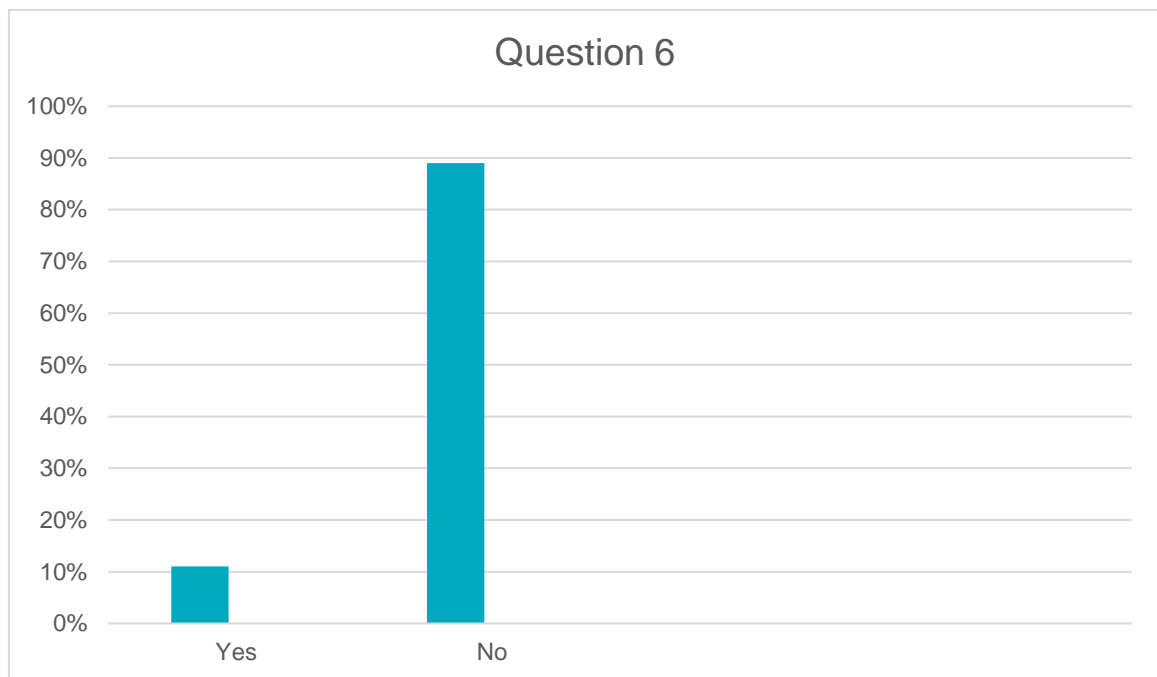
*"We don't do anything that helps me on site, I do groundwork and we don't learn that."*

*“The exams are too easy and the subjects don’t relate to site.”*

*“Spend too long on health and safety.”*

**Question 6:**

*Do you see the importance of material consciousness? (how a material responds when you interact with it)*

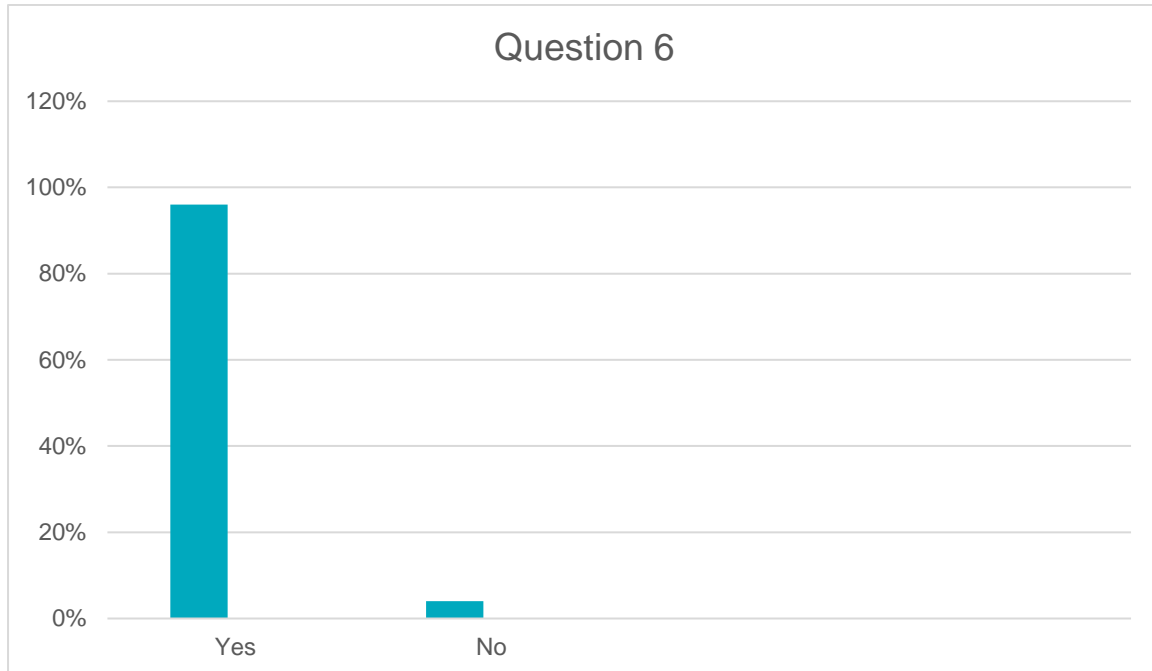


The results of this question were not what I was expecting. With material consciousness, championed with such relevance and importance to craftsmanship by Hyland and Sennett, I would have expected a higher percentage saying it was of relevance. This could potentially be seen as inexperience from the research population due to the stage of their development and career. A lack of understanding was also evident in the replies. One of the students replied:

*“don’t know what that word means”*

### Question 7:

*Do you feel that body positioning is important when carrying out a practical activity in the workshop?*



Body positioning is vital in completing a task correctly and accurately. Some of the responses are below. A number of responses focused on health and safety:

*"You don't wanna hurt your back."*

*"Keep hand behind saw so not to cut yourself."*

*"Don't chisel yourself."*

Other responses were geared more towards craft development:

*"You need to be straight on when laying bricks so they are level."*

*"Shoulders straight and elbow tucked in when cutting timber."*

### Question 8:

*What do you think would make your college classroom-based learning more relevant to your college workshop-based learning?*

This question was placed at the end to see what views students had on closing the gap between their college-based classroom delivery and their college-based workshop lessons:

*“I would like classroom lessons be taught in the workshop.”*

*“Use practical examples in the classroom.”*

*“Too much reading of a PowerPoint.”*

*“Make what we are doing in the workshop the same as the classroom.”*

The students, are indicating they would like more practical activity and more continuity in their learning.

### Emerging Themes:

Through re-reading my field notes and interrogating the data, a number of key emergent themes have become evident in the experiences of the tutors and students.

#### Theme 1 - Curriculum Relevancy:

A key theme emerging from the data, is the inability to design a construction vocational curriculum that will be tailor made for every employer and their business needs. Students indicated, college-based learning at times (and in some cases not at all) did not mirror the on-site activity the students were undertaking in the workplace. Tutors also indicated their frustrations at being tied to a curriculum and difficulty to improvise or contextualise learning for specific learners. Due to the vast nature of the construction industry, this is a perennial problem with construction focused vocational curriculums.



## Theme 2 - Justification for college-based aspects of vocational college-based education:

Although highlighted above in *Theme 1*, there is a problem in construction focused vocational curricula for curriculum relevancy to the workplace. We must not lose sight of the flip-side of this. Students who are not getting a wide range of experience in their workplace, do gain skills and knowledge in their college-based learning that they may not encounter in the workplace. This is a positive for college-based learning.

## Theme 3 – Teach to the Test:

Due to the structure of construction vocational curriculums set by awarding bodies, there can be an element of teaching to the test. This is a massive contradiction to what the tutors experienced when they were learning to what they are doing now.

## Theme 4 – Rigid Curricula:

Although tutors identified problems with the curricula they were delivering, they did feel that the structured modular nature of the curriculums was a positive for planning for lessons, exams, assessments and the whole academic year. Many tutors were delivering the same lesson to a number of different cohorts, year-in, year-out. The highly organised and structured nature of the curricula allowed for clear lesson aims and objectives and teaching materials could be shared quite easily between campuses.

## Theme 5 – Tutor Control:

A clear emergent theme throughout the tutor conversations, was control. Control over all aspects of the student's curriculum. Some student cohorts, had a separate tutor for the practical workshop lessons, classroom-based lessons and workplace assessments. Only one subject area sampled, had one tutor delivering all three aspects of the curriculum. The other tutors felt, this tutor could provide a better learning experience as a result of this.

### Theme 6 – Experience of Practice:

Student experience of practice and the amount of experience of practice they received was another important emergent theme. Tutors indicated that the full-time study programme students who gained more experiences of practice outside of their college-based learning, were at a more advantage than those students who did not receive any experience of practice. Tutors remarked that those students who did receive experience of practice were deemed to be more confident in their college based learning and more likely to gain an apprenticeship placement.

### Theme 7 – The Interstate of Art and Craft:

The final theme emerging from the data was tutors of the more aesthetically pleasing trades (bricklaying and carpentry) prioritised practice development and hand skills over theoretical knowledge. The electrical and plumbing tutors, who's pipework and electrical cabling, are in the most, kept out of the view of the eye in a domestic or industrial building, seemed to prioritise the theoretical knowledge behind the craft.

### Data Analysis:

Significant concerns regarding the perceived divide between theory and a practice in their training were repeatedly raised and demonstrated in this Chapter by both tutors and students.

Comments emphasising the importance of aligning and bringing together theory and practice more seamlessly were suggested by many of the research population and a lot were in favour of reducing the divide both in a delivery and learning sense.

It was also argued and understood by both students and tutors, due to aspects beyond their control (largely due to matters of curriculum design), that a full coming together of theory and a practice would be difficult and possibly not necessary and therefore unfortunately they remained separated. There was also quite a clear separation between off the job training elements delivered in the college workshop and the college classroom, a distinct separation between these two elements was repeatedly made very clear.

For the same reasons, a separation also appeared to have occurred between off the job training and on the job training with neither aligning sufficiently to create a more relevant curriculum. Tutors and students were very much of the opinion that those students who had gained full time employment as an apprentice gained greater knowledge and relevance from their off the job training.

Many tutors expressed the view that these apprentices were better equipped to make connections and to align off the job theory knowledge to their on-the-job daily practices. Others commented that the full-time study programme students were disadvantaged due to not having lived experiences “on site” and that the emphasis on theory knowledge was potentially lost on full-time study programme students due to an inability to make connections or links to past experiences. In addition, others held the view that hand skills and a practice were more important for full-time study programme students as this would enable and equip them when job searching within the industry.

Practical workshops, although sufficient for task at hand, were regarded by tutors as providing an inauthentic experience of a real-world experience due to the nature of the structured and inflexible modular curricula on offer.

As illustrated throughout the analysis of data in this chapter, a discontinuity between theory and practice was evident in all courses. The introduction of NVQ's and then a move towards QCF's were intended to align theory and practice and integrate real-life experiences with off the job training within college environments through assessment and learning. Jessup (1991) ascertains “*simply to assess (and teach) them separately will fail to make the links between theory and practice which are so crucial for competent performance.*” The responses gathered within this study from students and tutors suggest that Jessup's premonitions are correct and evident in the current curricula on offer and that theory and practice are not as closely aligned as was originally hoped when designing these curricula.

A further theme emerging for the data was that student numbers within the workshop and classroom were seen as quite a bone of contention particularly for the more experienced tutors who have previous experiences of smaller and more intimate class sizes.

Another theme related to assessment activities within the workshop which were deemed inappropriate by some of the tutors and students. Biemans et al (2009) argue that for meaningful learning to occur, “*learning activities performed by individual students in different places at different times to be aligned with each other.*”

In this respect, many tutors in the study expressed the view that the high volume of students in the classroom and workshop made individual task differentiation difficult to achieve, so a task umbrella was adopted instead due to health and safety constraints within the practical workshops. Biemans et al (2009) highlights lost learning opportunities due to a lack of continuity of activities being completed in the classroom, workshop and workplace.

Dunne (1933) and Aristotle remind us that a practice is developed by its insiders through discussion, questioning, reflection on and in action. It can be argued that low-level disruption caused by large class sizes in potentially causing loss learning and developing opportunities for reflection on and in action.

The works of Hyland (2017) and (2018) argue that prior subject knowledge and learning are key for teaching and learning and in providing students with a general overview of subject matter. If we take this in the context of the study, for construction courses this will occur more naturally in the workplace and apprenticeships where the job laid out in front of them and they are living and experiencing it in the moment. A full-time Study Programme student’s only experience of this situation is completing a task against a checklist of assessment criteria within a college workshop. The flexibility and real-life experience is not evident.

Jessup (1991) when discussing NVQ purposes stated it “*is critically important that learners can draw upon and relate the relevant aspects of knowledge when presented with problems and situations in their professional or occupational role.*” Within the controlled environments of college workshops, it is impossible to achieve or facilitate the skills and knowledge transfer.

Tutors also acknowledged that it is difficult to integrate college-based learning with workplace learning when they are not aware of the content and details of workplace learning activities due to other parties being involved in the workplace learning

assessment and instead of the college tutors. Guile and Okumoto (2007) echo this viewpoint in their analysis of the Advanced Apprenticeship Programme in the UK. Bieman's et al (2009) suggest that a curriculum model that adopts competence-based learning activities and assessments, centred around the core beliefs of real-life job experiences and practices, will enable students to make connections and links between on the job and off the job learning. Bieman's et al (2009) state this particular curriculum model is evident in vocational institutions in Holland. Guile and Okumoto (2007) support this view and feel that a bespoke curriculum model based on theoretical knowledge being delivered in the workplace and centred on the workplace activities being undertaken, would be a more beneficial approach. However, this approach could be time consuming and costly and may not suit every working environment.

The findings gathered suggest that a curriculum change is required to achieve more unity and continuity between theory and practice in construction trades courses. The findings also suggest that although the integration of theory and practice is difficult to achieve simultaneously on a daily basis, it is nevertheless achievable at different times and places. It is important that when the opportunity arises that links between theory and practice are secured. A huge emphasis is placed on vocational courses to embed literacy and numeracy since the Wolf Report (2011). A similar conscious effort is needed during lesson planning and delivery to link theory and a practice.

#### Chapter Summary:

This chapter, through the views of students and tutors highlights a number of key educational problems that are diminishing the status and quality Vocational Education and Vocational Educations. These viewpoints are from insiders currently involved in Vocational Education and they are therefore authentic. Chapter 6 draws conclusions and make recommendations based upon the viewpoints raised in this Chapter.

## CHAPTER 6:

### Chapter Overview

The introductory chapter of this thesis identifies the problem in practice which lent impetus to this study and describes the context in which the problem emerged. Chapter 1 also introduces the work of key scholars who have researched and contributed to the discourse surrounding this problem in peer-reviewed literature in this field of study.

The works of Hyland (2017), (2018), Sennett (2009) and Dewey (1933) are introduced in Chapter 2 in order to give consideration to concepts, theories, ideas and to describe and explore the creation of a vocational and academic divide and its consequences. My own experiences of practice as a Building Services Engineer are placed alongside the works of Aristotle, Sennett (2009), Biesta (2010), Hiim (2017) and Carr (1995) to extend and deepen the discussion.

Chapter 3 justifies the ontological and epistemological positions adopted in the conduct of the research and the methodological approach which guided the study.

In order to gain a greater understanding of the problem and context which form the central focus of the study, Chapters 4 and 5 present and analyse accounts of lived experiences of Vocational Education practice for the construction industry. Methods employed include, field notes of observations of practice, vocational students and tutors' accounts of experience (as well as my own), an illuminative case, focus groups and questionnaires.

Chapter 5 also identifies emerging themes and preliminary findings related to the consequences of the construction of a vocational and academic divide in practice and how in turn, this perceived divide has encouraged the embodiment of a theory practice divide in between vocational and other fields of education.

This chapter builds upon the findings of this thesis to draw conclusions and offer recommendations based on data and arguments presented in previous Chapters. An aspiration of this thesis is that its findings and recommendations may be of interest and useful in informing and improving construction-based vocational courses in the

future. The limitations of the study are also discussed together with my own reflections on the study as a whole.

### Key Findings:

#### Finding 1. Linking Practical Knowledge and Theoretical Knowledge in Vocational Education: lessons in curriculum design and practical relationships

Throughout the study, there was repeated evidence of a dislocation between the theoretical and practical aspects of both full-time and apprenticeship curricula within the College-based programmes of learning and in relation to on-the-job learning aspects of apprenticeships. It was found that full-time Construction Vocational curriculum students found it difficult to link and relate a practical activity they were completing in the college workshop to their classroom learning. There are a number of factors that appear to be responsible for this disconnect in the development of practical knowledge.

In general, full-time students as a majority spend the bulk of their time in college and so are not extensively exposed to the “real-life” element of a construction course, as they are not actually working in the construction industry. The absence of real-life experiences in students enrolled on full-time curricula presents a significant challenge to both the students and the teachers in linking theory to practice. This thesis found that this challenge is compounded by the modular design of vocational curricula in construction. Students on full-time Construction courses study one unit per term in the classroom and therefore, correlating classroom activities and workshop activities proves to be difficult in certain trades.

Evidence from this research illustrates how, on Apprenticeship Programmes, all apprentices had real-life experiences in actual construction contexts. This gave them a considerable advantage over the full-time students. Apprenticeship students in the study were able and encouraged to bring real-life examples of problems encountered in practice their workplace each week to solve and discuss together to enhance and relate to their college-based learning and on the job Apprenticeship training.

A recurring theme identified in this study, brings to light how difficult it is to design a ‘one-size-fits-all’ construction curriculum that suits every employer’s needs. The

construction industry is vast, practices can vary and competition in particular geographical areas can be strong. This suggests that the pursuit of perfect curriculum content and the notion of one-size-fits all apprenticeship training may be both impracticable and unrealistic.

For example, in order to ensure a steady stream of custom and secure an income a popular business strategy for many small or one-man-band construction companies is to focus upon/ concentrate their business activities in one specialist area of the industry. For example: a plumber may specialise in bathroom installations only or on boiler installation and servicing; a carpenter could focus on making stairs only or kitchen fitting or roofing installations; an electrician could focus on alarms and CCTV installations or lighting installations; a bricklayer could focus on ornamental work such as walls and pillars.

The college-based curriculum that a particular employer's apprentice is studying may therefore not be relevant as a whole to employers such as those described above. To the student however, providing them with vocational training in wider aspects of practice in the industry and enhancing their knowledge of the wider industry is one of the main benefits of the breadth of college-based learning. In the college-based elements of their apprenticeship training, construction vocational students receive exposure to and experience of, aspects of the industry that they potentially may not be exposed to as part of their on-the-job training. Hiim (2017) and Mann (2017) place a huge emphasis on integrating theory and practice in a college-based environment with theory and practice in a workplace environment.

Helping students construct conceptual links between their college-based learning and on the job training they argue, serve to further improve the links between theory and a practice and ensure they are not separated by default or design. As the work of Sennett (2009) and Dunne (1993) discussed in Chapter 2 point out, practice in any vocational or academic subject is developed and enhanced when the insiders who practise it challenge it in order to advance the practice. Being cognisant of the theory behind the practice and caring enough about the practice in order to question/critically examine taken for granted aspects are, according to Sennett and Dunne, the life-blood of the development of a practice.



From this standpoint, practice and theoretical development cannot be compartmentalised or confined to one place or one space. Continuity and coherence in the development of both, on-the-job and off-the-job training (two phrases which although in widely accepted may in the long run be unhelpful and misleading because of the work they do to separate vocational experience) are however vital. Curricular and pedagogical approaches, which encourage and enable students to learn both theory and practical skills at varied times and in different locations, are consequently pivotal to the quality programmes of and experiences in vocational education in any field.

A disadvantage identified in the study is that full-time students, who were only receiving college-based learning, were unlikely, or at least less likely, to be able to identify the interplay between theory and practice in the workplace in comparison to Apprentices who had access to more workplace experience. The ethos behind the breadth of college-based training is that full-time students, having gained a wider understanding of their chosen construction craft, could be a more attractive prospect to a range of employers than students who had just finished school and had no understanding of the construction industry.

This research identifies that some subject areas involved in the study are better than other subject areas at forging links between on and off the job learning for both full-time and apprenticeship students. Some excellent examples of teaching were observed, including college tutors bringing their own stories and experiences of real-life problems they encountered in their practice to bear upon their College teaching sessions and tutors inviting Apprentices to bring real-life examples of actual problems they encountered in the workplace to College each week for collaborative problem-solving activity and discussion with their tutors and their peers. These are presented in some detail below.

#### [Linking Practical Knowledge to Theoretical Knowledge: Practical Example 1](#)

For example, one tutor encouraged Apprenticeship students to bring in examples of good and bad practice captured on their phone that they had observed in the workplace the previous week. Students were also encouraged to capture system

problems they encountered in the workplace e.g., boilers not working, leaks, hot water systems not working etc. The tutor spent the first part of the lesson in a group discussion with the class, discussing the images and videos. In the problem-solving videos, the student who captured the evidence, was asked to explain the problem but not identify how he solved the problem and it was up to the class to discuss and solve the problem. This teaching method provides a simple example of how practical knowledge and theoretical knowledge encountered in the workplace can be linked to off the job learning in a pragmatic way, which encouraged students to work together in solving real-world problems in practice (CAVTL, 2013).

This pedagogic practice to support the development of theory and practice through discussion, problem-finding and problem-solving, resonates closely with the work of Sennett (2009) discussed in Chapter 2, as being a helpful and pragmatic way of developing, progressing and advancing any craft.

The method of bringing real-life experiences and real-life problems encountered by the trainees in the workplace created conditions which encouraged critical dialogue and enabled trainees to work together in collaborative problem solving in order to reach higher standards of practice. Embedding real-life experiences into practice in the pragmatic and authentic ways described above further supports the work of Sennett (2009) where he argues that practical knowledge and theoretical knowledge are mutually enhanced through co-operation, and a dialogue between tacit knowledge and explicit critique.

### [Linking Practical Knowledge to Theoretical Knowledge through Critical Dialogue: Practical Example 2](#)

A Carpentry tutor in Campus A implemented a “reflective diary” for all trainees to complete at the end of every workshop practical lesson and then to read at the beginning of the next workshop lesson, which is always on a separate day. The reflective diary encouraged the trainees to critically analyse their work through self-assessment. The trainees had to write down what they achieved in the lesson, where in their performance they felt strongest, and what areas they needed to improve on. The trainees they then had to set their own targets for the next lesson. The tutors then added their comments on trainees’ performance and set their own targets for

the trainee. The trainees spend the first part of the next lesson going through the feedback and engaging in critical analysis and target setting with the tutor. This method of regular, systematic and structured critical dialogue with their tutor, not only embodies some of the key principles of formative assessment (self-assessment, active learning and dialogue) advocated by Clarke (2001) and Black and William (1998) but also echo much of what Hyland (2018) describes as, “in coming to know the world” through manual handwork.

### Linking Practical Knowledge to Theoretical Knowledge in the Physical Environment: Practical Example 3

Throughout the study, the tutors delivered practical skill-based lessons in designated workshops. Traditional classrooms are used to deliver the theoretical knowledge for tested examinations. Only one programme area, Brickwork in Campus B, used the workshop surroundings for both practical assessments and theoretical delivery. The tutor would bring tables and chairs in from the side of the workshop and allow the students to sit amongst their practical work. The tutor explained that the process behind this was for the students to be amongst their work at all times and facilitated in referring back to their work for reflection and development. It was hoped that being in amongst their work all day would encourage the students to have pride in their work and work area. Vaughan (2017) in her study involving carpentry apprenticeships, found that students performed to a higher level when their minds sophisticatedly interacted with their physical environment, including the tools and materials.

However, these pedagogical practices were not commonplace or found in all of the sites or across all courses/curricula. While tutors who participated in the study all spoke about the importance of interweaving theory and practice and how crucial it was to integrate on and off-the-job training, this was not always evident in their practice. Tutors repeatedly referred to how the pressures of other administrative tasks and issues in curriculum design made it more difficult to embed theory and practice in a coherent way. Some tutors referred to how their organisation places more of an emphasis on embedding English, Maths, in line with the college’s own learning philosophy. This is centred around developing a student’s brain, emotions

and motivation to enable successful learning based on brain science through the psychomotor in its emitting the affective domain. The organisation's own list of "*Student Attributes*" had also to be embedded into each lesson. All of these demands combined to overcrowd an already demanding curriculum. There was subsequently more emphasis on embedding the organisations own demands, rather than a profound emphasis on interweaving theoretical knowledge and practical knowledge in Vocational Education activity. Less experienced tutors found it difficult to interweave theory and practice, as their focus often centred on organisational demands and expectations instead. In the same vein as learning their construction craft skills during their apprenticeship, the less experienced tutors are now learning a new craft (teaching) which like a construction craft skill, takes time to mature and perfect.

#### [Linking Practical Knowledge to Theoretical Knowledge Continuity of Tutor: Practical Example 4](#)

Data from the study reveal how apprenticeship students had 90 minutes of classroom delivery assigned to their timetable and this meant that tutors were under time constraints when delivering classroom-based learning to cover all aspects of the scheme of learning (again providing evidence of an overcrowded curriculum). Most of their timetable was dedicated to practical workshop time. This clearly places a higher emphasis on practical ability over classroom-based learning. In many subject areas, different tutors taught practical and classroom lessons. Here again we see curriculum arrangements signifying, and even creating, separation and division in the students' minds and perceptions regarding their acquisition and development of skill and craft.

The study found that in subject areas where the same tutor delivered both the practical and classroom sessions, theory and practice could be aligned and integrated more easily by tutors. There are several examples in the study of practical examples being brought into the classroom by tutors/students, bringing theoretical knowledge to life in the workshop. This made it easier to for students to link the learning and it also provided a platform for a more meaningful and impactful learning.

Students appeared to learn and remember the relevance of theory when it was linked to practical examples.

Data discussed in Chapters 4 and 5 illustrate how the structure of a Vocational Construction Apprenticeship, attending college one day a week for a minimum of two years, may possibly contribute to the notion that Vocational Courses are not as prestigious as Academic pursuits. As discussed in Chapter 2, academic pursuits leading to a university degree are deemed in England as more demanding, more prestigious and more time consuming, reflected in how many 18-year-old university students are “full-time” students.

A general misconception is the four days of the week a construction apprentice spends with their employer completing the on-the-job element of their training, is sometimes not viewed or counted as “learning” rather it is viewed or counted as “work”. The vocabulary used also contributes to this misconception. Many University courses require students to complete a “placement year”. This is a year the student spends in industry gaining first-hand knowledge of practice in a particular discipline or subject. All Construction Apprenticeship courses require students to be in a secure full-time work placement before commencing their apprenticeship college training. Apprentices are therefore deemed as workers rather than learners whilst in the workplace. This lexicon not only obscures the ways in which theory is developed in practice but also the ways in which wider aspects of practice and theory are developed in college.

### **Finding 2. Teaching to a Test and Assessing to a Checklist and How These Distort the Realities of Practice**

As identified and discussed in Chapters 4 and 5, the classroom-based element of the curriculum was found to be delivered in an assessment driven way. This practice of teaching to a test and assessing to a checklist, are rampant throughout Vocational Education programmes and not just constricted to the parameters of this thesis. In some areas, teaching theories and pedagogical strategies were observed to be constricted by tutors due to the expectation that every student on the course cover all of the specified (and often rather overcrowded) curriculum. Consequently, tutors were observed teaching in a very “chalk and talk” way. This involved standing in front

of a white board reading a PowerPoint with students copying down the main points from each slide. In these cases, there was very little evidence of teachers having employed much imagination or creativity, capacity for group problem-finding, problem-solving and discussion or student participation being encouraged.

As discussed in Chapter 5, the tutors in the study repeatedly reported that they felt there was pressure and expectation placed on them to ensure that every student achieve, irrespective of the amount of time and effort they invested in their vocational education. As described earlier, the modular design of the construction courses in the study meant that each subject was covered for a strictly limited period until the examination date for that part of the curriculum and then students were moved onto the next subject. Findings from the thesis suggest that tutors did not go back over topics that they had previously covered, with time constraints and pressures to get all examinations completed cited as the main reasons for this. This resulted in a kind of 'hurry-along' curriculum which had a tendency to encourage surface rather than deeper levels of learning standing in stark contrast to Sennett's claim that the development of skill and craft take time.

The study also found that in numerous cases, particularly in the full-time provision, classroom-based lessons were mainly centred on preparing students for examinations rather than more enduring educational concerns including the development of a deep and meaningful understanding of the practical and theoretical topic being covered. There was a clear indication throughout the study that tutors and learners, through assessment methods and procedures, were doing only what they needed to do and being informed of errors to avoid in order to achieve success in their examinations.

Hyland (2009) advises us to exercise considerable caution regarding a model of Vocational Education that is obsessed with prescriptive outcomes which use fragmented evidence to justify the claim that assessment criteria have been met and further contends that this could leave Vocational Education seriously out of touch with vocational practice.

It is also important to note that the theoretical examinations employed in the courses included in this research are all based upon multiple-choice examination. In numerous cases, the study found that students were not required or encouraged to

use problem-solving techniques in order to decipher the answers for themselves. Some examinations had a 60% pass rate, a number of tutors and students expressed an opinion that this was too low. Tutors also noted that only a basic knowledge and understanding of the topic was required to be achieved in order to pass the examination.

As discussed in Chapter 2, teaching to a test can have a profound diminishing impact on students' ability to recall previously acquired learning for application to future learning. Dewey (1933) reminds us that knowledge can only grow and develop into the future if that person is able to develop and appreciate their past experiences and learning. Bearing this in mind, it is argued that teaching to a test and examinations based upon multiple-choice, may not help students grow their knowledge as students may simply need to know or remember enough information to pass the module and subsequently secure their qualification without necessarily developing a sound and secure grasp of practice.

As discussed in the previous Chapter, tutors in the study felt that an examination at the end of each year, which covered the whole year's learning, would be an advantage to the students in developing and extending their knowledge beyond the basics acquired through rote learning and memorisation. Many tutors also expressed the view that multiple-choice questions were not effective and that real life practical examples should be used in examinations so that students would have to write explanations for and justification of their answers. Problem-solving was also an area that tutors found was not covered in detail in examinations. One tutor in plumbing remarked that over 70% of a self-employed plumber's work would be made up of call outs to break downs or leaks and that therefore, plumbers need to be able to solve the problems effectively and efficiently. The study found that students were simply instrumentally meeting examination requirements rather than deepening their knowledge of the industry.

The study found that in practical workshop lessons, achievement or completion of a practical activity was judged against a checklist of criteria set by the Awarding Body. As identified and discussed earlier, all practical assessments were completed in a college workshop which were designed to simulate a safe and controlled workplace

environment. College workshops in the study and those visited outside of this research are almost the same in every college. Many college construction workshops have not developed or progressed since the 1960's, consisting mainly of workbenches and vices. This is possibly one of the reasons why the craft development does not progress and becomes stale as new methods take a long time to be incorporated into the industry.

The study found that in all the Construction Courses, the simulated practical assessments carried out in a controlled manner achieved the basic and necessary hand skills required to enter the trade to begin a career in the trade. Basic tool safety was incorporated and developed upon, measuring and marking skills again incorporated and developed upon. These skills, although they may seem innocuous to many, are the fundamental skills a tradesperson or craftworker requires.

On completing practical tasks, students are assessed for competency via an assessment checklist. If a student does not meet the criteria, the student can have as many attempts as possible to achieve. However, this assessment method may operate to potentially dilute a craft skill as the student is merely doing enough to pass, rather than working towards craft mastery.

This study found that standardisation of tutors involved in assessment did take place and all tutors were found to be assessing according to the required criteria. One issue, brought to light in this study, is that many of the assessment tasks did not mirror or prepare for real working experiences to fulfil occupational competency. Jessup (1991) describes the unexpected nature of the working environment as a "crucial part of the concept of competence". The practical assessments undertaken in a controlled environment, assessed to set criteria, do not adequately prepare students for unexpected variations in the workplace. Jessup (1991) forewarned that if knowledge and skills were to be transferred in a simulated context that was exposed to many variations, then performance could be affected, and the transfer of knowledge and skills would not be straightforward. As discussed in Chapter 2, Hiim (2017) places a lot of emphasis on work-based competency skills being crucial to a student's development of in-depth knowledge. Hiim (2017) reflects in her findings that there is still a gap between learning and assessment and the transfer of skills between controlled and simulated environments into the workplace. Wolf (2011) also



echoes the importance and effectiveness of learning in a workplace environment over simulated and controlled environments provided in College workshops.

### Finding 3. Tutor Control Over Curriculum: tutor continuity in curriculum planning and assessment in the college and the workplace

A number of tutors involved in the study expressed concern about the areas of the curriculum delivery that they were not involved in. The Construction Programmes sampled in the study had three delivery aspects that each College had to deliver and each student had to achieve to gain their qualification. One curriculum area is the practical assessments students had to pass in the College Workshop. The second aspect, is as previously discussed, the online multiple-choice examinations each student has to pass. The third aspect is the student's on-site portfolio of evidence, known as their NVQ portfolio. In all the campuses and programmes sampled, only one programme, Bricklaying in Campus B, had a programme where the same tutor delivered all three aspects of the curriculum. All the other Construction Programmes had at least two different staff members teaching the same group and, in some cases, this consisted of as many as three and four staff members.

Although one tutor being responsible for a programme would make perfect sense to many people, it is important to place in context the reasons why this is a relatively rare phenomenon within Vocational Education Construction Programmes provided by GFE Colleges in the UK. Another interesting factor here is that the tutor delivering the Bricklaying course in Campus B is solely delivering the Apprenticeship Programme, he does not teach on the Full-Time Programme and that the Apprenticeship Programme is block release not day release. Another teaching staff member of the brickwork teaching team has responsibility for the Full-Time Study Programme. This apprenticeship programme was one of the more successful across the 3 campuses in regards to apprenticeship student attendance, retention and timely achievement. The success of this apprenticeship programme could potentially be due to the same member of staff conducting off-the-job training and on-the-job NVQ assessment.

The 2013 report of the Commission on Adult Vocational Training and Learning (CAVTL) highlighted the importance of teachers to be "Dual Professionals" and

maintaining industry knowledge. Undertaking on-site assessment of their students allows Construction Vocational Education teachers to maintain industry knowledge by living, breathing, absorbing, being immersed in the workplace outside of their normal college surroundings. Latest industry developments and techniques can be observed, discussed and critically analysed by the tutor who can then use these experiences in college-based delivery and make it relevant, memorable and impactful to the learner. Tutors, who solely teach and do not carry out on-site assessments, rely on publications and others to inform their knowledge of industry developments and improvements.

Heidegger (1978) suggests vocational knowledge is centred on interpretations of our experience of practice participation. Tutors continuing to be involved in the workplace, through participation in onsite assessments, continually update and increase their practice participation, develop their experience and knowledge. This enables their knowledge to become more informed by current workplace practices and developments constituted by complex wholes of skills, with intentional values and responsibilities embedded in practice (Hiim 2017).

It is important to note however, that not all GFE Colleges can adopt this model of programme delivery. One of the reasons for this is that they cannot afford to have one staff member allocated to one cohort only. Consequently, in many instances a tutor may teach up to eight different cohorts. GFE Colleges tend to have a number of cohorts for each discipline, so logistically it would be very difficult to place every cohort on block release. Employers may also prefer not to release their employee for a week every month, day release is more commonly adopted in industry and employers can plan their working week accordingly. Block release could also produce logistical problems for Colleges and for staff as well as creating room-timetabling issues, as potential clashes with other day release programmes could be an issue. In addition, significant reductions in funding to GFE Colleges are another important factor. For example, between 2003 and 2017 GFEs received only a 16% increase in Government Funding compared to a 91% increase in the same period for Secondary Education. These cuts in funding have adversely influenced the capacity of GFEs, leading them to adopt a staffing model that separating the on-site assessments from college-based delivery so tutors and assessors can then absorb a larger student caseload.

One of the positive aspects of the same tutor being responsible for the achievements of a complete cohort is that employers, students, educational managers etc., all have one point of contact regarding a students' progress on the course and relationships between employers and college tutors are positive, regular and strong. The main benefit witnessed throughout the study relates to having the college-based tutor conducting on site assessments and the relationship built between the tutor and the employer with the focus being upon the student's progression and development. The tutor can in these circumstances, raise any concerns to the workplace tutor/employer immediately they arise. These arrangements also make it possible for the tutor to liaise with the workplace tutor /employer regarding what work evidence the student requires in order to achieve their NVQ. Data from this study indicates that this could also be a two-way-street as in some cases, the workplace tutor /employer contacted the college tutor before the student was to attend college for their block release and asked him to cover a certain aspect or skill with the student during their college attendance that week. This allowed for the workplace to reciprocally influence and in some cases, direct the teaching and learning whilst the student was at college. It also provided the tutor with first-hand knowledge and observation of gaps in knowledge in the workplace that could be addressed in college learning. The tutor is then able to then bring each students' lived experience on-site into the college-based learning, not only so that linking practical knowledge and theoretical knowledge becomes more organic and much easier, but also opening up new opportunities for informal college and workplace tutor CPD.

In contrast, the onsite assessor in many cases only visited the college fleetingly during the week as their main job role was "out on the road". This meant that communication between college-based tutors and assessors was slightly disjointed. It is important to note however, that this was not the fault of any individual party but rather the unintentional consequences of differing demarcations and divisions of labour in each job role. For example, when the assessor might drop into college, the tutor could be teaching another cohort. Assessors and tutors generally sought each other out when there were student problems and issues to address. Findings from this study suggest that the separation of onsite workplace assessment from college-based teaching and learning is a significant factor in Construction Vocational

Programmes and one that is in urgent need of attention from those in the policy community with responsibility for Vocational Education.

**Finding 4. Experience of Practice: Practice does not make perfect, only perfect practice makes perfect.**

Throughout the study, whilst observing and speaking to full-time and apprenticeship students, in all cohorts there were naturally stronger and weaker students. Some students achieved higher marks in the multiple-choice examinations than others did and some students completed their practical assessments more quickly than others. This is inevitable in cases where there are 20 learners in a classroom and everybody learns differently and at a different pace. It is up to the tutor therefore to differentiate his or her teaching, support and utilise formative assessment strategies to support and progress each learner accordingly to the best of their ability.

Some very fine examples of differentiated learning were witnessed throughout the study. One striking observation was in relation to those deemed as stronger students by the tutors on the full-time course, for example, those students who gained high marks in the online examinations and produced high quality work in the classroom often struggled to articulate themselves when questioned on how a skill or piece of information would relate to the workplace.

This finding supports the work of Sennett (2009) where he suggests that craft, knowledge and skill improve and develop in cooperation with and in the presence of a master in the practice. Full-time study programme students are not exposed to master craftsmen or experienced craftsmen on a daily basis in the way apprenticeship students are. Full-time study programme students are therefore at a practice-participation disadvantage compared to the Apprenticeship students.

Wolf (2011) in her report into Vocational Education, underscores the need for college-based learning to mirror industry conditions. Hiim (2017) and Mann (2018) both echo the same viewpoint, where they argue that experience of practice in both the workplace and college-based learning should be interwoven. Young (2011) notes that practical knowledge and the development of skill that are constructed in co-operation between the workplace and other practical situations, consequently, has

greater depth and breadth, when compared to theoretical knowledge learnt solely in a classroom setting.

Students on the Apprenticeship Programme who were perceived by tutors as being weaker students, based on examination scores and results, were often found in the study to be able to articulate themselves better than the perceived stronger full-time learners. This may be attributed to them to having had more lived experience of practice in the workplace. Wolf (2011) foregrounds the importance and effectiveness of learning in a genuine workplace over simulated environment in an educational setting. Although the apprenticeship student may not fully understand in depth the theoretical knowledge, processes and mechanics, their practical knowledge and problem-solving capacities were more advanced and this was evident in their discussions with tutors and other students and in their ability to problem-find and problem-solve.

A lot of the first year Apprentices' spoke about being "go-fors" at work, particularly in their first few weeks and months on site. This consisted of completing a lot of observations of the more senior workers on site as well as handing them tools and materials. The students appear unaware they are in the early stages of gaining practical wisdom, through observation and repetition Sennett (2009). The first-year apprentices indicated that this signalled to them that they were not trusted by their employer to undertake tasks on their own. It is important to note that something crucial is at work here in that they were not only in the presence of and co-operating with the senior workers, but they were also able to observe them closely in practice while at the same time learning about the tools of the trade and their purposes. In this way, we can see Aristotle's description of how *phronesis* is developed in and through practical activity. We also find resonance here with Sennett's work, as he draws attention to observation and imitation through the early stages of craft development including technique or *techné*.

This strategy adopted by employers may be due to the idea that their apprentices at the beginning of their training lack a sense of what Aristotle described as practical wisdom (*phronesis*). The employers at this stage may adopt the view that the apprentices' lacked what Aristotle described as technical knowledge (*techné*). Winch (2006) reminds us that *techné* is knowledge associated with following a set of rules

or work recipes. On the other hand, technical knowledge in embodied interaction between man and material is more concerned with the development of *phronesis*.

The more experienced students in the study, in their third and fourth apprenticeship years, were able to relate and connect their college-based learning and workplace learning. Workshop observations of the 3<sup>rd</sup> and 4<sup>th</sup> year apprentices learning in their practice provided many examples of *phronesis* and *techné* in action. This was evident in Chapter 4 round 7, through apprentice Jack, who was developing practical wisdom through developing his senses and relating his senses to his construction trade. The students were of course unaware of these terms, but these forms of knowledge were embodied and clearly evident in their practice.

Observations of lessons conducted within the study across the various year groups and levels showed that lessons involving Level 3 Year 3&4 students included more in-depth discussion, challenge and critical analysis, than those lessons at Level 2 to Year 1&2 students. Experience of practice, craft and skill maturity in the Level 3 students is found to be more developed and evident in their practice than in the practices of their Level 2 counterparts. This finding lends support to the work of Sennett (2009) where he argues that critical dialogue, dynamic problem-finding and problem-solving develop and mature incrementally over time. The report from the Commission for Adult and Vocational Training in England (CAVTL, 2013) also supports this claim, contending that assessment in Vocational Education must equip students to develop careful, collaborative thinking and systematic, situated and practical problem solving.

It is worthy of note that the most impactful and memorable teaching practices were those that related classroom and workshop teachings to on-site methods and practices. Data from this study therefore support the claims made by Sennett (2009) among others, that critical dialogue, systematic analysis and problem solving are key components of memorable teaching practices for Construction Vocational students. These pedagogic principles and practices he argues, could be adopted by teachers in pragmatic ways across the vast majority of Vocational Programmes and need not be limited to Construction Programmes.

### Finding 5. Government Funding: The reluctance of numerous governments to fund Vocational Education.

Tutors involved in the study repeatedly expressed concern that a reduction in resources and capital money afforded to each curriculum had a negative impact of their teaching practices and that this in turn, had a negative impact on the student experience. The tutors in the study who were most experienced and had been involved in Vocational Education for over 15 years were certainly the most vocal. A number of tutors involved in the study remarked on reduction of teaching staff in each department and the number of staffing “Re-Structures” Construction Departments have experienced over the last ten academic years. The tutors stated that this had a negative impact on the overall learning experiences of students, as resources needed to be spread a lot more thinly than was the case 10 years ago.

A number of tutors remarked that student numbers had increased in each class compared with previous ten years. Again, these tutors felt this had a negative impact on students’ learning experiences in that they felt unable to provide the same levels of support to 20 students as they used to when they had to teach groups of less than ten students. The tutors also noted that increased student numbers in the practical workshop resulted in increased teaching time spent on behaviour management, which took away from their time to spend with the students in helping them to develop their skills. One tutor remarked, *“I used to teach a group size of seven to nine students. Now I have to teach a group of twenty to twenty-four.”* The same tutor also remarked that he has less contact time with students compared to when he first started teaching.

The tutors referred to requirements of the curriculum such as GCSE/Functional Skills English and Maths which students must achieve in order for colleges to be able to claim the full amount of allotted funding.

Staff reductions, particularly in technician support, were also repeatedly highlighted by the tutors who similarly attributed this to reductions in funding allocated to Vocational Education. One of the tutors remarked that when he began his teaching career in 1987 there were six full time teaching staff and two technician support staff members in the Carpentry Department in Campus A. It is worth noting that currently there is only one part time teacher, one full time teacher and one technician

employed in the same department. The same tutor also remarked that there are now more pupils enrolled on the Carpentry Programmes overall.

One way to look at this scenario is to consider one tutor to every seven – nine students as being a model of viability and a cost-effective means of delivering construction in a GFE that has over 4,000 students enrolled on all their Programmes. My own experience as an education leader in an FE college is that this option is neither viable nor cost effective. As discussed in Chapter 1 of this thesis, Government funding to the Further Education and Training sector has been greatly reduced and the effects of reduced funding to Further Education were becoming increasingly visible during the study. The most visible of these were found in the college workshops, resources such as hand tools, power tools, benches and materials. Many resources had to be shared amongst the students. This resulted in some students having to wait around for hand tools to become available once another student had completed their task. In many of the cases, there was simply not enough tools for each individual student and students, particularly apprenticeship students, were encouraged to bring in their own hand tools into the College. A lot of the College hand tools appeared to be old and had visible wear and tear and in some cases damage to the exterior of the tool. Tutors in the study often remarked there was not enough money in their budget to replace all the tools at one time and so they could only replace a certain amount each year. The upkeep and maintenance of the power tools and larger machines, particularly in the Carpentry Workshops, also often meant that the tool budget had to be spent on this equipment rather than upon the purchase of the smaller hand tools.

#### **Finding 6. “If You’re Thick, You Do Brick!”; Continuity between schools and Further Education and the promotion of Construction Vocational Education within schools.**

The above thought-provoking headline is one that may reflect public perceptions of Construction Craft Vocational Programmes. However, it does not resonate with those involved. This statement was made by ‘Alex’ a Brickwork Tutor in Campus B, who told me this was said to him in school by a teacher over 40 years ago, a statement that was clearly disrespectful, derisory and deeply offensive. The overarching meaning of these and similar views for young males predominately was one



of; if you could not study at a certain level or achieve certain grades, then construction was the only area you would be able to secure employment in the future once mandatory schooling was completed.

The thesis finds that, whilst this crass notion of “*If you’re thick, you do brick*” is not promoted as bluntly or crudely as was in this case within career advice in schools, there is still the perceived notion that young males, who will not pursue an academic pursuit, will therefore pursue a Vocational Education course, predominately in the Construction Industry. Lloyd and Payne (2012) suggest that this viewpoint is still prevalent in modern day secondary schools and Further Education colleges in England in relation to those learners who struggle at school.

Through Tutor forums, all the tutors, with the exception of two, did not achieve the relevant “O-Levels” or “GCSE” grades at the age of 16 in order to progress onto the next stage of Academic Learning and therefore were encouraged by their schoolteachers, careers advisors and family members to pursue a Construction Craft Apprenticeship. This example of students being geared and identified for Vocational Education at an early stage in their schooling is not a new phenomenon and is still widely accepted (and least tacitly) in operation in schools across England today. Haynes (2008) found that Head Teachers were targeting students in secondary school years 10 and 11, who were disengaged and disinterested in school, for courses in Vocational Education.

### Recommendations:

[For Teachers: Recommendation 1: Linking Practical Knowledge to Theoretical Knowledge in the physical Environment, Through Real Life Stories and Practical Examples.](#)

A number of innovative pedagogical methods and strategies were witnessed throughout the study. Some of the key pedagogical techniques which improved teaching, learning and assessment in Construction Focused Vocational Education, could be implemented seamlessly into other Vocational and Academic pursuits. Using examples of good craftsmanship, poor craftsmanship, problem solving and problem identification, that the students can themselves capture on their phones in

the workplace the previous week, was found to be very impactful and memorable for the students.

This pedagogic practice was tweaked ever so slightly for the non-apprenticeship Full-Time Study Programme students, who unable to access building sites and construction work places. These students captured examples from within their own home. Plumbing and Electrical students captured components and systems within their own home and had to do presentations identifying the component and its purpose within their house and on how these systems interacted and complimented each other in their own house. This method brings a 360-degree angle to their learning; the students are bringing examples from their home or workplace into lessons, to create discussion and to support each other.

This method of students bringing real-life examples to their FE lessons provides practical examples of how practical knowledge and theoretical knowledge can be brought to life through Experiential Learning (Dewey 1933), in a simple and student led forum. Kolb (1984) draws attention to how Experiential Learning relies on the person being encouraged to, and able to, learn from their experiences and supported in drawing upon previous experience when faced with the same or similar challenge in the future.

[Teacher Recommendation 2: Recognising Knowledge and Ideas from Theory and Research, only Constituents 1/8<sup>th</sup> of the Learning needed to put into Practice. \(Eruats Iceberg\)](#)

Link theoretical knowledge and practical knowledge at every available opportunity and illuminate classroom-based lessons with physical practical examples whenever and wherever possible. Provoke and provide a platform within each lesson that creates a safe environment for discussion, challenge and critical analysis.

McNiff (2002) suggests successful growth is achieved through the following three parameters; What do we know? What do we do? How do we share our knowledge? Using practical examples, allows teachers to physically demonstrate what they know, how they know it and do it and how they share their knowledge. In relating practical knowledge and theoretical knowledge, teachers create continuity and relevance of learning that is important to engaging and developing Vocational learners (Lucas 2012).

To help embed theory and practice, teachers in the classroom should try to align their curriculum delivery of practical assessments and theory-based knowledge to run alongside each other as much as possible Eraut (1994). Theory and practical lessons that do not mirror each other nor integrate the concepts learned in both, do not correlate and are not in harmony, so make it much more difficult for the student to learn. This thesis has found that classroom lessons that included more practical and workshop examples achieved a greater level of student participation and engagement, Fuller (1998).

### Teacher Recommendation 3: Joint Curriculum Planning.

Involve and integrate industry experts and leaders in planning and assessing the curriculum. Invite industry speakers to talk to your students; this will enable students to potentially see where their future lies within the industry and the different aspects of the industry that they are potentially unaware of. Hayes (2008) further supports this notion, as he believes that to improve industry standard, students must hear from industry leaders, contemporaries and providers. Mann (2017) notes that students who received four or more employer encounters during their education were 86% less likely to become NEET (Not in Employment, Education or Training).

### Teacher Recommendation 4: A Pedagogy for the Developing of Vocational Literacy.

Hiller (2012), Malthouse (2013), Moon (2006), Schon (1983) & (2009) all promote the value and importance of reflective practitioners. Teachers reflecting on action and reflecting in action are vitally important to both the development of the tutor and improving the overall learning experience. In Construction Vocational Education, the curriculum stays the same for a number of years, so teachers can be delivering the same lesson every year or depending how many groups they have, the same lesson twice or three times a week. It is vital for teachers to reflect on what went well, what did not go as well as expected and how will learning be improved upon if I were to deliver the same lesson again.

Student reflection on action and in action are also vitally important to their development. For example, the carpentry programme in Campus A developed and implemented a student reflective diary to complete at the end of the week, every week. Student attendance, retention and achievement were found to be higher in the

Carpentry department in Campus A than the Carpentry Department in Campus B which did operate a similar recording practice. This study did not deep dive into why this was, however from looking at the data at face value, it could be argued that the reflective diary had a major impact on student attendance, retention and achievement. The reflective diary enabled students to take more ownership of their learning and reflect more on their development. Dewey (1980) reminds us that learning in its elemental form begins with experience. Teachers must allow students to experience practice, Dewey (1980), then critical collaborative dialogue with peers and teachers, Sennett (2009) and then write it down. The study showed that this method could potentially improve vocational literacy.

#### [Teacher Recommendation 5: Beginning with Experience.](#)

It would be inappropriate for teachers to talk to Level 1 study programme students or first year apprentices regarding philosophical concepts, panpsychism, material consciousness and Aristotles forms of knowledge. These students are beginning their career and these concepts could potentially overwhelm them, and they may not have the lived practical experiences to comprehend and accept these philosophical concepts.

Teachers like myself who have been able to harness the power of practitioner research to engage philosophical discourses surrounding the nature of practice, how it evolves, develops and improves, can create educational encounters, with these forms of knowledge, if they take the experience of the apprentices seriously and build upon these experiences in elemental form, for apprentices to grasp and develop the forms of knowledge inherit in the practices and traditions of their craft.

#### [For Colleges, Recommendation 1:](#)

The study finds that Full-Time Study Programme students lacked experience of practice due to a lack of real-life experience in the workplace. Colleges therefore must provide a clearer pathway for students to achieving employer encounters and work place experience. This thesis finds that none of the Construction Departments in the three campuses had a designated Work Experience Coordinator. It was revealed through the tutor forums that other Vocational departments in the campuses' i.e., Hair and Beauty and Hospitality, had designated Work Experience

Coordinators working with the students. Wolf (2011) emphasises the importance of genuine workplace learning over education-based simulation. FE Colleges' must provide their Full-Time Study Programme learners with opportunities to gain genuine workplace learning. Crawford (2009) reminds us that craftsmen learn through experiences and gain hunches for problem-solving through experience of learning and creation, rather than through only following a set of procedural rules.

### College Recommendation 2.

The study found that Construction focused tutors are not required to hold a formal teaching qualification to enable the tutor to teach, it is considered to be desirable but not mandatory. The tutors in the study were required to have a recognised formal qualification in their chosen trade/occupation. This thesis found that a number of staff members with limited or no teacher training were teaching groups.

My own experience of completing a Level 3 Prepare to Teach in the Life Long Sector (PTTLS) qualification, through attendance at evening classes in the 3 months before taking up a teaching role means I am aware that I was better equipped for teaching than those staff members who had come straight from the building sites into teaching roles. After completing the PTTLS award I had a good basic understanding of the fundamentals of teaching, teaching duties, learning cycle, lesson planning and theories and concepts of learning.

At the end of my first month as a teacher, I enrolled on the Post Graduate Certificate in Education (PGCE) programme. Gravells (2012) notes with caution that new teachers with no formal training tend to teach how they have been taught, and only seeing teaching from the viewpoint as a student. Colleges therefore must ensure all new unqualified entrants to the profession receive some form of formal teacher training before commencing their role. This could be a contextualised online course to complete in evening time whilst the new staff member is working out their notice in their previous role, or awaiting their Police DBS certificate to come through.

Once new staff entrants have completed the training, it is important they are then enrolled on a formal teaching qualification at either Level 5 or Level 6. When learning to drive a car, a person must undertake lessons with a qualified driving instructor. This is to ensure competency and to ensure the learner driver does not acquire any

bad habits, which would then be embedded in their driving years to come. Vocational teachers, teaching without formal training, are potentially in danger of picking up bad habits in their teaching practice prior to engaging with formal training.

### College Recommendation 3.

Provide opportunities for staff with a forum to discuss their craft with other staff members. A number of the tutors remarked how much they had enjoyed and benefitted from the tutor forums I conducted. A number remarked that they had never had the opportunity to do so before. It is important therefore to create opportunities for tutors to learn from each other and not to be afraid to seek help or advice to improve their craft. The campuses involved in the study all organised staff CPD sessions every term, tutors repeatedly reported that attending these sessions was mandatory and to the benefit of the organisation, rather than for educational purposes improving their own craft of teaching.

Dual professionalism is a questionable term which is widely used to describe Vocational Education tutors. CAVTL (2013) highlights the importance of dual professional teachers. The data from this study identifies a clear construction between college-based learning and assessment, work-based learning and assessment and the on-site assessment of NVQ Apprentices. The on-the-job training and off-the job-training need to be better aligned, to provide a potentially more impactful learning experience. Colleges should therefore make deliberate staffing decisions to ensure that there is continuity between on-site assessments and college-based learning. Hiim (2017) and Eraut (1994) & (2004) support the value to Vocational Education when continuity between on-site activity and college-based learning are at the forefront of pedagogical practice. Conducting on-site assessments would help tutors remain up to date with current industry trends, techniques and developments.

Data from the study found that while all three campuses encouraged construction tutors to complete two-week industry placements every two academic years, none of the tutors had yet completed any industry placements. By simply changing the assessment arrangements across the college-based learning and work-based learning, CPD updating for college-based tutors and pedagogy updating for work-based tutors could be more organic and have more relevance.

### For Awarding Bodies: Recommendation 1.

Rush et al (2010) proclaim that in organising simulated training, situations are made to resemble occupational practice as closely as possible in a controlled environment for the purpose of teaching, learning and assessment. The study finds that a large number of the simulated practical assessments carried out by the trainees did not mirror what the trainee's experience or encounter in the workplace. In my own experience as a vocational tutor, undertaking practical assessments with students, teaching practical assessments, conducting student and tutor forums, observing and researching construction curricula. I found that a lot of the practical assessments tended to be low in stimulation, challenge and relevance. Data from this study suggests that Awarding Bodies need to address their practical assessments and ensure they are relevant to work based activities. Fuller and Unwin (1998) claim that students performed better when off-the-job learning, carried out in a college-based setting, could easily transfer into the workplace.

### Awarding Body Recommendation 2.

Modular based multiple-choice examinations were a topic brought up constantly by tutors and students throughout the study. The tutors noted that these examinations only served a purpose of memory retrieval rather than knowledge acquired and developed. Students indicated that the exams did not stretch or challenge their subject knowledge. Linn (in Black, 2001) contends that multiple-choice based examinations allow for teaching to the test and that student familiarisation with test items is potentially inevitable. I observed after carrying out the study, that there is an argument for written questions and answers, rather than multiple choice, for college-based examinations. Written answers showcase a student's depth and range of knowledge and allow for more problem-solving discussion and critical analysis. Crawford (2009) says it beautifully:

*“The mechanic and the doctor deal with failure every day, even if they are expert, whereas the builder does not. This is because the things*

*they fix are not of their own making, and are therefore never known in a comprehensive or absolute way.”*

Crawford, 2009:81-82.

Crawford is suggesting here that the problems faced by craftsmen can be of their own making and therefore, through practical experience and *phronesis*, they are able to solve problems in practice. This is a key aspect of practice and skill, too important to not teach in a construction curriculum. Awarding Bodies need to move towards accepting a wider variety of evidence from work-based tutors to capture student competency. Sennett (2009) draws attention to craft development through critical dialogue, discussion and using one's senses. Video evidence and recorded dialogues can be used to assess vocational competency, particularly in cases where a student's written skills may be under-developed in relation to their knowledge of their craft. The study draws attention to the success of students capturing evidence problems in practice (and evidence of their achievements at work) on their phone and bringing the evidence into class for discussion.

### [Awarding Body Recommendation 3.](#)

Evaluating craft through our senses has been happening for hundreds of years. Hyland's (2018) material consciousness and Sennett's development of an eye, ear and a nose, really intrigued me throughout the study. These were terms that I was blissfully unaware of, but once exposed to, enlightened me so much, as I was unaware throughout my working life as a plumber that I was developing an eye, ear and nose; that I engaged with the material consciousness to be good at my practice.

As a tutor and craftsman, I was very unaware how important these elements are to craft development. Sense development and material consciousness are apparent in everyday practice and yet students and teachers are unintentionally unaware they are engaging with and embodying these terms in their practice. The carpentry tutor that runs his hand gently across a piece of timber, or even smells the timber for freshness, knowing the environmental conditions the timber will work best in, is engaging with the consciousness of the material. So the plumber who diagnoses a



system fault through sound and the bricklayer who knows the “sweet spot” of a brick to hit with a bolster in order for a correct cut. These are all simple examples of sense development in craft and material consciousness. Findings from this study suggest that within the curriculum it is important to highlight to students these terms and aspects of practice and their relevance to the development of craft and skill. Perhaps it might be better not to use these terms as such, because they can be seen as being a bit “high-falutin” or even pretentious but to find simpler words and ways to introduce a discussion of these ideas in practice.

### Personal Reflection:

Undertaking this thesis revived, and brought to life, some very emotive personal memories for me, which I did not realise, had such a philosophical effect on me and the personal snobbery I experienced throughout my journey towards undertaking a vocational qualification. These memories had been suppressed/forgotten and I had never thought about them until undertaking this research. Whether it was my mother’s persistent advice, of getting “a degree and a good job”, or her disappointment when I left academia to go the vocational route. To the personal vindication of finally getting a degree (PGCE) in 2016 (eleven years after leaving an academic pursuit) and my graduation photo being placed on the wall in my family home alongside the graduation photographs of my two brothers and sister. None of that would have been possible if it were not for Vocational Education opening doors for me that I never knew existed.

The thesis also brought back a memory of my first day at a Further Education College, when I interviewed for a place on the NVQ Level 3 Plumbing Programme. This is going to sound cheesy, but it is true, I encountered my careers advisor from school in the corridor of the College. I had only met my careers advisor twice throughout my school career, once when completing my GCSE’s and the second time when I was completing my A-Levels. Both encounters lasted no longer than 10 minutes. He stopped in the college corridor when he saw me and said, “*What the hell are you doing here?*” not knowing my name but knowing who I was (a Secondary School Headmaster’s son). I told him I had left University and was going to do Plumbing, he was startled and asked a few questions regarding who my employer

was and what work we were doing. As he was leaving, he turned and said, “*You know when the knee’s give up on ya, get into the teaching.*”

I also encountered snobbery towards craft occupation whilst working for my employer in my former Primary School teacher’s home, when she spotted it was I who was working on her boiler she exclaimed, “*is that you Enda? Are you doing this now?*” when I replied it was indeed me and I was working as a plumber, she replied, “*Oh, that’s a shame*” and went back into her house.

I had completely forgotten about these memories but when researching perceptions of Vocational Education, these memories came flooding to the front of my mind straight away and I did not realise the impact they had on my career choice. This thesis marks a journey that started in February 2014, when I enrolled on evening classes to study a Level 3 PTTLs course.

### Conclusion:

It is apparent from the findings in this thesis that the Vocational Education Sector within England is an under-funded, undervalued and despite the political rhetoric to the contrary, largely underappreciated sector within the hierarchy of the English system of education. The study indicates that Vocational Education serves a key purpose in today’s society. It can open doors to students that were previously closed to them. Vocational Education provides the most reliable way for Construction Focused Students to learn theory and practical skills related to the sector in a safe and controllable setting. Historical antecedents of Vocational Education, in the perceptions of the general public and policy makers do require further investigation in order to help us to improve current and future practice in Vocational Education. After completing this thesis and arriving at its findings, conclusions and recommendations it is clear that there are significant improvements that can be made to Vocational Education in Construction.

I have recently relocated to the Republic of Ireland to teach Plumbing. I have immediately seen a stark contrast in their vision and practice of Construction Vocational Education. Construction Programmes in Republic of Ireland appear to be funded better for all stakeholders, including colleges, teachers, employers and

trainees. The Republic of Ireland Construction apprenticeship programme is carried out in phases, and students must study for at least four years to be deemed qualified. In the future, I would like to carry out a study on Construction Apprenticeships in Republic of Ireland compared to those in the UK .

A lot of commentators and researchers on Vocational Education are academics and many of them have never had experiences of thinking through making. As Carr (1998, p. 2) states: “*many researchers still proceed to study practice from the outside.*” The sector requires more insider research and more research carried out by practising practitioners to help it grow, develop and thrive from the inside if Further Adult and Vocational Education (FAVE) in England and further afield is (as ETF aspires) to become a self-improving sector. Programmes such as the Foundation’s sponsored research degrees supported and delivered through SUNCETT, are vitally important to increasing inclusion in educational research for under-represented groups and growing and developing research capacity across the sector. This thesis concludes that, Construction focused Further Education curricula are currently under researched in the UK by insiders currently practising in the sector. I hope that in some modest way, this thesis and this journey of mine into craft and research may contribute to this discourse.

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## APPENDICES:

Appendix 1.1: Student Participation Form:

### Consent Form

**Study title: Vocational Education: Theory and Practice an Equal Playing Field**

Signed: \_\_\_\_\_

Print name: \_\_\_\_\_

(Your name, along with your participant code is important to help match your data from two questionnaires. It will not be used for any purpose other than this.)

Date: \_\_\_\_\_

Witnessed by: \_\_\_\_\_

Print name: \_\_\_\_\_

Date: \_\_\_\_\_

Participant code: \_\_\_\_\_

I am over the age of 18	
I have read and understood the attached study information and, by signing below, I consent to participate in this study	
I understand that I have the right to withdraw from the study without giving a reason at any time during the study itself.	
I understand that I also have the right to change my mind about participating in the study for a short period after the study has concluded.	

## Contact for further information

Enda McBrien (Faculty Manager: Construction and Motor Vehicle, Activate Learning.) Email: [enda.mcbrien@activatelearning.ac.uk](mailto:enda.mcbrien@activatelearning.ac.uk) Phone: 0118 955 4416

**Study Title:** Vocational Education: Theory and Practice an Equal Playing Field.

## PARTICIPANT INFORMATION SHEET

### What is the purpose of the study?

This study explores the perceived divide between Vocational and Academic education. This study is focused on construction craft courses taught in a large GFE College in the South of England.

Level 1 construction craft will be tracked throughout their two year course and their destinations. The study will also explore the extent to what should a good vocational educational curriculum look like; how can we integrate theory and practice that will ensure learners in vocational education context are equipped with the necessary skills to not only progress onto New Apprenticeship but also to progress to the next level of study within their chosen vocational area?

### Who can take part in the study?

This study is open to all Level 1 Construction Craft students currently studying in Activate Learning.

### Do I have to take part?

Participation is entirely voluntary. If you change your mind about taking part in the study, **you can withdraw at any point during the session without giving a reason and without penalty.**

### What will happen to me if I take part?

This research involves small scale action research interventions set within the level 1 construction craft courses offered at the college. These interventions focus on finding the right location and tailoring the content of each session to suit the needs of the students making it relevant to the world or work.

Participants will be expected to:

- offer feedback at the end of their lessons and a summative feedback session at the end of their qualification.
- participate in follow up discussions as a focus group re development of the level 1 construction provision.

—  
In addition to this some students may be asked to help produce personal case studies that look at their introduction to craft and practice.

### **What are the possible disadvantages and risks of taking part?**

This initial part of this study should fit neatly with participants existing studies, offering minimal disruption to your schedule.

Follow up focus group discussions will require some time to be set aside for them. Participants should expect to spend up to an hour in each discussion.

### **What are the possible benefits of taking part?**

The possible benefits of taking part in this study include, but are not limited to, the following:

- Participants will have the opportunity to have direct input into the nature of their vocational education.
- Participants will have greater access to support and facilities as part of the study.
- Participants will have the opportunity to acquire and develop practical constructional craft skills that will support their craft practice.

### **What if something goes wrong?**

If you change your mind about participation, please contact me by email at [enda.mcbrien@activatelearning.ac.uk](mailto:enda.mcbrien@activatelearning.ac.uk) to cancel your participation. If you feel unhappy about the conduct of the study, please contact me immediately or the Chairperson of the University of Sunderland Research Ethics Group, whose contact details are given below.

### **Will my taking part in this study be kept confidential? What will happen to the results of the research study?**

All participants have a right to anonymity in this study as per BERA guidelines. We will not use your name or image without your consent. You can see the full BERA ethical guidelines [here](#).

If suitable, the results may be presented at academic conferences and/or written up for publication in peer reviewed academic journals.

### **Who is organising and funding the research? Who has reviewed the study?**

The study is funded by the [Education & Training Foundation](#) and delivered by the [University of Sunderland](#) under their SUNCETT program.

The University of Sunderland Research Ethics Group has reviewed and approved the study.

### **Contact for further information**

Enda McBrien (Faculty Manager: Construction and Motor Vehicle, Activate Learning.) Email: [enda.mcbrien@activatelearning.ac.uk](mailto:enda.mcbrien@activatelearning.ac.uk) Phone: 0118 955 4416

Doctor John Fulton (Chair of the University of Sunderland Research Ethics Group, University of Sunderland) Email: [john.fulton@sunderland.ac.uk](mailto:john.fulton@sunderland.ac.uk)  
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