

The influence of structure
and agency on tutor
approaches to facilitating
problem-based learning
across disciplines.

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Abstract

The quality of teaching and learning in UK higher education has been increasingly in focus since the turn of the 21st century. This has intensified with structural measures such as the Teaching Excellence Framework and the National Student Survey, which aim to appraise teaching quality. Increasing attention on graduate outcomes begets a need for universities to advance their curricula from content-focused, to outcome-focused curricula, with the aim of students being better equipped with the knowledge, skills, and attributes required for graduate roles.

Problem-based learning (PBL) is a student-centred pedagogy that is effective in supporting students to develop such skills and attributes, although challenges in developing student-centred pedagogies are reported, yet not fully understood. Whilst there is considerable research into PBL, to date, multi-site or multi-disciplinary research is rare. Instead, there is a repetitive trend of single-site studies focusing solely on teaching and learning interactions, failing to contextualise the research fully. Further, whilst disciplinary differences have been reported in more general approaches to teaching and learning, much of this research is dated, and is not specific to PBL.

This study adopted a narrative, life history methodology to explore the influences of tutor approaches to facilitating problem-based learning across five different disciplines, in five UK universities. The disciplines recruited to the study were chemical engineering, law, medicine, occupational therapy, and natural sciences. In total, 24 narrative interviews were conducted, and 20 participant observations of PBL sessions. By adopting a life history approach, and by considering the influence of structure and agency, this study explored the broader context in which the PBL takes place, revealing some of the site-specific norms, or disciplinary habitus that were often imperceptible to participants. Data were analysed thematically, and four overarching themes were revealed.

The four themes that transcended the research sites were signature pedagogies, the law of curriculum inertia, epistemological values, and site civilisations. These findings revealed new insights into the disciplinary and organisational habitus that shapes teaching and learning, and the impact on curriculum development. Further, a deeper understanding was gained of the ways in which both tutors' epistemological values, and those of key stakeholders influenced the PBL. Site civilisations revealed the crucial value of collaborative learning spaces for both staff and students.

This thesis presents a new model of structural influence that conceptualises the key influences on tutor approaches to facilitating PBL. It delineates three key cogs of structural influence, namely, signature pedagogies, pedagogical legitimation, and pedagogical provinces, and the interplay between these and tutor agency is explained. The findings of this study suggest that conscious consideration of these three cogs, and the ways in which they interact will advance effective and sustainable PBL.

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1 Introduction: The Context of PBL in Higher Education

1.1 Introduction

This thesis presents an exploration into the life histories of problem-based learning (PBL) facilitators from five different academic disciplines, in five different universities in the United Kingdom (UK). By utilising the conceptual lens of structure and agency, a more comprehensive understanding has been developed about the broader socio-cultural influences on PBL facilitation, that exist beyond the classroom walls. The study engaged with the complexity of multi-site and multi-disciplinary research, which allowed conclusions to be drawn about the disciplinary and organisational structures that commonly affect tutor agency, and shape teaching and learning practices.

This introductory chapter explores the context in which the study is situated, explaining the ongoing relevance of PBL as a student-centred approach to teaching and learning, and portraying the current climate of higher education. It provides my own storied account of the origins of the problem, explaining events and conversations that inspired the focus of the research. Further, it argues the significance of the study, and details the research questions, aims and objectives. Finally, the chapter concludes with an overview of the structure of the thesis.

The central arguments of this thesis are twofold:

1. Student-centred approaches to learning, such as PBL, are crucial in supporting students to develop the graduate skills and attributes required to meet the needs of graduate employers, and society more broadly.
2. In order to cultivate effective and sustainable PBL, there needs to be a well-considered balance of the structures that enable tutor agency, and those that constrain it, and these should be considered at a disciplinary level, as well as an organisational level.

1.2 The context of the study

Problem-based learning was developed in medical education in the 1960s (Barrows & Tamblyn, 1980). It has progressed from here into healthcare education and beyond, with increasing debate around its definition (Walker & Leary, 2009, p. 13). Nonetheless, the commonly reported characteristics are that it involves students taking responsibility for their own learning (Gould et al., 2015; Martin et al., 2008) by working in small groups to address real-world, ill-structured

problems (Hung, 2019; Savery, 2019), or to explore issues within a trigger scenario (Caswell, 2017; Robinson et al., 2015). Tutors are considered to *facilitate* learning within sessions, rather than delivering content in a didactic manner (Hmelo-Silver et al., 2019; Rico & Ertmer, 2015; Savin-Baden & Major, 2004), and students therefore spend considerable time learning on their own, and with their peers (Servant-Miklos et al., 2019).

Much research has been undertaken in PBL since the 1980s. Studies have argued that it is an effective approach to teaching and learning (Eslami et al., 2014; Norman & Schmidt, 2000), that promotes the development of critical thinking skills (Chan, 2016; Gould et al., 2015), teamwork skills (Kong et al., 2014), and fosters deep approaches to learning (Dolmans et al., 2016). Whilst there has been disagreement in published literature on whether or not PBL is *more* effective than traditional learning, this has changed over time, with PBL now being more favoured in literature that focuses on effectiveness of learning approaches (Hoidn, 2017, p. 125). I argue that this change coincides with a shift in perceptions of what constitutes knowledge and learning in the context of UK higher education. Universities have refocused their attention from students being able to retain and memorise information, to them being able to apply knowledge and skills in authentic contexts. In other words, considerations about what effective learning *is* has changed.

It is well reported that PBL facilitation poses challenges for tutors that are not commonly reported with the more traditional teaching styles (Fonteiijn & Dolmans, 2019; Wilkie, 2004). Facilitation is crucial to the success of the learning and the social interactions within the group, and endeavours to promote deep approaches to learning, and manage group dynamics (Hmelo-Silver et al., 2019). There is a shift in focus for tutors, moving away from having a content-focus, to instead being focused on the processes within teaching and learning (Azer, 2005), and many tutors therefore feel the need to undertake training in this regard (Joseph et al., 2016; Rico & Ertmer, 2015).

Since the early 2000s, there has been an increasing focus on the quality of teaching and its measurement in higher education (Biggs & Tang, 2011), and the introduction of the Teaching Excellence Framework (TEF) (BIS, 2016), promised to intensify this. With increased focus on university graduates being employment-ready, university curricula have changed from being content-focused to being more outcome-focused, and this begets an increasing attention to student-centred learning (Biggs & Tang, 2011). Employability, as a key outcome, varies widely across subjects and institutions (BIS, 2016: p. 43) and the Bologna Process, which ensures consistency in quality standards across European universities, identified student-centred

learning, such as problem-based learning (PBL) as a priority area for higher education, due to its effectiveness in this regard (EHEA, 2009). This has been restated more recently, with a plea for renewed efforts to embed student-centred learning (Curaj et al., 2020); however, there is little that explores the facilitators or barriers in this regard.

The increase of tuition fees, and the availability of statistical data, such as student satisfaction outcomes and graduate outcomes, begets an increasing marketisation of higher education, which adds structural constraints on the quality of teaching and learning (Feigenbaum & Iqani, 2015). The simultaneous reduction in academic voice in relation to teaching and learning processes (Rowlands, 2018) risks a diminution in the quality of our teaching practices. It is therefore increasingly critical to understand the agency of those most involved with teaching and learning, to gain deeper understanding of what shapes teaching and learning practices.

The massification of higher education has led to widening of participation (Giannakis & Bullivant, 2015), and this has increased the student numbers in UK higher education by more than 20% in the last two decades (EHEA, 2020, p. 19). The characteristics of students who attend university have changed from 'elite to mass' (Giannakis & Bullivant, 2015, p. 631), with ongoing demands for this to reflect the diversity of the populations better (EHEA, 2020, p. 92). This change in student population has implications for teaching and learning practices, as education can no longer be targeted at smaller numbers of high achieving students (Hornsby & Osman, 2014). Instead, this widening of participation in higher education has previously been reported to increase the numbers of students whose approach to learning is that of surface learner (Biggs, 2012), when tutors are being encouraged to foster deeper approaches to learning in their students. Further, it has led to increased class sizes which are inclined to reinforce teacher-centred, didactic approaches to teaching and learning (Hornsby & Osman, 2014), subsequently producing less favourable student outcomes (Bovill et al., 2020).

Hoidn (2016) argues that traditional teaching methods, which she explains as those based on lecturing or direct instruction, are outdated, failing to prepare students for work, or for society in general. Transmissive pedagogy has been described as being 'the sage on the stage' and was reported as being the dominant teaching practice within higher education (McWilliam, 2008, p. 264). In accordance, more recently, it is argued that the progression from traditional teacher-centred, to student-centred cultures, where students engage more actively, constructing knowledge through autonomous learning, remains challenging (Hoidn, 2016, p. 440) and this warrants further exploration. Indeed, Biggs (2012) asserts that student-centred approaches to teaching and learning, which encourage this active learning in students, can help bridge the

engagement gap between students who were traditionally considered 'academic', and those who are not (p. 40). He cites PBL as an example of student-centred learning, explaining that it requires all students to question, explain, and apply knowledge in ways that the 'academic' student might do more spontaneously. Further, he argues that where teaching approaches are didactic, whilst the 'academic' student will continue to foster deep approaches to learning, the 'non-academic' student is more likely to rely on surface learning strategies such as note-taking and memorising (ibid, p. 40). Consequently, with the ongoing diversification in student population, student-centred learning, such as PBL, is increasingly worthy of attention to ensure that teaching excellence can 'flourish across the sector' (BIS, 2016: p. 13).

Regrettably, the impact of centrally imposed requirements relating to regulation, and institutional reputation means that the Teaching Excellence Framework (TEF) risks undermining the teaching practice in particular disciplines, rather than improving it (Abbas et al., 2016), and the consequences of such structural influences require attention. Since the inception of the TEF there have been criticisms that it does not truly capture teaching excellence (Loveday, 2021), and that it predominantly focuses on proxy metrics that exclude the voice of those most involved in the teaching and learning processes (Cui et al., 2021). Further, universities' increasing attentions on league table positions and other reputational concerns risks the TEF being at the *expense* of a more genuine focus on learning processes (Wilcox, 2020).

What is considered to be teaching excellence across the disciplines is a contentious issue, and variance in disciplinary teaching and learning is likely to underpin this. Disciplinary boundaries have historically been a significant structural feature of academic life, with disciplinary groups and their positionality being portrayed as *tribes* and *territories* (Becher & Trowler, 2001), with distinct behaviours and languages (Kek & Huijser, 2017), and knowledge structures (Bernstein, 2000). However, these disciplinary boundaries have changed over time, with both university departments, and student learning becoming more integrated. Common first-years are increasingly being introduced which Nikolic et al. (2018) argues demands additional understanding of effective pedagogy at a disciplinary-level.

The impact of the Covid-19 pandemic is undoubtedly significant for universities, and EHEA (2020) describe the current climate as 'a point of genuine and unprecedented rupture' (p. 157). Despite the increase in student numbers, the EHEA (2020) revealed that the financial benefit of being educated to degree level has, in fact, slightly reduced (p. 122). They report that this may be due to a skills mismatch, where students are developing skills that are misaligned with

the graduate skills and attributes in demand within the societies in which they live. It is therefore essential that higher education institutions refocus their attention to the teaching and learning experiences that will support students to meet this societal need.

A central argument that underpins this thesis is that student-centred learning, and in particular, problem-based learning (PBL), is considered to respond to this skills gap, by supporting the development of key graduate skills and attributes. It equips them with the skills considered necessary for graduate employment, such as teamwork skills (Martin et al., 2008, p. 28), the ability to learn autonomously (Savin-Baden & Major, 2004: p. 4), and critical thinking skills (Hoidn & Kärkkäinen, 2014; Savin-Baden & Major, 2004). Through engaging with authentic problems that replicate real-world scenarios, students transition into employment well-rehearsed in the challenges that may meet them (Savery, 2019). As such, I argue that this study is both relevant and timely.

1.3 Origins of the problem

As explained in the previous section, the relevance, success, and demand for student-centred learning such as PBL is well explored. However, the musings of my research questions began informally, following a conversation with a colleague some years ago. We had been discussing a module with a PBL approach that we both worked on. As the module leader, I was curious (and a bit frustrated) about why some seminar tutors seemed to work against the ethos of PBL, by developing PowerPoint slides laden with content, which they then delivered in their session. This caused complaints from other students who were subsequently aggrieved at having 'not had the teaching'. In our conversations, I remarked at the ways in which I felt PBL prepared the students for graduate employment, and I wondered if others perhaps did not share this view. To my surprise, he suggested that others may indeed share this view, but that other factors were perhaps of more concern than whether our healthcare students were competent practitioners following graduation. He explained that once healthcare students had graduated, they no longer influenced his career progression. If they left their profession due to an inability to cope with the autonomous nature of the job, it was no longer his concern, much as he hoped that this would not be the case. Whilst they were students, however, what they wrote on the module evaluations *did* impact on his career progression, and this, he remarked, made it a more pressing concern. He explained that the quality of PBL was not well measured by the module evaluation, which asked questions such as how *prepared* a teacher was, or how well they *explained* something. As such, he felt that the easiest way to achieve higher student satisfaction rates was to deliver subject knowledge to the students. Initially, I was quite shocked at our

conversation; however, I took time to reflect on it afterwards. Whilst we both had similar structural influences, such as professional codes of conduct, and university quality assurance processes, such as module evaluations, our agentic responses to them were different. This raised some broad questions for me. What is really shaping higher education? What are the unseen influences of our practice? Are we being influenced by the right things? Are some structural influences that are intended to support teaching and learning, actually getting in the way of good practice? This inspired curiosity around what other structural influences affected teaching and learning practices, more specifically, PBL, as I questioned if this was a bit of misfit within my own higher education institution (HEI). I wondered if these tensions related to conflicts between university regulations and professional values within my own discipline, resulting in me questioning whether these influences vary across disciplines. My research questions, aims, and objectives emerged from this, and from exploration of the literature discussed in the chapter that follows.

1.4 Significance of the study

In 1997, Savin-Baden described PBL as ‘an innovation whose time has come’ (p. 447), yet more than two decades later, student-centred pedagogies continue to be slow in their development, due to shortcomings in the structural reforms required to drive this key agenda (Hoidn, 2017, p. 4). Indeed, it is disheartening that in the time that has since elapsed, we have not moved beyond didactic teaching methods being those described as *traditional*, and it is therefore essential that more is understood about some of the reasons why. With so much research discussing the benefits of PBL, it is essential to explore beyond the classroom into the broader context to understand what might shape the current UK educational trends. Utilising the conceptual lens of structure and agency supports this endeavour.

The majority of PBL research is focused on the experience of tutors and students within a single research site or a single academic discipline, often focusing on the implementation of PBL. Again, this fails to portray adequate detail of the broader socio-cultural contexts in which these stories unfold, thus veiling many of the complex structural influences on teaching and learning practices. This study adopted a more holistic exploration of teaching and learning practices, by understanding what influences tutor approaches to PBL within the structured contexts in which they are situated. Gathering observational data as well as interview data, revealed some of the cultural norms within disciplines and organisations, which were often obscured to members of those communities.

Student-centred pedagogies, such as the PBL in focus in this study, are reported to achieve the best graduate outcomes, thereby augmenting students' success in graduate roles, and in society more broadly. Further, with the diversification of student populations, and the increase in student numbers in universities, it is increasingly important that we understand more about student-centred pedagogies, which are considered more suitable to meet a diverse range of learning needs (Biggs, 2012).

Universities are enriched by the cross fertilisation of disciplinary practices (Kreber, 2009, p. 20), and this cross fertilisation softens what were once hard borders between the disciplines. The singular knowledge structures (Bernstein, 2000) have developed over time, subdividing into new disciplines, or even 'federated' disciplines, comprised of a number of subdisciplines (Klein, 2006). With higher education's ongoing shift towards integrated learning, multidisciplinary research becomes increasingly necessary, in order that academic communities can gain understanding of teaching and learning practices beyond their own disciplinary cultures.

Finally, with an increasing focus on metrics relating to student outcomes and experiences in higher education, my endeavour in this study was to capture the voice of those at the heart of the development of teaching and learning. Their stories are currently under-represented in research focusing on the context of teaching quality, and this warrants attention. This study has therefore employed a narrative approach in order to understand tutors' stories of facilitating PBL.

1.5 Aims and objectives

In response to what has been discussed thus far in this chapter, the following questions, aims, and objectives emerged, and have been addressed in this thesis.

Research Questions

- What is the influence of structure and agency on tutor approaches to facilitating problem-based learning?
- What comparisons can be made across different disciplines and contexts?

Aims

- To understand the ways in which structure and agency influence tutors' approaches to problem-based learning.
- To understand what these influences are, and how they compare across different disciplines in different UK universities.

Objectives

- To explore how tutors recount stories of their experiences of problem-based learning, and the influences on their approach to facilitation.
- To explore stories across different disciplines in different universities.
- To identify and critique the relevant literature, including the gaps and areas to be challenged or built upon.
- To consider the implications for theory, policy, and practice.

The section that follows, explains the flow of the remainder of the thesis, and the chapter concludes with a summary.

1.6 The structure to the thesis

Chapter 1, Introduction: The Context of PBL in Higher Education, introduces the study, discusses its significance, and situates it within the wider context of PBL and of higher education in the UK. It details the research questions, aims and objectives. Finally, it concludes with this outline of the chapters that follow.

Chapter 2, Literature Review: Disjunctive Stories of PBL Habitus, presents a critical discussion of key literature pertaining to the study, demonstrating how this has shaped the research question. It discusses literature in relation to structure and agency, arguing the interdependent nature of the concepts, and their value as a conceptual lens in educational research. It encapsulates key research relating to PBL in higher education, the nature of PBL facilitation, and the nature of teaching and learning within academic disciplines.

Chapter 3, Methodology: The Pursuance of a Story True to Life, provides an account of the narrative design of the study and how it evolved as the study progressed, shaped by the research question, key literature, and by my own reflexivity. It explains the ways in which data were gathered, analysed, and interpreted.

Chapter 4, Findings: Introduction to the Research Sites, is the first of five findings chapters, and illuminates each of the five research sites in turn. It provides an illustrative account of the PBL approaches being used in each, the context in which it happens, and the facilitation styles observed.

The findings chapters 5, 6, 7 and 8 presents the analysis of data, highlighting key comparisons across disciplines and contexts. These are organised into four themes.

Chapter 5, Findings: Signature Pedagogies, focuses on the ways in which disciplinarity influences the teaching and learning, and it presents seven contemporary signature pedagogies that were revealed in stories.

Chapter 6, Findings: The Law of Curriculum Inertia, focuses on curricular change and development, outlining the factors that catalyse change, as well as the forces that resist it.

Chapter 7, Findings: Epistemological Values, explores the impact of personal and collective epistemologies, detailing those that were espoused, and those in use.

Chapter 8, Findings: Site Civilisations, discusses the influence of the institutional environment in which the PBL happened. It explores some of the customs, practices, and the physical environments that shaped the PBL.

Chapter 9, Discussion: Towards an Ecology of PBL, presents a new model that conceptualises the influence of structure and agency on tutor approaches to facilitating PBL and the ways in which this shapes PBL. This manifests as three key interrelated cogs of structural influence that are mediated by the reflexive internal conversations of individuals. The chapter highlights the key messages that have arisen from the study, and provides five principal recommendations.

Chapter 10, Conclusion: A Story Without an Epilogue, argues the original contributions of the study, and discusses its limitations. It presents some key areas for future research and concludes with a short summary of the thesis.

1.7 Chapter summary

This chapter provided a brief account of PBL, and its value within contemporary higher education. The context of the research was discussed, explaining the significance of changes to disciplinary boundaries, and what constitutes knowledge in higher education. The

significance of the study was argued on the grounds of there being a need for a more holistic understanding of PBL, and the structured socio-cultural contexts in which it happens.

The next chapter, entitled 'Literature Review: Disjunctive Stories of PBL Habitus' presents a critical review of key literature relevant to the study.

2 Literature Review: Disjunctive Stories of PBL Habitus

2.1 Introduction

The previous chapter discussed the context of the study, detailing the research question, aims, and objectives, and the significance of the study. This chapter presents a review of key literature relevant to the focus of the study, and is presented in four main sections. The first section presents a discussion of key literature relating to structure and agency. It explains the concepts, arguing that they cannot be considered in isolation due to being interdependent. The second section presents key research in relation to problem-based learning within higher education, delineating it as an approach to teaching and learning, and discussing its impact on learning and on the student experience. The third section explores the notion of PBL facilitation, explaining the disjunctive role of the facilitator, some of the challenges it presents, and how it is influenced by facilitators' pedagogical beliefs. The fourth section presents a discussion of relevant literature relating to teaching and learning within and across disciplines, exploring the characteristics of different disciplines, and the resulting cultures and traditions in relation to knowledge. The chapter concludes with a summary of the findings of the literature review, highlighting where there are notable gaps, and explaining how this has shaped my own research.

2.2 Structure and agency

This section explores scholarly works in relation to structure and agency and its use as a conceptual framework in higher education research. It presents some discussion around structure and agency as concepts, how they are explained in the literature, and why they should be considered to be interdependent, by drawing on the work of some key authors in this field. Whilst no literature was found that considered the influence of structure and agency specifically in problem-based learning, this section explores some of the literature relating to structure and agency within the context of higher education more broadly. It begins by considering structure and agency broadly, arguing that they exist as interrelated phenomena within a complex process. It then focuses in more depth on each of these phenomena in turn, firstly locating structure, and secondly locating agency.

2.2.1 *Interplay between structure and agency*

The notion of structure and agency is fundamental within sociological theory and pertains to the relationship between social structures and the individuals and their actions within society. Early

scholarly works, such as those of Emile Durkheim presented these terms as distinct and often opposing; however, Giddens (1984) argued against this dualism. Instead, he argued for a duality between individual human agents, and the social structures in which they exist. His structuration theory explains this as the ways in which individuals are involved in creating and recreating social structures, and he suggests therefore, that structure and agency are intricately connected. Similarly, Sibeon (2004) argues that structures are always informed by the agency of individuals, and agency will always be influenced by structures, such as social networks or systems. As such, he asserts that they should not be considered as independent of each other.

Brew et al., (2018) argues that it is essential to consider the ways in which individuals within higher education are influenced by their structural constraints and conditions, in order that institutions can function effectively, and academic career pathways can be supported. They found that structural constraints and conditions within higher education were often confusing and overwhelming for academics. However, there is a need for more research that explores this, particularly in relation to the impact on teaching and learning.

Ashwin (2009) suggests that research into teaching-learning processes within higher education has consistently identified four structural-agentic processes (Ashwin hyphenates these terms as he is opposed to teaching and learning, and structure and agency being discreet concepts). These relate to the teaching and learning environment, student and academic identities, disciplinary knowledge practices, and institutional cultures (p. 10). There are of course interconnections between these processes; however, research that encapsulates multiple structural-agentic processes is limited.

Whilst there appears to be no overall agreement as to the definitions of structure and agency, Archer (2003) suggests that there is a degree of consensus pertaining to them being the objective and subjective influences on behaviours; however, this consensus is not apparent. Bourdieu (1990) argues that 'of all the oppositions that artificially divide social science, the most fundamental, and the most ruinous, is the one that is set up between subjectivism and objectivism' (p. 25). In general terms, structures are often portrayed as relating to the social form or physical environment, and agency relates more to individual agents or actors, and their ability to make choices; however, there is much analysis of this within sociological literature.

The value of structure and agency being used as a conceptual lens through which to analyse teaching and learning is advocated by Ashwin (2008, 2009). He asserts that accounting for structure and agency enables a broader analysis of teaching-learning interactions, warning that

focusing solely on the interaction risks obscuring some of the key contextual influences which may be less commonly visible (Ashwin, 2009). As mentioned, Ashwin (2009) had adopted the term structural-agentic in his writings, asserting that this captures the interplay between the two aspects, which is useful in portraying their interdependence. He suggests that the structural aspect is when actors are influenced predominantly by the world around them, and the agentic aspect is when the world is shaped by actors (Ashwin, 2009). Whilst this could seem suggestive of an either/or scenario that would perhaps fail to capture the complexities of the relationship between structure and agency, Ashwin argues that in fact, they can be considered as different ways to conceptualise social processes. In other words, they can be used as lenses through which to view the same process, resulting in both structural descriptions, and agentic descriptions.

Ashwin's (2009) arguments are comparable to the writings of Archer (2003, 2017), who also asserts that structure and agency only exist in relation to each other, although she acknowledges that this is debated in the literature. She suggests that the debate centres around whether or not one considers structure and agency to be distinct entities, explaining that some theorists 'transcend the divide' between the two, contending that structure and agency are ontologically inseparable (Archer, 2003, p. 2).

Whilst both Ashwin and Giddens argue that there is no clear boundary between structure and agency, Bourdieu makes this clearer in some of his terminology, such as 'habitus' which, in itself, transcends structure and agency. This is discussed further in the section that follows. I argue that structure and agency are inextricably linked; however, as Ashwin (2009) suggests, it can be useful to consider them both as lenses, perhaps viewing one as foregrounding the other in certain scenarios. I will therefore continue to use the terms separately, whilst acknowledging their interplay. As Ashwin (2009) himself acknowledges, the term structural-agentic is somewhat 'ugly' (p.19).

2.2.2 Locating structure

There are different notions of structure in the literature and many discussions relate to them being constraints or enablers of individuals' actions (Ashwin, 2009; Giddens, 1993). Giddens (1984) asserts that structures are always both constraining *and* enabling of human action, and their influence varies between the individual agents. He explains structures as the *rules* and *resources* that exist, and that shape society, although he acknowledges that human agents are responsible for the creation of these structures, thus also acknowledging the interdependence of structure and agency. For me, concepts such as constraints or enablement are subjective in

nature, as something that is perceived as a constraint by one individual, may be perceived as enabling by another. The rules that Giddens refers to are not necessarily solely comprised of the more formal guidance or laws that may be written down and enforced, but also, the cultural norms that influence human actions, engendering 'discernibly similar social practices (ibid, p. 17). Such discernibly similar social practices would be explained as 'habitus' by Bourdieu (1984) who explains them not as structural influences, but as the interplay between structure and agency. Habitus is the cultural norms, actions, and values that manifest in distinct social groups and result in an 'internalized program' that governs the actions of individuals (ibid, p. 424). He argues that habitus is created socially, rather than individually, and may be the result of unconsciously replicated behaviours. Similarly, May & Powell (2008) explain that habitus may be indoctrinated over a period of time, resulting in actions that are carried out routinely rather than more consciously considered (p. 129). As such, habitus is structured by the previous experiences of individuals, but then itself becomes a structuring influence in current and future actions (Maton, 2012, p. 50).

Bourdieu explains that power is created and legitimised through these socialised behavioural norms, arguing that sociological analysis should aim to reveal the dynamic power relations, and the often imperceptible inequalities therein. He deviated from using terminology such as ruling or dominant *classes*, and instead, adopted the term 'fields of power' (Wacquant, 1993). This, he suggests is where positions may possess capital, which in turn may exacerbate these inequalities. He describes three main forms of capital, namely, economic, social, and cultural. Economic capital relates to all material resources such as property, material objects and financial resources, Bourdieu (1986) argues that it may be concealed, yet is at the root of all other forms of capital. This is comparable to the structural influence that Giddens (1984) describes as *allocative resources*, which he explains as aspects of the physical environment and material goods. Social capital relates to one's status and social position, and the opportunities or resources that may be more accessible as a result of the network of relationships that can be capitalised upon (Bourdieu & Wacquant, 1992, p. 119). Finally, cultural capital relates to an often historical and inherited social heritage (Bourdieu, 1998, p. 20), which in some circumstances, may translate into economic capital (Bourdieu, 1986, p. 242). Bourdieu (1986) argues that cultural capital may be embodied through social processes, resulting in it being internalised as habitus. As such, he argues that it cannot be quickly transferred to others in the same way that allocative resources might be. This is comparable to the structural influences that Giddens (1984) refers to as *authoritative resources*, which is where agents are considered to have influence over other individuals.

Agents who hold the most capital or who are considered to have the most allocative or authoritative resources are those whom Giddens (1984) argues have the most 'transformative capacity' (p. 33). The notion of transformation is also discussed by Archer (2017) in relation to structural powers and she suggests adopting a morphostatic / morphogenetic framework of analysis. She suggests that societies may be morphostatic, which is where structures are reproduced and repeated in societies. In contrast, where transformation prevails, the structures are described as morphogenetic, and this is when they develop and evolve over time.

Hautala et al. (2021) report a decline in the transformative capacity of tutors in higher education over the last two decades, and they explored the influence of administrative structures in this regard. They explain that organisations vary in the degree of control they exert over those who work there, categorising them as either loosely coupled or tightly coupled. They define, 'loosely coupled' organisations, as having fewer restrictions on the academic freedom of individuals (p. 3). Tutors are therefore more likely to self-manage and can be innovative in their practice, achieving their professional goals. In contrast, 'tightly coupled' organisations are defined as having more sanctions, controls, and monitoring; and change in these organisations tends to adopt a top-down approach, prioritising profits over pedagogy (p. 4). It would be easy to assume from this, that tutors would favour working in loosely coupled organisations; however, Hautala et al. (2021) advocate that a balance between the two is more favourable. They found in their study that whilst tutors wanted to have academic agency within their professional practice, they also wanted to have the support and guidance of working within a framework of well communicated rules and procedures. Where they are likely to experience inner conflict is when their own values and identities are not congruent with those of the organisation, as this results in them feeling more constrained (Winter, 2009). Again, this highlights the subjective nature of constraint.

2.2.3 *Locating agency*

The notion of agency is also debated within literature. Discussion often relates to *whether or not* someone has agency, or *whether or not* they would have been able to do something differently, and I argue that this portrays agency in an over simplified manner. Giddens (1993) discusses agency in terms of whether a person could have acted otherwise within an event that does not have a predetermined outcome (p. 81). He differentiates between movements and actions, suggesting that in order for action to be agentic, it has to be informed by intention. In some ways this still alludes to *whether or not* someone has agency; however, Giddens (1993) also suggests that individuals have agency when they have *capacity* to act, even where they

have no intention to. Again, this risks obscuring the complexity of the subjective nature of intention and capacity. Some psychodynamic theorists might assert that all actions have some degree of intention, whether conscious or not. Further, if an individual's experience or perception is that they have no capacity to act differently, then does this manifest differently to them not having agency?

For me, this is problematic, as I consider it highly unlikely that there are many scenarios where individuals have absolutely no choice in their actions. Nonetheless, they may still *perceive* this to be their reality, and I am reminded of many conversations within my clinical career, where patients have told me that they had 'no choice' in their course of actions. Unsurprisingly, this was rarely the case. Rather, it was their *perception* of reality, sometimes skewed by the negative frame of reference that may come with depressive illness; or other times a reflection of what it felt like to have their choices limited; or their perceived difficulties in embarking on one particular course of action, making another choice much more appealing. Regardless, it would have been unhelpful to have considered *whether or not* they had agency, and instead, what is important to understand, is their experience, or perception of agency, and what influences that experience or perception.

Bourdieu (1998) also highlights the importance of considering perception, arguing that many inequalities are overlooked and reproduced due to the 'socially inculcated beliefs' of those with less capital (p. 103). He explains this as symbolic violence which 'extorts submission, which is *not perceived as such*, based on "collective expectations" (p. 103, emphasis added). In other words, individuals may be treated as inferior or may have less favourable opportunities, or access to resources, but do not perceive it this way and are therefore complicit in its reproduction. Webb et al. (2002) present a useful example around male dominance in society, suggesting that women did not perceive the symbolic violence as they considered their inequitable roles were natural (p. 25). Bourdieu describes this complicity as pre-reflexive explaining it as where viewpoints become unconsciously embodied within individuals.

Margaret Archer (2003) explores the notion of agency more subjectively and consciously. She emphasises the significance of individuals' reflexivity in *mediating* the influence of structure on agency, explaining this as an internal conversation where they consciously consider how they intend to respond to structural powers. They do this, having considered their own individual areas of concern. She therefore concludes that individuals have '*degrees of freedom in determining their own actions*' (p. 7. emphasis added). This was illustrated in Hautala et al's (2021) study of professional agency where they discussed individuals' responses to

organisational rules. Some staff admitted to *bending the rules*, or explained them as 'interpretative', whilst others felt unable to challenge them at all (p. 14). Thus, it must be acknowledged that structures are perceived and received differently by individuals, thus highlighting their interplay with human agency. Reimann (2009) reports a similar response to structural rules regarding the ways of thinking and practising that are decreed by professional bodies within their standards for practice or codes of conduct. Whilst the standards and guidance are written for entire disciplinary communities (she cites nursing as an example, as it has a regulatory body), she found that individuals responded to them differently, depending on their individual stance. Some considered them a framework for their practice, some reluctantly complied, and others contested them. It is important, therefore, to consider that the influence of structural constraints or enablers are not uniform or predetermined.

Whilst this highlights differences in the agency of individuals within communities, it is also important to consider the notion of collective agency. Hökkä et al. (2017) define collective agency as 'a process whereby the knowledge, skills and resources of individual actors are combined to achieve shared goals, and to shape the future' (p. 37), and this is relevant to disciplinary communities. Giddens (1993) asserts that communities, groups, and organisations are not in themselves structures, but instead, have structural properties and should therefore be viewed as systems of interaction. This interaction is discussed by Archer (2000) who asserts that agency is never individual. Instead, she suggests that it is always the result of interactions with communities within particular contexts, and is therefore collective in nature. Nonetheless, the internal reflexive conversation that she describes (Archer, 2003), happens within individuals, and so it is important to acknowledge the interplay between individual and collective agency.

It is also important to consider where individuals are socialised into certain behaviours that have become the cultural norms within specific contexts (Jones & Bradbury, 2017). Whilst these may manifest as individuals' agency, it may be that over a period of time, social structures have in fact, been a strong influence, but have become less apparent to individuals within that context. Consider a simple behaviour such as using an escalator. Within a department store, we might stand side-by-side with a friend, chatting until we arrive at the top or bottom. However, in using the escalators on the London underground, anyone not familiar with them will soon come to realise that standing side-by-side with someone is not an accepted practice in this context. After a few tuts, and being asked to move to one side, they will quickly be socialised into the rules of single-file formation, leaving an overtaking lane for others. However, even those in a desperate

hurry on the department store escalator will likely wait behind any other obstructing passengers, without saying a word. Jones and Bradbury (2017) explain this as the cultural rules that exist within social structures, and influence individuals through the consensus of a majority (p. 16).

The agency of professional communities has been the focus of a number of studies in higher education, considering academics as professional agents (Annala et al., 2020; Hautala et al., 2021; Rowlands, 2018). Eteläpelto et al. (2013) suggest that 'professional agency is practiced when professional subjects and/or communities exert influence, make choices and take stances in ways that affect their work and/or their professional identities' (p. 61).

In summary, I argue that it is essential to understand the *degree* to which individuals have, or perceive themselves to have agency. It is subjective and fluid in nature and has to be considered within the context of the structural influences in which the scenario plays out, due to the interdependent nature of structure and agency. It is also important to consider where collective agency may in fact be the result of socio-cultural structures or habitus, that govern or guide individuals' behaviours.

2.3 Problem-based learning in higher education

This section explores PBL literature in the context of higher education. It begins by explaining the ways in which definitions and designs of PBL have diversified over time, and presents a discussion about its effectiveness. It also explores the research that relates to students' experiences of PBL, detailing some of the factors that impact positively or negatively on it. The discussion that ensues, considers the educational culture in which PBL features.

2.3.1 Delineating problem-based learning

There is a wealth of research into problem-based learning which dates back to the 1970s, with an ongoing increase in prevalence most noticeable since the mid-1990s (Hallinger, 2020). Early PBL research was dominated by a focus on medical education, where PBL was considered to originate, and whilst this remains prevalent in the literature, the focus of research has now extended far beyond the medical discipline (Hallinger, 2020). Barrows and Tamblyn (1980) suggested that the ability to learn in a problem-based way has been fundamental to human survival as we endeavour to understand the world around us (p. 1). Their pioneering work around the use of PBL in medical education highlighted their concerns about students being assessed on their ability to memorise and recall information in order to become 'walking encyclopaedias of medical knowledge', rather than on their ability to solve medical problems using sound clinical reasoning, and the application of knowledge (ibid, p. 5-6). The increase in

focus on students being able to apply their knowledge to real-life problems in graduate employment roles has catalysed the use of PBL across disciplinary groups, although health disciplines continue to feature strongly in scholarly works.

Definitions and designs have altered, as problem-based learning has been adopted by more disciplines and more institutions, each wanting to make their own adaptations (Walker & Leary, 2009: p. 13). Savin-Baden (2014) suggests that PBL has diversified over time, as it has been adopted in varying ways by different disciplines, and she argues this risks PBL practice being reduced to guidelines rather than reasoned pedagogy. To capture this diversity of practice, she categorises PBL into nine 'constellations' (p. 202). For each constellation she explains the ways in which they correspond to modes of knowledge, forms of facilitation, and intended outcomes of learning. These constellations range from problem-focused designs that are most concerned with propositional knowledge, with a directive style of facilitation; to more collaborative and critical designs that are concerned with uncertain knowledge, where facilitators adopt a more enabling stance, prompting reflexivity in group members. Kek and Huijser (2017) warn that the 'elastic' nature of PBL is both its strength and its weakness, as there is a risk that too much diversification may result in an 'anything goes' approach to PBL (p. 3). What I argue at this point is that the diversification of PBL may be the result of disciplinary or site-specific habitus that has not yet been explored.

As well as the challenge of diversity of PBL designs, there is some confusion in the literature that relates to terminology. Mainly, this relates to the similarities and differences between problem-based learning and enquiry-based learning (EBL), also referred to as inquiry-based learning. There are studies that report their research relates to EBL, but when explored in more depth, appear to be more aligned with definitions of PBL, and this may lead one to believe the terms are interchangeable (see examples such as Tully (2010) and Snow and Torney (2015)). Some suggest that EBL is an overarching philosophy that encompasses PBL (Deignan, 2009), whilst others, such as Tosey (2008) present EBL as broader in its scope than PBL, asserting that students are more autonomous in the topic and direction of their enquiry. Moallem (2019) explains inquiry-based learning as a method that emerged in science disciplines, where deductive questions were formulated following direct real-world observations (p. 113). He suggests that the questions may have single-step answers and asserts that the tutor mainly directs the inquiry. Again, there may be disciplinary nuances that are yet to be understood within these variances. For me, the definition of PBL is clearer than the definition of EBL, which seems more problematic to delineate. Table 1 illustrates some of the possible distinctions between

PBL and EBL, although, as mentioned above, this should not be applied to all research without judicious review.

Table 1: Comparison between problem-based learning and enquiry-based learning

	<i>PBL pedagogical model</i>	<i>EBL pedagogical model</i>
Tutor role	Facilitates learning Questions reasoning Provides feedback on student engagement with learning process Encourages students to reason through activities	Guides learning Role models reasoning Provides feedback on student content learning Encourages students to respond to questions
Student role	High degree of responsibility for own learning Focus on developing disciplinary identity Works in self-directed manner and collaborates with team members	Moderately high degree of responsibility for own learning Focus on gaining disciplinary subject knowledge Works in self-directed manner May work independently
Sources of knowledge	Students encouraged to find and apply the most appropriate knowledge Team members are a source of knowledge	Tutors provide or guide the students towards the most appropriate knowledge Tutor is a source of knowledge
Learning activities	Ill-structured problems or trigger scenarios Activities focus on the process of learning	Problems or trigger scenarios are structured Activities focus on the content of learning

It is important to concede that inconsistencies in the use of terminology means that to focus only on PBL research that is named as such, risks overlooking crucial knowledge in the field. Literature was therefore considered acceptable to include within this review if the details in the article revealed it to be synonymous with the definition of PBL discussed in chapter 1.

2.3.2 *The value of problem-based learning*

There are a range of student benefits to using problem-based learning reported in the literature, and these tend to centre around its effectiveness in student learning, and its use in supporting the development of the skills considered crucial for graduate employment. There is, however, some disagreement in this regard, with some authors, such as Carriger (2016), asserting that more traditional methods of learning, such as lectures, are more effective regarding 'knowledge acquisition' (p. 95). For me, this is an interesting term that seems to objectify knowledge as something that can be collected or obtained. It seems in tension with student-centred principles, and therefore prompts further consideration of what measures effectiveness, and indeed, what

counts as knowledge. Or, as Savin-Baden (2020) questions, 'What knowledge is of most worth?' (p. 8). For Carriger (2016), the measure of knowledge acquisition was a multiple-choice practice exam that students completed within their last class. Such exams would usually only measure what students are able to remember in the short-term, and this is not the aim of problem-based learning. Carriger (2016) does, however, assert that PBL was more effective than lecture-based learning for developing problem-solving skills and critical thinking skills, and I argue that these are more valuable for graduate employment.

Similarly, Ma and Lu (2019) discuss methods of teaching and learning that support students in 'accumulating theoretical knowledge' in China (p. 7). From this language, and indeed, by their own acknowledgement, it is revealed that problem-based learning contrasts with the traditional Chinese models of teaching that students have 'long accepted' as being adequate (p. 7). These are more synonymous with students *receiving* knowledge. Despite this cultural change, following a meta-analysis of randomised control trials, they concluded that PBL was more effective at increasing knowledge, skills, and case analysis scores than traditional teaching methods, such as lectures.

Acquired and *accumulated* knowledge is likely to be synonymous with absolute ways of knowing, where students contend with knowledge that is certain and often delivered by their tutor (Baxter Magolda, 1992, p. 30). It is likely that the social structures that influence the cultural norms where absolute ways of knowing are in focus will vary from those that focus on other modes of knowledge, such as transitional, independent, and contextual, where students contend with uncertain knowledge and its application in real-life contexts (Baxter Magolda, 1992, p. 30).

Norman and Schmidt (2000) argue that PBL is an effective approach to teaching and learning; however, warn that quantitative approaches to its measurement often fail to capture what is truly propitious. They argue that research that merely attempts to compare variables within educational contexts, fails to acknowledge the uniqueness of each classroom interaction. Further, they oppose the notion of a uniform intervention, or a pure outcome in such research. Instead, they advocate the following:

'[W]e must seek to capture and measure, precisely those variables that the hard-core experimentalist seeks to randomize away. The advantage of a real environment is not that it is so messy with extraneous variables that we must randomize their influence away, but that it is so rich with other variables that we must capture these effects to truly understand the complexity of learning interactions.' (p.726)

Whilst I agree that the richness and messiness of learning interactions are crucial to explore, especially regarding relational pedagogies such as PBL, I am sceptical that their true value can easily be *measured*, as this richness goes beyond the grades awarded being the intended outcomes of education. Nonetheless, I concur with the principle of their argument, and consider it vital to explore and understand the richness and messiness that they describe.

Kek and Huijser (2017) assert that education is no longer merely about the qualifications that students achieve but is instead about students developing ways of *being*. They explain that PBL socialises students into autonomous, reflective, and resourceful ways of being. Further, they explain that these ways of being become encultured and unconscious, and students develop confidence in coping with change, uncertainty, and risk. This is due to them gaining a better understanding of the process of solving a problem, rather than merely being able to memorise a solution (Hoidn, 2017: p. 18). Again, this socialisation into cultural norms needs further consideration to understand whether this might relate to disciplinary habitus, or other broader social structures. The problems facilitate a shift in student thinking, rather than lead them towards a straightforward answer (Savin-Baden, 2020). This results in students being more able to reason independently (Prosser & Sze, 2014; Wang et al., 2016), think critically (Hussin et al., 2018; Kong et al., 2014), and understand new, complex situations (Alrahlah, 2016; Savin-Baden, 2000), which supports them being able to apply knowledge in new settings, such as is needed in graduate employment (Hoidn, 2017: p. 18).

2.3.3 *Student experience*

As well as student outcomes being well researched, there is an abundance of research exploring the students' experiences of PBL, with a number of commonalities. Macdonald (2004) suggests that students' responses to PBL will often be influenced by their previous experiences of learning, the ways in which PBL is introduced to them, and by the approaches of individual tutors (p. 42).

Studies have shown that where students have been accustomed to other methods of teaching and learning, they need time and support to adjust to PBL (Compton et al., 2020). Mabley et al. (2020) used observational data to understand students' first experiences of PBL within an undergraduate engineering course. Students had grown accustomed to lecture-based learning in the first two years of their course, where tutors would be considered the holders of knowledge, and they subsequently struggled to adapt to the autonomous learning style required in PBL. They noted that students spent too much time in the session discussing the processes of PBL, and not enough discussing things such as prior knowledge. They struggled to think beyond the

boundaries of the module, and therefore failed to draw on knowledge from other modules, or indeed, relate their knowledge to the broader context. Savin-Baden and Major (2004) warned of some of these challenges, and they argue the importance of considering the teaching and learning of the entire programme, rather than at a module level, which risks inconsistencies in approaches across the programme, and a disconnection in relation to student learning. They stress the importance of having a philosophy of curriculum design that underpins the teaching and learning at a programme level, and this may have impacted on students' experiences.

Interestingly, developing a PBL culture does not eradicate the students' notions that tutors are the holders of the most up to date knowledge. Aalborg University in Denmark is known for its longstanding commitment to PBL, and so not only is it an educational philosophy at a programme level, but also at a wider university level. Despite this, Monrad and Mølholt's (2017) study of social work students revealed that there is a discrepancy between the learning activities where students reported that they learned the *most*, and the learning activities that they expressed a *preference* for. Students reported that they experienced the *most* learning within PBL sessions; however, revealed that their *preferences* were in fact, for lectures. This could initially be considered as quite remarkable, as one might imagine that students would prefer the learning activities where they learned the most. However, the study provides some useful context. These learning activities did not exist in isolation, and so were considered by students to complement one another. Whilst students asserted that they learned most in the PBL sessions, they expressed some anxiety about whether their learning was sufficient. They seemed to gain some reassurance from the lectures, trusting that the tutors were covering the most relevant and up to date knowledge in the depth required. This corresponds with other studies that have reported students to hold the expertise of tutors in high regard (Couto et al., 2015). This has implications for practice, as we try to develop learning activities that maximise student learning within an educational culture that has a strong fixation on measuring student experience.

Cooper and Carver (2012) discovered that students' confidence increased as they became more experienced in PBL. Students' initial anxieties had related to knowing whether they were exploring relevant knowledge, and whether they were learning to an appropriate depth, and they found that facilitator guidance helped in this regard. They also reported students having an initial anxiety about group dynamics and how they might manage challenges such as team members not contributing appropriately. As students gained confidence in the PBL process, they also acknowledged increased confidence in managing these team dynamics and

recognised the value of self-regulated learning. This was synonymous with Svensson et al.'s (2021) study which revealed that students acknowledged becoming more autonomous in their learning following an initial anxiety about the depth of knowledge required. Further, they reported that where students did have anxieties about the depth of knowledge required, they sometimes adopted surface learning techniques, such as memorising information in advance of the session. Both studies stressed that students placed a high degree of value on the skilful engagement of their facilitator. In accordance, Martin et al. (2008) reported a change in students' motivation to learn when they learned in a problem-based way. It was noted that they initially had an extrinsic motivation to learn, but that this had shifted to being much more intrinsic after their PBL experience. This shift in control, autonomy, and motivation needs to be supported by facilitators, and engaging with students about the pedagogical reasoning for PBL helps with these transitions (Wosinski et al., 2018). A deeper understanding of the educational context in which these studies happened would have added interesting insights.

2.3.4 Cultures of learning

When researching teaching and learning approaches, it is important to consider the educational culture in which they happen, as this will be useful in understanding what shapes them. Clearly our cultural norms are a major influence on the ways we teach and learn; however, as is often the case, they may be so entrenched in what we do, that they become assumed and invisible to those involved. The result of this is that much of the PBL research fails to provide an illustrative account of the educational environment in which it has been carried out, and this obscures any disciplinary or site-specific habitus. Nonetheless, some of these cultural norms can be detected, albeit in subtle ways. Joseph et al. (2016) explored tutors' perceptions of PBL and suggested that they were supportive of it as an approach to learning. However, there was some incongruence in this study, that perhaps alluded to PBL being a pedagogical misfit within the cultural context in which the research was carried out. The facilitators in the study were reported to have been 'trained by experts' using PowerPoint, interactive discussions and demonstrations (p. 1). For me, there is a slight irony in the notions of expertise and training being considered the most appropriate method of teaching and learning to develop the knowledge and skills required to become a PBL facilitator, and it would be interesting to understand the reasoning behind it. Why, if PBL is considered to be a useful approach to learning, is it not the approach to learning used to support the facilitators? I suspect there are some cultural norms about training being delivered by PowerPoint, or perhaps cultural norms about sessions being contained in one day with participants being more passive recipients of knowledge.

Shulman (2005) suggests that studying a society's nurseries will illuminate its culture and I would argue that the same is true in the context of higher education. One might ask 'what are the teaching and learning activities that tutors engage in, and how student-centred are they?'. I suspect there will be great variance in responses to this question across organisations, although extending this question more broadly into higher education cultures, one might ask why student-centred pedagogies are not yet central to conversations that refer to 'traditional teaching'. This cultural context is important to consider within educational research.

Savin-Baden and Wilkie (2004) warned of risks where tensions exist between regulation and pedagogy. They cite the Nursing and Midwifery Council as an example, due to its focus on identified competencies required for registration, which they suggest has the potential to have an impact on the students' freedom of learning. I would suggest that the same is true in UK higher education more broadly, and I argue that exploring the impact of such tensions is crucial. More recently, Savin-Baden (2020) reports that the implementation of PBL faces ongoing challenges, and she blames administrative structures for *taming* learning, by enforcing less flexible ways of learning. She suggests the rigidity of some organisational environments maintains a focus on 'training' students, rather than allowing them to engage with learning more creatively and authentically. This is synonymous with the findings of O'Shea and McGrath (2019) who found that the professional artistry of occupational therapy lecturers underpinned their professional identity and habitus, but was found to be in tension with some of the outcome-driven structures within higher education.

Broader structural influences on academic practice emanate this rigidity far beyond the confines of the university walls, and higher education has a range of regulation, governance, and policy that shapes the approaches to teaching and learning. Due to the governmental devolution of education, there are differences in the funding and regulatory bodies in the four countries of the UK. In relation to the three countries included in this study, the Office for Students is the regulatory and funding body for higher education in England, and it regulates aspects such as quality and standards, as well as access and participation (DfE, 2019). In Wales, this role is undertaken by the Higher Education Funding Council for Wales (DfES, 2014), and in Scotland, the Scottish Further and Higher Education Funding Council undertakes the funding responsibilities, but is regulated by the Office of the Scottish Charity Regulator (OSCR & SFC, 2016).

Such regulation begets some of the structural measures of the quality of teaching and learning, such as the TEF, which is mandatory in England, but optional in other countries, and the

National Student Survey which covers all three countries included in this study. Ball (2015) argues passionately of the adverse effects of higher education being overly focused on metrics, and the experiences of academics always being reduced to something measurable. He offers the following warning:

'Once in the thrall of the index, we are easily reduced by it to a category or quotient – our worth, our humanity and complexity are abridged. We come to 'know' and value others by their outputs rather than by their individuality and humanity'... ...'the danger is that we become transparent but empty, unrecognisable to ourselves in a life enabled by and lived against measurement.' (p. 258)

One such example of this is the increased focus on the number of academics who have post graduate certificates in teaching and learning that meet the benchmarks of the UK Professional Standards Framework (UKPFS), thus gaining them fellowship with Advance HE. Kushnir and Spowart (2021) warn that the 'all-devouring' focus on such benchmarks risks obscuring the more authentic aims of higher education (p. 165). This corresponds with research undertaken by van der Sluis (2021) who found there to be no positive or negative association between an increased number of fellowships at a higher education institution, and their National Student Survey (NSS) scores. Whilst the UKPFS aims to recognise individuals' abilities to apply evidence-based teaching practices, I would argue that neither this nor the NSS can be considered a reliable measure of the teaching and learning quality.

What is sometimes clear, and other times alluded to, is that PBL does not always fit with the educational culture within UK higher education. This corresponds to the 'erosion' of PBL that Moust et al. (2005) describe when they reviewed the changes to PBL curricula over a 30 year period. They suggest that financial changes have reduced the tutor/student ratios, and this structural change has resulted in larger PBL groups, which function differently to smaller groups. They also suggest an increased focus on content, describing tutors as being infected with 'coverage virus' (p. 673). They assert that this has resulted in more and more lectures being provided, and tutor guides moving from a focus on pedagogy and facilitation, to a more detailed focus on subject knowledge. Whilst dated now, this article raises some interesting questions about the factors that drive change in curricula, and there continues to be a lack of longitudinal research that maps this over time. Further, I would argue that there remains a dominant narrative in higher education where less flexible learning outcomes and more traditional teaching methods are favoured over student-centred authentic learning. It is of significance that in 1980 Barrows and Tamblyn refer to teacher-centred learning as *traditional*,

and some 40 years later this tradition prevails, and we have not yet progressed to calling these 'previous traditions' of teaching and learning. These traditions have become the pedagogical habitus of UK higher education.

It is also important to consider the learning culture from the students' perspectives. Gram et al. (2013) studied Chinese students' ways of adapting to PBL within a Western educational culture. They explored students' perceptions of PBL and their experiences of student-centred learning, comparing them with the more didactic style they had been accustomed to. The study found the students to be initially anxious and uncomfortable with the change in learning styles. However, they were reported as being resilient and adaptable over time, expressing that they found PBL to be a positive experience. This illustrates a change in habitus for the students. Bourdieu and Wacquant (1992) explain that habitus is 'durable but not eternal' (p. 133), and therefore socialising students into new approaches to learning, can be useful in time. Fonteijn and Dolmans (2019) also acknowledged differences in educational cultures and the impact that this has on the ways in which students engage in small group working in PBL (p.205).

In summary, PBL is a well-researched approach to teaching and learning and studies have extended far beyond its origins in medical education. It is reported to prepare students well for graduate roles due to moving beyond ways of knowing, to ways of being. Students' response to PBL is influenced by their broader experience of learning, and their resulting expectations and confidence. It is unclear why the educational habitus in UK higher education continues to be portrayed as teacher-centred approaches to teaching and learning being *traditional*. Much of the PBL research presents single-site case studies and therefore fails to consider this broader context.

2.4 Facilitation

The challenges of PBL facilitation appear more prominent in literature than challenges relating to other methods of teaching. This section explores literature regarding the role of the PBL facilitator and how this may sometimes be considered a transition of role. It portrays some of the challenges commonly identified, and the ways in which the pedagogical beliefs that underpin tutor agency may impact on their facilitation.

2.4.1 *The disjunctive role of PBL facilitator*

The role of PBL tutors has been researched extensively, with much of the focus being on a transition from teacher-centred methods of teaching and learning, to the more facilitative methods synonymous with PBL. Tutors are usually described as facilitators (Hitchcock &

Mylona, 2000; Rico & Ertmer, 2015), and therefore guide and nurture student learning, instead of delivering information to them in a more didactic manner (Hoidn, 2017; Papinczak et al., 2009). Effective facilitation is central to the success of PBL (Hmelo-Silver et al., 2019), although universities often fail to recognise the complexities and challenges in this role (Savin-Baden, 2003). Whilst there is some degree of variance in the titles of teaching roles more broadly within higher education, there seems to be little acknowledgement of the advocated shift towards student-centred teaching methods. Rather, there seems to be a shift in role title within UK higher education, from lecturer positions toward professorial positions, which could be perceived to be a move in the opposite direction. Cameron (2021) reports that professorial roles are more clearly associated with research activities than teaching activities, therefore the shift in role title is likely to be consistent with universities' endeavour to ensure their strong research focus is represented in the roles of their workforce. Indeed, whilst undertaking this research, my own role title has changed from Senior Lecturer to Assistant Professor. For me, both titles form barriers to student-centred learning as they portray knowledge and status as being located within those who teach, rather than those who learn. Even the word 'teach' seems ill-fitting in this regard, for similar reasons.

Interestingly, Morling and Lee (2019) conducted a study of perceptions of different faculty roles, gathering data from both staff and students. Findings revealed that staff perceptions were that professorial roles would have more status, higher pay, and that people in these roles would be more likely to have a PhD than those in lecturer roles. Interestingly, in contrast, students did not perceive the roles as significantly different. It would, however, have been useful if the study had also explored the perceptions of teaching and learning styles associated with the roles, as this would be pertinent in considering the influence of role title on students' expectations of pedagogy. Accordingly, it is conceivable that the role of *facilitator* would have even less status ascribed, as the balance of knowledge and responsibility shifts further towards students, and this may well be a barrier to tutor facilitation.

The perception of these roles reveals some of the cultural expectations within higher education, which in turn, provide a pressure towards perceived teaching and learning norms. Robinson et al. (2015) discuss the concept of saving face in a PBL environment. Whilst their study relates to the challenges that *students* have in relation to saving face, it would be useful to extend this to consider what saves or threatens the 'face' of facilitators. They describe 'face' as being 'both a social and a dynamic concept, in that it is constructed in interactions, and is associated with a judgement made by others.' (p. 13). They explain that it relates to notions such as esteem

and worth, with judgements relating to wider cultural values and beliefs. They describe 'face-threatening acts' as those where there is a risk of losing face, such as engaging in team discussions where opinions differ (p. 13). The fluid nature of PBL means that facilitators who continue to see themselves as gatekeepers of knowledge, may risk feeling *exposed* when students develop knowledge that they do not have themselves. The perceptions of roles and titles discussed may add to this cultural belief, thereby resulting in many forms of PBL being considered to be face-threatening.

Such factors add to the complexity of challenges that are bestowed upon PBL facilitators. Barrows and Tamblyn (1980) suggest that teachers have little difficulty in delivering teacher-centred learning, suggesting that new skills are required to facilitate PBL (p. 18). Disappointingly, in the decades that have passed since this suggestion, little seems to have changed, and this would indicate that there are more significant barriers beyond a fairly straightforward need to upskill the higher education workforce. Instead, I would argue that the complexity of PBL facilitation continues to be overlooked.

The role of the PBL facilitator is often considered to be in tension with the more didactic roles in higher education, and the variance is such that tutors are reported to undergo a transition of academic identity (Savin-Baden, 2003). Lekalakala-Mokgele (2010) report that tutors found it challenging to modify their style of teaching from traditional didactic methods to more student-centred, facilitative methods, and explain this in terms of the tutors undergoing a paradigm shift (p. 639). In many ways, it could be argued that this is in fact a demonstration of the constructivist nature of problem-based learning, as tutors are required to deconstruct what was known to them in order to arrive at a new way of knowing. Nonetheless, tutors reported difficulties in relinquishing control, and discussed a resulting sense of anxiety and low self-worth.

The transition from lecturer to PBL facilitator is far from simple, given the unique perceptions of individual facilitators regarding how to undertake the role (Roberts, 2010). Whilst some have mistakenly considered the facilitator role to be passive (Hmelo-Silver et al., 2019), quite the opposite is true. Facilitators are more effective in supporting student learning when they are actively engaged, challenging and questioning students' discussions (Cooper & Carver, 2012), and this requires a degree of intuition (Savin-Baden, 2003), the ability to manage group dynamics (Fontejn & Dolmans, 2019), and knowing when to intervene, and in what ways to intervene (Hmelo-Silver et al., 2019). Students find that competent facilitator engagement provides a sense of security, and report that silent facilitators can be troublesome (Svensson et al., 2021). As such, whilst Hmelo-Silver et al. (2019) describe facilitation as a 'subtle' skill (p.

304), the role is far from passive, and it is vital that facilitators influence the group dynamics at an early stage, to avoid non-productive student behaviours becoming the cultural norms of the group (Fontejn & Dolmans, 2019).

2.4.2 *Conducting the orchestra*

Papinczak et al. (2009) liken the role of PBL facilitator to that of the conductor of an orchestra and indeed, this can be a useful analogy due to them both being complex roles that are not well understood. Further, I would argue that both roles attract a few comments about *not doing much*, despite them being highly skilled in their interactions with dynamic groups. It is foreseeable that there being a range of definitions of PBL, decrees an ensuing range of facilitation styles, and much is discussed about the complexities of interactions and the approaches that might be adopted. Heron (1989, 1993) is often cited as a pioneering writer in this regard. He presents three modes of facilitation; namely hierarchical, co-operative, and autonomous, and these vary in the degrees of authority that the facilitators and students have (Heron, 1993, p. 111). In adopting a hierarchical mode of facilitation, he suggests that facilitators manage and direct the work of the team, often being the one to make key decisions. A co-operative approach to facilitation sees the authority of the group shared between the facilitator and the students, resulting in a more collaborative relationship. Finally, an autonomous approach to facilitation is where authority is delegated to the group and they are supported by the facilitator to make their own decisions, and to work much more autonomously.

In contrast, Moore (2009) observed and interviewed 10 PBL facilitators and suggests the role of facilitator is 'ill-defined', also reporting a lack of guidance for facilitators (p. 151). This provides a challenge when reviewing the literature, as it is rarely explicit which style of facilitation is being studied. Similarly, Walker and Leary (2009) found the same to be true regarding the type of PBL being used. In their meta-analysis of 82 PBL studies, they report that many authors *suggest* making explicit the type of PBL used, but report that few have done so (p. 23). This clearly has implications for the style of facilitation undertaken. It also raises questions around how much facilitators understand of this, and adapt to the most appropriate mode of facilitation. Papinczak et al. (2009) explored facilitator effectiveness as perceived by students, and discuss challenges around managing complex group dynamics, and addressing issues as and when they arose within groups. This corresponds to the findings of Robinson et al. (2015), who explored issues around rapport management within PBL contexts. Their qualitative study gathered data from students through interviews, focus groups, and observations, and concluded that facilitators

need to support students more in their understanding of the constructivist nature of PBL, alongside promoting a relaxed and cohesive atmosphere.

McAllister et al., (2014) interviewed both tutors and students, exploring the notion of control within PBL contexts. They concluded that the role of the facilitator is complex, suggesting a need for a careful balance of the type and amount of intervention regarding both the content and student interactions. They report that too much intervention risks stifling the students' creativity. This is synonymous with the notion of the 'tightly coupled' organisations, where individuals felt unable to innovate due to constraint on their agency (Hautala et al., 2021, p. 4) However, McAllister et al. (2014) also acknowledge the challenges in activating the quiet or detached members, and this is noted as a source of student complaint when not addressed, in other studies (Papinczak et al., 2009; Tully, 2010). This sense of balancing input appears frequently in studies (See examples such as Assen et al. (2016); Lekalakala-Mokgele (2010); and Papinczak et al., (2009)), and tutor expertise regarding the subject knowledge may also influence this.

Couto et al. (2015) conducted a quantitative study comparing students' perceptions of PBL sessions facilitated by tutors who were considered to have subject expertise, and those who were considered not to have subject expertise. The students participated in PBL sessions initially with tutors without subject expertise, and subsequently, with subject expertise. The students overwhelmingly rated the tutors with subject expertise, as more effective in guiding and supporting the learning process. All tutors in the study had participated in the same PBL facilitation training prior to delivering the sessions and so it was concluded that the subject expertise was what made the difference to students' experiences. However, had the study adopted more observational methods of gathering data, other conclusions may have been drawn. For example, it could be that the subject expert tutors were able to guide and question the students around aspects of learning, or it could be that they delivered more content within the sessions and the students rated this. Another important factor to consider is that the sessions facilitated by those with subject expertise were the students' second experience of PBL. This may have affected the students' perceptions of tutors, as they may have become socialised into the PBL 'ways of being' (Kek & Huijser, 2017, p. 20), or they may have been more comfortable with the process than they had been during their first encounter with PBL (Robinson et al., 2015).

Whilst the model of PBL being used will guide the style of facilitation required, there are clearly other influencing factors. Studies suggest that PBL facilitators are required to balance aspects

such as managing group dynamics with encouraging student autonomy. They also need to balance the amount of their own knowledge and understanding that they impart in the sessions, with the meta-cognitive questioning of students' knowledge and understanding (Rico & Ertmer, 2015). This is a skill that requires practice, and it is reported that facilitators gain confidence in facilitation as they gain experience (Joseph et al., 2016; Wilkie, 2004). Wilkie (2004) observed that facilitators changed in the way they facilitated PBL over time and learned to appreciate that there was not a 'one size fits all' approach to facilitation, meaning that they had to be flexible in their approach (p. 87).

2.4.3 Pedagogical beliefs

There is much discussion in published literature about tutors' epistemological beliefs, and how this may or may not influence their teaching styles. PBL is usually associated with uncertain knowledge, and this is relevant to the role of PBL facilitation. Whitehill et al. (2014) explain the epistemological values that would usually be associated with this, explaining that 'For those engaged in PBL, there is a general consensus that there is no stable 'truth' to be uncovered but that truth and knowledge are evolving, contested, and under constant re-construction.' (p. 3). They stress that epistemology needs to be considered before PBL as a philosophy can be understood. Hofer and Pintrich (2004) assert that individuals have unique conceptions of what knowledge is, and how it can be constructed, which they explain as an individual's 'personal epistemology' (p. 4). Whilst our personal epistemologies undoubtedly shape our teaching practices, it would be naïve to assume that this is not complicated by other issues. Some structural examples might be the physical environments in which the teaching takes places, the policies and procedures within organisations, or broader regulations such as the UK-wide enforced transition to online learning in March 2020 (QAA, 2020).

Norton et al., (2010) interviewed new lecturers who were studying a post-graduate certificate in learning and teaching in higher education and found that they generally perceived the role of a tutor as a facilitator of learning. They reported, however, that the tutors felt constrained in this facilitator role, due to structural influences beyond their control, such as group size, inheriting teaching from other tutors, assessment regimes, and time. Further, there were some slightly contradictory discussions around assessments. Tutors reported feeling a sense of responsibility for the students passing assessments, and they admitted that this had resulted in them feeling under pressure to resume a less facilitative style of teaching, and instead, be more directional. This suggests that tutor confidence in student-centred learning was not entirely as they had espoused, as there seems to be a tacit assumption that students are more likely to pass

assessments when tutors are more directive. Further, it raises the notion of assessment as a structural influence that may in itself impact on tutor agency.

This corresponds to Assen et al's (2016) mixed methods study, which concluded that tutors' beliefs did not necessarily predict their actions. They collected survey and observational data from 57 tutors. Whilst tutors' pedagogical preferences were cited as being in favour of the more student-centred styles of learning, observational data revealed that tutors demonstrated a more traditional style of teaching than those they had ascribed value to. Argyris and Schön (1974) differentiate between individuals' espoused theories and their theories in use. They argue that if individuals are asked about their behaviours, their response will relate to the theories they pledge allegiance to. However, importantly, what guides their actions, which Argyris and Schön entitle their theories in use, is not necessarily always the same as those they espouse loyalty to, and this therefore seems synonymous with the findings of Assen et al. (2016).

Moore (2009) also explored PBL tutors' facilitation styles and the influence of their pedagogical beliefs. Tutors were observed and then interviewed, and were found to facilitate in a manner that was in tension with their espoused beliefs. The tutors discussed that they felt the need to appear more credible to students by inputting information to the sessions (p. 154). Again, this indicates some of the conflicting tensions that arise within student-centred approaches to teaching and learning, although it is not clear what is at the heart of this perceived credibility. Hallett (2010) also studied the pedagogical beliefs of tutors and whether their teaching practices were congruent to their asserted beliefs. In this study however, the focus was on the influence on teaching approaches on a more macro level, namely the requirement to teach set standards, and the influence of assessment regimes and national league tables. This caused tensions for tutors and they reported a sense of conflict between feeling under pressure to deliver content and endeavouring to activate independent thinking in the students. This is a useful study in providing some insights into the impact of structural influences on teaching practices.

Skelton (2012a) explored some other challenges that tutors reported as barriers to being able to teach in congruence with their pedagogical beliefs. He interviewed 11 tutors and found that even highly committed tutors found it challenging to focus on improving the quality of their own teaching, as they perceived the university's focus was more towards research. In another article exploring the same study, he reports tutors feeling a sense of dissatisfaction when they feel constrained in their ability to teach according to their pedagogical beliefs (Skelton, 2012b). He focuses on more structural constraints and suggests that these exist at a micro, meso and macro level, resulting in tutors compromising their values. Whilst the study was not specifically

about PBL, it did report particular tensions around student-centred learning. Several of the participants in the study discussed tensions in the transition to more student-centred approaches, which were not centred solely around their own confidence in the role of facilitator. Instead, they reported perceiving contradictory messages within the culture of the department that sometimes conflicted with their pedagogical values. Inside the classroom, students were being encouraged to take responsibility for themselves and their learning; however, outside the classroom, the department was reported to 'pander' to them, and this resulted in a lack of congruence in communication (p. 262). In accordance McAllister et al. (2014) suggest that students being considered 'customers' can affect the balance of responsibility and control, directing it away from students and back towards higher education establishments. It is important to consider in depth, the ways in which this may influence teaching practices.

In summary, the role of PBL facilitator is complex, and research suggests there are continued challenges in tutors transitioning from didactic teacher-centred teaching and learning activities to a more facilitative approach. There are a range of approaches to facilitation, which are unfortunately rarely detailed in the studies. Some research indicates that tutors do not necessarily enact the approaches to teaching and learning that they espouse; however, there are very few studies that explore the reasons for this.

2.5 Teaching and learning across disciplines

This section explores the literature relating to teaching and learning within the disciplines. As such, it begins with an exploration of the nature of academic disciplines and how they may be characterised. Next, it discusses some of the customs and cultures of teaching and learning in the disciplines, outlining what has been found in relation to the disciplinary groups included in this study.

2.5.1 Characterising disciplines

The word 'discipline' has its origins in education and has influenced the structural boundaries of higher education departments or schools for a considerable time (Klein, 2006, p. 10). Kek and Huijser (2017) assert that 'disciplinary thinking is so ingrained into our modus operandi and woven into our DNA that it operates like common sense, and most of the time, we don't give it a second thought.' (p. 66). They suggest that disciplinary cultures can embody their own behaviours and languages, arguing that students will struggle to integrate knowledge across disciplinary boundaries if they are taught in discipline-based curricula. This embodiment of common sense is what Bourdieu (1977) explains as doxa. Doxa relates to the values and beliefs

that underpin habitus and is strongest where structures (such as the boundaries of disciplinarity) are stable. I argue therefore, that this disciplinary thinking is not ingrained into individuals, but rather, is socialised into them. Such socialised and unconscious behaviours have become the 'internalized programs' (Bourdieu, 1984, p. 424) that I explain as disciplinary habitus. Krebin (2009) suggests that introducing students to disciplinary behaviours and ways of thinking allows for a better understanding of the identity of our students, and she also advocates for teaching and learning experiences that cross disciplinary boundaries. She argues that disciplinary identity is powerful, asserting that many academics feel a stronger connection to their discipline, than they do to the university that employs them.

The boundaries of disciplinarity are contestable, and as new specialised knowledge emerges, old boundaries are broken down, and new ones transpire. This intensifies ongoing debates around how disciplines are defined and delineated. Becher and Trowler (2001) explain that historically, university departments provided some sort of indication of disciplinary boundaries; however, prompt consideration of when a new discipline may be born out of a parental discipline (they give the example of mathematics being the parental discipline of statistics) (p. 41). Some disciplines are broad in their scope, whilst others, such as biology or physics have become 'federated' disciplines due to having generated a number of subdisciplines over time (Klein, 2006, p. 11). Similarly, Bernstein (2000) refers to 'singulars' and 'regions' when describing disciplinary knowledge structures (p. 52). He suggests that singulars are knowledge structures that are unique, with tight boundaries, such as physics or chemistry. He describes regions as the 'interface between disciplines', arguing that regionalised disciplines have more autonomy over the course content, and are therefore more able to respond to the demands of the wider market they serve (p. 52).

Krebin (2009) prompts us to differentiate between a *subject*, which she defines as 'what is looked at', and a *discipline*, which she defines as 'what is looked through or with' (p. 4), further explaining it as a lens through which we make sense of the world (p. 16). This may provide a useful, albeit simplistic way of considering how new disciplines emerge. As subject knowledge expands and develops over time, the way in which it is categorised, and how it connects with other bodies of knowledge, is reconsidered. This generates new lenses through which we make sense of the world. This may also be why university departmental structures no longer seem so tightly bound by the parental disciplines that were described by Becher and Trowler (2001) or the singulars described by Bernstein (2000).

The scholarly works of Biglan (1973a, 1973b) are often cited as seminal in relation to disciplinary teaching and learning, following his exploration of the characteristics of subject matter across academic areas. His work offered a 3-dimensional scaling of subjects according to whether they were paradigmatic or not, whether they were applied or not, and whether they were concerned with life systems or not. The first two dimensions feature more heavily in the literature and the opposing ends of the dimensions labelled as hard and soft for paradigmatic subjects, and pure and applied in relation to the application of subject knowledge. As with many explanatory typologies, its simplicity is compelling; however, it was written in a different educational era, and much has changed. In relation to paradigmatic and non-paradigmatic academic areas, Biglan draws on the work of Kuhn (1962) in explaining the term 'paradigm', suggesting that it relates to there being a single body of knowledge that is characterised by there being consensus regarding content and methods. Kuhn himself suggested that this had been the least understood aspect of this literature, despite being one of the most crucial (Kuhn, 1969, p. 186) and this risks Biglan's typology being grounded in confusion. Nonetheless, there are aspects that can crudely be considered in relation to paradigmatic knowledge, such as models, rules, and exemplars, and it clearly has its roots in the sciences, which is arguably how many researchers interpret this dimension. In other words, is the subject matter rooted in science or not? The other dimension that is often referred to when citing Biglan's typology is the pure to applied dimension. Again, this provides a fairly simplistic view of subject matter that was probably more relevant in the 1970s than it is now. With the increasing focus on graduate skills, there are likely to be far fewer programmes that do not have some degree of focus on the application of knowledge. Kreber (2009) offers further criticisms of Biglan's typology, explaining that in more recent times, programmes are more likely to transcend what were the historical boundaries of disciplinarity, and this adds to the complexity. She also suggests that it fails to recognise the individual and subjective nature of disciplinary identity, instead, viewing it as one that is shared by a community.

Becher (1994) uses Biglan's model to categorise academic disciplines broadly, and this gives some indication of the ways in which disciplines were perceived in the 90s. He suggests that hard pure disciplines are natural sciences, soft pure are humanities and social sciences, hard applied are science-based professions, and soft applied are social professions (p. 152). Again, evidently much has changed since this work, and many disciplines would be likely to contest their depicted categorisation. Nonetheless, it can be a helpful model to prompt consideration of the *degrees* to which these dimensions influence the unique nature of a discipline, how this may

impact on the identity of individuals within that community, and how it may shape the teaching and learning.

Trowler (2014) warns that researchers need to engage with the 'heterogeneity and dynamism' within disciplines to truly understand them as communities (p. 1721). To use my own disciplinary background as an example, occupational therapy is without a doubt a discipline that applies knowledge, yet it seems to transcend the hard and soft dimensions due to drawing on both paradigmatic and non-paradigmatic knowledge. However, as my clinical career was in mental health, I am arguably more likely to draw on knowledge with its origins in psychology and sociology, and in this regard, one might categorise occupational therapy as a soft discipline. However, an occupational therapist whose clinical career has been in hand therapy may draw more on their knowledge of anatomy and physiology, and so may consider occupational therapy to be a hard discipline. Consequently, whilst it may not be useful to categorise disciplines crudely due to their increasingly complex nature, it is important to consider disciplinary epistemics, as this may help us to understand what knowledge is valued, and how it is constructed within disciplinary communities.

Klein (2006) suggests that disciplinary knowledge is characterised by two features: namely, functional differentiation, and systems of power. She describes functional differentiation as relating to the worldview of that discipline, and being evident in the following traits:

- 'a subject matter, and objects isolated for study
- A body of evidence, canon, content laws, formalisms
- Exempla, models, paradigms, and law
- Concepts and theories
- Methods, procedures, techniques, and skills
- Explanatory modes, language and argument styles
- Ontologies and epistemologies' (p. 10)

She suggests that systems of power are evident in traits such as institutional structures and resources, or cultures that shape identities, suggesting that they control the nature of work within a discipline. I would argue that research tends to focus more on the functional differentiation, and the systems of power warrant further attention.

2.5.2 Discipline-based teaching and learning

As mentioned above, it is important to understand the nature of disciplinary subject matter in order to begin to understand the cultural norms within disciplinary groups. Advance HE

(previously the Higher Education Academy), which is a UK organisation that works to improve quality in higher education, has classified higher education disciplines into four clusters. These are Arts and Humanities, Health and Social Care, Social Sciences, and Science, Technology, Engineering and Mathematics (STEM). Abbas et al. (2016) assert that each cluster has pedagogic characteristics in common, that are aimed at developing appropriate graduate identities in their students. Becher and Trowler (2001) assert that disciplinary epistemology and disciplinary cultures are 'inseparably intertwined' (p. 23). Again, drawing on Biglan's (1973b) typology, Neumann et al. (2002) offer some insights in this regard. They suggest that hard pure disciplines are typically focused on fixed content knowledge which results in teaching and learning activities that are instructive in nature. In contrast, soft pure disciplines have more diversification of content knowledge, and teaching and learning activities tend to be more constructive in nature. They further suggest that hard and soft *applied* disciplines contrast in similar ways. Thus, hard applied disciplines are more focused on 'factual understanding' that is then applied to prescribed techniques, whereas soft applied disciplines are more concerned with a more open-ended process of building knowledge and theory (ibid, p. 408).

Such differences in disciplinary habits were explored in the work of Lee Shulman in his articles about signature pedagogies (Shulman, 2005c, 2005b). Here, he explains signature pedagogies as 'the forms of instruction that leap to mind when we first think about the preparation of members for a particular profession', detailing that the students are taught to think, perform, and act with integrity (2005b, p. 52). It is noteworthy that Shulman's work is professionally focused, rather than disciplinary focused, and as such, there is no real consideration of the disciplines that might fall into Biglan's (1973b) pure categories, thus reinforcing the nature of professional groups being disciplines that apply knowledge. However, others have extended the use of the concept of 'signature pedagogies' by exploring the teaching and learning habits of disciplinary groups that have not routinely been considered to be professional (see examples such as Chick et al., 2012; and Gurung et al., 2009).

In 1955, Cogan noted an absence of clarity and agreement in the literature, and warned that to provide a definition for profession, was to invite controversy. Surprisingly, almost 50 years later Cruess et al. (2004) argued that this quest for definition continued. Nonetheless, despite the time interval, the authors of both articles presented some common themes relating to professions. Firstly, they suggest an increased focus on the acquisition of skills as well as knowledge. In accordance, Shulman (2005a) asserts that 'Professional education is not education for understanding alone; it is preparation for accomplished practice in the service of

others.' (p. 53). Secondly, they propose that professions have a more vocational focus, suggesting the presence of key occupational roles that provide service to others. With the increased focus on students graduating from universities with applied knowledge, rather than content knowledge (Pace, 2017), it raises question of whether or not a clear boundary between professions and disciplines truly exists, and as such, I argue that in contemporary higher education, there is an increasing overlap.

A simple search of the term 'signature pedagogies' in academic databases such as ERIC (Education Resources Information Center) or Academic Search Complete indicates the increasing focus on signature pedagogies as customary teaching and learning practices relating to academic disciplines (professional or otherwise). Nonetheless, studies that transcend the boundaries of disciplinarity, such as Shulman's, are disappointingly rare, as much of the research relating to discipline-based teaching and learning continues to focus on a single discipline.

In accordance, it is important to consider the boundaries of the term signature pedagogies. As mentioned above, researchers have extended its use, and this risks a dilution of its focus. In many ways, my choice of research question was underpinned by my own personal stance in relation to signature pedagogies. As a healthcare practitioner I was aware of the challenges for healthcare graduates in transitioning from education into qualified practice in health and social care. Prior to the development of preceptorship programmes across the NHS, which supported this transition, there had been a high turnover of newly qualified staff who had not adequately prepared for or supported in graduate healthcare roles (Dept. of Health, 2010). Indeed, this was synonymous with the experience portrayed by Beth, one of my participants who graduated long before preceptorship schemes were developed. She reflected on her own transition into her first graduate role by saying '*I had this degree, that I just didn't have the confidence that I knew to apply to different situations.*'. As such, even prior to embarking on my academic career, I held a conviction that higher education should have a realistic and real-life focus, that prepares graduates for working life. I argue therefore, that this should be the focus when referring to signature pedagogies, rather than merely considering the habits and characteristic forms of teaching and learning. The ongoing transition towards applied knowledge and graduate skills therefore invites a rekindling of the work of Shulman, focusing on more contemporary signature pedagogies, contextual ways of knowing (Baxter Magolda, 1992), and how these compare across disciplines.

There has been some useful research into the teaching and learning practices of the disciplines involved in this study, and this is useful to consider briefly. Law was a profession included in Shulman's (2005c) work, where he describes a lecture theatre with a semicircle of rows of students facing the lecturer. The lecturer directs questions at individual students, following up on their answers with further questions, analysing or challenging their initial response. Coughlin et al. (2010) explain this as 'Socratic questioning', which they assert is a signature pedagogy in law curricula, as it develops students' abilities to reason, and therefore to 'think like a lawyer' (p. 361). Occupational therapy is described as having relational pedagogies, where its key features are 'learning by doing' (Schaber et al., 2012, p. 189), with a focus on human interaction (Krishnagiri et al., 2019; Schaber, 2014). Students frequently work in small groups engaging in a range of learning activities. This group work supports the development of clinical reasoning skills and reflective skills (Schaber et al., 2012), with clinical placements being explained as the 'proving ground' for student learning (Presseller, 1983, p. 163). This is similar to medical education, where clinical reasoning skills are explained as one of the key reasons for PBL being so widely used in medical curricula (Wang et al., 2016).

Delahunty and Kimbell (2021) recently explained that teaching within STEM disciplines is characterised by pedagogical approaches such as collaborative project-based learning. Whilst such approaches are entirely appropriate in STEM education, there are many associations with more traditional teaching and learning activities, such as lectures. STEM research suggests that structural influences such as time constraints, class size, and course content result in tutors merely fine-tuning their lecture notes and PowerPoint slides from one semester to the next (Hora, 2016). Mastascusa et al. (2011) also explored teaching and learning in STEM disciplines, and the title of their book includes the term 'effective instruction', which gives a clear indication of some of the cultural norms. They explain the challenges some STEM students have in applying their knowledge, describing them instead as acquiring 'inert' knowledge, which is knowledge that students can verbalise but not apply (p. 58). Students become focused on fitting given numbers into a formula, without understanding the process, a technique Mastascusa et al. (2011) have entitled 'FTF'; find the formula (p. 129). They suggest that STEM education is often characterised by the transmission of decontextualised knowledge, and they argue that PBL may afford students more opportunities to construct and connect knowledge, due to its focus on realistic scenarios.

In summary, the boundaries of disciplines, and of professions as disciplines, have changed over time, as new disciplines transcend the boundaries of what were once single disciplines,

and as universities shift their focus towards the application of knowledge. There are differences noted in the signature pedagogies that arise from the habitus of different disciplines, where students and tutors are socialised into familiar teaching and learning routines. Much of this research is either dated, such as Shulman's work, or only explores the teaching and learning habits of a single discipline.

2.6 Chapter summary

Problem-based learning has attracted considerable attention over recent decades, and this has resulted in a significant amount of research in the area. Disappointingly, what is evident is a repetitive trend of research focusing on single case studies, presenting the self-reported experiences of tutors or students, often implementing a PBL approach to teaching and learning, or comparing PBL with other approaches to teaching and learning. Whilst this continues to be relevant, it fails to advance PBL research beyond the boundaries of individual classrooms and as such, lacks detail about influences such as the socio-cultural determinants, disciplinary habitus, or broader structural factors, and how these might shape PBL practice. Similarly, there is much exploration and discussion around PBL facilitation and the interpersonal challenges it begets, as well as the transition in tutor role, and how this might be affected by pedagogical beliefs. Again, much of this research is carried out within a single research site, or a single discipline and therefore obscures some of the complexities relating to cultural norms or environments that would add to the richness of knowledge. There is a similar trend in the research about disciplinary teaching and learning, which usually fails to extend beyond single disciplines, or to capture what truly shapes signature pedagogies. Structure and agency provide a valuable conceptual lens that adds insights into teaching and learning beyond the boundaries of individual classrooms, and I argue that this is what is lacking in much of the PBL and disciplinary research. They are explained as interdependent concepts, rather than distinct, and discussions should therefore capture the interplay between structural enablers or constraints and the reflexive mediation of individuals.

This study aims to address these gaps in research by engaging with the messy, but rich, variables of the teaching and learning environment that Norman and Schmidt (2016) assert will help develop a better understanding of complex learning interactions (p. 726). It braves the 'cross-disciplinary waters' that 'few hardy souls' dare to enter (Argyris & Schön, 1974, p. 3) and uses structure and agency to guide exploration of the broader context in which the PBL happens.

The next chapter, entitled 'Methodology: The Pursuance of a Story True to Life' explains the narrative methodological design that was employed in the study. It discusses the methods employed in the study, from negotiating access to the research sites, to analysing and interpreting the data. It presents some of the ethical considerations in the study, and the nature of reflexivity.

3 Methodology: The Pursuance of a Story True to Life

3.1 Introduction

In this chapter I present and justify my research design, explaining how it has evolved as the study has progressed. I discuss the narrative methods used, reflecting on how these have been adapted during the process of carrying out the research. In keeping with the research design, I illustrate my account with reflective stories from my own research journey.

Sackett and Wennberg (1997) encourage researchers to focus on their research question, and to consider the most appropriate way to conduct their study, rather than spending time arguing about the perceived 'best' methods. They assert 'the question being asked determines the appropriate research architecture, strategy and tactics to be used – not tradition, authority, experts, paradigms or schools of thought' (p. 1636). I concur with this statement, and so will discuss how my design has been shaped by my question, literature, and researcher reflexivity.

I begin the chapter by explaining my own philosophical worldviews and how these relate to this study. I then discuss my overarching research approach, exploring the narrative life history methodology, followed by the main ethical considerations within the study. Next, I explain the design of the study and begin this with an outline of the research sites and participants, which is discussed in more detail in the next chapter. Research methods are then discussed, detailing the narrative interviewing and participant observations used to gather data, and the thematic analysis and interpretation of the data. The chapter concludes with an exploration of researcher reflexivity.

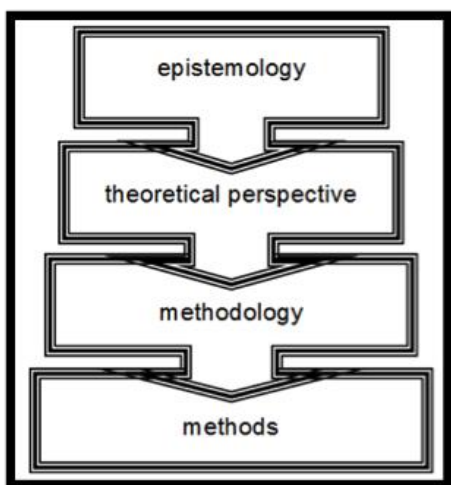
3.2 Philosophical worldview

This section presents a discussion around the philosophical perspectives underpinning my research methodology. As with many aspects of qualitative research, there is no consistency in how this is presented in literature, or the terminology used therein. However, the aspects in common with most discussions appear to be around the nature of knowledge and the nature of

reality. As researchers' epistemological and ontological stances undoubtedly influence their research design (Savin-Baden & Major, 2013, p. 58), they will be the main focus of this discussion.

Initially, I was drawn to Crotty's (1998) research design framework to support my thinking in this area as it prompts researchers to consider epistemology and theoretical perspective separately. See figure 1.

Figure 1: Crotty's research design framework



(Crotty, 1998, p. 4)

I thought that by separating the elements, it would help me to understand it in more depth. However, in attempting to write separate discussions about each, I quickly realised that in fact, they are inseparably entwined. I began to realise that my desire for concepts and terminology to fit neatly into distinct definitions and categories, was in tension with my beliefs around the nature of knowledge being subjective, messy and fluid. When reading about qualitative research approaches and terminology used therein, there is little, if any of it that fits neatly into boxes. However, this is consistent with the underlying premise of qualitative methodologies, where it is emphasised that there is no 'one truth which can be verified and replicated but rather, several truths that are equally valid' (Williams et al., 2019, p. 1). On reflection, I realised that by trying to define and neatly categorise, I had in fact been searching for one truth. I had hoped that this would be replicated across texts to assure me that my understanding was correct, instead of acknowledging there were multiple truths, and aiming to ensure that mine was one that was valid. Once I gained an awareness of this tension, I felt more able to consider what Creswell (2014) refers to as philosophical worldviews. I could consider my own thoughts around knowledge and reality without a need to subdivide the section into neat categories.

Creswell (2014) states that the term philosophical worldviews encompasses terminology used by others, such as paradigms, epistemologies, and ontologies. This corresponds with, Goodson and Sikes (2001) who suggest that separating such elements is artificial (p. 19).

Narrative inquiry is used in diverse ways within research and whilst predominantly used within qualitative studies, can also be used within more objective studies (Riessman, 2008). This study is underpinned by an idealist ontological conviction, which asserts that reality can be subjective and mentally constructed (Savin-Baden & Major, 2013, p. 56). Thus, multiple realities exist, and these realities are influenced by and created with those around us and the experiences we have. This situates this study within a social constructionist philosophy. The multiple realities that will exist within the study are important to consider. Social and environmental influences may affect the stories the participants narrate. It is likely that people narrate stories differently in different settings; or may narrate a story differently to me than they would to a friend or a student. Using interviews within the work setting, and observations within the classroom are considered the most appropriate way of constructing the reality most likely to influence their PBL facilitation in practice, due to it being as close as ethically and practically possible to their natural social and physical environment. Further, it is acknowledged that stories are subjective, and memories or interpretations of events can change. Bolen and Adams (2017) discuss accuracy in stories told, suggesting there are differences between 'historical truths' and 'narrative truths' (p. 620). Indeed, they then give some interesting examples of stories being remembered differently by individuals, some time after an event. In studies where there is a belief that reality is objective, this variance would clearly be problematic. However, for this study it is acknowledged that individuals' behaviours are shaped not only by the more objective historical truths, but by the narrative truths which are shaped by the meaning and significance individuals ascribe to them.

Social constructionist and interpretivist terminology are often used in narrative inquiry literature, and at times no clear distinction is made. However, I would suggest there are differences, and these may be influenced by the type of narrative inquiry being used. Savin-Baden and Major (2013) present a comparison of narrative approaches and acknowledge the potentially different philosophical perspectives therein (p. 236). Whilst they suggest that life course, autobiographical, biographical, and digital storytelling types may be interpretivist, they differentiate by saying that life history is more likely to be constructionist. This is consistent with Goodson's distinction between life story and life history research (2012). He encourages

researchers to go beyond the personal accounts within life story work and explore the social and historical context. It is this collaboration, he suggests which moves the interpretivist life story (which he suggests may be predetermined and well-rehearsed by the narrator) towards being a co-constructed life history (Goodson, 2012). The social and historical contexts are important to consider within this study, and it would be satisfying to therefore locate it firmly within the social constructionist ontology. However, as discussed earlier, qualitative research is messy, and knowledge and truth do not fit neatly into distinct categories. Instead, it is likely that these terms are closely related, with no defined boundary. As such, there are elements of both interpretivism and social constructionism that were influenced by the dynamic relationships between me and the participants in the study. As I discuss later in the chapter, my own interpretations permeate my data gathering. This is consistent with my identity as an occupational therapist and my resulting natural tendency towards analysis of interpersonal interactions.

Cohen et al. (2018) suggest that researchers' choice of methods will be influenced by their philosophical worldviews (p. 5). They suggest that those with an objectivist stance will favour methods such as experiments and surveys, whilst those with a subjectivist stance, as with this study, will favour methods such as interviews and participant observations (p. 6). This implies researchers have a fixed individual stance; however, I would assert that for many, their stance is more fluid than this; influenced by the focus of their inquiry. Bruner (1986) discusses two ways of knowing; namely paradigmatic knowing and narrative knowing (p. 12). He suggests that each way of knowing demands different types of verifications regarding what can be known. Paradigmatic knowing is about testing and logical reasoning, and questions how we can know the truth; whereas narrative knowing is about likelihood and probability, and questions how we can ascribe meaning to experience (Bruner, 1986, p. 12). Instead of presenting these as contradictory ways of knowing, Bruner in fact suggests that they complement each other. This coexistence of different ways of knowing seems more plausible than the notion of conflicting entities. For me, it is the nature of knowledge within individual studies that requires careful consideration. Within my study, as with many qualitative studies, knowledge is considered to be subjective, where individuals gain knowledge through their own subjective experiences (Creswell & Poth, 2018, p. 21). This corresponds with Bruner's narrative way of knowing which instead of searching for empirical truth, searches for subjective meaning, influenced by experiences. Thus, it is acknowledged that the meaning tutors have ascribed to an event today, may be different from the meaning they ascribed to it yesterday, or when they narrated the story to a different audience. New experiences that we have will continue to shape our stories of our

past, as new knowledge changes the meaning we ascribe to events. In accordance, it is acknowledged that there may be differences in the way researchers interpret their data, due to the unique nature of their own life histories. This is illustrated by Hendry (2009) who suggests 'A story can be true to life without being true of life' (p. 76). This is not considered problematic in this study as tutors are considered to be influenced by their subjective experiences rather than an objective reality. My endeavour is to present my findings as a story that participants would deem true to life.

3.3 Research approach

This section discusses the narrative approach taken within the study, considering this broadly, and then focusing more specifically on the life history type adopted. I reflect on how the methodological design has emerged and shaped the study, illustrating this with my own stories from the field. Key terms are discussed in relation to research methods literature, and defined for the purpose of this study.

Narrative inquiry has been a methodology increasingly used within social sciences research over the past 30 years (Caine et al., 2013, p. 574). Connelly and Clandinin, (2010) describe it as a methodology to study experience as story, suggesting humans lead storied lives (p. 477). It is this which makes narrative inquiry particularly relevant as a methodology in my study, as the stories aided my understanding of the personal, meaningful influences in tutors' approaches to PBL, and limited more generalised answers.

Riessman (2011) suggests that narrative inquiry has 'mushroomed' in its use, becoming a methodology that is incredibly broad (p. 311). However, Goodson (2017) suggests that the way in which narrative is used, has changed (p. 11). He suggests that studies have moved from 'grand narratives' (such as those around religion or psychological theory) to smaller scale or individualised narratives. Taylor (2013) likens the explosion of narrative work to the universe following the 'Big Bang', suggesting that it is due to our unconstrained imagination and our affinity with telling stories (p. 99). As such, narrative inquiry could be considered an umbrella concept encompassing more specific types such as life course, life history, biographical, and autobiographical (Savin-Baden & Major 2013, p. 233), making it important to illustrate the type used in each study.

As with many aspects of research, there are different understandings around terminology, and this is important to consider and clarify early in the research process. The terms narrative inquiry and narrative analysis are sometimes used interchangeably in literature, and this can be

confusing. Throughout this study I use the term narrative inquiry as an overarching research methodology, and I consider narrative analysis to be a specific method of data analysis. This is because I consider the word 'inquiry' to relate more to a question, which is, therefore, more integral to the study, and 'analysis' to relate more to an objective within a study.

There are also inconsistencies in the use of the terms 'story' and 'narrative'. Whilst both terms occur frequently within narrative inquiry literature, there is debate around their definitions. Some authors report them as distinct entities (Mattingly & Lawlor, 2000; Riley & Hawe, 2005), whereas others use the terms interchangeably (Riessman, 2008). Further, Grimaldi et al. (2013) only use the term narrative as they suggest that the word story has interpretations arising from its everyday use. A further challenge is that there appears to be little consensus in definition when authors do consider the terms as distinct. Mattingly and Lawlor (2000), differentiate between the two by explaining that stories have plots and have a beginning, a middle and an end, whereas narrative is more 'event-centred.... located in a particular time and place' (p. 6). I find this definition confusing, however, they provide an explanatory example stating that someone saying their child is a brilliant artist is narrative, but someone describing a distinct episode where their child drew something wonderful, is story. Riley and Hawe (2005) suggest that stories become narratives when analysis starts (p. 227). I find this problematic, as others suggest that within interviews of this type, the gathering and analysis of data are intertwined (Kvale & Brinkmann, 2009, p. 49), meaning there are no distinct boundaries.

For me, this seems more compelling, and indeed, one of the challenges of gathering interview data was in remaining open in my thinking, and listening to participants' stories, thus not allowing my thoughts to focus too much on my own analysis of what was happening or being said. Taylor (2013) provides a simple but useful definition of narrative and story (p. 100). She refers to story as a single account of reviewing a life event and suggests narrative is a series of stories. For me this seems like a plausible definition. Whilst it is in keeping with other definitions of story being something individual, it also allows for there being a bigger picture, which stories form a part of. Further, it allows for something without a clear beginning, middle and end, which for me, captures experiences which are entire events, but where the beginning, middle and end are perhaps less well-defined. I would assert that a narrative is more open-ended than a story. It can be built from stories but then may actually become an entire event in itself. Thus, it becomes a bigger story. To consider this in the context of this research study, individual stories were gathered from participants and these build together with others to form a narrative within

the research site. However, once this data set is complete, it was then considered to form the story of that one research site.

The type of narrative inquiry considered most appropriate for my own study is life history. Life history research can be useful in exploring participants' 'insider' experiences within a specific setting (Savin-Baden & Major 2013, p. 233). Goodson (2012) explains the differences between life stories and life histories, suggesting that life stories are individual and personal, and are the starting point for our understanding. These stories are then developed into life histories by placing them in a cultural and historical context in order to understand the 'social relations, interactions, and historical constructions' (Goodson, 2012, p. 6). This corresponds with the work of Connelly and Clandinin (2010) who discuss three commonplaces to narrative inquiry; these being temporality, sociality and place. To illustrate this in the context of this study, I could have interviewed tutors in depth about their current PBL practices and what they felt might influence their practice. It is likely that I would have elicited an interesting life story from the participants; however, analysis may have been challenging without an understanding of the social and historical contexts. Time was taken to understand contexts for individual participants, and also for each of the research sites. The observational data provided detailed information about some of the cultural norms, and about the environmental contexts, but informal conversations and observations also proved incredibly useful in understanding important historical aspects of each course. This helped me to understand a particular moment in time as part of an ongoing story that was emerging, and that I had become part of.

Close, trusting relationships between researcher and participants are often required in life history research (Goodson, 2017, p. 5) due to the focus on individuals' personal history (Savin-Baden & Major 2013, p. 233). I reflected on this further following my interactions with Emily at Meadow University. I had been concerned, as when our interview discussion had concluded, Emily remarked that she had not expected the interview to be as broad, and she wasn't sure if we had answered the research question. In the fortnight between the interview and the observation, it appeared that we had both reflected on the interview. Emily initiated a conversation about her increased awareness of the way in which her family influence her approach to PBL following our interview. This reassured me of the value of this personal history within life history work, although prompted ongoing consideration around the holistic nature of the interviews and this meeting with the expectations of participants.

Goodson and Sikes (2001) commend life history methods for their holistic nature, as they assert that it goes beyond considering the experience of a person within one role, and instead

encourages participants to bring all their roles to the study (p. 10). They suggest that life histories provide more contextual information that allows a life story to be considered within a particular period of time. Goodson (2012) argues that life history research helps explore whether people are influenced by externally generated scripts or whether they are influenced by their own internal 'self-conversation' (p.7). As such, this will allow exploration of the structural and agentic influences that are central to this research study. Goodson (2017) asserts that due to the co-constructed nature of life histories, they are less at risk of being misinterpreted due to being considered out of context (p. 4). I reflected on the differences between life stories and life histories following my interview with Patrick at Forest University. Patrick described having little agency in some aspects of his day-to-day work. Had I considered Patrick's story without further exploration, it would have been easy at this stage, to assume that he was someone who was habitually more structurally influenced. In enquiring more about Patrick's historic PBL experiences, it became apparent the degree to which the context affected the influences on his approach to PBL. In discussions about his past work settings, his sense of agency was much more apparent, as he discussed a freedom to develop innovative teaching methods, and being supported by his physical and social environment. This employment was noted to correspond with a time of high investment within higher education, as the Higher Education Funding Council for England (HEFCE) were awarding short term grants to support enhancements to teaching and learning (HEFCE, 2011). Indeed, Patrick discussed being able to bid for financial support within the university, and about his suspicions that these changes had not been sustained over time, since he had left. Without exploring the social and historical contexts with Patrick, much of this detail would not have been considered. Goodson (2017) asserts that through this exploration of time, place and person, 'life histories reach the parts that other methods fail' (p. 5), which this example demonstrates.

As well as being methodologically valuable, I quickly developed a more personal appeal towards narrative methodologies. I was aware that I felt naturally drawn to, and curious about story and meaning. As an occupational therapist these are concepts which underpinned my clinical practice for two decades. Hasselkus (2011) discusses narrative within a therapeutic context, and asserts

'The story of an experience provides a window of understanding into the way in which the storyteller interprets and frames the events that took place. An understanding of the meaning of the experience may, thus, be gleaned from the story. (p. 10).'

It is this meaning that I aimed to understand in my clinical practice in order to truly understand a client's motivation to engage in occupations. Hasselkus (2011) also presents a discussion around the convergence of therapist and patient stories to form a new collaborative story (p. 11). This collaboration is synonymous with much that is discussed in relation to the co-constructed nature of narrative inquiry.

3.4 Ethics

Educational research should be conducted drawing on principles from guidelines, university ethics committees and professional bodies (Dhillon & Thomas 2018, p. 443). As such, I have drawn on principles laid out by the British Educational Research Association (BERA, 2018) and my professional code of conduct (Royal College of Occupational Therapists, 2021). Official approval to conduct this research was gained through Worcester University ethics committee on the 26th of March 2018 (appendix 1). However, good ethical practice goes beyond ethical approval, and should underpin the organisation and design of the research. For me, the need for good ethical practice in research emulates the need for good ethical practice within clinical practice. Consequently, I aimed to adopt the same 'openness, transparency and candour' (Francis 2013, p. 4) within my research practice, as I had aspired to in my clinical practice. As an occupational therapist, I encountered many challenging ethical dilemmas in my career. This was useful preparation for the ethical dilemmas I encountered carrying out this study, many of which became a focus for reflection, due to there not always being a straightforward solution. Kim (2016) warns that ethical guidelines do not necessarily address the 'itchy spots' that we encounter in our research journey (p. 101), and I found these often became topics for further discussion in supervision. This section aims to present the key ethical considerations within this study and explores some of the 'itchy spots' encountered.

3.4.1 *Negotiating consent*

Consent was considered to be an iterative process that required the same openness, transparency and candour to ensure that it remained informed. Potential participants were sent an introductory email with an attached letter outlining the focus of the study, and the nature of participation being proposed. A participant information sheet was also attached with the aim of ensuring they had the information they needed about the process, expectations and the risks involved in participating (see appendix 2). Hard copies of all documents, including consent forms (see appendix 3) were also taken to the interviews to ensure the information required for informed consent remained accessible to the participants. Rights to withdraw data were discussed with participants, as well as being defined on consent forms.

Consent was also sought from the students attending the observed PBL sessions (see appendix 4). A student letter outlining the focus of the study and the nature of my involvement in their session, was emailed by the participant prior to the session. This encouraged students to contact me, or their facilitator, if they were uncomfortable about me being there. Hard copies of this and a student consent form were then taken to the session. At the beginning of the session, I removed myself from the room to give students the opportunity to voice concerns indirectly. This process proved somewhat troublesome as I had not anticipated how this would be addressed if students arrived late to their session. In the larger sessions where teams worked simultaneously, I was able to target these students as they arrived, providing individualised explanations of my involvement in their session, without disrupting other students. However, in sessions where there was only one team within the session, it became obvious that this would prove to be disruptive for the students who had arrived on time. On these occasions, the facilitator handed them the forms on their arrival, and I initiated a brief discussion with them at the end.

3.4.2 Anonymity

The notion of confidentiality and anonymity proved to be more problematic than I had originally anticipated. Having ascribed pseudonyms to each of the participants and organisations, and removed other obvious identifying details, I quickly realised that this would not suffice in maintaining anonymity. Accordingly, Kim (2016) warns that issues around confidentiality and anonymity in narrative work are not straightforward (p. 158). She suggests that colleagues may be able to identify each other within published work, and this became a concern within this study. Many participants knew each other well, not only as colleagues, but also personally and socially. Furthermore, they sometimes had an awareness of each other's participation in the study as this was discussed openly by participants in some research sites. For me, the narrative nature of this study was what made anonymity troublesome. Participants' stories were unique, and it was clear that it would not be difficult to identify them from an entire transcript. As such, I engaged in some email exchanges with all participants, encouraging them to read transcripts and to highlight any text that may risk revealing their identity, as well as anything they considered to be sensitive. None of the participants highlighted any concerns about their identity being revealed, despite my own thoughts that the transcripts contained many factors that could reveal their identity to colleagues. It is likely that these factors were not highlighted due to participants being less concerned than I was about anonymity. To illustrate this with an example, there were occasions where I considered that revealing participants' gender might risk identifying them amongst colleagues who had also participated. I highlighted this concern,

asking if they would prefer to be portrayed in the opposite gender or with a gender-neutral pseudonym; however, none of them requested this.

3.4.3 *Trustworthiness*

There is much discussion around the criterion that should be considered in order to improve trustworthiness in narrative research (Loh, 2013). Terminology such as dependability, confirmability and reflexivity are in keeping with the openness, transparency and candour that I aspire to. As such, I endeavoured to be reflexive and open throughout the study, and transparent in my explanations of the research process and its limitations.

Qualitative epistemologies acknowledge that researchers form a fundamental part of qualitative research, and as such cannot be viewed as independent of it. Cohen et al. (2018) explain that 'What we focus on, what we see, how we understand, describe, interpret and explain are shaped by ourselves and what we bring to the situation. We cannot stand outside these.' (p. 302). They continue by explaining that researchers bring their own values, beliefs, characteristics, biases and knowledge, and that these form lenses through which they see and interpret the world. As such, qualitative researchers need to practise reflexivity, through conscious and deliberate consideration of their thoughts and actions, in order to gain awareness of how they may have influenced and shaped the research (Cohen et al., 2018, p. 303). In keeping with narrative epistemologies, the intention of being reflexive is not to make 'truth claims' but instead to acknowledge and explore the researcher's role within the co-constructed stories of the study. Kim (2016) describes it as 'critical scrutiny' of researcher actions and role in the research (p. 248).

I would assert that many research studies are borne out of bias. It is commonly advised that researchers embark on PhDs which focus on topics of particular interest to them, and I argue this will, therefore, be more value-laden than topics they knew little about. My original interest in the topic stemmed from my own experiences of learning in a student-centred way. I felt I had learned in more depth than when I had learned with more didactic approaches to teaching. My experience as a PBL facilitator had also shaped the focus of the study. In particular, the conversation with a colleague that I referred to in chapter one prompted my realisation that facilitators responded to different influences when facilitating PBL. I expected that participants might tell similar stories, explaining that teaching evaluations were a constraint on their practice. However, this type of structural influence did not emerge in my findings in the way I initially thought it might, and so I felt that my bias influenced the research question more than the outcomes in this regard.

I did, however, reflect on some of my other experiences and how they influenced the data gathering. Whilst trying to limit my verbal interactions within the interviews, I was aware of smiling, or nodding agreement where participants discussed issues that I had experience of. Indeed, these were issues that I was more likely to ask a follow up question about. In particular, my experience of the challenges around timetabling, and my interest in this infiltrated some interviews. As I gained awareness of this, I made more effort not to inquire further in this area unless I considered it to already be a theme within the interview. As such, I felt a need to be reflexive *during* events within the research process, as well as after, which Schön (1992) refers to as reflection *in action*.

As well as respondent validation being employed to support the protection of participants' identities, it was also used to check for inaccuracies or misinterpretations. Van den Hoonaard (2017) explains that member checking or respondent validation was previously considered to be a way of checking the accuracy of transcripts, but it is now also about ensuring correct interpretation of data (p. 585). Interestingly, in summarising literature around member checking, he regularly uses terms more in keeping with positivist research, such as 'triangulation' or 'correct' and 'incorrect' (p. 586). In slight contrast, Kim (2016) talks about generating meaning through the co-construction of stories between the researcher and participant. They suggest that researchers should present 'fidelity' in their writings, explaining that the co-constructed story should respect and value the participant and their told story (p. 111).

As well as sending transcripts to all participants to confirm accuracy, I also sent all participants the vignette I had written on them and asked them to comment on whether it seemed like an accurate analysis of their story (see appendices 11 to 15). Goodson and Sikes (2001) warn that not all participants want to engage in this process, or that they may not agree with the researcher's interpretations (p. 36). Indeed, not all participants took the opportunity to check transcripts for accuracy or respond to the participant vignette sent; however, these were a small minority of participants. On other occasions I had realised that I had gaps in my understanding or had been worried that I had made an assumption. On these occasions I took time to email participants to clarify my understanding, or to request more information, to ensure trustworthy representation of participants' stories.

3.4.4 *Researcher positionality*

Dhillon and Thomas (2018) assert that it is important to consider researcher positionality within a study, and that this should not necessarily be conceptualised as absolute insider or outsider positionality. They suggest instead that that this may be fluid within the course of the research,

and that these positions are in fact part of a continuum. Prior to identifying research sites, I had felt that I had not wanted to recruit participants from my employing university. This was influenced by my thoughts of insider research having the potential to contain more bias. At this time, I was perhaps seeing positionality in these absolute terms, rather than as a continuum. As my study progressed, I found my positionality varied mainly in relation to my 'identification of sameness or difference' (Le Gallais 2008, p. 145). I realised that I did not feel like an absolute outsider in any of the research sites and instead experienced this by degrees. I found myself resonating with many stories around academic identity and working in higher education. I reflected on my body language within interviews and found that I had to make efforts not to change from curious nods of encouragement to nods indicating familiarity and agreement. Perhaps unsurprisingly, I felt somewhat of an insider within Meadow University, being part of the same disciplinary community of occupational therapists as my participants, and I could, therefore, resonate with many of the stories told. Whilst gathering data here, I found that I made more effort to maintain my vow of silence within the interviews, reflecting that perhaps I had more bias in my thinking, and therefore, more potential to reroute the interview journey.

I also resonated with stories told within Hillside University, due to the discipline still being health related. I felt more of an outsider within Forest and Beach universities, mainly due to the differences in discipline, but also, as Forest University was the research site furthest from me, I spent less time there, and therefore, felt like a formal visitor within this site. Interestingly, the site I began to feel most like an insider was River University, despite this also being a discipline not well-known to me. I felt that my relationship with the participants and wider team went beyond formalities. People expressed interest in me as a researcher, and as a person, and I felt welcomed as part of their close-knit community. However, this did not translate to the sense of 'sameness' which Le Gallais (2008, p. 145) describes, as there was little about the discipline or the way they delivered PBL that resonated with my own experience. Interestingly, I perhaps expected to feel more of an insider as regards PBL, than I did in any of the research sites. I found that due to the courses having more of a PBL philosophy threading through their curriculum, my own experiences tended to be very different to what I observed, or indeed expected to observe. Although this may have induced more 'imposter syndrome' in me (Proctor 2017, p. 56), it also helped me to remain more open-minded within the research process.

3.5 Design

The study design emerged over time, being shaped by reflections, discussions within supervision, and preliminary findings. Narrative interviews and participant observation data

were gathered from 23 participants across five research sites, capturing variance in disciplines. The research sites and participants are introduced in depth in the chapter that follows. The number of research sites and participants were higher than were originally intended and this was gauged by considering there to be a sense of wholeness, rather than aiming for saturation in data gathering. I sought to gather enough data from each participant, and to include enough participants from each research site to feel able to co-construct stories ‘true to life’ (Hendry 2009, p. 76). I explore this further, later in the chapter.

3.5.1 Research sites

This section outlines the research sites and participants, explaining why, and how sites were included in the study, and the process of inviting participants’ involvement. The data gathering methods are also explored and justified. Purposive and maximum variation sampling were used, to maximise the diversity in disciplines included, whilst ensuring participants have experience relevant to the study (Taylor, 2013, p. 191). Much time was taken to identify appropriate research sites and negotiate access. Initially, this was done through discussions with my supervisory team, and by searching through course details on the internet. Discussions identified points of contact within courses, usually where a member of the supervisory team had established working relationships with people in relation to PBL. This known sponsor approach was also useful in identifying potential research sites, as well as participants with a known interest in PBL.

Courses were researched via their student-facing web pages, to establish whether PBL or student-centred learning was explicitly mentioned in their teaching and learning activities, and literature was also explored to identify where PBL was being used. This desk-based research yielded a list of approximately 20 courses as potential research sites, and contact was made with these. From these communications, five research sites became the focus of the study. This was shaped by attempts to capture diversity in the disciplines being studied as well as responses to my contacts. Attempts were made to have at least one discipline from each of the Advance HE disciplinary clusters; namely Arts and Humanities; Health and Social Care; Social Sciences; and Science, Technology, Engineering and Mathematics (STEM). Unfortunately, attempts to recruit a research site from Arts and Humanities proved unsuccessful despite several lines of inquiry. Other disciplinary clusters are represented as follows:

STEM – Chemical Engineering (Forest University) and Natural Sciences (Beach University)

Social Sciences – Law (River University)

Health and Social Care – Medicine (Hillside University) and Occupational therapy (Meadow University).

Inclusion and exclusion criteria were developed, which can be seen in appendix 5. All sites have been ascribed a pseudonym, and how access was negotiated in each of these sites is outlined in table 2 below.

Table 2: Negotiating access to research sites

<i>Research site</i>	<i>Subject</i>	<i>Access</i>
River University	Law	PBL mentioned on website and PBL tutors mentioned. Made email contact and met with Deputy Head of School who then made introductions to other members of the course team. Spent time informally with PBL community.
Forest University	Chemical Engineering	Known sponsor approach gained me contact details of one tutor. This tutor was known to have experience of implementing PBL in the chemical engineering course. This tutor then forwarded my email to colleagues she thought may be willing to participate
Meadow University	Occupational therapy	Known by researcher to have a PBL focus. Members of the course team have publications about PBL. Contacted them directly and email forwarded on. Invited to attend a staff meeting and was able to talk through my study with other potential participants.
Hillside University	Medicine	Found a website that outlines the medical schools that have a PBL focus. Targeted medicine due to the history of PBL and its origins in medical education (Barrows & Tamblyn, 1980). PBL is explicit on course website and one tutor is named as having a leadership role relating to PBL. Made contact by email and subsequently attended one of tri yearly PBL meetings.
Beach University	Natural Sciences	Courses were identified as using PBL on the website and an email was sent to an admissions address. One tutor responded to this, identifying, and copying in other potential participants from her course. An informal meeting was set up which all four tutors attended and expressed an interest in participating.

The size of the sample is important to consider in any research study. Whilst quantitative studies seek to recruit enough participants to ensure their findings are generalisable, qualitative studies do not have this as their aim, and thus, sample sizes are smaller. Additionally, the time-

consuming nature of data gathering and analysis further limits the number of participants involved. Goodson and Sikes (2001) suggest that researchers should gather data until they believe saturation and repetition occurs (p. 22). However, they discuss the strength in a collective story, where life histories are gathered from several participants, narrating similar stories. For me, and I suspect many other qualitative researchers, there is a challenge in finding a point of saturation whilst simultaneously endeavouring to capture individuality and uniqueness. Kim (2016) asserts that qualitative researchers need to be open about where saturation has not occurred, and why (p. 161). In contrast, I question whether saturation truly exists. Due to the subjective nature of qualitative research, I would argue that there will always be a degree of new knowledge that could be derived from further data gathering, and so perhaps Goodson and Sikes' (2001) term 'repetition' seems more fitting (p. 22). That said, I believe that attention needs to be given to unique stories within the data, as well as aspects of repetition. As data gathering continued, I began to become concerned that in fact I had too many participants. I worried that the individual stories might become lost in the larger participant numbers. As a result, my intention was to gather enough individual stories to form a collective story of each research site. Presenting the collective stories within each research site allowed the individual stories to be considered, but in a more discernible way. These research site stories are then brought together to form the story of this study; one that is distinct but is not considered absolute. Instead, I suggest that it forms part of a larger narrative about teaching and learning in higher education. It is not intended to be one absolute truth, but a story true to life (Hendry 2009, p. 76).

3.5.2 Participants

Initially, in recruiting participants, I felt it was important to ensure all participants could be observed as part of the study. I was keen to capture the stories of those with the most involvement in PBL, and I felt this was a way of ensuring that involvement. However, as stories emerged, I realised that there were people who were fundamental to the collective story of that research site that I would not be able to observe. This was the case at River University. I had been put in touch with Shona when I initially contacted the site, and she kindly met me informally to chat about my study. I remember feeling compelled by her story, but then a little disheartened when I realised that she was not going to be facilitating PBL, and so did not meet my inclusion criteria at that time. As this was the first research site that I had made contact with, I struggled to see beyond my inclusion and exclusion criteria and was keen not to compromise too early in the process. However, after interviewing and observing 4 other tutors at River University, it became apparent that some of the information Shona had discussed informally, was around

the cultural and historical context that I was keen to understand further. She had featured as a character in many of the stories told, and I felt that without interviewing her, the River University story would be incomplete. This considered modification of the inclusion criteria allowed me to gather valuable data not only in River University, but also in Meadow University.

The principal challenge in recruiting participants was obtaining replies from preliminary emails sent. Throughout the recruitment process, I was aware of adding to participants' email traffic. Pignata et al. (2015) report that email overload is now a normal part of working life as an academic in today's universities and is a source of significant stress. In striving to research in a non-maleficent manner I was concerned that repeated reminder emails had a significant potential to add to this stress, and so some lines of inquiry were terminated even after interest had been expressed by potential participants.

Bondy (2010) suggests that negotiating and maintaining access to research sites is a social process and asserts that different approaches are needed across different sites. Making contact via email inhibits this social interaction due to its impersonal nature, and therefore I was keen to visit and explain my research face-to-face wherever opportunities arose (as was detailed in table 2). This was distinctly more effective, although clearly required at least one person to make an initial response to my email contact. In face-to-face interactions I found there to be a genuine interest in participating, which was otherwise not apparent in the lack of response to emails.

In all sites, there was a snowballing effect, where participants would talk to peers and encourage their involvement in the study. This is noted to be an effective sampling technique where participants are hidden or difficult to access, which is very much the case when relying on email as a method of communication. Participants recruited to the study, and their roles can be seen in table 3 below:

Table 3: Participants recruited to study

<i>Site</i>	<i>Course</i>	<i>Participant</i>	<i>Role</i>
Forest University	Chemical Engineering	Jasmine	Substantive academic role
		Patrick	Substantive academic role
		Samuel	Substantive academic role
		Sylvia	Substantive academic role

River University	Law	Diane Nigel Sandra Shona Roy	PBL tutor role (casual contract) Substantive academic role Substantive teaching role Substantive academic role PBL tutor role (casual contract)
Hillside University	Medicine	Andrew Emily Kirsty Nicole Paula	PBL tutor role (casual contract) PBL tutor role (casual contract) Substantive academic role Substantive academic role Substantive academic role
Meadow University	Occupational therapy	Beth Hannah Jennie Robert Rose	Substantive academic role Substantive academic role Substantive teaching role Substantive academic role Substantive academic role
Beach University	Natural sciences	Gary Jade Karen Mairi	Substantive academic role Substantive academic role Substantive academic role Substantive academic role

3.5.3 Data gathering

The data gathering methods used in this study were narrative interviews and focused participant observations. This section discusses and reflects on the data gathering methods in relation to the underpinning methodology. Data gathering commenced in November 2018 and concluded in February 2020. The timescales across the sites are illustrated in table 4 below:

Table 4: Gantt chart of data gathering

	Nov '18	Dec '18	Jan '19	Feb '19	Mar '19	Apr '19	May '19	Jun '19	July '19	Aug '19	Sept '19	Oct '19	Nov '19	Dec '19	Jan '20	Feb '20
Forest																
Interview			X									X				
Observation			X									X				
River																
Interview	X		X						X							
Observation	X		X													
Hillside																
Interview							X	X								
Observation							X	X								
Meadow																
Interview						X	X			X	X					
Observation												X	X		X	
Beach																
Interview								X		X	X					
Observation													X			X

3.5.3.1 Narrative interviews

Narrative interviewing is derived from the Latin term *narrare*, meaning to report or to tell a story (Jovchelovitch & Bauer, 2000) and is considered an in-depth interview technique. There are three commonly discussed characteristics of narrative interviewing. Firstly, there is a focus on the data gathering being around participants' stories rather than broader general information (Clandinin, 2016; Goodson, 2012; Jovchelovitch & Bauer, 2000); secondly the interviewer is reported as adopting more of a silent listening role than in other types of interviews, whilst the interviewee has longer periods of talking (Goodson, 2012); and thirdly it is considered a co-construction of knowledge between the interviewer and the interviewee (Clandinin, 2016; Gemignani, 2014). The value of narrative interviews is that it supports understanding the meaning behind participants' answers, rather than eliciting more generalised answers from them. For example, if a participant reported being a creative person, this is open to a range of interpretations. If, however, they told a story about developing a creative solution to a work team's communication challenges; or instead discussed an amazing sculpture they had made from driftwood found on a beach, it is likely that the researcher would gain a better depth of

understanding of what meaning they ascribed to the term 'creative'. Understanding the meaning within stories is important in this study, due to working across different universities and different disciplines, as generalised answers may contain language or cultural norms that would risk obscuring meaning.

The aim of using narrative interviews was to gain a depth of information and meaning which may be missed in interviews adopting more of a 'question-response' mode (Jovchelovitch & Bauer, 2000). This is done by imposing less structure to the interview, allowing the participant to narrate their story in whatever way feels natural. This, it is suggested, elicits a more valid portrayal of participants' experiences, as it is less likely to be diverted or shaped by the researcher (Jovchelovitch & Bauer, 2000). Connelly and Clandinin (2010) explain that story is 'a portal through which a person enters the world and by which his or her experience of the world is interpreted and made personally meaningful' (p. 477). Mattingly and Lawlor (2000) assert that the stories told in narrative interviews are much more likely to contain the 'thick description' considered more valuable to researchers than 'abstract generalisations or belief statements' evoked by other interview techniques (p. 5). Within this study, I was keen to avoid interviews that elicited perceived correct answers, or answers with no context to help me understand them, therefore, narrative interviews were considered to be the most appropriate method to gather data.

It is noted that not all participants readily narrate a story within interviews (Goodson, 2012; Mattingly & Lawlor, 2000) and this was firmly in my mind as I developed my interview schedule (see appendix 6). As such, the schedule contains more questions than one might expect with narrative interviews. However, these were used more as a *safety net* of prompts, which were never used in order and were reworded to fit the flow of the conversation. I was keen to meet participants before I interviewed them, as I felt this would give me an overall sense of whether they were likely to elaborate on their experiences within the interviews. At River University, I had the chance to meet all participants prior to their interviews and felt I had gained a good rapport with them. The only slight exception to this was Nigel, whom I had only met the day before our interview and so didn't know quite as well. During our informal meeting, Nigel seemed very responsive to questions, openly imparting stories of his own career path. I therefore felt confident that the interview would prompt a similar type of discussion. However, there was a surprising change in dynamic within the interview the following day as Nigel was much less forthcoming in his answers, seeming to check out with me that he was including the correct type of information, and not talking too extensively, perhaps in case he spoke off topic.

Goodson (2012) explains that interview participants may be 'descriptors' or 'elaborators' (p.67). He suggests that participants who tell descriptive stories are more likely to relay a series of chronological events with little reflection or analysis. They suggest that descriptive storytellers are more likely to give shorter answers, often looking to the researcher for the next question. Nigel presented mainly as a descriptor. Although he was open about information, and seemed happy to share, there was little analysis or reflection within the interview. He rarely took time to deliberate his answers and there was no debate or contemplation in his story. Indeed, I found myself being drawn a little into the question-response style of interview that I had been keen to avoid.

In contrast, Goodson (2012) explains that participants may elaborate within their stories (p. 67). Elaborators tend to present as more reflective about the story they narrate and may express an 'interior conversation' about their story (p.67). In accordance, Kim (2016) describes narrative interviews as a reflective process where participants organise information, taking previous experiences into account. This helps them to make sense of that experience and communicate its meaning.

I found that most participants were elaborators. Participants' reflections were sometimes made more obvious with remarks such as 'That's an interesting question', or 'I haven't really thought about it like this before but...'.

This was illustrated in my conversation with Jasmine, a participant from Forest University. She appeared conscious of the reflective process involved in narrating her story, and discussed this within the interview:

'You suddenly do start to realise how much you've changed, how much your teaching style has transitioned, and it's actually conversations like this which gives you the time to reflect and think about it.'

Jasmine had been reflecting on her own narrative in preparation for the interview. She had been thinking about her own life stories, organising them and making connections and thinking about their meaning, resulting in her talking openly and at length in the interview session.

Further, Jasmine's reflection illustrates the co-constructed nature of narrative interviews, also reported as a key characteristic (Gemignani, 2014). Regardless of how impartial I might have been within the interview, I was influencing the story before the point of recording it by prompting this reflection. Gemignani (2014) highlights that it is not only what a researcher says within the interview that contributes to the co-construction of the story; but many unspoken elements such

as time and environment; as well as interviewer presence, agenda, position, and relational style (p. 129). He suggests that 'the past is constantly formed and reconstructed in its relations to the present and future' (p. 129). For Jasmine, the experience of being a research participant in my study was shaping her stories of past events before, and during our conversations.

Correspondingly, Kvale and Brinkmann (2009) discuss different approaches to interviews (p. 48). They present two metaphors categorising interviewers as either miners or travellers. The miner's aim is to extract data from participants, and therefore these interviewers do not consider themselves part of this data. In contrast, interviewers who are travellers embark on a conversational journey with their participants, co-constructing meaningful data. Narrative interviews are described as informal and conversational, and on many occasions, I felt as though I was part of a reflective journey with participants.

Within narrative interviews, it is suggested that researchers allow a prolonged period of time for the participant to narrate their story without interruption (Goodson, 2012; Jovchelovitch & Bauer, 2000). Initially when reading about co-construction of knowledge and the use of silence within narrative interviews, I considered them to be a contradiction in terms. How could a researcher co-construct a story if they are had taken a 'vow of silence' within interviews (Goodson, 2012, p. 37)? Why would someone talk at length within an interview without any kind of reciprocal dialogue? I was aware that my natural approach to an interview would be to gain some rapport and encourage sharing of information; perhaps by sharing something of myself. Within a clinical setting, this relates to the therapeutic use of self, which is an increased awareness of the interpersonal nature of a relationship (Solman & Clouston, 2016), and the use of personal characteristics in order to engage with someone (Holmqvist et al., 2013). I was therefore well-practised in developing a rapport with people by not only asking questions about their experiences, but perhaps reciprocating, giving appropriate amounts of information about myself, and by making and exploiting connections where possible. With narrative interviewing, I therefore felt that I was endeavouring to establish a rapport, and encourage someone to talk in an uninterrupted manner, without using some of the tools that I was most familiar with. Nonetheless, I found that by setting the scene, and explaining the nature of narrative interviews in advance, participants seemed comfortable to narrate their stories.

When gathering interview data at Forest University I was apprehensive that I had not been able to meet all tutors before their interviews, due to the research site being so far away. I worried this would limit the rapport developed and the stories narrated. Fortunately, this fear was not realised, as all participants spoke openly, and at length, in response to my questions. I was able

to develop a good rapport with participants, and balanced this with the 'vow of silence' encouraged in narrative interviewing (Goodson, 2012, p. 37). I did this by using non-verbal encouragers such as being attentive, or nodding and smiling, to demonstrate my active listening, paraphrasing less frequently than I perhaps would have in clinical practice. This was initially quite challenging, and I reflected on the nature of the research interview contrasting with the more reciprocal clinical interview that I was accustomed to. Taylor (2007) discusses the differences between unidirectional and bidirectional communication, stating that therapists would aim for bidirectional communication, where each party would be involved in an ongoing 'give and take' style of communication (p. 161). However, she elaborates by explaining that this need not be an equal amount of verbal communication, and instead, could merely be acknowledgement or indication that communication has been received. I therefore concluded that my non-verbal encouragers had been enough to facilitate this bidirectional communication, and that this had been effective in balancing the space for the participants to tell their stories, with demonstrating attentive listening.

My vow of silence did not last the entirety of the interview. Broad questions initiated discussions at the beginning of the interview, where I listened and endeavoured not to interrupt. This was followed up later in the interview with prompts around temporality, sociality and place, as suggested by Connelly & Clandinin (2010). I made notes of prompt questions as participants narrated; however, quickly realised that not being able to prompt in a synchronous manner, affected some of the information shared. Where there were entire stories still to explore, it was straightforward to paraphrase an aspect of the interview and ask for further information. However, on occasions there were aspects of participants' stories where some further minor information would have been useful or interesting. It felt inappropriate to revisit some conversations later in the interview process, as there was a risk it would become disjointed. I was concerned that prompting for short answers would transform the interview into a less conversational format with a series of short questions and answers. Reassuringly, I realised that frequently the participants would provide this information without my prompt, later in their story. Where they didn't, I accepted that this is the nature of subjective qualitative interviews and therefore, not problematic. I found the experience of embarking on the journey with the participants, not knowing the turns it would take, more revealing than mining for inconsequential details. An example of transcribed interview data can be seen in appendix 7.

3.5.3.2 *Participant observations*

Kawulich (2005) describes participant observation as a 'process enabling researchers to learn about the activities of the people under study in the natural setting through observing and participating in those activities' (p. 2). Despite observation being a method increasing in popularity since the 1970s, it continues to be reported as not having 'equal standing' with quantitative methods (Fine, 2015, p. 530). However, as Sackett & Wennberg (1997) state, it seems more fitting to consider using the most appropriate methodological tools for the task in hand. Initially, I was reluctant to use observational methods, and was considering methods such as surveys. Kim (2016) suggests that this reluctance is common in many doctoral researchers, who prefer to engage more with interview data, whilst avoiding spending time in the field (p. 171). She suggests that the reluctance is around the time-consuming nature of observations. Whilst this was certainly part of my concern, I also had concerns around the practicalities of gathering data within specific timetabled PBL sessions, as opposed to using other methods which have more flexibility in timing. However, my concerns around the pragmatics were put to one side, and instead, methodological reasoning governed my decision to gather observational data. This was mainly due to considerations around validity, and gaining naturalist information, which I discuss further in this section. Interestingly, whilst I found observational data to be incredibly valuable, it does not seem to be a strong feature with literature on narrative research methods.

Embarking on observational data gathering generates both practical and ethical considerations for the researcher. These relate to how much the researcher might be involved in what is being observed (Angrosini & Rosenberg, 2011; Kawulich, 2005, p. 6; Savin-Baden & Major, 2013, p.394), what it is that they plan to observe (Angrosini & Rosenberg, 2011; Kawulich, 2005, p. 7), and how the data will be recorded (Fine, 2015, p.533; Kawulich, 2005).

Researchers should consider their degree of participation, before carrying out their observations. Savin-Baden and Major, (2013) present a continuum of researcher involvement on a five-point scale (p. 394). This ranges from peripheral participation (least involved) to complete participation (most involved). Kawulich, (2005) also discusses a scale of participation, ranging from complete observer (least involved) to complete participant (p. 8). Whilst I attempted to limit the degree of participation in the observed sessions, I acknowledge that all degrees of participation will have some sort of influence on what is being observed. Small matters such as when I write in my field notes, facial expression, or eye contact could all influence behaviours in the session. This is, however, considered in keeping with the social

constructionist nature of this study. When observing the PBL, I tended to position myself somewhere in the room where I could be seen, but was perhaps slightly apart from the group. This seemed to help the students and facilitators to note, then ignore my presence. The exception to this was in the larger sessions that I observed at Forest University, where facilitators worked with multiple student teams. Due to the size of the classroom, I tended to follow the facilitators around, but again, tried to position myself slightly removed from the group.

Types of observation range from 'exhaustive' (Savin-Baden & Major, 2013, p. 393) or 'descriptive' (Kawulich, 2005, p. 15), where the researcher attempts to record anything and everything, to 'selective', where researchers are more systematic in their observations (Kawulich, 2005, p. 15; Savin-Baden & Major, 2013, p. 393). This had implications for the ways in which I recorded data. For me, it seems unfeasible to record anything and everything within a session, unless using audio-visual recording devices. Whilst audio-visual equipment undoubtedly captures more detailed information, I argue that there is much greater risk of its presence influencing what is being observed, or of it being intrusive to the PBL session. Instead, I wrote field notes, attempting to capture the information that I considered to be most relevant. Focused observations are where the researcher has key aspects to observe, and these may emerge from preceding interviews (Kawulich, 2005, p.15; Savin-Baden & Major, 2013, p. 393). As such, I noted aspects such as student numbers, facilitator positioning, group dynamics, key points about the environment, and a sketch of the room for each one. I also noted some of my own reflections and minor session details, not knowing whether they might later hold significance.

Creswell and Poth (2018) propose that gathering observational data as a second source of data, increases the study's validity by triangulating data (p. 53). In addition to gaining access to information not mentioned in interview (whether deliberately avoided, or not considered important), observation also allows researchers to confirm the accuracy of aspects of interview discussions, as people may enact things differently to how they report they do them (Cohen et al., 2018, p. 542). This was evident in a study by Assen et al. (2016), who concluded that many teachers espoused beliefs in student-centred learning, yet were observed to teach in more traditional teacher-centred ways within PBL tutorials. This is particularly relevant for my study, and was my primary reason for using observations, although interestingly, this was not found to be their greatest advantage.

The greatest value of my observational data was in gaining additional insights into the cultures and unspoken details of the research sites. Kawulich (2005) suggests that cultural norms are

often not discussed in interviews (p. 5) and indeed, many of the points I noted in my observations were not things I would have considered asking about. Goodson (2012) asserts that this extra detail around context supports the development of the participants' life stories into life histories (p. 37). Examples of this were around facilitation styles, student engagement and motivation, and a level of detail about the physical environment that would not naturally be discussed in an interview situation. Often, I reflected that the observational data had helped me to think beyond my own cultural norms, and added a depth of understanding beyond my expectation. Kim (2016) asserts that through participating in fieldwork 'we engage ourselves in keen attention, attuned to the life space of our participants.' (p. 172) and it was this engagement which brought participants' stories to life. An example of this was at Forest University. I noticed that 'roaming' tutors in this large session did not sit with the students, and instead, stood in front of each group in turn. I reflected on the fact that my clinical training in facilitating groups prompted me to always sit at the same level as group participants to the extent that I had not even considered that someone might do this differently. As such, gathering observational data untethered me from some of my own unconscious assumptions.

Other cultural details added through observational data related to learning spaces. Tutors at both Forest and River universities spoke positively about their learning spaces, despite having little in common. At River University the learning environment had been specifically designed to be used for PBL, and they sat around a large oval table as though in a meeting. This fitted with my expectations around team working. At Forest University, tutors spoke positively about being timetabled into a particular classroom, due to it being a flexible learning space, rather than a raked lecture theatre. However, in my observation, I was surprised to see that in most sessions, the students did not adapt their environment to sit facing each other in groups, and instead, continued to sit in rows. Following this, I reflected on the added value of observational data, as I realised some of my own cultural norms as a tutor and as an occupational therapist, meant that this data had been obscured within interviews. An example of observational data can be seen in appendix 8.

3.6 Thematic analysis and interpretation

Thematic analysis is suggested to be the most common method of narrative analysis despite being explained as 'painstaking' (Riessman, 2008, p. 73). It focuses on *what* is told in stories, rather than the *way* that these stories may unfold within conversations (Kim, 2016, p. 213), and attempts to discover the distinctive patterns and repetitions that may be found in the data (King et al., 2019, p. 200). In keeping with other aspects of the research methodology that I have

discussed in this chapter, I was keen to separate out data analysis, interpretation, and researcher reflexivity neatly, but instead, found it to be synonymous with the messy nature of qualitative research, explained earlier in the chapter.

Whilst many researchers discuss analysis and interpretation separately in their study, I found there to be no clear-cut boundary between them. I had been keen to employ Braun & Clarke's (2006) six-phase 'step-by-step' guide to thematic analysis, which they explained as familiarizing yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. However, in stark contrast, instead of my analysis and interpretation following a step-by-step process, I found it to be more of an iterative process. By that, I mean that I spent prolonged periods immersing myself in the data, without attempting to apply a procedure, or being confident about a direction.

Braun and Clarke themselves acknowledge that their step-by-step guide was misleading in depicting a clear path through this process, and later explained that it involves moving between the phases, likening this to the experience of following a hose through grass, where one might move both forwards or backwards, or follow loops (Braun et al., 2016). In addition, they added further detail stressing the importance of reflexivity within this process, explaining their preference to now use the term reflexive thematic analysis (Braun & Clarke, 2019). This more recent work is more fitting in explaining how I analysed and interpreted the data, even though what I had initially *attempted* to do was to follow their 2006 process.

Most usefully, Braun et al. (2016) present a cluster of the original six phases in their later work, first explaining familiarization and coding; then theme development, refinement, and naming; and then writing up. For me, this clustering is useful in illustrating the troublesome, messy nature of data analysis and interpretation by indicating that they do not neatly separate. I use these cluster headings to structure the remainder of this section.

3.6.1 Familiarization and coding

The process of immersing oneself in the data is a necessary part of data analysis, but, for me, the challenges of this are under-reported. I had gathered data over a 15-month period, and although had spent time considering it, and discussing it in supervision, had struggled to make significant progress with more formal analysis. I was fortunate enough to be granted some time on sabbatical, and this allowed me to step away from the other responsibilities within my full-time employment. On my very first day of sabbatical, I realised that this was my first real experience of immersing myself in the data. Prior to my sabbatical, I had been strict in protecting

the time to progress my research; however, I quickly realised that working with data one day per week for five weeks bears no resemblance to the experience of immersing oneself in the data for one full week. In part, this is due to the challenges of having to reminding yourself what you were doing last time; however, what made the most significant difference, was being able to de-clutter my thinking. This allowed me to analyse data without the repeated cognitive distractions, such as worrying how many emails I had received whilst working on my research, or remembering something I hadn't done. I therefore argue that a more illustrative term for researchers to consider is *data mindfulness*, where they can be fully present with their data without the distraction of competing concerns. This is particularly important for researchers with competing demands for time.

Whilst many authors argue that transcribing their own interviews helps them to become more familiar with, or immersed in their data (for example, Braun & Clarke, 2006; Jovchelovitch & Bauer, 2000), this was not my experience. I had all interviews transcribed professionally, and the time I saved on this process allowed me to immerse myself in the data in ways that I considered to be significantly more valuable. On receiving the transcripts, I would check them for accuracy by reading through them, whilst simultaneously listening to the recording of the interview. For me, the experience of simultaneously listening and reading allowed me to consider the data within a more meaningful flow than the stop-start nature of transcribing, that draws focus towards words and punctuation, instead of story and meaning. It enabled me to become necessarily pre-occupied with my own reflexive data mindfulness and I did this two or three times for each interview and observation (I used the read aloud function in Word to do this with my typed notes from observations).

Coding the data was troublesome, and again, this was due to my attempts to find some procedural security. Braun & Clarke (2006) suggest that the inductive style of reasoning that is in keeping with constructionist research would not ordinarily work well by applying rigid rules. Instead, they suggest researchers engage in 'ongoing reflexive dialogue' to ensure their coding extends beyond their preconceptions of the themes. Nonetheless, whilst it is described as being systematic and rigorous (Braun et al., 2016), researchers are also encouraged not to aim for codes that are considered 'correct' (Braun & Clarke, 2019).

Savin-Baden and Major (2013) suggest that codes may be descriptive, where codes merely summarise data; or analytical, which are grounded in what the researcher believes is going on (p.422). King et al. (2019) suggest that thematic analysis comprises distinct descriptive, then interpretive coding phases (p. 204). It was through reading about descriptive and interpretive

coding that I realised that my analysis and interpretation were integral to all parts of my research, and had begun even during the fieldwork. In interviews, my follow-up questions often revealed my analysis, and were akin to the ongoing reflexive analysis and interpretation that I had engaged in within therapeutic conversations in practice. As such, my own life history as an occupational therapist influenced my approach to narrative interviewing as I had been accustomed to reading the sub-text within conversations and checking out my interpretation *during* conversations as well as *after* them. Many of these questions were the integral habits I had developed to check out my analysis and interpretation, many of them starting with 'it sounds like...'

The following excerpt from my conversation with Andrew, at Hillside University, illustrates an example of this, where my initial interpretation had been based on my own assumptions. Checking this out with Andrew allowed me to arrive at a different interpretation.

Heather: *'So, does that PBL community, other than the peer review system, does it impact on how you deliver PBL?'*

Andrew *'I think it does. It's a forum. It's an opportunity to get together once a term, and have a chat...'*

...I hesitate to call it community because sadly it's not terribly well attended. Sometimes it is.'

Heather *'Right.'*

Andrew *'But it's a sort of community, a loose community I suppose. You can run the risk of operating in complete isolation if you're a contractor because you come in, do it, and go out. And you might not even bump into anybody else. And there's no time to talk really in between...'*

Heather *'...So having asked initially about a PBL community, it actually sounds like the opposite; that it can be quite an isolated role.'*

Andrew *'Yes, it can be, very much so.'*

My assumption about there being a PBL community had arisen from my unconscious analysis of what might contribute to a sense of community. As River University had a clear sense of community, and both sites had a remarkably similar approach to PBL and to staffing, I had unwittingly deduced causality. Through this reflexive conversation, I was able to adapt my thinking. As well as prompting me to realise the isolated nature of Andrew's role, it also prompted me to reconsider what had contributed to the strong sense of community that I had observed at River University.

Analysis was also evident in observational data, more so if I had dictated my field notes prior to typing them up. The notes that I made within PBL sessions were mainly descriptive and in the early stages of data gathering, when I typed these up, they generally followed the pattern of information that I had written. However, I moved towards dictating these notes in the later stages of data gathering, and these notes were observed to contain more reflexive analysis. The following is an excerpt from observational data gathered in Emily's PBL session at Hillside University:

*'Emily prompts them to cover an aspect that they've not yet covered, so, around the specific signs and symptoms of each category of anxiety. So, they start to discuss this. Again, **this is relating more to their practice**. Emily prompts them to think about at what point they would refer someone. So again, **relating it to practice**.'*

This phrases in bold illustrate my analysis of where Emily might have been influenced by her understanding of the graduate skills required for medical practice.

Coding the data took several attempts before it felt useful. Initially, I attempted to use descriptive codes; however, found that it was impossible to extricate my own analysis, and I had also been concerned about obscuring the meaning within stories. Savin-Baden & Major (2013) assert that not all research approaches demand coding or cutting of the data (p. 429); however, it felt important for me to make efforts to see beyond what might be most obvious in the data. In an effort not to lose the meaning within stories, I found it useful to adopt a questioning approach to coding, by asking questions such as 'What is this story really about?' or 'What does this relate to?'. As such, I retained my codes in the form of stories, separating out those that related more strongly to the individuals' life histories, from those that related more strongly to the sites. In putting these in a separate document (see appendices 9 and 10), the patterns and repetitions across sites and across disciplines became more visible. For me, coding was a juxtaposition of closely scrutinising the data, whilst simultaneously standing back from it.

3.6.2 Theme development, refinement, and naming

The process of developing, refining and naming themes is where codes are considered, and organised into patterns or themes that go beyond a summary of analysis, and begin to consider the significance in relation to the research question (Braun et al., 2016, p. 198). This is the stage that moved me beyond the experience of immersing myself in the data, to one of drowning in data. Organising, considering, and then reorganising the data took considerable time, and researchers are urged not to rush the process (Braun & Clarke, 2006, p. 86). As I had used most of my sabbatical to code data, I struggled to find the mindfulness required for this process,

as other pressures competed for my attention. Reflexivity was crucial here, and this was supported in my supervision sessions. Denzin (1998) suggest that researchers 'can neither make sense of nor understand what has been learned until they sit down and write the interpretive text, telling the story first to themselves and then to their significant others, and then to the public (p. 317). Using this example, my supervisors were my significant others, and provided invaluable opportunities to grapple with developing themes through reflexive conversations. As well as my supervisors posing questions, and adding challenge to what I was explaining, supervision provided a *sounding board* that allowed me to hear my own stories again, and to reflect on whether they sounded like an accurate representation of the data.

As mentioned earlier, I found interpretation to be integral to my identity, due to the natural curiosity that drives me to understand the *why* as well as the *what*, and this was important in making connections between conversations, disciplines, and sites. My interpretation of both interview and observational data can be seen in appendices 9 and 10, where themes have been ascribed a unique colour. Willig (2014) explains that researchers may approach data interpretation both suspiciously and empathetically. She describes suspicious interpretation as 'detective work' that aims to present latent meaning that is not immediately obvious, or that is perhaps obscured (p. 137). She describes empathic interpretation as aiming to magnify and develop meaning, noting relationships and connections (p. 138). I adopted both approaches to my interpretation of data, as is indicated by the questions I mentioned above; 'what is this story really about?' being suspicious interpretation, and 'what does this relate to?' being empathic interpretation. The balance of both approaches helped me to unveil some of the hidden cultural themes within data, as well as developing clarity about the ways in which the themes related to each other across sites and across disciplines. As example of this is shown below in figure 2, which illustrates an excerpt from the analysis of the session I observed with Jade at Beach University (also see appendix 10)

Figure 2: Analysis of observational data at Beach University

Signature pedagogies

Epistemological values

The law of curriculum inertia

Site civilisations

<i>Life stories</i>	<i>Site stories</i>
There is very limited tutor engagement in the session. No real attempts to generate discussion and information tends to be delivered rather than making use of opportunities to embed inquiry.	Classroom very lecture focused.
There is a lack of collaboration between students throughout the session.	Small class size in an oversized classroom. Young student cohort rather than having a diversity of ages.
Students appear to value delivered content from the tutor and do not seem to value discussions.	Work is given to those who are considered to teach better.
There is a focus on 'gathering knowledge' for future use, particularly in note form, with no sense of trying to understand it.	This is the first semester of the students' course and there is therefore more focus on delivered knowledge that they will then draw on in a more problem-based way later in the course.
There is limited student engagement throughout the session and no real attempts to address this. They don't speak to each other or listen. Some parts of the session were focused on working individually when students could have been encouraged to collaborate.	There is a strong focus on objective knowledge.
	Industrial action ongoing.

On the right-hand side, the story about the first semester of the course being more focused on delivering knowledge, has been interpreted as relating to signature pedagogies and therefore highlighted in orange. If this had been viewed independently, it could have been interpreted to relate more to the epistemological values of tutors or students. However, in noting the relationships and connections explained as empathic interpretation (Willig, 2014), I was able to consider this story alongside other stories from the science sites. These had revealed a strong disciplinary narrative about delivering objective knowledge in the science disciplines that influenced my interpretation.

Although Braun et al. (2016) present 'writing the report' as a separate phase of data analysis, I found the process of writing about the themes further developed my analysis and interpretation until eventually, I felt content with my themes, and confident that they would portray a story that I considered true to life.

3.7 Reflexivity

I have mentioned reflexivity in other parts of this chapter; however, bring it further into focus here. Reflexivity is a crucial element of qualitative research and is often used to support trustworthiness and validity. Its intention should not be to impress objective ideals on to qualitative studies, but instead, to provide some transparency around where researcher identity and assumptions may influence the course of the study. Finlay (2003) explains that the researcher is considered central to qualitative research, arguing that 'we no longer seek to abolish the researcher's presence', and should instead, recognise the value of subjectivity (p. 6). She suggests that rather than questioning the *need* for reflexivity in qualitative research, we should question how to do it.

However, Kim (2016) asserts that reflexivity should be considered a 'disposition' as well as a skill (p. 250), and I argue that this places a more fitting emphasis on *being* reflexive rather than *doing* it. In accordance, disposition is a concept that Bourdieu (1977) draws on, explaining it as a component of habitus that 'designates a *way of being, a habitual state* (especially of the body), and, in particular, a *predisposition, tendency, propensity, or inclination*' (p. 214). Reflective practice is a foundational *way of being* in occupational therapy, and learning authentic reflection is therefore integral to occupational therapy education and practice (Wong et al., 2016). As such, I found my reflexive disposition within my day-to-day thinking to be more valuable than the more focused entries written in my reflective diary. As mentioned earlier, Kek and Huijser (2017) assert that 'disciplinary thinking is so ingrained into our modus operandi and woven into our DNA that it operates like common sense' (p. 66), and for me, reflexivity is a crucial part of my disciplinary DNA.

In keeping with the social constructionist nature of this research, my own life history is acknowledged as a crucial component. As mentioned earlier in the chapter, my endeavour has been to present an open, transparent, and candid account of this research journey. I have done this by highlighting where my own life history may bear significance, and by offering some reflective comment.

3.8 Chapter summary

This chapter discussed and justified the narrative life history methodology of the study. It explored some of the ethical considerations that unfolded in the course of the study, explaining how these were negotiated. The chapter provided an account of the research sites and

participants, and discussed the ways in which data were gathered, analysed, and interpreted. The next five chapters present the findings of the study and are presented as follows:

Chapter 4 presents an introduction to the research sites. It provides an illustrative account of the participants, the course, the PBL and the environment across each site.

Chapters 5, 6, 7, and 8 present the four themes entitled signature pedagogies, the law of curriculum inertia, epistemological values, and site civilisations, respectively.

4 Findings: Introduction to the Research Sites

4.1 Introduction

This chapter is the first of five findings chapters. It differs from the other findings chapters, as its purpose is to provide some precursory detail, providing a foundation for the thematic chapters that follow. It is presented in five sections, providing an illustrative account of the research sites, in turn, and the participants therein. It illuminates these sites by providing some broader contextual information, and therefore provides some descriptive detail of the course, the environment, the participants, and the PBL in each site. A summary of this information is captured in a table at the end of each section, which also outlines the impact of the individuals' life histories on their facilitator stance. More detailed vignettes for each of the participants is also provided in appendices 11 to 15.

At this point, I again, highlight my endeavour to protect the identity of the research sites and in turn, the participants. Walford (2018), discusses the challenges of protecting the identity of research sites. He reports having managed to identify research sites described in published articles by simply taking a few key words 'from the blurb' in articles and putting into Google (p. 519). In contrast, he told of a researcher who had not felt able to publish their research due to feeling unable to guarantee participant anonymity. My intention is to avoid both of these outcomes by limiting some of the details considered a risk to anonymity (examples might be TEF rating, Russell group university, or region of UK) whilst also bringing the research sites to life.

Across the research sites, the approaches to PBL and to facilitation were discernibly different. In some sites, the approaches were similar across all observed sessions, whereas in other sites, they varied. This variation within sites may have been due to difference in styles of individual facilitators and/or differences in the year and experience of the student group. Tutors were aware of the range of PBL approaches and often they discussed the degree to which they considered their PBL to be 'pure'. As mentioned in chapter 2, Savin-Baden (2014) acknowledged the diversity of PBL approaches and entitled these *constellations* of problem-based learning. This conceptualisation is used to portray the PBL across the sites.

Facilitators have been mapped against Heron's (1993) and Wilkie's (2004) modes of facilitation. Heron (1993) presented three modes of facilitation which he entitled hierarchical, co-operative and autonomous (p. 111). He explains the hierarchical facilitator as adopting more of a

managerial style of facilitation, directing the team, and controlling the work they engage in. Wilkie (2004) defines this style of facilitation as 'directive conventionalist', explaining that these facilitators often focused on the content, and retained control of the learning. The co-operative facilitator described by Heron (1993) works more collaboratively with the group, supporting decision-making processes and guiding team working. This has similarities with Wilkie's (2004) nurturing socializer approach, although as well as this emphasising the student-centred nature of learning, this approach also values the relationships within the PBL process (p. 88). Finally, the autonomous facilitator supports the team to engage in peer support and decision-making, allowing them the freedom to direct their own work (Heron, 1993, p. 111). This corresponds to Wilkie's (2004) liberating supporter which she describes as providing minimal intervention, often being cited as the style facilitators aspired to (p. 84). Wilkie (2004) offers an additional approach to facilitation that is important to consider. She explains this as pragmatic enabler and suggests this is where facilitators do not adopt a fixed approach to facilitation, and instead adapt their style to each learning situation.

4.2 The Story of Forest University: Chemical Engineering

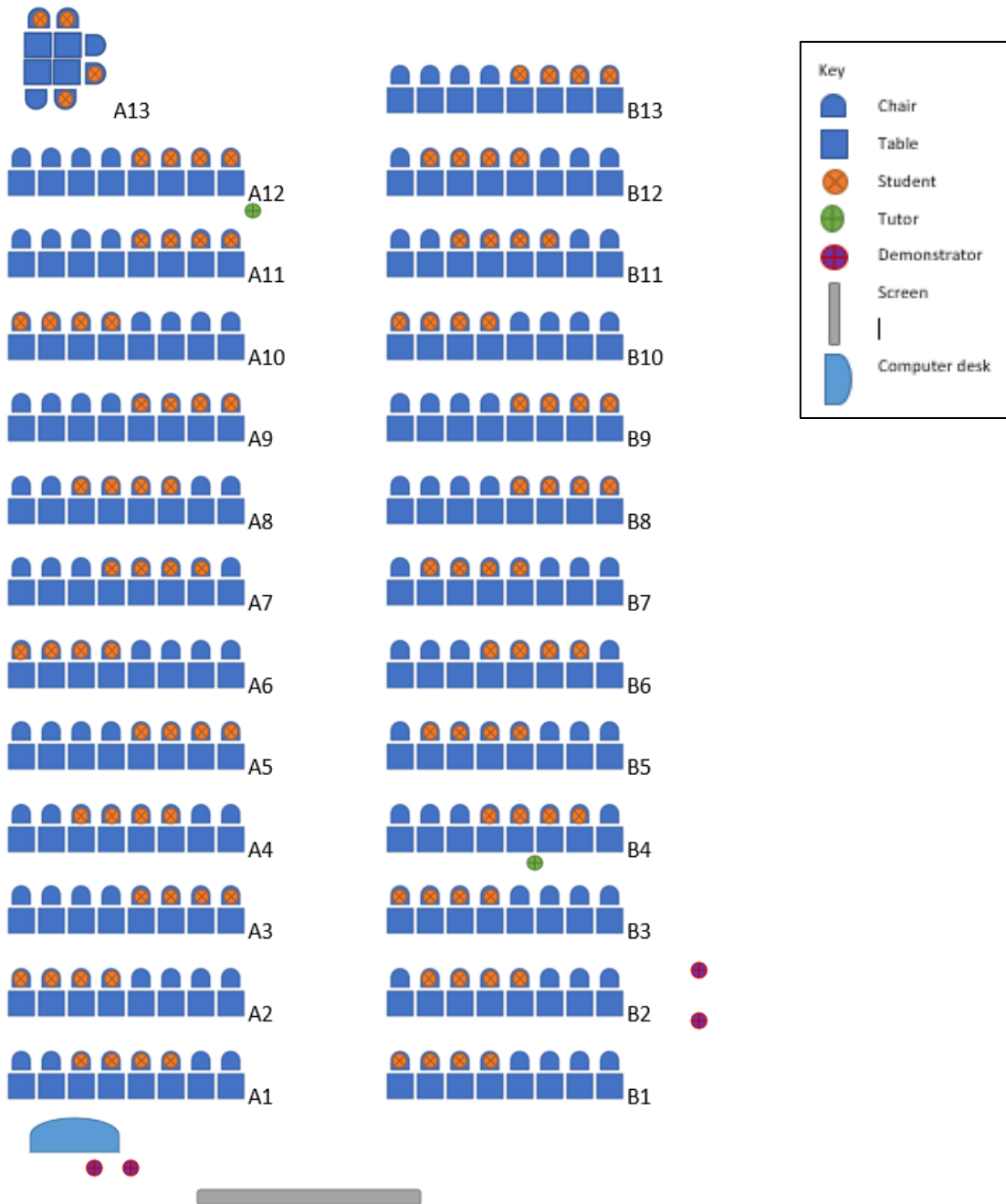
4.2.1 *The environment*

As I arrived at Forest University, I was reminded of parts of my occupational therapy training in the early 90s. Most of my learning had taken place on one floor of a small building, sited within the grounds of a college. However, when learning anatomy and physiology, we had to commute to a city centre university which was much grander, and in keeping perhaps with a stereotypical view of a red brick university. Forest University reminded me of this. I entered an immense building with high ceilings and long, wide corridors. It seemed quiet, but for the echo of shoes clicking on the hard floors or the stone staircases. Forest University has a long-standing focus on science and technology. The chemical engineering course is a four-year undergraduate course which offers an optional 5th year progressing to master's level study. The course has around 130-140 students per year.

Classrooms were vast, and to my surprise, contained the entire year-group in each of the PBL sessions. They tended to be organised in two columns, each made up of rows of around eight individual desks all facing forwards to the projector screen (see figure 3). Tutors had to shout to be heard, but when they did, students immediately stopped talking and listened intently. I noted this in my observations:

'All the students listen when Sylvia talks, despite the fact it's a really huge classroom area. They don't seem to break into chats in their groups. They are very much listening to what she's saying.'

Figure 3: Forest University PBL session of year 2 students



4.2.2 *The course*

Many of the modules on the chemical engineering course had previously been delivered as 10-credit modules; however, the university had moved to a 20-credit format and so modules had to be combined. This had resulted in many modules having two distinct topic areas. In some instances, the two topic areas were reported to connect well; however, other modules were described as a 'poor marriage' of subjects. Assessments covered both subject areas in one exam, and students could therefore compensate for a lack of understanding in one topic area by focusing more heavily on the other in the exams. Students were often assessed by exams in the earlier years of the course and then had a large design project in later years.

4.2.3 *Staffing structure*

At Forest University, I didn't feel as though I got to know the staff group beyond the participants of the study. One tutor, who had been my point of contact for recruitment, put me in touch with the other participants and so I didn't have the same number of informal conversations and introductions as I had in other sites. Teaching staff tended to be lecturers or senior lecturers, although there were also demonstrators in all observed sessions. Demonstrators are PhD students who are being supervised by staff in the department, and whose role involves supporting some teaching. They are more synonymous with teaching and learning within science disciplines and there were between two and five demonstrators in the sessions observed.

4.2.4 *The participants*

There were four participants at Forest University from a range of disciplinary and geographic backgrounds, and with experience of working and learning in a variety of countries around the world. Disciplinary backgrounds included single science disciplines, such as mathematics and chemistry, but also engineering and chemical engineering. Two participants spoke about their considerable experience of PBL in other settings although both conversations highlighted these experiences as being distinct from their experiences of using PBL at Forest University, mainly due to the large class sizes at Forest University.

An interesting observation about facilitators at Forest University was that only one out of the four observed sat down with the students, whilst the other three stood over them. There was variance in the styles of facilitation. Patrick, who was observed in a year one session, was the least involved in the students' learning, only engaging with students if they sought support. Wilkie (2004) describes this as being a 'liberating supporter' due to having minimal engagement with the students (p. 84). When he did engage with the students, he usually gave detailed

explanations, which corresponds with Heron's (1993) hierarchical mode of facilitation, or Wilkie's (2004) direct conventionalist approach, retaining more focus on content, than skills such as critical thinking. This was also the approach adopted by Samuel in a year two session, as he methodically worked his way around every team in the session, enthusiastically repeating the same detailed explanations. In the same session, Jasmine was observed to have a direct conventionalist approach, although balanced this with a more enquiring, co-operative mode of facilitation, prompting students to articulate their reasoning, or providing the minimum guidance necessary to allow them to continue to work things out for themselves. She was approachable, took time to give feedback and said she was keen for the students to build confidence. This approach corresponds to the 'nurturing socialiser', which Wilkie (2004) describes as 'student-centred, nurturing and supportive' (p. 88). In contrast, Sylvia was very focused on encouraging autonomous learning and teamwork skills. Even in the third-year session observed, students required support to work together, and Sylvia seemed reflective of whether her presence in a team was facilitative or impeding. In contrast to the other sessions at Forest University, Sylvia prompted the students to move tables so they faced each other (much like group A13 in figure 3), and she would sit amongst the group she was speaking with. Whilst her mode of facilitation was co-operative, her endeavour for student autonomy was evident.

4.2.5 The problem-based learning

There was some degree of variance in how PBL was delivered on the course or indeed, what was considered by tutors to be PBL. It seemed to change as the students progressed through the course although there were no conversations indicating this was intentional. Class sizes were markedly bigger than in any of the other research sites. The sessions observed had around 100 to 120 students in, and facilitators and demonstrators moved between groups.

In year one the students didn't necessarily work in teams, and the problems they worked on had more structure to them. The facilitator and demonstrators tended to troubleshoot with students who were unsure of how to progress with a problem. The students left the session when they had worked their way through the set of given problems. If they had no difficulty during the session, they may not interact with the facilitator at all prior to leaving, as there were no discussions initiated by the facilitator. Sessions were an opportunity to apply their knowledge to a set of given problems, and as such, is most in keeping with constellation 1 in Savin-Baden's (2014) classification of PBL approaches. This focuses on managing and testing knowledge in the context of solving problems. It could also be argued that Patrick's session was more synonymous with definitions of enquiry-based learning as detailed in table 1 earlier due to

Patrick adopting more of a guiding and/or instructing role, and the students often working independently. This was evident in the following excerpts from observational data from Patrick's session:

'Students are sometimes sitting with friends but not in set groups. They do not appear to work collaboratively.'

'2.20pm Student asks for his answer to be checked.'

'Student asks for something to be checked – demonstrator checks it.'

'Student stuck on question 3. Tutor checks working.'

In year two the PBL also seemed aligned to constellation 1; however, some changes were noted. The students now worked in self-selected teams, although this was haphazard in its application. Some teams were observed to work as two pairs, or even as individuals, and facilitators did not encourage collaboration. I noted the following when observing the session and this was the session illustrated in figure 3:

'Group A13 is the only group sitting facing each other. All others are sitting in a line, even though they could have sat facing each other by sitting a group at each end of a row.'

Problems had less structure and there was an increasing emphasis on reasoning and making connections to prior knowledge. The year-two session I observed had two facilitators and I had been keen to witness how this worked as participants spoke highly of this being a good way of bringing two subjects together. I felt a little disappointed when I realised that the session had two sets of problems, facilitated separately by the tutors. Therefore, each facilitator worked with half the class for the first half of the session; they then called a short break and the facilitators moved to work with the other half of the class. In essence, it was two separate sessions that happened in the same classroom. Both tutors made efforts to spend time with each team once during the session. They tended to work their way from the front of the class to the back, or vice versa. Discussions were often repetitive, with facilitators prompting for the same information from each team or imparting the same information.

In year three, the approach to PBL differed, and the processes seemed more familiar to those I was used to and had observed elsewhere. The module that the students were embarking on was a design module, and teamwork was now emphasised and encouraged. The PBL approach had therefore changed from constellation 1 to constellation 5, which is where students may work on a design project. (Savin-Baden, 2014, p. 205). Teams were encouraged to assign roles such as facilitator, scribe and timekeeper, and a reflective element was introduced regarding

their teamwork. Within the sessions they would complete and hand in a summary sheet with their agreed learning objectives on.

4.2.6 Review of Forest University

Table 4 provides a review of the participants, the PBL and the facilitation at Forest University.

Table 5: Forest University participants, PBL, and facilitation

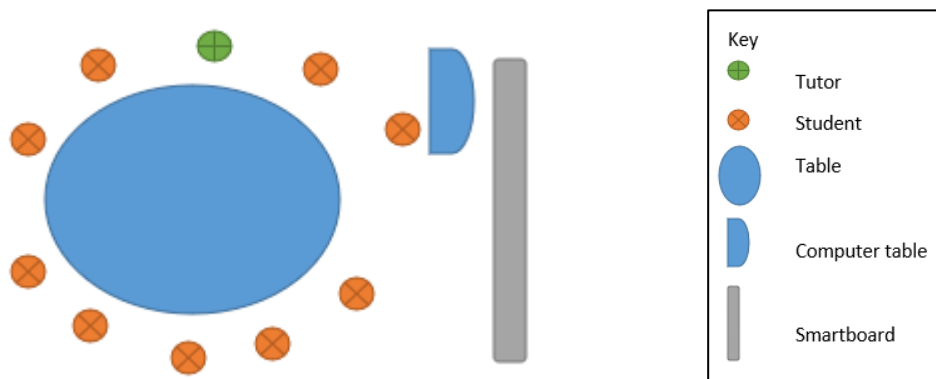
<i>Participant and role</i>	<i>PBL approach</i>	<i>Main modes of facilitation</i>	<i>Impact of life history on facilitator stance</i>
Jasmine Academic role Observed with year 2 students	Constellation 1	Co-operative Nurturing socialiser	Jasmine reported a shift in her stance when she moved from teaching in a single science discipline to chemical engineering. She recognised a need for chemical engineering students to integrate knowledge from simultaneous and past modules that had been less crucial in her previous role. She thought PBL was useful in this respect.
Patrick Academic role Observed with year 1 students	Constellation 1	Co-operative Liberating supporter	Patrick had extensive experience of PBL as a facilitator, a trainer, and within curriculum transformation projects. Whilst Patrick appeared passionate about PBL, his previous experience of taking a team approach to curriculum transformation, resulted in him considering it a risk to undertake this development work individually at Forest University.
Samuel Academic role Observed with year 2 students	Constellation 1	Hierarchical Direct conventionalist	Samuel's stance was strongly influenced by his own learning experiences. He had been autonomous in his learning, forming his own peer learning group, and had only attended lectures where he thought things were explained well. He discussed PBL being most useful for students who were autonomous in their learning.
Sylvia Academic role Observed with year 3 students	Constellation 5	Co-operative Pragmatic enabler	Whilst Sylvia had an engineering background, her career had predominantly been focused around PBL curriculum development. She therefore identified more with education as a discipline than chemical engineering. She valued the life skills that PBL helped students to develop, and this seemed to be at the heart of her facilitation.
Notes: A 5 th participant was emailed; however, was not available at times suggested. I sensed that he was not keen to participate.			

4.3 The Story of River University: Law

4.3.1 The environment

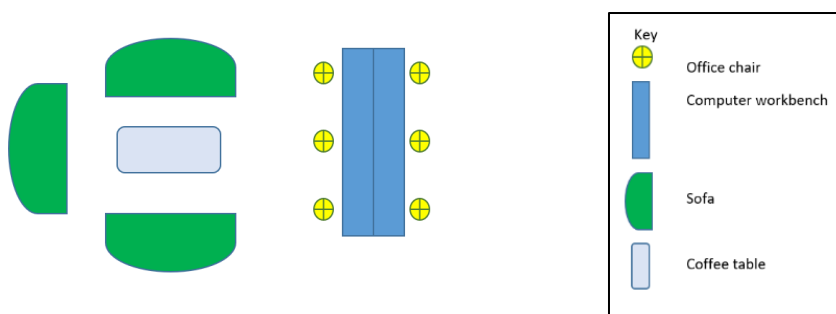
River University has been delivering their undergraduate law course for a little over a decade now. The campus felt fresh, spacious, and modern, and contrasted with the traditional feel in some other sites. Staff emanated a sense of pride in the purpose-built environment and keenly showed me around. The classrooms resembled meeting rooms and been designed specifically for PBL (see figure 4). They were glass-fronted, with a computer and smartboard at one end, and an oval table in the centre, which would comfortably seat around 12.

Figure 4: River University PBL session



The office space had also been influenced by the PBL used. Whilst academics tended to be based in individual or shared offices, there was some open plan office space which was designated for all PBL tutors (see figure 5).

Figure 5: River University PBL tutors' area



This space had a sociable and friendly feel to it and seemed to be the community hub for both academic and PBL staff.

4.3.2 The course

The students experienced a range of learning approaches such as plenaries, round table discussions, and moot clinics; however, the PBL was central throughout the curriculum. The timetable was well structured with PBL sessions running in parallel, allowing tutors to collaborate and reflect in between. Sessions ran in two-hour slots and there were three slots in the day. Tutors often facilitated all three sessions in one day, and these may be the same trigger. The course and the environment were designed based on 12 groups of 12. However, numbers had increased to over 200 students, meaning group sizes had increased, sometimes as high as 18 students. All sessions observed had 12 students due to attend, and this seemed to be a comfortable fit. The students' assessments tended to be individual exams.

4.3.3 Staffing structure

Staff had a mixture of roles in the law school. The substantive tutors had lecturer posts or teaching scholarships. They would be involved in the design and delivery of all learning activities on the course, as well as facilitating PBL sessions. The PBL tutors were sessional tutors, who were usually only involved in the facilitation of the PBL sessions. There were around 20 PBL tutors with varying contracted hours.

There was a great sense of community and collegiality within the law school. As I spent time in the PBL tutors' area, I began to feel part of this community, as I was welcomed, introduced, and invited into both teaching and social conversations. Tutors knew each other as colleagues, but there were also clear social connections. They met outside of work, commuted together, and in some instances had known each other prior to their employment at River University. There was a strong sense of trust and respect across the staff group. There was a robust peer observation process, and without exception, participants portrayed a sense of valuing this as an opportunity to improve their own practice. New members had opportunities to shadow existing members of staff, and to run mock PBL sessions with students who volunteered to be involved.

4.3.4 The participants

Participants at River University had a range of roles and backgrounds; however, were consistent in the way they facilitated PBL on the course. They all adopted a co-operative mode of facilitation, and three out of four demonstrated facilitation skills resembling Wilkie's (2004) 'pragmatic enabler' (p. 84). As such, they often spoke of the difference in support as students

gained confidence and skills in PBL, providing more guidance in year one, whilst encouraging more autonomy in later years. Roy, however acknowledged his slightly different facilitation style. This was more like a 'nurturing socialiser' (p. 88). Thus, he prioritised his relationships with students, empathising with their experiences, giving more hints and stories if they were struggling, or if they were worrying about forthcoming exams. This was evident in some of Roy's comments I noted in observational data when he had provided some detailed information for students:

'[I'm] teaching although I'm not meant to.'
'I'm spoonfeeding as it's the end of term.'
"Don't want you to have to research over Christmas"

4.3.5 *The problem-based learning*

Students worked in groups of around 12 in the PBL sessions at River University. The groups were called 'firms', and the students would work with the same firm and tutors for the whole academic year. The students would take on roles such as scribe, timekeeper, and chair, and would rotate these each session. The two-hour sessions were split evenly between discussions on what students had researched on the previous week's trigger, and the exploration of a new trigger. Recent changes had been made to the PBL format, as it had been observed that in third year the students were experiencing what was described as 'PBL fatigue'. As a result, some sessions were being developed into more advanced PBL sessions, although these had not yet been delivered. The intention was that they would work with more complex case studies and offer more flexibility in the assessment format. PBL triggers were written to cross boundaries of different types of law, such as criminal law or international law. This was to make them a more authentic representation of legal practice. The students had a template process and structure to help guide their discussions in the sessions.

There was a high degree of consistency of facilitation styles within all observed sessions, and conversations commonly reported endeavouring to limit facilitator intervention. There was an extensive pack of tutor notes for each session, which had been developed by the tutors considered to have expertise in that field. The PBL observed was most like Savin-Baden's (2014) constellation 6 (p. 207). This approach moves away from propositional knowledge and encourages the development of critical thinking that translates into practice.

4.3.6 Review of River University

Table 5 provides a review of the participants, the PBL and the facilitation at River University.

Table 6: River University participants, PBL and facilitation

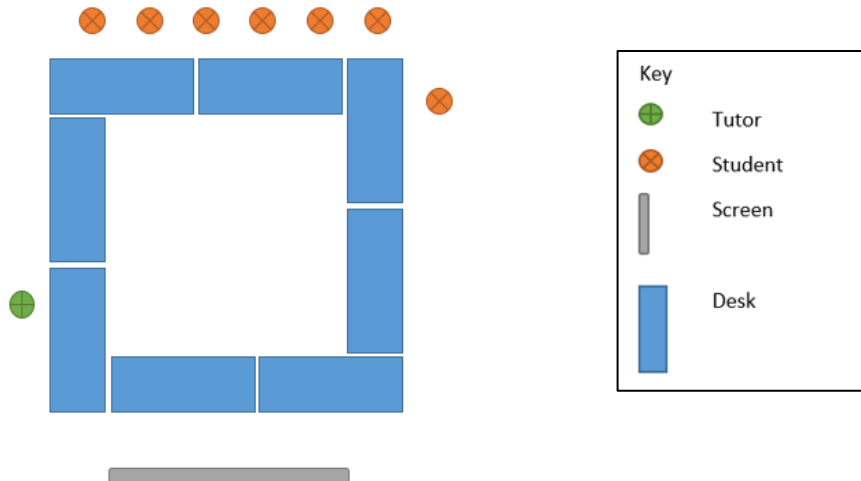
<i>Participant / role</i>	<i>PBL approach</i>	<i>Main modes of facilitation</i>	<i>Impact of life history on facilitator stance</i>
Diane PBL tutor Observed with year 3 students	Constellation 6	Co-operative Pragmatic enabler	Diane had a strong focus on the importance of relationships, and this influenced her stance as a facilitator, as she valued and encouraged the students to develop teamwork skills. She had left a previous teaching career as she had become frustrated by the restrictive nature of the teaching and learning. Diane had applied to work at River University as she was interested in the PBL curriculum.
Nigel Academic role Observed with year 2 students	Constellation 6	Co-operative Pragmatic enabler	Nigel's stance as a facilitator was strongly influenced by his own student experience of PBL. He had completed undergraduate and postgraduate studies which had contrasting approaches to learning and found this comparison useful. In particular, Nigel had a focus on quality and effectiveness and had experienced PBL as beneficial in this regard.
Sandra Teaching role Observed with year 2 students	Constellation 6	Co-operative Pragmatic enabler	Sandra acknowledged that her own learning experiences, which had been more didactic in nature, had encouraged her to be a 'surface' learner, rather than understanding things in more depth. Being able to compare this to the PBL curriculum at River University had developed her enthusiasm for PBL. Her confidence in it being a useful approach to learning has developed over time, as she had observed students' exam results.
Shona Academic role	Not observed	Not observed	Shona's stance as a PBL facilitator was informed by a breadth of experience as a PBL educator and researcher, and by her disciplinary identity. This reflexivity seemed to strengthen her empathy and understanding of the range of facilitator stances in the course team and how this could impact on the consistency of approach, or on tutors' job satisfaction.
Roy PBL tutor Observed with year 1 students	Constellation 6	Co-operative Nurturing socialiser	Roy had an extensive career as a lawyer and this, along with his natural affinity for storytelling significantly influenced his stance as a PBL facilitator. Whilst he espoused a belief in the value of PBL as a pedagogy, he had to overcome his natural tendency to impart illustrative stories from practice.
Notes: Initially Shona had not been interviewed as she was not due to facilitate any PBL sessions that I could observe. Whilst interviewing other participants at River University, it became apparent that Shona was instrumental in the PBL delivery there and so she was asked if she would participate.			

4.4 The Story of Hillside University: Medicine

4.4.1 The environment

Hillside University had a town-like feel to its campus. I found it easy to get lost amongst the array of buildings, regularly finding it difficult to locate buildings, or to understand the signage. I felt sorry for the gentleman trying to deliver a parcel, who stopped to ask if I could help him locate a particular building. I couldn't. But I could certainly empathise with his challenge! I observed a range of classroom spaces at Hillside University, and they were often oversized, albeit entirely functional for the small numbers of students they accommodated. Only one felt like a bit of an unusual space, as it was a large room with much of the space taken up by shelving and items which appeared to be stored there. Whilst there was adequate space for the group to cluster near the computer and projectors screen, they did end up in a slightly awkward looking formation. Other classrooms typically had a quadrangle of desks with the students tending to sit along two sides, as illustrated in figure 6.

Figure 6: Hillside University PBL session



4.4.2 The course

Hillside University advertises its medical course as having a PBL curriculum, and this has been its learning philosophy since its inception. Initially the course was accredited via another university, subsequently gaining its own accreditation some years later. Students have PBL modules in years one, two and three, although in year three, many of the PBL modules happen

within clinical practice, rather than within the university. The sessions had resources which supported them, and these were on the students' virtual learning environment. These were quite detailed due to the General Medical Council's (GMC) requirements that the course has a defined *written down* curriculum that the students can access. The learning outcomes for each module were therefore released on the last day of that module to reduce undermining the PBL philosophy of the course, whilst continuing to provide the *written down* curriculum. The course was in the process of expanding, in fact, doubling its student intake from 60 to 120 students per year. As such, they were in the process of recruiting and training more PBL tutors.

The students were heavily timetabled, with second year being reported as particularly busy for them. The PBL sessions followed a set pattern of delivery, happening on pre-determined days throughout the timetable for each year group. Students remained in the same PBL groups for the year, and they undertook end of year exams.

4.4.3 Staffing structure

The boundaries of the staff team felt very indistinct due to there being input from a variety of people and roles. There was a significant number of PBL tutors, whose roles were non-substantive. They came from a range of disciplinary backgrounds, although those who facilitated year three groups tended to have some degree of medical experience. PBL tutors were not involved in the delivery or planning of the rest of the curriculum. In contrast to the PBL tutors at River University, there was little sense of community beyond the boundaries of the group. There were PBL meetings three times a year, but not all tutors were able to attend, and they may otherwise not be in contact with each other. These meetings were coordinated by one member of staff whose role was to coordinate the delivery of PBL throughout the course. She took responsibility for the recruitment and training of PBL tutors, as well as the coordination of PBL triggers and materials. Lecturing staff had substantive contracts and their roles related to the overall delivery of the course, such as student support or academic year coordinators. Again, staff in these roles came from a range of disciplinary backgrounds.

4.4.4 The participants

The five participants at Hillside University had distinct disciplinary backgrounds, although all had healthcare connections. Three participants were experienced academics, although one had only recently started in her position in the medical school. The other two were hourly-paid PBL tutors; one being otherwise retired, and the other having private work outside the university.

As with other courses with well-established PBL curricula, participants at Hillside University adopted the approach of 'pragmatic enabler' (Wilkie, 2004, p. 89), acknowledging that their facilitation changed as the students gained confidence and skills in PBL. Only one participant, Paula, acknowledged an ambivalence in this regard. She openly reflected on being drawn to having more of an insider relationship with the students than the role of facilitator afforded her. She was keen to be part of the team, inputting her own thoughts and this is more akin to the approach of a 'nurturing socialiser' (Wilkie, 2004, p. 88). This was not observed in the PBL session I attended with Paula; however, she did explain experiencing a sense of responsibility for nurturing the group and helping them to feel at ease. Kirsty and Paula adopted co-operative modes of facilitation with their groups whilst Emily and Andrew adopted autonomous modes. Whilst this may have been due to slight variations in facilitator stance, it was also considered in keeping with the pragmatic enabler, as the students in Emily and Andrew's session were noted as being particularly engaged, collaborative, and autonomous, thereby requiring less direction.

4.4.5 *The problem-based learning*

There were around eight students per session, with one facilitator. Each PBL module consisted of three sessions: a 90-minute objective setting session, followed by two further 90-minute feedback sessions. This was the only site to have two sessions of feedback for each trigger, and the students were observed to have no difficulty filling it with their discussions. The autonomy demonstrated by the students at Hillside University was commendable. They were not permitted to rely on notes or laptops to feedback their learning, and instead, engaged in discussions exploring topics in depth. They drew diagrams together and spent a greater amount of time working without input from the facilitator than was observed in any of the other sites. Their autonomy and teamwork were revealed in observational data as follows:

'Emily checks out something they've discussed, asks them for clarification. There's a real sense that the knowledge and expertise is located within the group. Students ask the group questions if they're not sure about something. [Questions are] very much directed to the group rather than to Emily.'

'One student makes a suggestion about why patients might be more at risk of suicide after starting a particular type of medication. He asks Emily if that's right. She says it's an interesting hypothesis, it needs further checking out.'

A framework was used to guide students' learning objectives. The most significant focus was on medical sciences; however, there was also a focus on social, ethical, and professional issues. Students used roles such as scribe and chair, although in some sessions, these roles were fluid and the students worked in ways that played to the strengths of individuals in the

team at any given time. Therefore, one student might initially chair discussions but then might hand this over to another student when the nature of the discussion changed.

The approach used for PBL was synonymous with constellation 7 (Savin-Baden, 2014, p. 208). This encourages multimodal reasoning in students, prompting them to consider knowledge across disciplinary boundaries, and adopt a critical stance.

4.4.6 Review of Hillside University

Table... provides a review of the participants, the PBL and the facilitation at Hillside University.

Table 7: Hillside University participants, PBL and facilitation

<i>Participant / role</i>	<i>PBL approach</i>	<i>Main modes of facilitation</i>	<i>Impact of life history on facilitator stance</i>
Andrew PBL tutor Observed with year 2 students	Constellation 7	Autonomous Pragmatic enabler	Andrew's career in health illustrated that his passion to learn, and authentic curiosity predominated his desire to ascend any hierarchical structures. As a PBL facilitator, he therefore valued what <i>he</i> learned within sessions, as much as what the students learned. He positioned himself amongst the students, leading from the rear, rather than adopting a more authoritative stance.
Emily PBL tutor Observed with year 2 students	Constellation 7	Autonomous Pragmatic enabler	Emily had close professional and personal associations with medics that informed her understanding of the demanding nature of a career in medicine. As a facilitator therefore, she was clearly mindful of the bigger picture in relation to the module learning outcomes and would encourage students to explore topics in more depth than might be required for the exam. She had great empathy regarding the emotional stresses of the job and was keen that students developed resilience during their studies.
Kirsty Academic role Observed with year 3 students	Constellation 7	Co-operative Pragmatic enabler	Kirsty reported herself as having been a solitary and introvert learner when she had been a student; however, as a PBL facilitator she held the social construction of knowledge in high regard. This stance may have been informed by some of Kirsty's less formal learning, as she discussed the ways in which PBL resonated with her social learning experiences in day-to-day life.
Nicole Academic role	Not observed	Not observed	Nicole explained that her role at Hillside University had pushed her out of her comfort zone and this was a theme in conversations relating to PBL facilitation. She asserted that as the curriculum was integrated, there would always be instances of tutors facilitating sessions

			that forced them out of their comfort zone due to transcending areas of expertise.
Paula Academic role Observed with year 1 students	Constellation 7	Co-operative Pragmatic enabler	Paula had experience of working as an academic on another undergraduate course more synonymous with her own disciplinary background. She had found the students to be challenging and some senior colleagues to be critical and this prompted a degree of self-scrutiny. She acknowledged her need for acceptance from the students within sessions, stating she wanted to be liked and respected as knowledgeable.
Notes: I was unable to shadow Nicole as she had new members of staff shadowing her sessions at the time.			

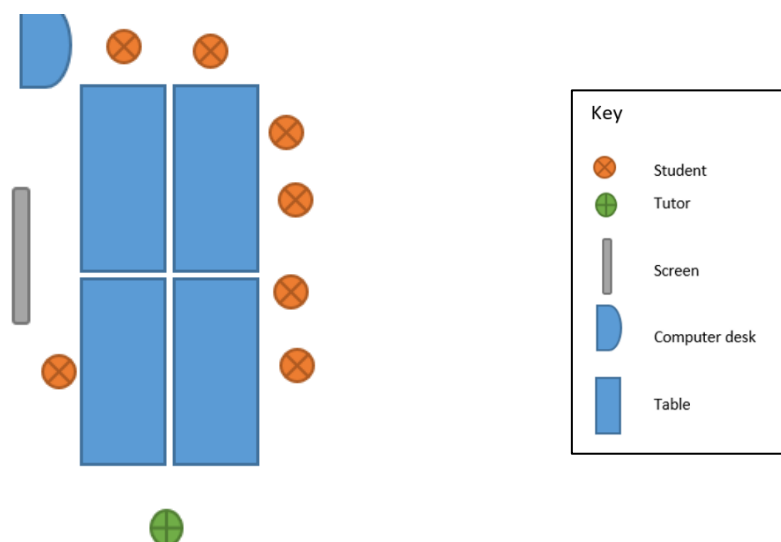
4.5 The Story of Meadow University: Occupational Therapy

4.5.1 The environment

As I entered Meadow University campus, I expected memories of previous visits to come to mind, as I had attended a short occupational therapy course there over 20 years ago. Sadly, whilst I remembered the PBL curriculum being a topic of conversation on the course, the campus felt unfamiliar. Nonetheless, as occupational therapy has a strong sense of community, I quickly felt a sense of belonging when gathering data here.

The classrooms were an adequate size for small group teaching, although were quite narrow, which appeared to split the group on occasion (see figure 7).

Figure 7: Meadow University PBL session



Tables formed a rectangle in the centre of the room, and there was a computer station in the corner linking to the projector. PBL sessions ran in parallel, with four groups running for 90 minutes followed by another four. The sessions were timetabled in adjacent rooms and tutors met briefly between sessions, by leaving one session early, and arriving late to the next.

4.5.2 The course

The occupational therapy course was not PBL at its inception; however, adopted this approach many years ago and has been a PBL curriculum ever since. Student numbers on the undergraduate occupational therapy course have grown in recent years to 80 students per year. There are strong links between occupational therapy staff at the university and the students' educators in clinical practice, where the students would complete placements as part of their course.

Whilst the occupational therapy curriculum had adopted a PBL curriculum, discussions revealed that the course was a bit of a 'square peg in a round hole', becoming more apparent as smaller departments had merged into a larger school, and processes had become more standardised. Tutors discussed the challenges in maintaining a PBL philosophy in a system where there was little understanding of it.

4.5.3 Staffing structure

Tutors working on the programme were all lecturing staff, some on academic contracts and some on teaching scholarships. I was kindly invited to two staff meetings where I met some of the course team. The second meeting had a PBL focus. Interestingly, PBL meetings were something that had been discussed in some of my earlier interviews with the more experienced facilitators. They had reflected on how useful it had been when they had held meetings with a specific focus on PBL but mentioned these no longer happened. Their participation in this study had prompted more conscious thought about PBL processes, and the meetings had seemingly been reinstated as a result.

4.5.4 The participants

There were five participants at Meadow University and there was significant variance in the length of time they had worked there. This resulted in variances in stories told. Two participants considered themselves to be relatively novice PBL facilitators, despite working there for around two to three years. The other three participants had worked there for over 15 years, and told stories of the ways in which PBL, the staffing and indeed the university, had changed in that

time. They told stories of a core team of PBL enthusiasts, most of whom were no longer there. The newer tutors' stories were less historical and tended to focus on their transition into the role of PBL facilitator.

Participants' approaches to facilitation were consistent, facilitating in a co-operative manner (Heron, 1993, p. 111), and adopting a pragmatic enabler approach (Wilkie, 2004, p. 89). Participants placed high emphasis on the value of processes relating to autonomous learning and teamwork.

4.5.5 The problem-based learning

Students worked in groups of around 10 in the PBL sessions and their work was progressive over several weeks, usually culminating in a group assessment (a presentation, for example) that they shared with other PBL groups. Triggers were multifaceted, perhaps relating to a clinical scenario, and the module guide provided a structure of which areas to research and discuss each week. Students were encouraged to write group contracts at the beginning of the academic year and to distribute the roles of chair, scribe and observer. A role which was used at Meadow University, but not observed in any other site, was that of *evaluator*. The students in this role were tasked with providing an evaluation of the team working after each session. It was observed, however, that there was some student resistance to such structures, and they were seen to work without formal roles, stating they didn't need them. The impact of this was noted in observational data:

'Robert asks if they still use the role of chair and scribe etc. The students say they haven't. They resist the roles and suggest that it is fine to just all chip in. Robert asks if the more vocal student is chair. She says no, but he encourages her to take on this role. The dynamics change from this point, as she makes more effort to coordinate discussions.'

With the high emphasis on collaborative, reflective working, the PBL at Meadow University correlates with PBL constellation 8, described as 'collaborative, distributed problem-based learning' (Savin-Baden, 2014, p. 208). This approach stresses the importance of reflexively evaluating individual and team working when learning about an issue from practice.

4.5.6 Review of Meadow University

Table 7 provides a review of the participants, the PBL and the facilitation at Meadow University.

Table 8: Meadow University participants, PBL, and facilitation

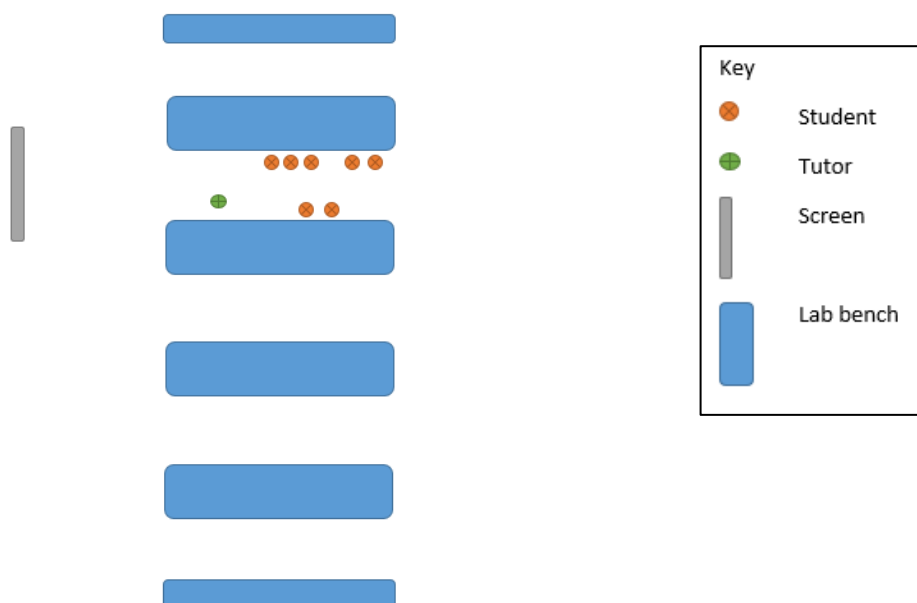
<i>Participant / role</i>	<i>PBL approach</i>	<i>Main modes of facilitation</i>	<i>Impact of life history on facilitator stance</i>
Beth Academic role	Not observed	Not observed	Prior to working at Meadow University, Beth had worked within mental health settings. She drew on her experiences of facilitating clinical groups when facilitating PBL due to having developed skills in managing group dynamics and an increased awareness of self within these dynamics.
Hannah Academic role	Not observed	Not observed	Hannah also had extensive clinical experience as an occupational therapist and reported that her experience of facilitating groups in practice had given her confidence to facilitate PBL at Meadow University. She also described reflection as a key skill that she considered had transferred well to PBL.
Jennie Academic role Observed with year 1 students	Constellation 8	Co-operative Pragmatic enabler	Jennie's experiences as a student and as an occupational therapist in clinical practice influenced her stance as a PBL facilitator. She empathised with students and was keen to ensure she steered them away from some of the challenging experiences that she had encountered. Reflection was integral to Jennie's disciplinary identity and she explained that this was an important aspect of being a PBL facilitator.
Robert Academic role Observed with year 3 students	Constellation 8	Co-operative Pragmatic enabler	Robert had worked at Meadow University for a considerable period and his formal learning and research activities had a strong PBL focus. Despite having been out of clinical practice for quite some time, his clinical expertise strongly influenced his identity. As such he enjoyed students drawing on his expertise within relevant trigger scenarios.
Rose Academic role Observed with year 1 students	Constellation 8	Co-operative Pragmatic enabler	Rose was relatively new to Meadow University, and to academia. She had worked in many leadership roles where she had been responsible for delivering information to staff groups. She acknowledged that the shift to more student-centred approaches had been challenging due to her extensive experience of delivering training in more teacher-centred ways.

4.6 The Story of Beach University: Natural Sciences

4.6.1 About the environment

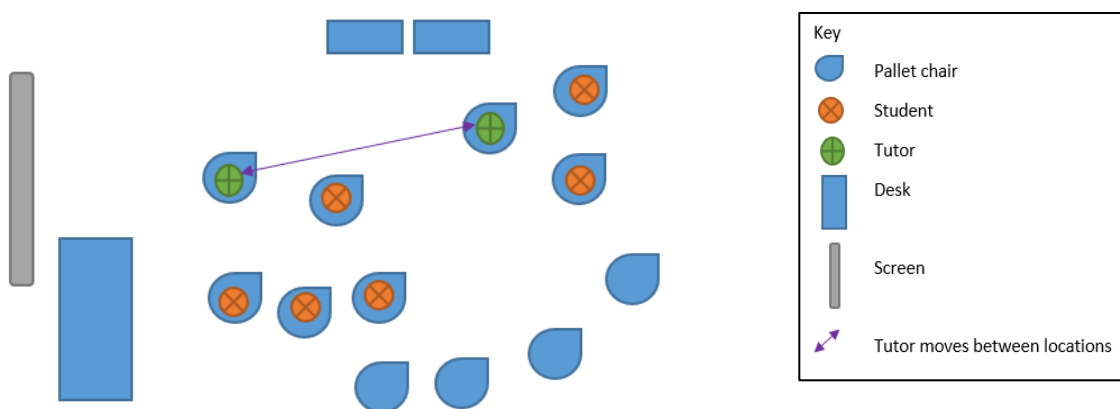
Beach University is a city centre research university with a traditional feel to it. My interviews and observations were conducted in a number of different buildings where I had to be signed in and out by staff. Outside of the classrooms, the buildings felt old-fashioned and fusty, which was perhaps how I had anticipated a science building being. The classrooms varied in size and shape, but they were generally oversized for the particularly small cohort of students I observed. One observed session was in a laboratory that had 10 large benches. The students worked in pairs in one section of the laboratory; however, most of the space was not required (see figure 8).

Figure 8: Beach University PBL session



In both other sessions the rooms were also oversized for the number of students, but less significantly so (see figure 9).

Figure 9: Beach University PBL session



4.6.2 The course

The natural sciences course is a 3-year undergraduate programme, with optional additional years such as a preliminary foundation year and/or a 4th year master's year. Instead of large student numbers and didactic traditional teaching methods often associated with science subjects, there was a small cohesive course team, small student numbers, and student-centred learning embedded throughout the course. However, the natural sciences' story was bittersweet. Whilst the course had developed over time, it had also been closed and redeveloped, resulting in two fallow years and staff redundancies. I gathered data in the first year of the new programme, which only had seven students. The new programme built on the pedagogical approach of the previous course, which had received national recognition in the form of an award for collaborative teaching excellence.

Whilst I had not been consciously aware of the impact of diversity in the other research sites, I began to ponder the impact of the homogenous student group at Beach University who, it was reported, almost always came straight from school. The students seemed young and giggly in the sessions and some behaviours seemed more in keeping with school children than university students. An example of this was in the session I observed within the laboratory, which was in the second semester of the first year of the course. One student spent significant periods of time with his head on the desk, his arms making a pillow, as though sleeping. I remember

feeling quite shocked at him engaging in some conversations with the facilitator whilst continuing to sit like this. I wondered if such behaviours would have diminished with a more mature presence in the student group. This is highlighted in the following excerpts of observational data from Karen's session:

'Student has had head on desk for 5 minutes...' *'...he has no concerns about the poor impression he is giving, given he has only just met Karen today.'*
'She asks them what they thought about one of their other learning sessions. Tired student remains with his head on the desk although does chip in a few words.'
'Students use the time between collections to chat and socialise. They are quite young in their interactions and remain boisterous and giggly throughout the session...'
'...There are lots of quite dramatic slightly attention seeking communications in the group.'

The course is interdisciplinary in nature, rather than solely being comprised of single-science modules. This means that the modules cross disciplinary boundaries, providing a more holistic learning experience. In the new iteration of the course the students also have the option to study some modules from the single-science degrees, which they didn't have before. The original course was developed with financial support from HEFCE. It also received funding that was related to the Stimulating Physics programmes whose aim was to encourage student uptake of physics.

Due to the fallow years between the original course and the current one, I had to wait to start my data gathering at Beach University. This was so that I could gather observational data with the new student cohort. Whilst there was still a cohort of students being taught on the old programme, the course team were protective of them, and acknowledged the students' unhappiness at having their course closed, resulting in a smaller learning community for them to be part of. This also meant that unusually, it was the same students I observed in all PBL sessions at this site.

The course had a mixture of learning activities, and one of the sessions I observed had an hour's lecture followed by an hour of PBL. It was interesting to observe the degree to which the lecture was didactic despite there only being five students present. There was no real engagement between the tutor and the students. The information was delivered, and students took notes. In fact, for most of it, the tutor did not even face the students.

4.6.3 Staffing structure

A significant conversation at Beach University related to staffing, and in particular, job insecurities. The redundancies had clearly impacted on individuals' sense of job security, and

they discussed challenges in career progression, such as promotion or obtaining substantive posts. This featured more in conversations at Beach University than the other research sites. I remember feeling a great sense of respect for the tutors, and their perseverance and hard work in attaining their current positions. Interestingly, there was little sense of bitterness in these conversations and all participants seemed to routinely work extra hours with little complaint. One participant, Karen commented that the staff team had 'been through the mill'; however, maintained that this had strengthened them as a team.

4.6.4 The participants

There were four participants at Beach University, and this made up the core staffing on the natural sciences programme. The participants all had single-science disciplinary backgrounds; two from biology, one from physics and one from chemistry. Without a doubt, the redevelopment of the natural sciences course could be attributed to the passionate, hard-working course team. They were a small, close-knit team, regularly featuring in each other's stories, especially regarding the developing and running of the course. Discussions about teaching excellence awards were common in conversations, and despite it being reported as exceptional to win the Beach University teaching excellence award, all four participants had done so.

Facilitation styles varied, and the sessions observed seemed to indicate progression towards student autonomy. The first session was the most structured and the students needed encouragement to work in their teams; the second was more practical in nature and with one team as the exception, the students seemed to be working more collaboratively; and the third session had less structure to it, with the facilitator tailoring conversations to individual teams. Whilst this progress could be an indication of a pragmatic enabler approach to PBL (Wilkie, 2004, p. 89), there was a strong directive conventionalist approach that remained within the sessions (ibid, p. 85) and commonly, a hierarchical mode of facilitation adopted (Heron, 1993, p. 111). As all observations were in year one of the course, it is anticipated that the facilitators' approaches would change as the students gained experience of PBL.

4.6.5 The problem-based learning

Problem-based learning threads through the whole natural sciences course, including induction and open days. However, participants acknowledged that it develops as the course progresses, with a reduction in the scaffolding that guides and supports students' learning.

The PBL sessions were aimed at helping the students to apply their knowledge to real-life scenarios. They worked over a period of weeks on the same scenario and were to deliver an 'output' at the end, which was their summative assessment. Examples of this might be a case report, or a website, which the students would then present.

The students worked in small teams. All the sessions I observed had at least one student absent, and so team sizes were between two and four within the sessions, with either two or three teams in each session. Students were very focused on notetaking in sessions; however, often this appeared to be at the expense of actually listening to and considering information.

Tutors adopted a roaming facilitator role within the sessions and moved between the groups. It was observed that the students didn't appear to work naturally or effectively in groups. They needed encouragement to collaborate, and often only engaged in group discussions when the facilitator was specifically focused on their team. When the facilitator sat with another team, students often resorted to checking phones or working individually. This was revealed in the following excerpts of observational data:

'The group of four seem to be sharing things in online shared spaces. However, there is not much interaction in their group.' (Mairi's session).

'The tutor interacts with one student and then the other, rather than with both at one time. It doesn't appear collaborative, rather, it appears like a series of individual interactions.' (Mairi's session).

'The group of four are not interacting. They seem to be on their phones or checking emails on their laptop.' (Mairi's session).

'One student notices there is no number seven on the worksheet and this exact same comment is made by another student five minutes later. I think this shows how disengaged the students are, particularly to what other students may discuss in sessions. The students sit and quietly work through the worksheet with no discussions.' (Jade's session).

The approach to PBL correlates with Savin-Baden's (2014) constellation 5, problem-based learning for design based learning (P. 206). This is where students work together on problem scenarios with the intention of developing an output at the end. The aim is that students develop capabilities required for graduate employment. Karen's session was different, as this had a more practical focus within the laboratory. As such, it was more in keeping with constellation 2, problem-based learning through activity (Savin-Baden, 2014, p. 205). Although participants at Beach University rarely discussed specific jobs that their graduates might apply for, they did speak about more general capabilities for graduate employment.

4.6.6 Review of Beach University

Table 8 provides a review of the participants, the PBL and the facilitation at Beach University.

Table 9: Beach University participants, PBL, and facilitation

<i>Participant / role</i>	<i>PBL approach</i>	<i>Main modes of facilitation</i>	<i>Impact of life history on facilitator stance</i>
Gary Academic role	Not observed	Not observed	Gary became heavily involved in teaching and learning as a demonstrator, which was part of his role as a PhD student. This ignited his passion for teaching and learning and so he started at Beach University in a role supporting the development of PBL in one of the single science sites. His focus on PBL research and improvement remained a strong.
Jade Academic role Observed with year 1 students	Constellation 5	Hierarchical Direct conventionalist	Jade acknowledged that the demonstrator role as a PhD student and the teaching experiences she had as a post-doctoral researcher prompted her to realise that her strengths and passion were for supporting student learning. Jade started at Beach University when the Natural Sciences been receiving poor student satisfaction. This prompted her to consider the way PBL is scaffolded by resources across the course.
Karen Academic role Observed with year 1 students	Constellation 2	Co-operative Liberating supporter	Karen had worked many casual roles in higher education prior to working in the Natural Sciences course. These had often involved delivering information in a didactic manner and so this had been her original approach when asked to cover a PBL session. Once Karen gained more experience of PBL, she found that it became her more dominant approach to teaching, and she began to embed student-centred activities into all her teaching.
Mairi Academic role Observed with year 1 students	Constellation 5	Hierarchical Direct conventionalist	Mairi was a self-confessed 'science geek' with an affection for storytelling. This influenced her development of PBL triggers as she reported that she was keen to retain a sense of story within the trigger, to ensure it was true to life. Mairi also had experience of PBL from a learner perspective. She recollected some of her own negative experiences and was keen to ensure her students avoided similar challenges.
Notes: Whilst Gary had been keen for me to observe one of his PBL sessions, his work commitments changed. Whilst there may have been opportunities to observe him, in the end it felt as though the emails requesting potential dates had potential to add to his work pressures and so I decided not to pursue it further.			

4.7 Chapter summary

This chapter has provided an illustrative account of each of the five research sites, detailing the contextual features that were discussed or observed. It used Savin-Baden's (2014) constellations of PBL to portray the ways in which PBL was used across the sites, and used Heron's (1993) and Wilkie's (2004) conceptual frameworks of facilitation to portray the styles in use.

The next four chapters present the findings organised into four themes. These are signature pedagogies, the law of curriculum inertia, epistemological values, and site civilisations. The degree to which influences on PBL facilitation were perceptible to individuals increases as the chapters progress. As such, in chapter 5, which follows, whilst signature pedagogies were revealed in conversations across the sites, they were rarely identified as such. In contrast, many of the structural influences in chapter 8, site civilisations were more discernible and were therefore revealed in conversations.

The next chapter discusses the first theme, entitled 'Findings: Signature Pedagogies.'

5 Findings: Signature Pedagogies

5.1 Introduction

As discussed in Chapter 2, the term signature pedagogies was offered by Shulman (2005a) to illustrate the cultures of teaching and learning that typified distinct academic fields. He asserted that signature pedagogies ‘implicitly define what counts as knowledge in a field, and how things can become known’, advocating that this shaped teaching practices (p. 54). This chapter presents seven contemporary signature pedagogies that were revealed in the data, providing a definition for each, and illustrating their degree of influence across each of the disciplines. These are outlined in table 10 below. Importantly, there was significant correlation between these signature pedagogies, and the top five skills that global employers considered to be of most value in graduate employees, namely, problem-solving, teamwork, communication, adaptability, and interpersonal skills (QS, 2018, p. 13).

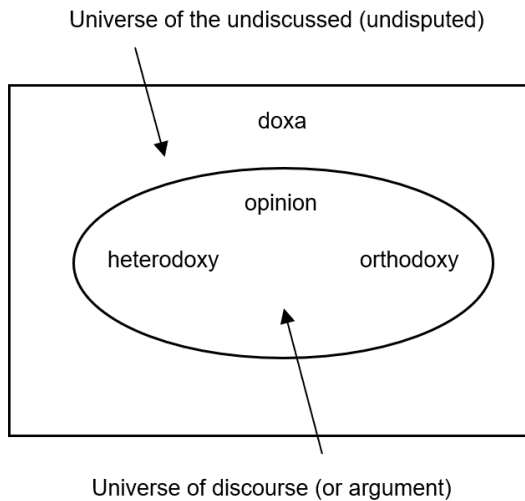
Table 10: Signature pedagogies across the research sites

<i>Signature pedagogy</i>	<i>Description / Focus</i>	<i>Forest: Chem Eng</i>	<i>River: Law</i>	<i>Hillside: Medicine</i>	<i>Meadow: Occ Therapy</i>	<i>Beach: Natural Sciences</i>
Pedagogies of collaboration	Working with others. Developing professional relationships.	Insignificant	Strong	Moderate	Strong	Insignificant
Synoptic Pedagogies	Connecting and building knowledge.	Moderate	Strong	Strong	Strong	Strong
Pedagogies of resilience	Coping with interpersonal or practical challenges. Managing conflict.	Insignificant	Strong	Strong	Strong	Insignificant
Pedagogies of reasoning	Understanding and applying knowledge. Being able to justify standpoint.	Strong	Moderate	Strong	Strong	Moderate

Pedagogies of dynamic knowledge	Exploring contemporary knowledge and determining relevance.	Insignificant	Strong	Strong	Strong	Insignificant
Pedagogies of absolute knowledge	Delivery of absolute knowledge.	Strong	Insignificant	Insignificant	Insignificant	Strong
Pedagogies of empiricism	Disciplinary experiences and characteristics brought to tutor roles.	Insignificant	Moderate	Insignificant	Strong	Insignificant

As mentioned in chapter 2, disciplinary thinking may be so internalised by individuals that it becomes disciplinary ‘common sense’ (Kek & Huijser, 2017, p. 66), or doxa (Bourdieu, 1977) that in turn informs disciplinary habitus. Bourdieu (1977) describes doxa as the ‘universe of the undiscussed’ (p. 168), as illustrated in figure 10.

Figure 10 Bourdieu's conceptualisation of doxa



(Bourdieu, 1977, p. 168)

Accordingly, the signature pedagogies discussed in this chapter were rarely explicitly identified as anything that may be distinctive, and often participants appeared unaware of the potential for PBL to manifest differently within disciplinary communities. As such, they were the social

practices that harboured structural influences relating to the informal cultural norms of teaching and learning within the disciplines.

Several of the signature pedagogies were strongly influenced by the graduate skills and attributes that participants considered most crucial for their students to develop, and they discussed the ways in which they considered PBL to support this endeavour. These were pedagogies of collaboration, synoptic pedagogies, pedagogies of resilience, and pedagogies of reasoning. However, there were also signature pedagogies that were related to the type of knowledge synonymous with that discipline, and the way this shaped the teaching and learning. These were pedagogies of dynamic knowledge, and pedagogies of absolute knowledge. The final signature pedagogy related to the disciplinary skills and characteristics that tutors *brought* into the classroom. These were pedagogies of empiricism, and they related to the disciplinary skills and identities that participants brought to their teaching and learning from their previous working roles. The seven contemporary signature pedagogies provide the structure for the remainder of the chapter.

5.2 Pedagogies of collaboration

Pedagogies of collaboration relate to the teaching and learning activities that support students to develop teamwork skills, and they were a strong influence at River and Meadow universities, Law and Occupational Therapy. At Hillside University, the observational data revealed the students' teamwork skills, and so although it was not the focus of my conversations with participants, the medical students demonstrated more competence in this regard, than the other four sites.

Participants at River and Meadow universities, where pedagogies of collaboration were a strong influence, described the ways in which PBL supported students to develop the skills required to work with others, and many asserted this was crucial, regardless of the graduate roles they embarked upon.

Shona, who was an experienced PBL facilitator at River University, suggested that this was something that law students found difficult to adapt to. She said there was an observable trend that students who applied to study law had competitive personalities, and she argued that many of the traditional law courses enhanced this:

'With PBL we try and take competition out, and encourage collaboration instead of competition, and that's really, really hard for the students. Because we have a high intake tariff, most of our students have been top dog in their respective school, and they

come in and they're not the top dog anymore, because you can't all be the top, can you?'

However, she asserted that teamwork skills enhanced the employability of the students and therefore, valued River University's more collaborative approach to learning, emphasising that the best lawyers worked in teams, rather than as a 'lone wolf'.

The student PBL teams at River University were called 'firms', and this likened the learning environment to the work environment. Diane also discussed the similarities between working in PBL teams and embarking on graduate employment, describing individual teams as having their own unique group dynamic. She explained that some students needed encouragement to consider how this prepared them for graduate roles:

'...sometimes, you know, you'll get students that say well, I just don't want to work with X, you know. And, sometimes there's very little you can do about that other than manage their expectations and say, okay, right, well... And, I often remind them, well, we're in a professional environment, imagine you're in a law firm, you simply don't have the option to say I'm not going to work with partner X, you know.'

At Meadow University, Occupational Therapy, participants also discussed the collaborative nature of learning and the ways in which it prepared students for graduate employment. Robert, a tutor with longstanding experience of PBL, discussed that some students needed encouragement to collaborate, as this was not something they had been used to:

'The other thing about it, I found, and I still find this as a tutor is trying to get the students to understand that problem-based learning, in my view anyway, is a cooperative form of learning. So, you're sharing knowledge, you're learning from each other, in a sense you're depending on each other to bring back information, whereas traditionally, education could be much more competitive. It's 'I want to get a first-class honours, I'm going to do this.' So, there's a tendency to keep things to yourself. Whereas PBL goes totally against that. So, it's getting that philosophy across to the students.'

Rose also discussed that students sometimes found it hard to adapt to working in teams and explained that it required them to develop trust in their peers, particularly where sessions required students to undertake different roles, or to have explored different topics. She described an adjustment from being in control of one's own learning, to becoming reliant on members of a team and suggested that for many students, this responsibility for others resulted in them being more engaged in the learning. Rose valued such collaborative experiences due to their relevance in qualified occupational therapy practice.

There was a noteworthy contrast in relation to pedagogies of collaboration when observing the PBL sessions in the science sites, particularly at Forest University. There was little evidence of

collaboration in the observed sessions, and other than in Sylvia's session with third year students, all teams sat in a row rather than facing each other. This is an unusual seating arrangement in PBL as it makes it challenging for the teams to interact. Even when facilitators joined the teams to prompt discussions, they did not encourage collaboration, and instead, often facilitated separate discussions if the team had split into subgroups, rather than encouraging them to work together.

5.3 Synoptic pedagogies

Synoptic assessment is a term that has been used for some time to define assessments that connect various components of a subject, thus encouraging more holistic learning (Constantinou, 2020). However, the term synoptic *pedagogy* has not received the same attention, and this was an important pedagogy observed across all sites. Although not named as such, synoptic pedagogy was discussed by participants as teaching and learning that engenders the synthesis of knowledge and skills across and between modules and years of the course, and also, previous learning experiences. This theme was strongest in the four sites with integrated curricula, namely River, Hillside, Meadow and Beach universities.

At Forest University, Chemical Engineering, synoptic pedagogies were only a moderate influence, as despite it being argued as important by some participants, it was evident that the course structure continued to introduce subjects more disparately than in the other research sites. Nonetheless, Jasmine recognised the importance of trying to encourage students to connect their knowledge. She explained that students often considered their learning in subject areas as separate, and they would therefore not draw on it in later modules.

'And actually, we tried to create this story of why you know things that lead onto each other, so they can see 'oh actually if I understand this, it's not that big a jump to understand something else'. So... instead of discretising all of their learning. Which I think part of the modular system has reinforced for them.'

Synoptic pedagogies were a stronger influence across the other four sites, and participants discussed the value of having an integrated curriculum in this regard. At River University the conversations with participants revealed some of the more specific subject areas of law, such as criminal law, tort law or contract law. Sandra reported that real-life legal issues often cross the boundaries of these more specialist areas, or indeed, may draw on several. She explained that PBL supported the students to learn about the real-life challenges that they face in graduate employment:

'hopefully it gets the students to appreciate that problems in the law office don't come nicely wrapped up with a label on them. You've got to think about what the issues might be and not just focus on the first one that smacks you in the face, because it might be that there's other stuff as well.'

This was also the view of Shona at River University, who suggested that it was more traditional for law to be taught in distinct subject areas. She advocated strongly for an integrated curriculum; however, also discussed some of the challenges faced by integrated curriculum teams:

'As soon as I got behind the scenes, I realised the complications of the PBL design. Unlike in other university programmes, there's a real need in the PBL model for communication across subject areas. The way that we design problem-based learning at River is that public law, for example, will be in a problem with criminal law or contract law or EU law. So, those subject teams have to talk to each other in a way that you don't have in traditional universities.'

Nicole from Hillside University, Medicine, also acknowledged that an integrated curriculum presented some significant challenges in coordinating input from individuals that would encompass the range of expertise required to develop integrated triggers. She did acknowledge that this could impinge on tutor agency as individuals were sometimes keen to teach their subject expertise. Nonetheless, she explained the value of PBL as a synoptic pedagogy for student learning. She asserted that medical practitioners are required to consider a range of factors that may affect an individual's health, such as their social or economic circumstances. This was also a topic within my conversations with Paula. She explained her observations that medical students were more focused on absolute knowledge and struggled with more 'nebulous concepts' (I discuss this further in relation to students' epistemological values, in chapter 7). However, she revealed that she valued the integrated curriculum and how this related to the qualified practice of medics:

'I think the majority of the good students recognise that you have to have a much more comprehensive, integrated way of looking at health, because a lot of the time, you're not going to be talking about how cells work in day-to-day practice. That's not what you're going to be doing, you're going to be dealing with humans.'

Similarly, Robert from Meadow University, Occupational Therapy, acknowledged the complex nature of working in healthcare, and explained the ways in which their PBL curriculum prepared the students for graduate employment. He explained that to work effectively with patients, students would be required to synthesise a range of knowledge, such as sociology, psychology, and anatomy and physiology. Hannah discussed that the integrated modules placed demands

on the students that were synonymous with graduate employment, and suggested that some students found this troublesome:

'So, it really brings in that multiple-knowledge from different modules will come into that. And you can really see the students that have assimilated that knowledge that they've needed and at the end, there's others that don't do very well, they really flounder with that and find that really quite difficult.'

At Beach University, Natural Sciences, there was some variance in the ways in which the subjects were taught. Whilst the course was mainly integrated in nature, in its redesign, it had been agreed that students would be able to complete some single-science modules that were open to students on a range of courses. Beach participants explained that whilst these modules were useful, as they allowed the students to focus in more depth on an area of interest, they tended to compartmentalise the subject knowledge. Despite Mairi being from a single-science background, she had a passion for many of the disciplines and was therefore passionate about synoptic pedagogies, and she asserted that the disciplines had 'artificial barriers' between them. She explained that when she developed modules that cut across courses, she would 'shoehorn' in subject matter from a range of science disciplines, thus ensuring a more synoptic learning experience for students.

5.4 Pedagogies of resilience

Resilience is defined here as 'the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress' (APA, 2020), and this has been cited by employers as the greatest skills shortfall in graduate employees (QS, 2018). Pedagogies of resilience are therefore explained as the approaches to teaching and learning that support students to develop their ability to adapt to changes in circumstances, and to cope with challenge, be that practical, or interpersonal. This was a strong influence at River, Hillside, and Meadow universities, Law, Medicine, and Occupational Therapy, and discussions often related to the challenges of working in teams that students would encounter in graduate employment, and the similarities between this and their teamwork experiences in PBL. Whilst not a significant influence in the science sites, a minority of participants did discuss that PBL was valuable in supporting the students to develop self-management skills that would be useful in graduate employment.

In both health sites, participants acknowledged that graduate employment would require interdisciplinary working, and participants discussed the resulting increased risk of conflict caused by differences in clinical opinion or perspectives. Nicole, from Hillside University,

explained why she felt PBL helped the medical students to develop the capabilities required to manage this:

'PBL puts a lot of emphasis on articulating your knowledge, being able to talk about it. And I think that's a massive challenge for some students, but a valuable hurdle to clear, because a lot of that is required of them in a workplace like the NHS. And if they are going to be effective doctors, then they are going to have to be able to explain things clearly. Not to be intimidated by having to explain the rationale for something. There's a lot of strong characters that they'll have to deal with.'

Similarly, Jennie, who had learned using PBL in her own occupational therapy training, discussed the need to be resilient when embarking on qualified clinical practice:

'So, it literally drops you in at the deep end in a major hospital. It was frightening. And to have a consultant who has been there for goodness knows how long, a stereotypical scary consultant, challenging you about a patient who needs to go home and you're holding up a discharge, you're causing a delay. That's quite frightening for a newly-qualified 21-year-old.'

She contended that her experience of working in teams within PBL sessions had given her the confidence to be able to challenge and discuss clinical differences of opinions in practice. She therefore regarded PBL as valuable in supporting her own students to develop resilience.

At Hillside University, I was intrigued by the number of conversations with participants that related to the wellbeing and resilience of medical students. Initially I had wondered if this related to the pressures of medical training; however, my conversation with Paula revealed that this was not the case. Paula was new to the medical course at Hillside University but had worked as a lecturer in another health-related course for some years previously, and therefore drew some comparisons between student cohorts. She discussed feeling surprised to find that many of the medical students seemed to have a highly anxious disposition:

'It's a weird mix of how individuals have really shitty lives and things that happen to them that you wouldn't necessarily expect. It's almost like students that are very driven to do medicine often have a motivator in their background for that. They may have experienced family ill-health or other things. What you find is, is that a lot of their personal lives, also have additional health concerns in them. A certain degree of dysfunction. And so, this is the reason why they're coming in.'

Nonetheless, participants discussed the importance of medical students continuing to develop resilience and this was a particular focus in my conversations with Emily. Emily had many connections with doctors, both from her own career and within her family, and she asserted the importance of students' learning experiences preparing them for the challenges they would face in practice. She was troubled by the degree of stress that doctors experience in their careers,

arguing them to be the least psychologically supported profession. She told me that she openly encouraged the students to consider their own mental and psychological resilience, and she suggested that this influenced the way she facilitated her sessions. She explained the importance of encouraging autonomy; however, said that she would try to balance this by steering them away from unnecessary stress.

At River University, pedagogies of resilience were also a strong theme in conversations; although, the focus of this was broader than in the health sites. There were no conversations about managing conflicts or opinions within teams, but instead, participants discussed the challenge of speaking out in groups, and the way in which PBL supported the students to develop the confidence to do so.

Gaining confidence in speaking out was a theme that punctuated my conversation with Roy. He greatly empathised with the difficulty of speaking out in groups and described himself as having been incredibly shy when he was at university, acknowledging that this led to him avoiding some learning experiences such as debates, or moot courts, as he did not have the confidence to engage. He described the way in which he considered PBL to support the students to develop their confidence in speaking out in groups, suggesting there was a marked progression when comparing the confidence in first year and third year groups.

5.5 Pedagogies of reasoning

Many participants discussed the value in using PBL to support students to develop sound reasoning skills, although this manifested differently across the sites. Reasoning skills are defined here as competence in the act of applying judicious rationale in order to resolve problems, or to justify a standpoint. In the science sites, in particular, Forest University, this related to problem-solving, and students developing a thorough understanding of scientific processes. In the health sites, it related to the students developing clinical reasoning skills. As such, pedagogies of reasoning are explained as the approaches to teaching and learning that develop students' skills in applying their knowledge in reasoned ways that allow them to justify their actions or opinions.

At Forest University, it became apparent through the data analysis and interpretation processes, that problems and problem-solving are in fact, fundamental to the disciplinary identity of a chemical engineer, and the demands of graduate employment. Samuel, a tutor whose educational background was chemical engineering, revealed, 'no employer is going to pay you to solve a problem they already know the answer to'.

Pertinent to developing competence in problem-solving was the ability to apply reasoning, and this was discussed in depth at Forest University, and in some conversations at Beach University. Jasmine had worked at Forest University for over 10 years, and she explained how PBL had developed over this period of time. She explained that students had previously appeared to work well in tutorials; however, had not performed well in exams. Tutors had realised that students were working through some of the problems by fitting information into given equations, without a true understanding of the reasoning behind the process. This is synonymous with the FTF (find the formula) style of learning that Mastascusa et al. (2011) suggest is common within STEM disciplines (p. 129). As such, the students at Forest University had subsequently struggled to apply their knowledge to any modified scenario, as they were not able to apply the relevant scientific reasoning. This had been one of the key reasons for incorporating PBL into their curriculum. Jasmine explained that students had become reliant on being given all the required information needed to solve problems, and had therefore not developed the ability to reason through ill-structured scenarios more synonymous with PBL:

'So, it's getting them out of that mindset that it won't always be somebody saying, 'please do that calculation, please prove that this is what I need it to be'. The language of the engineering community, and just the world at large isn't always like an exam question. And pulling them out of that is also one of the things that we're trying to do to prepare them for later classes, and to prepare them for the real working environment.'

This was also evident in observational data. In Samuel's PBL session with second year students I had noted that students were perceptibly focused on whether they had an answer *correct*. However, Samuel facilitated deeper conversations about the steps involved. He spent time questioning the students' reasoning and prompting them to justify each part of the process within the problem. Both Jasmine and Samuel encouraged these discussions by asking many 'why' and 'how' questions in the session.

Mairi, from Beach University, acknowledged that she was fascinated by the more factual nature of science, she did not necessarily consider that others would share this fascination. Instead, Mairi enjoyed developing PBL triggers that inspired curiosity in students, and she was keen that they understood the scientific reasoning in order that they could then apply it to different scenarios. She discussed that her mark of failure would be if students could apply none of what they had learned when they embarked upon graduate roles.

Stories across both health sites revealed that the ability to clinically reason was an important part of developing a professional identity, and participants discussed the ways in which PBL supported this. Whilst this was only occasionally mentioned in conversations, it was apparent

in much of the observational data. At Hillside University, Medicine, Emily, Andrew, and Kirsty were all observed to challenge students' reasoning in the PBL sessions which were with second or third year students. Often, they encouraged students to provide further explanation for the information they were sharing, or to justify why they had formed a particular opinion on something. Other times they were encouraged to apply this reasoning to a particular clinical scenario, which was observed in Emily's session where she challenged students to justify *why* they might choose one medication over another.

Kirsty, who was an experienced academic, and who had herself completed two years at medical school, articulated the connection between students learning in a problem-based way, and their ability to apply clinical reasoning:

'I have highlighted that it's about them developing their clinical reasoning skills. So, actually being able to start off with, here's your presenting complaint or symptoms and what do you need to know?'... ..'It's trying to help them to do that; to problem-solve. Because ultimately, as doctors, I know that, obviously a lot of experienced clinicians, what they do with patients is pattern-recognition, but for those who don't fit patterns, they need to be able to do that problem-solving. And a lot of the learning that they're going to have to do before they get to that expert stage is very much a case of, well, what do I know about this, what do I need to go and find out in order to actually make sense of why that patient's presenting the way they are; what on earth can I do with them to help them. It's totally relevant to medicine, but also just to life.'

This was similar at Meadow University, Occupational Therapy, where participants were also observed to challenge the students' reasoning in the PBL sessions, prompting for justification of their work, or their opinions. They also reported the students developing more confidence in their own reasoning as they progressed through the course. I discussed with Robert the ways in which this was visible in the PBL sessions:

Heather *'It sounds like.. something around their learning being visible in those sessions.'*

Robert: *'Yes, it is visible. It's visible. It's their confidence. It is their reasoning, I think. Justification for why they do what they do. For instance, they might be presenting a plan of intervention and they'll be talking around I'm going to do this with this person. I discussed this with them, and my reason for doing this is **this**. I chose **this** because of **this**. I've gone for Canadian occupational performance outcome measure because it fits with this or I've chosen the Kawa model. And they're so good at justifying now.'*

Supporting their reasoning with appropriate research evidence was a clear theme across both sites; however, at Meadow University, facilitators were observed to prompt students towards this more. This seemed to be an area where the occupational therapy students were more inclined to cut corners in the process. In all three sessions at Meadow University, which ranged

from first year to third year, the occupational therapy students were observed to plan potential interventions for their given clinical case scenario, using anecdotal evidence. In all three sessions the facilitator allowed the students to discuss this for a while, and then encouraged them to explore more research-informed reasoning. Facilitators questioned the students' reasoning, asked what they had read around a particular topic, or in some cases, told them more directly that they needed to explore more evidence.

5.6 Pedagogies of dynamic knowledge

Pedagogies of dynamic knowledge are the approaches to teaching and learning that develop students' abilities to locate and apply contemporary knowledge. This was a strong theme in the courses where the knowledge required for graduate employment was recognised to continually evolve over time. Participants recognised that in addition to students being able to understand and apply knowledge, their graduate roles would demand an ongoing pursuit of knowledge, in order to remain up to date. This was a particularly strong theme in my conversations in the two health sites, Hillside and Meadow universities, where participants acknowledged the dynamic nature of knowledge in the field, and the need for graduates to practise in an 'evidence-informed' way (Melnik & Newhouse, 2014). However, it was also a moderate theme in conversations at River University, where participants recognised that changes in the law meant that teaching students to memorise information would not serve them well in graduate employment.

Shona, from River University, suggested that historically, law had been about facts; however, this was no longer the case. She described having observed some lectures in other programmes and being quite shocked at how historical some of the information had been. She argued that PBL prepared students better for present-day legal practice by developing their ability to explore and contextualise contemporary knowledge:

'It's knowing where to find the law and knowing what to do with the law. And finding the law is really easy. All the legislation is publicly available. All the case law is publicly available. There are textbooks that are open access. You don't need to know it. You need to know where to find it and what to do with it. So, the traditional model of law, of someone telling you what is effectively in the chapter of the textbook, and you writing down what's in the chapter of the textbook, and then doing an exam and regurgitating it, that's not useful knowledge.'

She suggested this was particularly important when teaching international students, as they would be less inclined to draw on UK-focused law if they returned to their country of origin following completion of their studies.

At Hillside University, Medicine, students were provided with the resources for each trigger on their virtual learning environment. This ensured that students had access to relevant and up-to-date knowledge on the topic area; however, may have perhaps limited their ability to explore beyond those resources. In Paula's session, the students were in their first year and seemed to rely on anecdotal evidence more than I observed in other sessions. This was evident in my observation notes from the session and the following three excerpts are taken from these:

'One student seems good at using evidence to support their opinion, whereas others are very anecdotal in their discussions.'

'There are parts of the topic area that they're not aware of, in terms of the treatment of addiction, even though this is the hub of their session. So, they're talking about what they think. It hasn't really been based on evidence.'

'They're very much feeding back what they think is socially acceptable to have an opinion about. They complain that the resources didn't have all the answers, so they don't seem to be able to look beyond these.'

Paula prompted them on occasion, to discuss what they had read, and this seemed to focus the students back on more evidence-informed discussions. In other sessions I observed at Hillside University, the students were more reliant on evidence in their discussions, and it is likely that this was due to them being year two or three students.

Kirsty, who was a longstanding member of the medical school staffing, explained that she considered the medical degree to only be the starting point for students' learning, likening it to learning to drive:

'We're just getting them to the driving test. They pass the driving test, away they go. They've still got all that learning to do about what it's actually like to be a driver in different conditions and different road types and day and night and passengers on board or, you know, kids or an animal in the back.'

She discussed a range of topic areas that students were required to learn in contemporary medicine, acknowledging that this meant they were not able to cover other aspects in the depth they previously would have. This resulted in an increased need for students to become lifelong learner in their graduate roles.

At Meadow University, Occupational Therapy, in my conversation with Robert, he argued that 'knowledge comes and goes', and explained that this resulted in a need for students to develop lifelong learning skills to ensure they would continue to draw on contemporary knowledge in

their graduate roles. Rose was also passionate about the need for students to develop lifelong learning skills, and my conversations with her highlighted the dynamic nature of knowledge in occupational therapy:

*'...hopefully problem-based learning supports students in becoming lifelong learners, supports students in being autonomous, supports them in... if they don't know something, they automatically go to find out about it. They're not waiting to be told something.'... ...'So, we're not standing, teaching black and white facts, and you will learn **this**. Or, we're not expecting them to go off on placement and mirror everything that an educator's doing. We want them to be challenging. We want them to be learning. We want them to be finding relevant books and journal articles, and what is the evidence-base. We want them to be enquiring. To be hungry for... what knowledge do I need to work to the best of my ability for this individual that I'm working with.'*

In the observed sessions at Meadow University, all facilitators were seen to take time to question the students' sources of knowledge when they engaged in discussions that seemed to be founded on opinion. They did not prevent such conversations, but instead, would allow them to run their course, then invite discussion on how this compared with other sources of knowledge.

5.7 Pedagogies of absolute knowledge

Pedagogies of absolute knowledge are explained as the approaches to teaching and learning that involve the transmission of certain, or absolute knowledge. Absolute knowledge is associated with more teacher-centred approaches, such as lectures, as it focuses on tutors clearly communicating knowledge, and the students 'acquiring' it (Baxter Magolda, 1992, p. 74). Such pedagogies could be considered the antithesis of pedagogies of dynamic knowledge, as the focus is often on knowledge that might be deemed to be more constant. As such, they were a strong influence in the sciences sites, where tutors discussed content being steadfast over a far greater period of time than was discussed in the other sites. In contrast to the aforementioned signature pedagogies, where tutors were influenced by the intended graduate outcomes, pedagogies of absolute knowledge often related to the disciplinary traditions of teaching that were reported, and had often been experienced by participants in their own learning. As such, there was often a sense of repetition of teaching traditions.

Whilst pedagogies of absolute knowledge were not significant in the non-science sites, there were some noteworthy conversations relating to the support that students required to transition into higher education learning. Beth, from Meadow University, discussed the challenge:

'I don't think the educational system prepares students very well for higher education. I don't think it fosters independence, self-directed learning. I think it encourages acquisition of specific knowledge, very content driven, and to pass exams.'

This was mirrored in other conversations, and therefore, raises some questions about the signature pedagogies in schools having a focus on absolute knowledge.

Lectures were a topic in many conversations across the research sites; however, they seemed to have the deepest roots in the science sites. Interestingly, a conversation with Sylvia at Forest University exemplified this. Although Sylvia had qualified as a chemical engineer, pedagogy was a key area of expertise and a focus of much of her research. She had used PBL in a range of settings and had also delivered courses for new PBL facilitators. When I was due to observe her PBL session, she had emailed me in advance, suggesting she may have to make some changes. She kindly agreed to another brief interview in advance of the session to allow me to understand the story behind the changes. Sylvia explained that a module evaluation had yielded some mixed comments. Although fewer than 10% of the students on the module had completed the survey, some had stated they had felt 'a bit lost', complaining they had not had any lectures, and therefore had not been taught anything. Sylvia suggested that it was quite common in chemical engineering for students to look to their tutors for continual guidance. She suggested:

'They don't feel that they're learning if you're not telling them what it is that they need to memorise...'

This resonated across both science sites, as students were observed to fall silent whenever facilitators spoke, often frantically taking notes of anything that was said.

Sylvia had discussed the results of the third-year module evaluation with the director of teaching and the head of department. Discussions were about bringing in more lecture material to support the students in their learning and Sylvia explained to me that she thought this would be problematic:

'If I go lecturing, it's a very different thing...' '...I could do both [PBL and lecturing], but in a sense, the problem I have is that I'll have to devise a whole bunch of new problems, and it will just be reverting to our normal standards of you lecture and then the students do some practise problems on what you've lectured them. Which is not what I wanted them to do. I wanted it to be more a discovering type of approach.'

Sylvia was open about her dilemma. She wanted to support the students and for them to be happy in their learning. However, she considered that conforming to pedagogies of absolute knowledge by providing a scaffolding of lectures would undermine the student-centred teamwork that she felt was most important.

At both Forest and Beach universities conversations revealed a common module timetable as being a lecture followed by a PBL session, although at Forest University, they suggested the balance had changed, resulting in less lecture time, and more PBL time. Nonetheless, lectures seemed to continue to be a significant part of students' learning across both science sites.

At Beach University, where all sessions observed were first year sessions, two out of the three of them had a preliminary lecture. As was mentioned in chapter 4, the style of lecture observed at Beach University had no interaction with students and was delivered as a monologue of information, rather than there being any opportunity for discussion. There were further commonalities relating to lectures in the science sites, and these related to specific subjects such as maths and physics. Tutors maintained that these subjects are difficult to learn in a student-centred way, and instead, a lecture was needed. This seemed to relate to a belief that students needed some baseline understanding of some topics before they could build on it within PBL sessions. Similarly, Gary discussed an example where students may be required to deconstruct some school learning in order to learn about quantum mechanics. He asserted that as a topic, it was counterintuitive, and was in tension with much of what they may have learned in A-level physics. As such, he argues that this would be problematic as a PBL topic area, suggesting that students needed more guidance. As such, there appeared to be some perpetuation of content that in turn, led to a perpetuation of pedagogies of absolute knowledge within the science disciplines.

A further interesting tradition that seemed to pervade the science sites related to the student numbers within each classroom, and there appeared to be no consideration of anything other than accommodating the entire student year group in one teaching session. Sylvia explained this as a tradition in science subjects, but also suggested that focusing on 'efficiency' was a disciplinary disposition within engineering, and dividing the cohort, thereby increasing the teaching input, would be considered inefficient.

5.8 Pedagogies of empiricism

The term *empiricism* is derived from the Latin word *empeiria* meaning experience (Duigan et al., 2020). Pedagogies of empiricism therefore relate to the disciplinary skills and characteristics that derive from tutors' own experiences within their discipline, often within vocational roles. As such, they are where tutors' disciplinary identity shaped the teaching and learning through the use of discipline specific skills or characteristics, which had often been consolidated in advance of embarking on an academic career. O'Shea and McGrath (2019) describe this as professional

habitus, explaining that it arises from the knowledge, skills, and values synonymous with professional identity. It could be anticipated that pedagogies of empiricism would be a strong influence within courses with a vocational focus; however, this was not necessarily the case, and instead, individuals' life histories were found to be most significant. As such, pedagogies of empiricism were strongest where individuals had experience of working in the roles intended as graduate destinations for their students.

At Forest and Hillside universities, none of the participants had practised as chemical engineers or as medics. At Hillside University, whilst the PBL was facilitated by medics in the later years of the course, this was connected to their placements, and so not part of this study. At Forest University, and also at Beach University, both science sites, participants' life histories revealed that they had progressed through education and into an academic career, typically doing undergraduate studies, then postgraduate up to doctoral level, and then pursuing an academic position. As such, none of participants from Forest, Hillside or Beach universities had worked in the positions that would be the typical graduate destinations of their students, and therefore, pedagogies of empiricism were not detectable.

At River University, Law, participants discussed a range of experiences that had consolidated their disciplinary identity and influenced their approach to teaching and learning. The PBL curriculum at River University well organised. The timetabling was systematic, with a duty cover system in place to cover any unplanned absences and tutors were prepared well in advance of sessions due to the extensive tutor notes packs, which detailed the triggers, key topic areas and the learning outcomes that it was anticipated the students would derive from the sessions. Shona described such diligence as a disciplinary disposition in law and asserted that this was not always helpful in relation to PBL. She suggested that a 30-page tutor pack could be overwhelming, particularly for new law tutors as they tended to over-prepare, instead of considering more broadly the ways in which to support the students. Shona asserted that those with a legal background may find the lack of structure and control in PBL quite challenging.

Nigel seemed to be the personification of this meticulous characteristic. He described being 'obsessively prepared' well in advance of any teaching session. He was determined to do a good job, and for the students to get the most out of their learning. This seemed to be exemplified when covering another facilitator's session. He wanted to make sure the students had achieved everything they needed to, thus ensuring a smooth transition back to their usual facilitator.

Pedagogies of empiricism were significantly stronger at Meadow University, occupational therapy, than any of the other sites. There was a strong sense of disciplinary identity and all five participants had embarked on their academic career *following* a clinical career in occupational therapy. This clearly influenced their approaches to teaching and learning. Whilst they made more meaningful connections to the skills that students required for graduate roles, they also mirrored some of the skills that they had used in clinical practice, within their PBL sessions.

Two key disciplinary skills identified as fundamental to occupational therapy pedagogies of empiricism are therapeutic use of self, and reflection, and these are inextricably connected. Although I would argue that reflective practice is fundamental to any health profession, it was rarely mentioned by participants at Hillside University. In fact, comparing the five interviews from each health site revealed that 'reflect' (or derivatives of reflect) was mentioned only six times at Hillside University, yet 53 times at Meadow University, featuring in all conversations. Mainly, participants referred to *being* reflective, rather than *doing* reflection in a more task-orientated way. As I discussed in relation to my own reflexivity in chapter 3, being reflective appeared to be integral to participants' disciplinary disposition and was routinely mentioned in stories about clinical and teaching practice. They reflected on becoming facilitators and the time it had taken to feel comfortable with their unique style of facilitation. This exemplifies the therapeutic use of self, which is where individuals consciously consider the ways in which their unique personal qualities can be used within a therapeutic relationship (Holmqvist et al., 2013). However, in PBL, it related to the facilitator's unique use of self within tutor-student relationships in these sessions.

Jennie, who had worked at Meadow University for two years, talked to me about how she had spent time shadowing other facilitators and observing the impact of differences in personality on facilitation:

Heather 'It sounds good. People bringing their own personalities and shaping it in their own way. Do you think your sessions reflect your personality and your own style?'

Jennie 'Not yet. I'd like to. There's one colleague in particular that stands out for me as being somebody that I'd like to be like. But then I say to myself, but is that because of their personality as well? Is it just about how they come across as opposed to what they do, if that makes sense? I don't feel that I'm quite there yet with my style.'

Similarly, Beth was an experienced academic, having worked at Meadow University for over 15 years. She was notably reflective within the interview, taking time to analyse her thinking as she spoke. She described PBL as requiring more personal investment than would be required in a lecture, and discussed the resulting need for personal reflection:

'I think part of being a good facilitator is about reflecting, preparing... It's not even preparing content, is it, it's preparing yourself, even just thinking, what did this group do last time, were there any problems in the dynamics that I need to be mindful of going in today?'

Participants at Meadow University also discussed the need for occupational therapy students to develop reflective ways of being, and they explained that PBL supported students in this regard. Meadow University was the only site where reflection was part of the PBL process as students were required to evaluate the ways in which they had worked as a team and their own contribution to that. Robert asserted that reflective skills were crucial and that gaining an understanding of the ways in which they had learned, was as important as *what* they had learned.

5.9 Chapter summary

This chapter builds on the work of Shulman (2005) in its presentation of seven contemporary signature pedagogies that were observed as disciplinary dispositions and habitus, influencing the approach to PBL facilitation. Whilst Shulman had advocated that signature pedagogies were more likely to be evident in disciplines with a stronger vocational focus, this was not entirely true in this study as they were also deemed to be influenced by the life history of tutors, and the career pathways that may typify that discipline. Signature pedagogies were predominately influenced by the skills and attributes that participants considered to be most important for the students to develop. As such, they discussed the ways in which these signature pedagogies supported the students to develop collaborative skills, and to develop the resilience considered necessary for graduate employment, through the experience of working in teams, and managing conflicts. They discussed the ways in which signature pedagogies supported the students to develop the ability to reason, and to articulate and justify their opinions, and to contend with dynamic knowledge, ensuring that their practice was informed by the most up to date knowledge. Other signature pedagogies were observed to manifest across the sites, and these were the perpetuation of disciplinary traditions of teaching and learning, particularly in relation to absolute knowledge, as well as the well-practised disciplinary skills from their experience in prior roles.

The next chapter discusses the second theme, entitled 'Findings: The Law of Curriculum Inertia'.

6 Findings: The Law of Curriculum Inertia

6.1 Introduction

The title of this chapter emanates from Isaac Newton's law of inertia. This was Newton's first law of motion that declares that an object that is at rest, will stay at rest, and an object that is in motion will continue that same motion unless forces act upon them. I suggest a useful translation to consider in higher education would be that a curriculum will remain the same, or will continue to develop in a similar manner, unless forces of change act upon it. This chapter therefore considers the influence of structure and agency in relation to curriculum development, considering where they might drive change, or where they might provide resistance.

The first section of this chapter explores the catalysts of change that were seen to impact on the PBL in the research sites. Firstly, it describes the impact of turnover in staffing, with a particular focus on the loss of the pedagogical architects; those who were involved with the original design of the PBL. Second, it describes the impact of the student voice on the PBL curriculum, and how this was shaped by both formal and informal student feedback. Finally, it explains how the increase in work pressures in the research sites resulted in changes to the PBL curriculum.

The second section of the chapter explores inertia. Again, using the analogy of Newton's law, inertia is the resistance of an object to change from its current state of rest or motion. Consider the challenge of initiating movement, or changing direction, when a shopping trolley has the increased inertia that arises from having a wonky wheel. As such, in the context of the law of curriculum inertia, this section discusses the confines of change and the *wonky wheels* of the curricula that cause resistance to change, or resistance to redirecting development pathways. Further, it discusses the protracted nature of change described by participants, particularly where the change was of great magnitude.

The chapter is therefore structured as follows:

- Catalysts of change
- Wonky wheels of curriculum development

6.2 Catalysts of change

This section explores some of the key forces of change that were observed or discussed across the sites and how they impacted on the PBL. It describes how a turnover of staff had catalysed

changes in the curriculum, as had student feedback, and an increase in work pressure in the sites. There were key roles that impacted on curricular change across the research sites, and I have entitled these pedagogical architects and curators. The pedagogical architects were the people who designed the PBL within the courses, often responsible for the original structure of the PBL curriculum. As such, they are considered the authoritative roles described by Giddens (1993) as harbouring transformative capacity, who were prominent in driving curricular change. The curators were those who held a formal or informal role relating to the *maintenance* of the PBL curriculum. These people often oversaw the PBL across the course, maintaining standards or consistency in teaching and learning, often by imposing formal or informal rules that constrained tutor agency, and developed habitus within staff groups. The roles of both architects and curators were observed to hold a degree of power, or symbolic capital over other tutors.

Across all research sites, participants told stories of changes in the staff group over time, and this was a significant catalyst of change in the curriculum. In particular, these stories were about the architects of the PBL within the courses. It was noted that, with the exception of Forest University, conversations revealed that almost all of the architects had either moved on, retired, or were no longer part of the day-to-day structure of the courses. Over time, this had an impact on the PBL at that site.

At Beach University, there were conversations about the loss of the original architects of the PBL curriculum of the site. The course had two fallow years between the two iterations of the course, and this coincided with a change of course leader. There were therefore two distinct architectural stories that emerged in conversations, although mainly, these stories focused on the more recent course development. Jade was the course leader for the new programme and was cited by other participants as being instrumental in shaping the pedagogical approach in the natural sciences course. She, and the other participants had worked on the original course, and its redesign, which coincided with the retirement of the previous course leader, offering an opportunity for them to focus on some of the areas that required improvement. This afforded them a useful balance of being able to learn from their experiences of the previous course, whilst also being able to start afresh designing the new one within the fallow years.

At Meadow University, there was a detailed narrative which unfolded, that portrayed a cohesive team of PBL architects who had been longstanding members of the course team, but had now left, or retired. The impact of this had been gradual, and I was aware that my presence seemed

to prompt those who had worked alongside the original architects, to reflect on the insidious changes to their PBL curriculum over past years.

Hannah was a longstanding member of the team at Meadow University, and had learned, researched, and published PBL. She discussed the loss of the architects there, suggesting that the 'core PBL group' had now gone. Over time they had been replaced with staff without the same degree of commitment to PBL, thus causing a 'slow erosion' of the pedagogical philosophy of the course due to unconstrained tutor agency. She described some of the changes she had observed:

'There have been staff that have come in and felt very strongly - we need to teach; traditionally teach some subjects. There has never been a real... I don't think, adoption by everybody to agree in how we're going to take some of the modules forward. And because people... Because we're all modular, people have that freedom to make changes in the modules. And whether or not that necessarily fits in with the overall educational philosophy, sometimes I'm not convinced that it does.'

She discussed some tutors beginning to introduce keynote lectures in modules, and then over time these changed again from keynote lectures, to lectures that were more content-laden. She reflected on the impact of these changes on the educational philosophy of the course:

'Can we evidence that we're doing what we're saying we're doing? Because as a team we've called ourselves experts in the past and actually, are we? Are we still? Have we moved on as well? I'm not sure that we have.'

These small changes seemed to have gone relatively unnoticed until the course had been due to be revalidated. This seemed to afford the staff some opportunity to refocus on the consistency of pedagogy across the course, resulting in their increased awareness of the insidious changes.

Robert, who was an equally longstanding member of staff at Meadow University, also discussed the 'core' group of people who had been the PBL architects. He described them as having had an enthusiasm and interest in *how* students learn, rather than just *what* students learn, and explained that this had been central to the development of the course:

'This core group of people were passionate about using PBL. They were educationalists. They wanted to think about how they could create an occupational therapist who was a problem-solver, and who would be an OT of the future.'

Whilst he asserted that newer tutors continued to have a passion for student learning, he explained that this passion wasn't necessarily for PBL:

'They kind of... they believe in very much... a sort of mixed form of delivery. A kind of hybrid type of learning, with lectures, workshops, and less purist PBL, I would say.'

Following the loss of the architects at Meadow University, tutor agency in module leader roles was causing some fragmentation of the PBL philosophy. This seemed to be further compounded by the absence of a curator role, which had probably not previously been necessary due to the discernible strength of the 'core' team of architects. In contrast, the curator role at Hillside and River universities seemed to protect against this erosion of the pedagogical philosophy following the loss of the architects, due to their focus on consistency. This will be explored further in the next chapter, which discusses epistemological values.

At Hillside University, the medical course had originally been accredited through another university. This meant that there were no architects from the original design of the course who were located at Hillside University. However, Nicole, who coordinated the PBL at Hillside University, explained that they had subsequently designed their own course and were now independently accredited. Therefore, whilst there was a loss of the original architects, Nicole had assumed an architectural role, which had resulted in them achieving independent status. She had then monitored and maintained this pedagogical design through her curator role. This consistency of input was undoubtedly reflected in the consistency of the PBL.

At River University, Shona strived to maintain a uniform approach to PBL across an evolving staff team and identified how her role supported the design implemented by the previous architects. She explained the changes she had observed following the loss of the original architects:

'I wasn't the architect, I'm more like a member of the facilities team. Just building maintenance of something that was already designed by somebody else. So, part of it is that we've lost the voices of the original people who set up the model, and we've had people coming in with quite strong voices saying slightly different things, which is fine. A workplace always evolves in that way.'

I was interested to listen to this story, as River University had such an observable consistency in approach to PBL, that I struggled to see the impact of these strong voices. However, Shona explained that as well as trying to maintain consistency of some of the broader PBL processes, she also endeavoured to maintain a consistency in some of the detail, such as language, and suggested that this was something that had changed over time:

'It's having a coherency in the language that we use with the students that we're teaching. I think we're very lucky at River, because obviously the whole programme was designed with that language, but new members of staff come in and things change. We've grown and grown and grown, and I think at the moment we're losing a bit of that core language.'

Shona discussed needing to 're-align' their PBL by engaging with the academic tutors about the design of the course. She considered that they should either recommit to the original model, or acknowledge the loss of the original architects, and collaboratively adapt the design. This could be considered to be a manifestation of the symbolic capital held by Shona. In trying to re-align the PBL, she imposes a structural influence on other PBL tutors on the course. Whilst this authority could be considered to be the symbolic violence discussed by Bourdieu (1998), as I discuss further in chapter 8, Shona was reflective of the nature of this imbalance of power, rather than using it to her own advantage.

Interestingly, as I continued to analyse the impact of the loss of the architects, I reflected on this theme within the recruitment stage of my study. As part of my strategy to identify potential research sites, I had explored literature that had related to course-specific implementation of PBL. I had assumed that these contact details might lead me to research sites that had a PBL curriculum; however, this strategy did not prove to be fruitful. I observed that some of the researchers were no longer part of the course team (indeed, some never were). When I contacted the course team, I was usually then informed that they didn't use PBL, and I wondered if this was the result of a turnover of staff.

The second significant catalyst of change was the voice of the student, and this was a theme across all research sites, but was by far, strongest at Forest University. Commonly, stories related to the influence of formal structures such as module evaluations, the National Students Survey, or complaints. However, student feedback through less formal mechanisms was also observed to impact on the PBL across the research sites.

Module evaluations across the sites were generally reported to indicate that students valued and enjoyed PBL across the sites, and tutors used information from these to make incremental changes to triggers, or to facilitation styles to support the students. Robert from Meadow University discussed this being constructive, and he valued the students' honesty in this process. Students were also encouraged to evaluate themselves and how their group had worked together, and there was a sense of the evaluation process at Meadow University being collaborative, reflective, and holistic in how it shaped the PBL.

In contrast, at Forest University, Sylvia, an experienced PBL facilitator discussed the impact of her module evaluation and the resulting pressure to incorporate lecture material into her PBL sessions. This was due to a low overall student satisfaction rating, which meant that she was required to review the module and devise an improvement plan. Interestingly, only 12 out of

over 140 students had completed the module evaluation and this did not seem to have been considered significant. Further, the module had achieved a high pass rate, and this didn't seem to have been factored in either. Sylvia reported that in the evaluations, some students stated they had enjoyed the module and valued the PBL. However, other students had reported feeling a bit lost, or had complained that there had been no lectures, suggesting that they had therefore, not been taught.

As a result of the evaluations, Sylvia had spent time over the summer, considering the best way forward with the module. She shared her internal conversation with me, which demonstrated her mediation between the structural constraint of student feedback and pressure from those in authoritative positions, and her own agentic desire to maintain a PBL approach to learning. She told me that the easiest course of action would be to convert the module back to a teacher-centred delivery; however, maintained that she did not believe that this was in the best interests of the students. She therefore chose to respond to the module evaluations by providing more information about the approach to learning in the module, thus managing the students' expectations more. There was a common theme within the two interviews I conducted with Sylvia that related to her desire for authentic engagement with the students. She strived for open conversations and candid debates about course-wide issues; however, reported that such conversations tended to be discouraged at Forest University. Nonetheless, she planned to facilitate some open conversations with the students within the sessions, about the importance of independent learning; explaining that it would be challenging now but would benefit them in the longer term.

Sylvia's decision to uphold her pedagogical values had a potential cost, which she discussed with me. Our conversation revealed her reflexive considerations as she described the interplay between university structures and her agency in relation to pedagogical development:

- Sylvia* 'I feel that a lot of the innovation and the new things that people want to do are very much hindered from the pressures, from the system. And when I say the system; it's management and the university as a whole; and the idea of what the university is for. And what their cultural values within the institution are, of education. And of course, in here it hasn't happened yet; but a lot of these evaluation questionnaires are used for promotion cases. Now, if your career is on the line, you will do whatever you can to make sure these are not going to backfire on you. And that's why, I think, the rope breaks at the weakest point, which is always this bad carrot and stick situation for the academic.'
- Heather* 'It sounds like it's a real challenge to stick with your beliefs really.'
- Sylvia* 'It is. Yes, it is...' '...But in reality I'd rather have a job where I can do what I can..., I want to do, and do things differently, [rather] than have to do things just

because they will get me somewhere higher on the ladder. It's a matter of what I enjoy.'

At River University, tutors had also discussed change in response to feedback from students, although this was not via the formal evaluation processes, which were usually positive. Instead, over several years, it has been observed that in year three of the course, the students' attendance started to decline. Several participants at River University mentioned a phenomenon which they referred to as 'PBL fatigue'. Shona explained that this was when students became bored of the repetitive nature of the process, and therefore attended less. The course team's awareness of PBL fatigue had prompted quite a major course restructure. This resulted in the year three PBL sessions having more choice in learning and assessment for the students and additional complexities in the triggers.

Participants at Forest and Beach universities discussed the impact of the National Student Survey. At Beach University, the information in the NSS seemed to have been taken as an opportunity to learn about the student experience in order to shape the teaching and learning. Jade discussed the students' complaints in the NSS and the impact of this on the PBL. She discussed the ways in which the course had developed over time, suggesting that in the early iterations of the course, the students were observed to be struggling to achieve some key learning outcomes, or were failing to achieve the higher degree awards, as they seemed to be 'drifting' through the course. Subsequently, the teaching, learning and assessment processes were developed to make them more robust, and the demands on the students were made more explicit. Following this, Jade had noticed some themes in the NSS feedback relating to students' stress levels, and to them feeling overwhelmed and overworked. She admitted they had perhaps 'swung the pendulum a bit too much in the other direction' and the course team therefore responded to this feedback by addressing some of the pressure points in students' workload, and the timing of the PBL across the course.

In contrast, at Forest University, Sylvia referred to the NSS as 'the stick of the National Student Survey' and discussed its impact, explaining that staff were 'edgy' about it. Her desired response to NSS data, student evaluations and complaints raised in student forums was to collaborate further with the students; to understand more about the issue in question, and to understand the degree to which it was an issue across the cohort. However, she discussed changes being made that were potentially from a minority of students, and expressed concerns that students with opposing views might be overlooked:

'This is not meaningful in a sense, it's not... Equally if the students complain about something, we have to run around and see how we fix it. Why don't you sit down and discuss with them where the sources of the complaints are, and logically reason through them, and see what actually has essence, and what is all a bit just venting, perhaps a bit of anger at the moment. Because there will be elements of both in there.'

Patrick also discussed his surprise at some of the complaints that were upheld at Forest University, and in our conversation, it was apparent that this made him uneasy about curriculum development. Complaints which he considered to be matters of academic judgement, and not therefore grounds for complaint, were routinely actioned. He told me about the strength of the student voice and how it influenced curriculum development:

'And I've seen often that management takes the side of the students rather than takes the side of the lecturer. And that then is a disincentive to innovate as well. Because if you do some innovation and it doesn't go right the first time, (they seldom do go right the first time), you take a risk. In my old institution I actually felt a lot better supported when things went wrong. I would feel the management were behind me and saying okay, 'things didn't go right because someone's trying to innovate and that's an activity we encourage.' I don't feel the same support here.'

This seemed in contrast with other stories told by Patrick, when he had discussed his innovative work redesigning curricula, and embedding and designing PBL across courses prior to working at Forest University. He told me about a range of different ways he had used PBL, both in seminars and in laboratories. His previous practice sounded innovative and iterative, and he talked with a sense of pride about his achievements. In contrast, the stories he told about his work at Forest University seemed devoid of passion, and he admitted his efforts were more to 'fit in' with teaching and learning practice, rather than facing any risks that came with innovation. As such, as well as being a catalyst of change, the student voice at Forest University had therefore become a source of curriculum inertia.

There were many stories told in my conversations with participants, that revealed the challenges posed by an increase in work pressures, and discussions that indicated this was both a catalyst of change as well as a source of inertia. This was a strong theme at Meadow and Forest Universities and was discussed as having a negative impact on PBL. At Meadow University it was cited as a catalyst of change, whilst at Forest University it related more to inertia and will be discussed later in the chapter.

As with other catalysts of change, the increase in work pressure was discussed by the three participants who were longest serving at Meadow University, namely, Robert, Hannah, and Beth. The two main themes in these conversations were the reduction in time for personal learning or preparation, and the reduction in time for team discussions, and participants detailed

how this changed the PBL within the course. Gregory and Lodge (2015) discuss the challenges experienced by academic staff in relation to their workload. They suggest that academics are often under pressure, due to inadequate workload allocation models and a lack of time being allocated to the professional development required to undertake the role.

All three participants discussed the extensive learning they had undertaken early on in their academic career at Meadow University, which was focused on PBL. This was cited as fundamental in developing their understanding of PBL, and in cultivating their passion for PBL. They discussed attending training courses or workshops, or taking time to learn individually, and they explained how valuable this had been.

Robert discussed the postgraduate certificate in education which he undertook a couple of years after he started at Meadow University. This was not a course that had been on offer at Meadow University at this time, and so he had attended another university one day per week over a two-year period. He explained that this had allowed him to focus in depth on PBL, and to consider how to apply it in his own work. At that time there was no requirement to complete the teaching qualification; however, Robert had requested it. In contrast, Rose, one of the newer members of staff, mentioned that achieving this qualification was now a condition of passing her probationary period at Meadow University. It is worth noting that in between Robert and Rose completing their postgraduate certificates, the UK Professional Standards Framework (UKPFS) was developed, resulting in universities becoming increasingly focused on staff gaining recognition and fellowship with the Higher Education Academy (van der Sluis, 2021).

Hannah also discussed the dedicated time she spent learning about PBL early in her academic career at Meadow University, and enjoyed doing her teaching qualification which, like Robert's course, was before the development of the UKPFS and had been flexible in allowing her to focus on a specific area of interest. She commented on how this had changed over time, suggesting there was less flexibility in the current teaching and learning course, as well as fewer days of attendance. She discussed her observations of newer members of staff having less time to dedicate to learning about pedagogical theory, suggesting this may be why they seemed more inclined to add teacher-centred learning activities to modules. She was concerned that they had less support through formal learning opportunities, or from the team discussions that used to be more commonplace amongst the staff group. Robert told similar stories, and expressed similar concerns about the result of increased pressure of time:

'We've done lots of training on that. We've... interestingly enough, I think we haven't done enough in-house training or discussion about how we use PBL for a few years.'

What's really interesting about that is we've had at least three members of staff within the last two years. I don't think they've ever been party to those discussions. When I first arrived, there was a lot more time... again, I think, where we would sit down, we would talk about the educational philosophy. We would have times built into the term where we would discuss how we deliver the programmes; how we deliver PBL. We would talk about how we assess; what we look for; how we involve students within that process, and that seems to have gone.'

A further impact on PBL which was discussed by Beth, another very experienced PBL facilitator at Meadow University, related to personal preparation for the session. Beth had been difficult to interview due to her diary commitments and she seemed overwhelmed by workload at various points in our conversation. She discussed covering for tutor absence, timetabling pressures, and the recent course revalidation, and said this pressure of time reduces the time she spent on her preparation as a facilitator. As discussed in chapter 5, occupational therapy tutors drew on their reflective practice skills, and their use of self in their approach to PBL facilitation, and this was a focus in our conversation about pressures of time. Beth explained how supportive she had previously found debriefing discussions with peer facilitators; however, stated that these had given way to general time pressures. She described rushing between sessions, meetings, and emails, and explained that the most significant impact of this was having no space and time to think. She was concerned that this was impacting on the quality of her sessions:

'There's no thinking time, or reflection time anymore in between, and I think that is something that I find quite stressful, and I think impacts on my perception of myself as a good facilitator, because I think part of being a good facilitator is about reflecting, preparing... It's not even preparing content, is it, it's preparing yourself, even just thinking. What did this group do last time? Were there any problems in the dynamics that I need to be mindful of going in today? Those kinds of things, that's important preparation that's not content related, and that again, is the thing that's been sacrificed when things have got so busy, the preparation and the debrief afterwards, and I worry then, that that comes across in the group.'

Jenson and Morgan (2009) discuss the pressure of work within academic roles. They suggest that academics are finding it increasingly difficult to contain work within the boundaries of normal working hours, stating that much of their efforts regarding increasing the quality of teaching and learning activities remains hidden. This was evident across the sites, as tutors were passionate about curriculum development, yet their ability to take time to focus on consistency of pedagogy seemed to cause its erosion, most evidently, at Meadow University.

6.3 The wonky wheels of PBL curriculum development

This section explores some of the curriculum inertia that was observed or revealed in conversations across the research sites. It describes some of the *wonky wheels* that made pedagogical change more challenging, and where these forces of resistance were strongest. The most significant sources of inertia related to the magnitude of the intended change, student resistance, and disciplinary epistemics.

There was an observable difference in conversations about change across sites, and much of this difference could be attributed to the distance between the start and intended end points of the change journey. At River and Hillside universities, as the curriculum had been PBL from its inception, the conversations that related to change tended to be about iterative developments rather than large-scale change. As such, there were fewer stories told about resistance. In fact, at Hillside University, the only conversations of significance related to approval required by the General Medical Council and the complexities that of this in curricular development. Unlike the other research sites, changes to module content, even minor changes, were required to be approved externally. Whilst Nicole coordinated this work, the protracted nature of change as a result of these regulatory structures was also perceived by other course tutors and affected their motivation to develop the curriculum.

Paula was new to the staff group at the Hillside University, although had worked in a similar position on a non-medical course for a number of years before this. She was therefore able to explain the differences she had observed, in relation to course development. She explained these differences and how they constrained tutor agency. In her previous role, she had been able to make changes to modules in a straightforward manner; however, in comparison, described learning resources as 'locked down' in the medical curriculum, due to its regulatory structures:

'I realise I've come to the other side of the spectrum, whereas in [previous role], you can change the content if you want to. Nobody cares. You can write a lecture on anything, and an exam question on anything, and you've got broad learning outcomes. Nobody really goes in and says 'Are you sure that you've actually been able to address the learning outcomes. Does this fit the General Medical Council's model?' The General Medical Council really do come in and evaluate and quality assure all the medical programs, so they don't have a lot of room for manoeuvre, when it comes to what they're actually teaching.'

Paula explained that sometimes she had thought of improvements that she considered could be made to PBL triggers. However, she realised that to make a minor change in one of the learning outcomes of a module would result in a significant amount of work:

'So, it's laborious. I would say that I probably lose my enthusiasm for changing after a while, and I'll be like, let's just stick with what we've got. Because the other aspects about the medical school program outside of PBL, I don't think it lends itself well to modification, actually.'

In contrast to River and Hillside universities, Forest University seemed to have a significant amount of curriculum inertia, and this made improvement processes protracted and challenging. Jasmine and Samuel discussed the changes that they had implemented to the module they co-facilitated, and both explained how this had been developed over a significant number of years. In part, this seemed to be a result of the considerable distance between the start and end points of their change journey. Transitioning from a much more teacher-centred style of delivery to PBL meant changes to the core structures in the course, such as timetabling, teaching and learning resources, and assessments, and Samuel and Jasmine described an iterative process of evaluating some changes, then implementing others.

The longer change journeys required a huge commitment and effort to undertake, and this was a source of inertia which Paula had reflected on in our conversations at Hillside University, in relation to her previous role. She discussed how valuable PBL could have been in the course where she had taught prior to working in the medical school, but explained that pedagogical change tended to only be driven by feedback from structural influences such as the National Student Survey, or from external examiners:

'Yes, you'd need to have outlined strategic reasons with evidence to suggest why it is that people need to change the way that they're teaching. They won't do it because they want to be innovative, nobody's got time to be innovative. They need to write that four-star publication for their REF return. They need to already do the marking, the allocation, and the question designs that they've got going on for the module...If they change it, does that mean I've got to write another 10 lectures that are based on this PBL?'

Participants in other sites discussed the sustained effort and motivation required to develop a PBL curriculum. At Beach University, Gary explained that it had taken about 10 years of development work before he had felt happy with some PBL resources he had developed. Jade discussed identifying areas for improvement in the Natural Sciences course when she had first started working at Beach University. When the previous course had been withdrawn and the new one developed, this afforded the course team the opportunity to design the course afresh, whilst learning from the strengths and challenges of the previous one. This allowed changes to

be made at a course level rather than at a module level, which seemed to overcome inertia more effectively.

At Forest University, as well as having a significant distance to travel from the starting point to the end point of their change journey, there were other sources of inertia that hindered curriculum development, such as student resistance. Sylvia and Patrick discussed these quite openly, although the impact on their practice differed due to the ways in which this was mediated by their individual agency. Sylvia described the work she had done in various higher education institutions where she had embedded PBL into the curriculum, and she described some of the challenges she had encountered. She explained that it was common for students to be resistive to PBL, particularly where they had experience of more didactic approaches to teaching and learning. She empathised with their experience, explaining it was natural for them to resist something that they perceived to be disruptive. Interestingly, this in itself was not a strong influence on the development of the PBL curriculum. What was, however, was the perceived lack of support from more senior personnel in managing these student anxieties and/or complaints about change.

Sylvia and Patrick both described a lack of support in this regard, and this generated some curriculum inertia. They both described a culture where there was anxiety about upsetting students, and the impact of this seemed to be that communications between tutors and students became further constrained. Sylvia was familiar with working in a culture where collaboration was encouraged, and was regarded as a useful way of supporting students to understand the reasoning behind some decisions:

'This was one of the things that surprised me the most I remember at first; how much emphasis the department puts on what we think the students' perception about whatever we want to change will be. If I come and say, 'why don't we do this?' There'll be somebody saying, 'No, don't do that.' 'Why?' 'Because the students are going to complain'. And I always wonder how do you know they're going to complain? What is your... As in, 'why do you think they're going to complain?' 'Because they won't like disruption', or 'they don't like this', and I always say 'Look: they are quite reasonable, I think. If you give them a rational explanation, I bet you can buy them in', but we're always too afraid of doing that.'

Patrick had also been innovative in his previous employment, and this led me to feeling quite surprised at how readily he seemed to conform to the inherited teaching and learning practices at Forest University. He explained that he could only be innovative in changing the teaching and learning if there was some funding to buy out his time to do this.

'I think what I've tried to do in Forest University is more or less fit in with what is already here, rather than try and change it. I think that the thing that happened in [previous employment] that was unique was that we had this director of teaching that was pushing change. And I think unless you've got someone at the top pushing change then it's difficult for an individual. You can tinker but you don't have an impact across the whole course. So, there's a lot of, if you like, small-scale change that I see in Forest University that they have changed here and there, but there doesn't seem to be a feeling in the department that they're going to change the whole curriculum from year one onwards.'

In many ways, participants at Forest University were all passionate about being innovative in their teaching and learning, yet seemed to be driving in different directions, implementing the 'small-scale change' that Patrick suggested had limited impact on the curriculum as a whole.

This resonated with stories told at Beach University where the change in the curriculum had been supported by HEFCE funding. Gary discussed the initial curriculum inertia and the challenges of developing the whole curriculum. He had been successful in bidding for several streams of funding to support implementing PBL in various courses at Beach University, and this had helped him to overcome curriculum inertia:

'Once you've got a sustainable model, I think it can be developed with almost minimal funding, as long as the university is willing to support it; as long as the university is willing to give individuals time to spend writing new PBL scenarios and developing them, and piloting them and then running them with a full cohort. It's doable. But I think getting something off the ground is a lot easier with a bit of external money.'

It was interesting that it was within both science sites where conversations revealed that tutors had little agency in overcoming curriculum inertia without the support of formal funding streams, and this seemed, in part, related to disciplinary epistemics. Conversations at Forest and Beach universities revealed that some aspects of the course content were much more steadfast, meaning some teaching materials had been used and reused over a significant period of time. At Hillside, Meadow and River universities, there was a much stronger sense of tutors being under pressure to *regularly* develop and update course materials to keep up with continual changes in disciplinary knowledge. This reduced the curriculum inertia in these sites as this development work seemed to be more readily accepted as a day-to-day aspect of the job. This correlates to Bernstein's (2000) knowledge structures. Disciplines such as Medicine, Occupational Therapy, and Law could be considered to have been regionalised, which is described as being a coalescence of 'singular' fields of knowledge (p.52). He suggests that these regional disciplines have more pressure to respond to the changing needs of society, and this seemed to thread through the stories in these sites.

In contrast, participants at Forest and Beach universities, told stories about inherited teaching materials that had not been updated for years, or about materials only being updated when tutors left. Development of the teaching and learning materials, therefore, did not seem as routine in the science sites. Jasmine also discussed curriculum inertia as having generational differences in the chemical engineering course at Forest University, referring to 'older' or 'younger' colleagues, and describing a reduction in curriculum inertia as the average age of the staff group had reduced. She illustrated her point by telling me about a colleague who had retired having used the same handwritten notes for his sessions for over 20 years, seeing no need to make any changes to the teaching and learning in this time. Interestingly, there was no sense of Jasmine being concerned that the *content* of this module needed to change to capture new knowledge in this area; only that the pedagogical approach should have adapted to the increase in student numbers, and that the materials should have been more accessible for students with additional learning needs.

This resonated with a conversation I had with Jade when I visited to observe her session in the natural sciences course at Beach University. She described some 'old professors' who had a reputation for using outdated methods of teaching, and yet were not challenged in this regard. In fact, Jade joked that it may even have resulted in them being given less work to do. This interesting manifestation of symbolic capital demonstrated that change could only occur when some individuals with status or prestige were no longer present. Again, the conversation about being outdated referred only to their pedagogical approach and not to the content of the session. From discussions, it seemed that the content of the sessions was quite static over time, in a way that would not have been possible in the health disciplines or in law. The PBL session I observed with Jade was split into a lecture-based component, followed by the PBL component. She explained that she had not developed the lecture; however, it was apparent from her delivery that she was familiar with the content. The focus of the lecture component was what could be considered as certain, or absolute knowledge (Baxter Magolda, 1992, p. 74). This related to cell structures, and identifying and labelling various parts of diagrams shown on the slides. Interestingly, I recognised some of the material from my own science lessons at school, which again, indicates the static or 'singular' nature of the knowledge in focus (Bernstein, 2000, p. 52).

The static nature of knowledge that caused curriculum inertia in the science sites also seemed to be replicated in schools, and participants at Forest and Beach universities discussed students' expectations of teaching and learning activities that emanated from the way they had

learned science at school. Jasmine referred to this as having a 'school mentality' and explained that students struggled to adapt to pedagogical approaches that encouraged them to transfer learning, explaining that they sometimes complained if exams contained questions that had not been directly taught:

'I don't have time to go through really in-depth questions in the lectures because I'm giving you the tools to build up to be able to do these more difficult questions. But they think that if we attack a problem in a tutorial and it's a certain level of complexity then we should've done something completely analogous in class. And it's almost... 'you didn't teach me how to do this question whereas if I was at school they would've taught me step by step - if you get a question that looks like this, this is how you break it down and this is how you attack it or attempt it.' Whereas now we're kind of saying, well, I give you those tools, you get the basic concept of understanding, we practise that, we develop it, we extend on it and they get progressively more difficult, because once you're proficient at that, then you can think about things, you can stretch yourself that little bit further.'

Samuel and Jasmine had discussed these customs of learning, which Samuel referred to as 'nasty habits', but I would explain as disciplinary habitus. Interestingly, however, he also explained that around half of the first year of the chemical engineering course was a recap of what students would have learned in science classes at school, which again, reinforced the more static nature of knowledge within the discipline.

6.4 Chapter summary

This chapter explored curriculum inertia across the sites, explaining the structural and agentic forces that catalysed change in the curriculum, as well as the *wonky wheels* that generated resistance. Participants who had worked in the sites the longest, told more stories about the ways in which the research sites had changed over time, and those who had worked in other higher education institutions were able to draw some comparisons.

Tutor agency was perceived as valuable in curriculum development; however, it triggered some erosion of the PBL due to inconsistencies in approach, most notably, following the loss of the architects, or where there were no curator roles. These key roles harboured symbolic capital that affected the development and maintenance of a PBL curriculum. Curator roles are discussed further in chapter 8, Site Civilisations. Without these roles, the turnover in staffing, and the increase in work pressures in higher education allowed tutor agency to drive change in disparate ways. Participants discussed the importance of spending time as a course team discussing pedagogical values and approaches, but there was variance across the sites regarding the degree to which this happened.

The sources of curriculum inertia varied across the sites and the magnitude of change was understandably a significant influence. The science sites, Forest and Beach universities, had curriculum inertia that related to the absolute nature of knowledge in the course. There seemed to be less requirement to routinely change the course content than in law, or in the health sites. Participants in the science sites, therefore, discussed curriculum change as distinct work requiring funding streams to enable it. Across all sites, there were stories told about a desire for a more considered and consistent pedagogy within the curriculum, where course teams had managerial support, and time to focus on curriculum development.

The student voice was discussed by participants across the research sites often as part of formal structural processes. It was observed to shape the teaching and learning both as a catalyst of change and a source of inertia. At Forest University, however, the student voice was strongest, and this had resulted in more curriculum inertia and in some cases, a perceived loss of agency, as participants found it difficult, or indeed risky, to implement pedagogical change.

The next chapter explores the third theme, entitled 'Findings: Epistemological Values'.

7 Findings: Epistemological Values

7.1 Introduction

This chapter explores the impact of individual and collective epistemological values on the PBL across the research sites. Epistemological values relate to perceptions of knowledge, how it is constructed, and what is considered most valuable in relation to knowledge. As such, they are a significant aspect of tutor agency due to often being at the heart of decisions made and actions taken. The term ‘personal epistemologies’ is used where these perceptions and considerations relate to the beliefs and values of individuals (Hofer & Pintrich, 2004), and this was a predictably strong theme in conversations with participants. Hofer and Pintrich (1997), describe personal epistemologies as being the theories and beliefs that individuals hold about knowledge and knowing; however, Argyris and Schön (1974) assert that further exploration is required in order to identify the degree to which theories and beliefs are ‘espoused’ or ‘in use’. They explain that individuals’ *espoused* theories are usually the ones they pledge allegiance to in conversations; however, may not always be the ones that govern their actions (Argyris & Schön, 1974, p. 7). As mentioned in chapter 3, this was a compelling reason for gathering observational data in this study, instead of solely relying on self-reported data. However, what also became apparent in this study, was that some participants had coexisting, and sometimes contradictory epistemological values that they did not always appear to be aware of. Further, whilst personal epistemologies are considered to be unique, and shaped by individuals’ life histories (Billett, 2009); there were also epistemological values that emerged in stories as being collective, rather than individual. These were revealed in data relating to key stakeholder groups and were noted to have varying degrees of impact on the PBL across the research sites.

The chapter therefore explores what emerged as being most important in relation to knowledge and knowing by participants and key stakeholders, and how this shaped the teaching and learning activities across the sites. It is presented in three sections, as follows:

- Espoused epistemological values and those in use
- The influence of expertise
- Stakeholder values

The first section presents the espoused and enacted personal epistemologies of the participants, outlining where they were espoused and/or in use, some of the epistemological dichotomies, and the ways in which they were influenced by participants’ unique life histories.

The second section focuses on the notion of expertise and the interplay between this and epistemological values, portraying the participants' and students' perceptions, expectations, and debates in this regard. Finally, the third section of the chapter presents the epistemological values of the key stakeholders who were illustrated in participants' stories, and the resulting sources of tension.

7.2 Espoused epistemological values and those in use

This section reviews the epistemological values espoused by participants and considers how they were enacted within the PBL sessions. It portrays some of the stories that participants told of the challenges in remaining true to their values within their day-to-day work, and highlights where participants appeared to have coexisting knowledge values. Participants across all sites claimed to value PBL as a pedagogy, although this was anticipated, due to the nature of the study. Interestingly, there were conversations across all sites that indicated a common pursuit of a seemingly unattainable 'pure PBL', and this often revealed where participants considered their approach to be compromised. Conversations revealed that participants' epistemological values were notably influenced by their own learning experiences, although these were often experiences that they endeavoured *not* to replicate.

Whilst there was variance in the reasons that participants cited for valuing PBL, there were some noteworthy commonalities across the sites. These tended to centre around the ways in which PBL supported the students to understand, apply, and contextualise their knowledge, conforming to three domains of ways of knowing; namely, transitional knowing, independent knowing and contextual knowing (Baxter Magolda, 1992, p. 30). Participants discussed how these ways of knowing prepared students for life beyond university, rather than merely coaching them through examinations. Nigel, who had recently started working at River University, referred to this preparation for what he described as 'being a functional adult with a job'. There was a focus in many conversations revealing that the participants valued the ways PBL encouraged the students to apply their knowledge to real-life situations. In considering some of the differences between PBL and more traditional teaching methods, Nigel, from River University, pondered, 'I suppose it depends on your thoughts on what learning is.' and this was at the heart of many conversations about epistemological values.

There were some notable disciplinary commonalities relating to epistemological values that were revealed in the data. In the science sites, participants talked more about valuing PBL due to it supporting students to understand information well enough to translate it to varying

contexts, rather than to merely memorise and repeat it. This is commensurate with transitional ways of knowing where students move beyond seeing all knowledge as certain (or absolute), and their understanding supports them being able to apply knowledge to relevant scenarios (Baxter Magolda, 1992, p. 30). It was noted that epistemological values of the students within the science sites seemed to be in tension with their tutors' and this is discussed later in the chapter.

Within the health sites, and in law, there was a much greater focus on students being able to form and articulate their own opinions, and for these opinions to be grounded in evidence. Further, there was a focus on a more critical and context-dependant application of this knowledge. These are more commensurate with 'independent' and 'contextual' ways of knowing that foster autonomous and critical thinking, encouraging evaluation and consideration of a range of perspectives (Baxter Magolda, 1992, p. 30).

At River University, several participants discussed how they felt that PBL supported the students to gain crucial life skills. Diane had worked in a number of roles relating to law prior to her PBL tutor role. She described this as a 'portfolio career', and her experiences influenced her thoughts on the value of PBL beyond the traditional lawyer role. She talked passionately about PBL supporting the students to develop a sense of responsibility for themselves, which would be beneficial beyond education and work. Diane had taught law for a considerable period in another university and had been 'comparing notes' with a friend who worked in the course at River University. The conversation about pedagogical approaches had ignited her curiosity and this was such a crucial part of Diane's agency, that she had left her previous role to work at River University when a position became available. She explained that PBL was much more in keeping with her epistemological values than the didactic dissemination she had been used to in her previous job:

'You're not just teaching them knowledge, you're teaching them a way of being in the workplace, which is really important, and a way of being for themselves going through life. So, you're actually teaching them to take responsibility for the outcomes, because if they don't put in the work in the PBL session, the outcome will not be good. So, I just think it's good... It's not just good on pure educational, you know... in purely sort of legal education. It's wider life education, I would say.'

Participants discussed the epistemological value of PBL having been reinforced by the students' success in their assessments. At Forest University, participants described an improvement in students' exam results since using PBL in the course, as students had become more able to apply their knowledge to unfamiliar problems in the assessments. Similarly, at

River University, Sandra, who was an experienced PBL tutor who had also worked in other higher education institutions, discussed seeing positive results in the students' assessments. She described taking time to adjust to the role of facilitator, due to having less control of the details of what the students learned:

'And that's maybe a new skill to learn, to really trust the students that they understand what's involved and they will get it right. And do you know what? They do. You only need to read their exam scripts, or whatever, at the end of the day. And you can see they do get it.'

These stories were similar across the research sites, and tutors explained valuing PBL to support the students to acquire knowledge that was not merely memorised and regurgitated, but instead, was understood, applied and contextualised. As such, these conversations revealed stories of participants teaching in ways that were congruent to their espoused knowledge values.

Whilst conversations with most participants across the research sites revealed fairly unilateral student-centred epistemological values, I also engaged in conversations with some participants that highlighted an array of more distinct epistemological values. Sometimes these appeared to be in tension with each other; however, often they co-existed like tools in a toolbox, each considered to have unique strengths. Where data revealed tensions, stories told were often about participants' own enjoyment of one particular style of teaching, whilst simultaneously valuing something different for the students. Such stories tended to portray an enjoyment of explaining knowledge to students, and of gaining a personal sense of effectiveness through observing the students develop their understanding. Participants discussed or indicated a love of explaining, and of enjoying being witness to the resulting 'lightbulb' moments in students. Jade, from Beach University, referred to this as being the 'Sage on the stage'. Further, there was an apparent enjoyment of illustrative storytelling, where tutors would share their experiences with students. These conversations revealed that tutor agency was influenced both by their personal epistemologies, and their own sense of enjoyment. For some, there was a sustained and conscious battle, requiring effort to resist the storytelling or imparting information that they evidently enjoyed. Participants discussed biting their tongues or sitting on their hands in attempts to facilitate in ways they felt most supportive for the students. Whilst this could be interpreted as constraints on agency, imposed by the structures of the PBL curriculum; it could also be interpreted as tutors' personal epistemologies and personal enjoyment being in tension with each other.

Shona, who had a senior role in the law school at River University, spoke openly about these tensions within our conversations. She spoke of tutors' desire to, and enjoyment of telling stories from legal practice:

*'..the temptation is to tell war stories, and the students do like the war stories, but again it's like, it's not about me. I think it's okay to do that when you've covered everything else and they've done everything and you say, well, the thing that you were talking about, actually I had an experience like that in practice. But you've got to make sure that's not the main event. The main event is **them** talking about it and **them** doing it. So, I think anybody who has been used to being a teacher finds PBL facilitation difficult for that reason.'*

Shona suggested that allowing tutors to have a balance of different styles of teaching would be more likely to meet their needs, as well as the students', although acknowledged that this was more difficult for PBL tutors due to the confines of their role.

Sandra, also from River University, discussed the complexities of facilitating PBL, whilst also trying not to fall back into previous teaching habits:

'And I do like explaining. I think that's just the teacher in me. D'you know? You like to see the lightbulbs coming on, don't you? And I think that sometimes with PBL, that it can be a bit hard to work out, how do you give that extra assistance without undermining PBL as a sort of teaching ethos?'

Whilst these conversations revealed an awareness of tutors' theories in use not always being synonymous with those in action, not all participants demonstrated this awareness. The co-existence of epistemological values also emerged in my interactions with Samuel from Forest University, although was not acknowledged by him. He explained many reasons why he considered PBL to be valuable for chemical engineering students, and yet this was often incongruent with his facilitation in the observed session. In our conversations, he explained the value of encouraging the students to articulate their understanding of something, to enable them to apply it to new scenarios:

'So, what I do is I go back, and I ask them to explain how they solved the first problem, and then get them to think about how to solve the second one on the same level. So, instead of going around answering questions that they have, I pose the questions to them and I get them to explain to me how they were thinking. So that works a lot better, I think.'

This focus on students' understanding is consistent with transitional ways of knowing, focused on understanding and applying knowledge; however, this contrasted with observational data that revealed a style of facilitation more in keeping with absolute ways of knowing. In the observed second year session, Samuel's approach to facilitation seemed to oscillate between requesting brief explanations from students, to imparting lengthy explanations himself. He

tirelessly repeated explanations, delivering knowledge to the students with the same enthusiasm and passion in his discussions with the twenty-fifth team, as he had with the first. Whilst this clearly limited the students' abilities to talk through their own reasoning, it was apparent from the number of student-nominated teaching awards which papered the walls of his office, that his approach to teaching and learning was well received by the students.

Further indication of Samuel's co-existing epistemological values punctuated our conversations. He discussed his enjoyment of seeing the 'light bulb moments' in students, acknowledging that these moments often happened outside of the classroom when students were working more autonomously. Nonetheless, this seemed to underpin his enjoyment of the job:

'I felt that the most rewarding parts, I think, were when I actually got to sit down with a student and explain things in a different way. With the lab it was much more about getting things to work and just troubleshooting stuff. And, while I think that's valuable, it wasn't really that rewarding. Whereas sitting down and explaining an algorithm to a student or something, how they need to structure their logical thinking was a lot more rewarding. Especially when they got it, which was not always the case.'

There were other co-existing epistemological values that emerged in conversations that were not related to participants' enjoyment of the job, yet also revealed an inclination towards absolute ways of knowing. These were sometimes discussed in conversations about the knowledge that was considered to be most crucial for students to learn on the course, and revealed beliefs around key subject knowledge being delivered to students, either in lectures or reading materials. In sites such as River University and Forest University, lectures and plenaries were discussed as routine learning activities which ran in parallel to the PBL sessions, providing a scaffolding of resources to support students. There was a common thread within these conversations that related to lecturing instilling confidence that students had learned key information. This was particularly true of Roy at River University, where I had observed a *party line* to emerge. By this, I mean that there were common values amongst tutors that appeared to manifest as indoctrinated opinion more than true personal beliefs. I discuss this further in relation to informal rules in chapter 8. Whilst Roy had endeavoured to espouse the *party line* throughout the interview by passionately advocating for PBL, I gained further insights into his epistemological values towards the end, when our conversation had taken a more social turn. He was discussing the legal aspects of clinical negligence, which was an area of law he felt was particularly important:

Roy *'One of my godsons, he's a doctor. He didn't have any training on clinical negligence or what it was. And I sat with him for an hour and talked him through it. And it's a very high burden to prove somebody's negligent, a very high burden, and he just felt a load better. If he'd had a couple of lectures...'*

Heather *'It's interesting you said, 'if he'd have had a couple of lectures' and not a couple of PBL sessions.'*

Roy *'Yes, that's probably age. I would say both. I would say both. I think you need introducing to a subject to then move on, like I said the, you know... To me, some legal concepts need teaching before you start dissecting them. But that's a personal view.'*

Nigel at River University also discussed providing some of the crucial knowledge in plenaries, so that students could then focus on discussing the application of them in the PBL sessions. He explained that tutors had the option of delivering plenaries in a traditional lecture style or could provide a more interactive learning experience for the students.

'I tend to use a more classic lecture style, in that I want to make sure that all the material that's relevant for the subject that I'm giving it, it is in there, that students can access it when they need it, that it's as clearly as possible explained, and then allow them to then take that away, having hopefully provided a clear explanation of a load of issues.'

Emily, from Hillside University, was explicit in acknowledging her co-existing epistemological values, and did not present these as in tension with each other. She discussed some of the strengths of PBL; however, suggested that students may miss out on particular types of knowledge as a result of this approach alone. She suggested that PBL curricula encourage the students to understand many broad concepts, but that this may risk the omission of valuable detail, particularly relating to specialist areas of practice.

'But they miss out on the excellence part of what could be the unique..., what could be different..., what could be academics coming around and giving lectures in certain areas. So, lectures are not compulsory in PBL universities generally. So, there is that bit of a gap, which many of the PBL curriculums will have.'

Emily discussed the impact of this on her PBL facilitation. Whilst she would reassure the students that they had researched appropriate knowledge in relation to their learning objectives, she would frequently have conversations that encouraged them to explore some topics in more depth, particularly if it related to an area of practice that they were interested in specialising in. She did; however, maintain a facilitative stance throughout the observed PBL session.

In accordance with the co-existence of epistemological values, studies have highlighted that tutors may find it difficult to teach, or facilitate PBL in a way that is congruent with their espoused

pedagogical values due to structural constraints (Assen et al., 2016; Hallett, 2010), and initially I considered this to be the case with two participants at Forest University; Sylvia and Patrick. They both had extensive experience of PBL prior to working at Forest University. They told stories of their experiences of facilitating PBL in other higher education institutions, developing PBL curricula, and also of providing PBL facilitator training for others. It became apparent that the PBL they facilitated at Forest University varied greatly to their experiences elsewhere. Significantly, they both told stories of facilitating PBL with small groups, distinctly different from the groups of over 100 students at Forest University. Another contrast was the model, or constellation of PBL (Savin-Baden, 2014) that was used, and this was apparent in both interviews and observational data relating to Patrick.

Patrick had contacted me prior to my visit, as he was concerned that his module was 'not really PBL'. He was concerned about wasting my time. We discussed it on the phone and agreed to continue as planned, and this proved to be valuable in building the story of the Forest University site. In our conversation, Patrick told many stories of his experiences of developing and using PBL in a range of academic posts, and I felt in awe of his expertise. The observed year one session was as Patrick had described it in our conversations:

'It's got an element of problem-based learning, in that the problems are set in context. Things that are different from problem-based learning is the problems are not particularly open-ended.'... 'Whereas a problem-based learning course, you might never actually get to the answer, you might just learn something in the process of trying to get the answer. There's formal group work in problem-based learning whereas in this problem course, this problem-solving course, the students are just free to organise themselves how they feel.'

I observed students to mainly work individually in Patrick's session. He didn't routinely approach the students and so only engaged with them when they sought help. This meant that the majority of students in the session had no interaction with Patrick or with the demonstrators. They attended the session, tackled the set of problems given to them, and then left when they had finished. In fact, by the time the session was half-way through, there were only 13 students remaining out of a possible 100.

Whilst Patrick espoused student-centred epistemological values, he claimed that time pressures and the magnitude of change discussed in the previous chapter, resulted in curricular developments not being prioritised. Initially, I empathised with the challenges faced by Patrick, and considered these time pressures to be encroaching on his agency, due to him not being able to teach in ways that were true to his espoused epistemological values. However, following

further analysis of the interview and observational data, I realised that whilst Patrick had extensive experience of PBL and clearly valued it, his stories revealed more about the authoritative roles he had undertaken when developing PBL, than his passion for it. I re-analysed the data and made new connections between stories told and observed.

There is no doubt that to make large-scale changes to the module or course, making them entirely problem-based, would have been a huge undertaking, as discussed in chapter 6. Nonetheless, there were several small, straightforward adaptations, drawing on problem-based principles that could have been implemented with little requirement for time or resources. Firstly, the students could have worked in teams to draw on the social constructivist principles of PBL. Secondly, Patrick could have facilitated more actively, rather than only approaching students when they requested help. This could have been a useful opportunity to encourage them to articulate their reasoning and to think more critically. I therefore concluded that whilst it was likely that Patrick was not enacting his epistemological values, this was not entirely due to structural constraints as there were notable elements of choice.

This was in contrast to Sylvia, who also had extensive experience in using, developing and delivering training in PBL, and was dedicated to making her module as problem-based as possible, within the constraints of large class sizes of over 100 students. As she was not able to facilitate in depth with all teams in her third-year session, Sylvia explained that she would target the groups that she felt needed most support; however, would then provide written feedback for *all* teams on their action plan which they were to submit to her later in the day. Her determination to work in congruence with her espoused epistemological values by encouraging student-centred learning and team work clearly resulted in a significant increase in work for her, and yet went without complaint.

Whilst tutors espoused and enacted epistemological values varied across sites, there was a common theme that emerged from stories relating to the degree of purism of the PBL. These conversations were often about the perceived pedagogical compromises that had been made and were perceived to contaminate the PBL. These conversations often revealed the approach to PBL that participants held in highest regard. Most commonly, participants portrayed the purest PBL to have the least directive style of facilitation, and minimal 'scaffolding' of other resources, such as lectures or written materials. Many participants discussed an elusive, seemingly unattainable, pure PBL which they often yearned for. Interestingly, purism was not a theme in data from River University. Whilst participants acknowledged the additional learning resources for students to engage in, such as lectures or plenaries, they appeared comfortable

with the balance of different ways of learning and there was therefore no sense of aiming for anything different.

At Meadow University, both Hannah and Robert discussed the occupational therapy course becoming less purist over time due to the change in tutors and resulting disparity in personal epistemologies. Hannah explained that the purism had eroded gradually over time, as more and more learning resources had been built into the modules, impacting on the contextual ways of knowing that underpinned her own epistemological values:

'People have wanted to put in more, and more, and more keynote lectures, to the extent where they're not actually keynote lectures anymore, they're content-based lectures to support certain modules...' '...In the undergrad programme on some modules, they've become much more, you know, this is sort of a lecture on the arm, this is a lecture on the knee, this is a lecture on so and so. So, it's not contextualised in terms of a case study or doing it in problem-based learning, it's done in a lecture type... And it's that, I guess, that's what I'm saying about being more purist, it's the contextualising the learning within the case studies that I see as being more pure problem-based learning. Whereas I feel they've added in an awful lot of knowledge-based sort of taught stuff to scaffold the learning of the undergraduate students.'

A similar story was told at Hillside University, by Nicole, who was the PBL coordinator. She suggested that the course there had become 'diluted' over time due to the scaffolding of lectures and the written resources provided. She reflected on whether the course had become more of a 'hybrid' course, and discussed some of the resources which had been added to support the students:

'We give them, now we give them really, really directed learning resources. So, the idea that students go out and find their own resources is a bit of a nonsense. And we... Each module has a set of resources that are paired directly to each learning objective. So, if students didn't go to the PBL, and just read all of the resources, they would still cover the material that they need to cover.'

As mentioned in table 1 earlier, the provision of structured resources is arguably more synonymous with enquiry-based approaches to teaching and learning. As such, it raises questions about whether EBL is perhaps the result of a dilution of PBL, caused by variances in epistemological values.

Conversations at Beach University were in contrast to the pursuit of purism in other sites; however also revealed a high degree of agency in this regard. Karen told me about the ways in which her teaching had changed over time and described how being involved in PBL delivery of the natural sciences course had shaped her approach to teaching and learning in other

courses. She suggested that PBL did not need to be pure and explained that she often used aspects of PBL to supplement other teaching activities.

Similarly, Jade explained PBL as being a 'spectrum', disputing 'pure' PBL as being the ultimate goal. She discussed development work over a period of time at Beach University where students were thought to have had too few resources as scaffolding and then too many. She explained that as students gained confidence and expertise in PBL, they would reduce the scaffolding, thus encouraging more independent ways of knowing over the duration of their course. This was synonymous with observational data from Beach University. The session that I observed in the first semester of their course seemed very didactic and Jade was almost apologetic for the session being 'not very PBL'. However, the second observation was a few months later in the second semester, and the same cohort of students were observed to work a bit more independently in a laboratory. The third observation of the same student cohort was also in semester two, around two months later. Although this session also had a precursory lecture (which I did not observe), the PBL session that followed, demonstrated progression towards a more collaborative and autonomous style of PBL, very much as Jade had described.

Participants discussed their own diverse range of learning experiences, and this notably influenced their epistemological values. For some participants, they were influenced by negative learning experiences that they did not wish to emulate, whilst others were influenced by the experiences that they had found most useful. Most participants in the study had learned in traditional ways, with lectures, and seminars or tutorials. Diane, from River University acknowledged that despite not that believing that teacher-centred learning suited many students, it had been valuable for her. However, she was the only participant whose epistemological values seemed in tension with their own experience. Across the research sites participants told many stories of leaving lecture theatres with little understanding of what had been taught or how to apply it. Beth, from Meadow University, discussed the challenges she experienced in transitioning from university into occupational therapy practice, and how she did not feel the didactic curriculum had prepared her in the way that the PBL curriculum prepares students.

'I think I left university after my three years still very green and not knowing how to apply anything... ..I remember saying to my senior at the time, I don't know what I'm doing, I really have not got a clue what I'm doing. I don't know what OT [occupational therapy] is, I don't know... .. I had this degree, that I just didn't have the confidence that I knew to apply to different situations, or settings, or contexts, or even know where to start really. And I don't see that now with students.'

Nigel, from River University had experienced teacher-centred learning in his undergraduate degree and then PBL in his Master's degree. He suggested that this gave him a good working knowledge of a range of different approaches, enabling him to empathise with the students' experiences. He remembered the challenge in adjusting to a different way of learning, acknowledging that he did not like it at first. However, he came to realise the benefit of working with others and being able to research topics more meticulously:

'You can spend hours and hours reading and researching at home or away, or in the library or whatever, but if you have sometimes a ten or 15-minute conversation with other people who maybe have come up with other bits and pieces, it can be even more useful than that.'

Nonetheless, he remembered his experiences of adapting to PBL, suggesting he would therefore offer a little more support and reassurance to students who were new to PBL.

This ability to empathise with students' experience of PBL was revealed in the stories of all participants who had learned using PBL. Only Mairi from Beach University, Jennie from Meadow University and Nigel from River University had experienced PBL in their undergraduate or master's learning, and all spoke highly of its merits. Whilst they valued it as a method of learning, they were cognisant of some of the challenges they themselves had faced, thus being keen to ensure that their own students had a more positive experience. Mairi and Jennie both discussed their experiences of going wrong in their learning, and not being set back on track by their facilitator. They both expressed their frustration at the time they had spent on the wrong task and explained that in their role as facilitators they made extra efforts to ensure they prevented students from undertaking the wrong learning tasks, by intervening earlier in the process.

7.3 The influence of expertise

Expertise was the focus of many conversations about knowledge and construction of knowledge across the research sites. Much of this related to disciplinary or subject expertise, and participants debated the value of expertise and the ways in which it influenced the PBL sessions. In particular, they spoke about subject expertise within their discipline, and often this was a significant feature of their academic identity, sometimes portraying disciplinary subdivisions within sites.

Subject expertise was portrayed differently across the research sites and related strongly to participants' areas of specialty. In the science sites, subject expertise related strongly to a particular field of science and for many, this subject was also the focus of their research. Across

the other sites, subject expertise mainly related to a specialist field of knowledge within the discipline and had often been acquired through previous work roles. At Meadow University, this related to the clinical area of practice that tutors had worked in prior to embarking on their academic career, such as mental health, or palliative care. This was similar at Hillside University, although the staff group had much more variance in their backgrounds, and therefore expertise was more diverse than other sites. At River University, whilst one participant discussed the impact of research expertise, the stronger theme in participants' stories was subject expertise relating to previous work roles.

At the science sites, Forest and Beach universities, participants discussed the subject knowledge of tutors, and how this shaped the teaching and learning activities within the site. At Forest University, participants discussed tutors having subject knowledge in key fields, and the modules they taught tended to be aligned with this, as well as their research. This had similarities with stories told at Beach University; however, as the modules were interdisciplinary, participants talked more about expertise in relation to particular aspects of a module, rather than the module as a whole. Nonetheless, in the science sites, participants were much more likely to facilitate sessions that focused on their subject expertise. They reported feeling uneasy, or indeed unable to facilitate PBL sessions that related to subject knowledge that they did not have expertise in.

Jade discussed some of the challenges of staffing PBL sessions with facilitators with appropriate subject expertise, acknowledging some of the areas she did not feel confident to facilitate:

'That's because physics is a different subject, it's a different language. And I don't speak physics, bottom line.'

This focus on subject expertise seemed even more apparent at Forest University, although it may have been more evident due to the modular structure of the course, resulting in content being less integrated than at Beach University. Whilst Jasmine and Samuel both discussed their efforts to make connections between the subject areas in their module, their facilitation remained entirely separate, focused on their own subject expertise. They were both reliant on this subject expertise within the session as they imparted more information, giving far more detailed explanations than was observed in any of the other sites.

At all the non-science sites, participants discussed their areas of subject expertise; however, seemed comfortable to facilitate sessions that focused on other areas. At River and Meadow

universities, participants discussed the experience they had gained prior to working in academic roles and this was usually the basis of their expertise, and indeed, their identity. There was more variance at Hillside University as participants had more disparity in their disciplinary backgrounds. As such, their subject expertise was deemed to relate more broadly to their discipline, rather than the more specialist fields of knowledge observed at River and Meadow universities.

At Hillside University, participants frequently discussed the diversity of expertise in the course team which was derived from the range of disciplinary backgrounds. For example, they discussed statisticians, ethicists, or epidemiologists bringing expertise in those subject areas. However, conversations also revealed a theme relating specifically to medical expertise, and this tended to divide the PBL tutors. Nicole, the PBL coordinator, explained the way the course changed as the students progressed through the years. In the first two years of the course, the focus seemed to be more on the acquisition of foundational knowledge such as scientific knowledge. In years three and four, the scenarios became much more clinical, and there was a greater demand for the students to apply their knowledge. The tutors who facilitated the PBL in years three and four were therefore those who were considered to have more medical expertise; for example, they may have been retired medics or may have had experience of working closely with medics in a clinical setting.

Interestingly, whilst several of the participants at Hillside University debated whether subject expertise was an asset or a barrier, no-one voiced any strong concluding opinion. It was evident, however, that the variation in expertise was an ongoing point for discussion within the course team. Nicole explained that all PBL tutors would be 'out of their comfort zone' at times in the sessions, due to not being subject experts in all key areas of content in a scenario. This was due to the course having an integrated curriculum, meaning that each of the trigger scenarios cut across subject areas. Nicole therefore questioned whether a facilitator who was considered a subject expert truly existed at Hillside University. Nonetheless, she explained that in developing the PBL triggers, she would often collaborate with tutors known to have more subject knowledge relating to specific aspects of a scenario.

Both Edith and Paula from Hillside University acknowledged that they may push students for more information in areas where they had subject expertise; however, suggested that it didn't make a notable difference to their overall facilitation. They acknowledged that no facilitator would be an expert in all areas, and they discussed their own experiences of becoming

comfortable with facilitating sessions where they were not considered by students to be the experts.

Edith, who had a clinical background, albeit non-medical, explained that where sessions covered aspects that the students knew she had subject expertise, there was sometimes a greater expectation from the students for her to teach. However, she explained that instead of feeling compelled to impart knowledge relating to subject expertise, she was more inclined to question the students further, to ascertain the depth of their knowledge.

Conversations at Hillside University and River University revealed similarities due to the triggers transcending subject areas. Triggers at River University would not neatly correspond to one field of law, and tutors would therefore have more involvement developing aspects of the triggers according to their field of expertise. Nigel acknowledged the difference that expertise made to his facilitation and to the tutor notes he would be involved in preparing:

'So, sometimes you'll be dealing with a PBL scenario that isn't your area, and you'll be..., not reliant on the notes, but you'll use the notes... Sometimes if it's an issue that I know a lot about, I feel like I can offer more, particularly in normative issues. That's just a natural result. Because what you don't want to do is provide tutor notes that are so vast and comprehensive that they're not really accessible. It just so happens that if there's a normative question about my area, or even a learning outcome about my area, you can maybe do a bit more of a steer. So, 'could this be an issue?', 'might you want to think about this?'. But that's kind of a natural consequence of just everyone having a different specialism really.'

He described this as 'bonus material' although explained that he would not give the students extra information, but instead would steer them towards certain topics that he thought they may need to know in more depth.

Diane and Sandra also discussed being comfortable facilitating sessions at River University, focusing on areas they did not consider themselves to be subject experts. Whilst they acknowledged that expertise allowed facilitators to appreciate some of the subtleties within the triggers, they advocated that the tutor notes that were written by subject experts, were comprehensive enough to give facilitators the guidance required to ensure the students discussed the information relevant to the triggers.

Interestingly, Shona, who had a more senior role than the other participants at River University, brought a new perspective regarding expertise, which she suggested was a key component of her professional identity. Whilst she was a passionate advocate for PBL, she candidly

acknowledged that approaching teaching as an expert gave a degree of status, or symbolic capital (Bourdieu 1986) that PBL facilitation did not:

'So, the temptation to be the expert in the room comes naturally with someone who's chosen a teaching career. That's what people like. It's a status thing. It makes you feel good, people looking to you and having to be the source of knowledge. So, to get rid of all of that and then say, no, I'm just here to facilitate, is quite a cultural change for me, and for other staff members as well, I would say.'

She was open and reflective about the inner debate between the two selves that she entitled 'me as the font of all knowledge' and 'me as facilitator. Nonetheless, she explained that her strong belief in PBL influenced her determination to retain and coordinate the PBL in the law school, in keeping with her epistemological values.

Conversations at Meadow University were comparable, as participants discussed the impact of expertise on their facilitation. Subject expertise in the occupational therapy course team strongly related to tutors' clinical background and was a significant feature of their professional identity. However, they endeavoured to not impart information in PBL sessions that related to their subject expertise. Beth explained that it took over a decade of facilitating PBL for her to feel comfortable to not be the expert in the session, explaining that she felt higher education promoted a culture of expertise being held in high regard. She described feeling under pressure to impart information and to be considered the subject expert by others, illustrating her epistemological values as being in tension with the broader culture at Meadow University. It seemed apparent that Beth was in fact resisting the symbolic capital that might be associated with being an expert, instead prioritising her epistemological values:

'I've probably got that imposter syndrome that you keep hearing about all the time, but I think universities breed it, because I think you're often in meetings or conferences where that is the feel of it, the feel is about expertise and the feel is about letters before or after your name.'

Over time, she reported feeling more comfortable and confident in being ingenuous with the students about the limitations of her knowledge. She discussed her positioning as facilitator within PBL sessions, describing herself as being more of a group member than a group leader. As such, Beth was open to embarking on a learning journey with the students in the group.

One of the barriers Beth mentioned in relation to being a PBL facilitator was her job title as 'lecturer' and how this was also in tension with her epistemological values:

'And I don't like lecturing at all, and that is ironic, isn't it, that my title is lecturer, but I never see myself as a lecturer, and if I could describe myself as anything but a lecturer,

*I would. It's the thing that is linked to my pay, but I hate lecturing, I absolutely despise it, and I didn't really ever come into the job to lecture, but it is part of the job.'... ...'I would rather be a facilitator, I would much rather be a facilitator. I think it makes me more approachable. I think, yes, it might not seem as **expert**, but it is more me.'*

All participants at Meadow University discussed expertise in terms of tutors' clinical backgrounds. Both Jennie and Rose acknowledged that it was more difficult to resist the temptation to input knowledge when a session focused on an area of their expertise. Robert, who had engaged in PBL research, told stories of being asked if it was ethical to withhold knowledge and experience that would be useful for students in PBL sessions. Robert explained that he was happy to have conversations about his knowledge and experiences when students asked specific questions. This may be within or outside of the PBL sessions. Students on the course gained an awareness of the tutors' clinical backgrounds and would sometimes seek them out to ask for some guidance. Robert explained that he felt this demonstrated that the students were able to use tutor expertise as a resource, rather than considering it to undermine the PBL process. Synonymous with conversations I had with Shona from River University, Robert suggested that tutors enjoyed being able to share their experiences with students and these interactions allowed them to do so.

7.4 Stakeholder values

Engagement with stakeholders varied across the research sites, although evidently, the strongest stakeholder voice was that of the students. Participants described feeling a pressure to teach in particular ways, or to teach particular subject knowledge, and these stories revealed the epistemological values of key stakeholder communities, and the degree of influence they had in that site. Despite the epistemological values of participants revealing a preference for transitional, independent and contextual ways of knowing (Baxter Magolda, 1992, p. 30), this was not always synonymous with the values of key stakeholders. Instead, interview and observational data revealed stakeholders' predilection for absolute knowledge, to varying degrees. Some stakeholders were uncomfortable with subjectivity; instead, preferring knowledge that they deemed to be correct, factual, and measurable. Further, conversations with participants also revealed some stakeholders' opinions that certain types of knowledge could not be acquired by student-centred methods and should therefore be delivered didactically.

The epistemological values of students were discussed at Forest, Hillside, River and Beach universities, and revealed a predilection for 'absolute' knowledge, which is described as certain

and discoverable, and is usually 'delivered' by teachers (Baxter Magolda, 1992, p. 30). Further, to varying degrees, some students had an observable trepidation towards subjective knowledge. Across these sites, participants discussed their perceptions of students' desire for facts, and for correct answers. The students struggled with any ambiguity, and were uncomfortable with debate, options, and opinions. This was a strong theme at Forest University, and most participants described students as being more focused on obtaining a correct answer, than understanding the process behind it. Participants discussed these epistemological values being fostered by school learning, claiming that school children learned to value knowledge that could be memorised and repeated in exams, over knowledge that could be understood and applied. As such, they appeared to be a consequence of the pedagogies of absolute knowledge discussed in chapter 5 that had emerged as the disciplinary habitus in teaching and learning in the science subjects.

Jasmine explained that she thought school teaching of science subjects often focused on encouraging children to recognise patterns in questions, and to memorise the step by step 'recipes' to follow to get the highest marks in an exam. Participants at Forest University, therefore, told stories of school learning being about fitting numbers into a given equation and calculating the correct answer, rather than of understanding the equation itself, or knowing when it should be used. This is synonymous with Mastascusa et al. (2011) who explain it as a 'Find the formula' approach to learning (p. 129). At school, if they had not been sure which numbers to fit into the various parts of the equation, they often had the answers in the back of the textbook, allowing them to test out various calculations until one obtained the correct answer. Participants at Forest University frequently referred to this as learning a 'recipe', which was not a metaphor used in any other site. This prior experience of learning science subjects seemed to be a strong influence on students' epistemological values.

Observational data at Forest University also revealed the students' discomfort with uncertain knowledge. In Patrick's session with first year students, one student had requested assistance due to being concerned about his answer. Whilst he had compared his answer with a friend's and they had matched, he was worried that having solved the problem a different way, his answer could not also be correct. Patrick reassured him that both ways of solving the problem were correct, due to there being more than one response to the problem. Similarly, in Jasmine's second year session a few students asked about examinations. Their concern was around questions that required a qualitative response, and they were anxious about not knowing the measure of a correct answer. They wanted to know how much to write, striving for some sort of

quantitative guide to knowing if their response was the correct one. Sylvia explained that she felt this was a trait of engineering students:

*'...and this is the thing that they struggle with; the notion that you can end up with more than a single answer. The other thing and I think it's also very typical in engineering students... because I think in the humanities you will tend to be more analytical or you will try to be thinking more about what the meaning of things are; perhaps create a discourse around it and arguments and so on, but in engineering because everything is pretty much about numbers, then you **must** have the numbers.'*

Interestingly, students' epistemological values were less evident in conversations at Beach University, other than to acknowledge that schools focused more on the content of learning than the process. Nonetheless, there were some clear indications in observational data that students had a similar notion of knowledge being something that can be memorised and repeated.

The first session I had observed, had been with Jade, and was in the first semester of the students' course. This session was split in two halves, with the first half being a lecture about cell structures. During the lecture, only one student appeared to be engaged. She was attentive to everything Jade said and was frantically trying to type as many notes as she could. Other students appeared to make little effort to listen and understand the lecture, and there were no opportunities for discussion or questions. Although they had laptops in front of them, they appeared to be doing other things, and rarely raised their eyes towards Jade or the projector screen. When Jade finished delivering the lecture, she encouraged the students to have a 10-minute break. During this time, the group seemed to descend on the student who had been frantically typing. They reviewed her notes and asked if she was happy to share them with everyone else, claiming she writes better notes than anyone else. They seemed happy that by obtaining these notes, they had received the knowledge that Jade had delivered.

The second half of Jade's session was the PBL session, although students continued to be preoccupied with any information Jade imparted, rather than immersing themselves in collaborative discussions. She encouraged the students to articulate what they knew, and they tended to give very brief answers. When she asked them to explain their reasoning or to expand on their answers, but they tended to decline. At this point Jade would herself provide the explanation she had wanted from the students, and the students would quickly try to capture the details of everything she had said, in their notes.

The students' focus on notetaking rather than reasoning and understanding, indicates similar epistemological values as had been observed at Forest University. There was a sense of

knowledge being *gathered* rather than created or understood, with tutors being regarded as the knowers who would deliver this knowledge. When I observed the same group of students around 6 months later in Mairi's PBL session, their endeavour to capture everything discussed by the tutor appeared unchanged. Whilst the teams did make a little more effort to collaborate when Mairi was not sitting with them, they continued to take copious notes gathering any explanations or guidance she imparted. They did not appear to place any value on the interactions with their peers, and frequently seemed to focus on other things, such as emails, when they were supposed to be collaborating with their teams.

The students' predilection for absolute knowledge was also a strong theme at River and Hillside universities, law and medicine, although there was less focus on memorising and repeating knowledge. Conversations with participants at both sites revealed a disciplinary trait relating to a need to be accurate and correct. At River University, participants spoke about lawyers needing to be accurate in their account of a situation, drawing on the correct laws and guidance. Similarly, in medicine, participants explained the need for doctors to be confident and accurate in their diagnoses of conditions, and the repercussions of being sued for getting things wrong. These notions of graduate roles seemed to impact on the students' epistemological values.

Nigel, from River University, explained that the PBL triggers usually required the students to write a 'normative' learning objective. He said these often started with the word 'should', and they required the students to think more critically about a topic; something they found challenging. Normative learning objectives encouraged the students to question information, consider why someone might have a different opinion, and to think more deeply about the topic. However, Nigel suggested that they usually needed some encouragement to do this, as they preferred questions with direct answers.

This was very similar at Hillside University. It was Paula who first drew my attention to the students' predilection for absolute knowledge, despite being quite new to the medical school staffing:

'A lot of the social sciences stuff they don't like, because they find it too descriptive in a lot of ways. In other ways, they're just more interested in learning about systems and models and operations and processes, than they are interested in actually understanding some of the more sort of nebulous concepts of society and cultural values and reactions and self-identity. And even in some way, models of psychological processes and how it is that people deal with different health related issues.'

Paula explained that in the PBL sessions, the students had a passion for drawing and labelling diagrams that demonstrated the information they had memorised. However, she acknowledged

that some of the stronger students would recognise that the medical role rarely involved explaining the components of a cell, and would instead, be working with human beings. The consequence of this was that facilitators rarely interjected when students were discussing the medical sciences aspects within the sessions but spent more time challenging and questioning the students where topics had the potential for critical discussion.

I was reminded of this conversation with Paula in my observation of Emily's PBL session with third year students. When I introduced myself to the students, I gave them a brief overview of my research and asked if they had any questions or concerns. One student asked, 'Are you doing qualitative research?'. I confirmed I was. At this point the student became wide-eyed, exclaiming, 'Woooooah!' in disbelief. This was not the reaction I had been expecting. I reflected on my own viewpoint of those in medical sciences being dismissive of subjective knowledge due to not considering it valid. I had expected a similar reaction from the students; however, my encounter seemed to indicate that in fact, he considered qualitative inquiry more complex or challenging.

In several observations at Hillside University there were student discussions about the depth of knowledge they required about topics, and a focus on more objective knowledge and how this might be tested in an exam. In Andrew's session the students were somewhat dismissive of topic areas that required broader discussion and debate, and they had open conversations about strategically focusing on knowledge they deemed to be examinable. They were not interested in learning things that they did not think could be tested in their exams.

A further commonality between River and Hillside universities related to the students' school learning experiences influencing their epistemological values. This was different to the focus on memorising and repeating knowledge that had been a theme in the science sites, and instead, related to learning competitively, rather than collaboratively. Paula, from Hillside university acknowledged that many of the medical students had been working towards getting into medical school from their early teens, knowing that there was competition for places. Similarly, Shona, from River University revealed the law school's high entry tariff, explaining that most students who started their course had been used to being 'top dog' at school and found it an unsettling experience to encounter students who might know more than they did. She suggested this new learning culture could be challenging; however, emphasised the importance of students developing their skills in collaborative learning.

There were other stakeholders who featured in conversations across both health courses, and these were clinicians. They were the medical practitioners and occupational therapists who hosted student placements, and they had a strong stakeholder voice within those universities. There were recurring stories about clinicians expressing their disappointment in the anatomy and physiology knowledge of the students, and this was clearly a knowledge area held in high regard. They complained that the students knew less anatomy and physiology than they had known themselves as students. Kirsty, from Hillside University, acknowledged this to some extent during our discussions about the influence of the clinicians. She suggested that the overall content of the medical course had changed over a period of time, as the nature of the job itself had changed. This had resulted in the students being required to learn a broader range of key topics:

'I think they [medics] think that they [students] don't do enough depth in anatomy and physiology compared to what they did. But actually, it's a balance of, well, do they need all that? And I can guarantee that those older clinicians didn't do anything about population health, public health, professionalism, ethics, or certainly very little communication skills.'

Interestingly, anatomy and physiology also featured in stories told at Meadow University, about occupational therapy clinicians. In common with Hillside University, there was a perceptible pressure from stakeholders in clinical practice, for students to be taught more anatomy and physiology. This pressure seemed to be from clinicians who had themselves learned using traditional teacher-centred approaches to learning. Conversations across both health sites suggested that clinicians attributed this lack of anatomy and physiology knowledge to the PBL curriculum of the courses. I found it difficult not to raise an eyebrow whilst listening to these stories due to them echoing stories from my own practice. In both my clinical and my educational roles, I have listened to the pleas of many practitioners for students to be taught more anatomy and physiology, and to their opinions on how old and new teaching and learning activities compared. A theme within these stories, and the stories within the health sites, related to clinicians wanting the students to have similar learning experiences or knowledge that they had encountered during their own training. Clearly, these stories form part of a much bigger narrative in health education, rather than only in relation to PBL. Clinicians had a stronger presence, and therefore voice, in the health courses due to the requirement for students to spend time on clinical placement during their course. However, whilst course teams clearly spent time considering clinicians' opinions, and engaging with them on a range of matters, there was no evidence that their disregard of PBL had any significant impact on the PBL curriculum. Rather, the impact of these conversations was that tutors spent more time trying to manage the

expectations of clinicians, helping them to understand the broader range of topics the students were required to learn, and explaining the benefits of the PBL approach to learning.

By comparison, although external stakeholders had less presence and voice in the delivery of the law course at River University, participants reported that they spoke favourably about the graduates they employed. Conversations revealed that they were appreciative of the graduates' abilities to confidently engage with the teams, and that they were more autonomous in the workplace. Diane told me that some of the students engaged in 'vacation schemes' with law firms. She enjoyed listening to their stories and told me that she found it more rewarding to hear how the students had been commended on their abilities to apply what they had learned, to real work-life scenarios in the workplace, than she was to hear of them achieving a first-class degree on the course.

7.5 Chapter Summary

This chapter focused on the epistemological values that underpin tutor agency, and the influence of this on PBL. Participants' and stakeholders' personal epistemologies shaped the teaching and learning across the research sites and were often influenced by their own learning experiences. Whilst all participants valued PBL, the co-existence of other epistemological values emerged in conversations. As such where participants' espoused epistemological values varied from those in use, this was not always due to overt structural influences.

The value of expertise was discussed and debated across the sites, revealing tensions between identity as a subject expert and epistemological values. Subject expertise was evidently more revered in the science sites, where many participants were observed to give more detailed explanations within sessions and were also less likely to facilitate sessions on other subject areas. In other sites, participants acknowledged that expertise influenced their approach to facilitation. However, there was consensus that this took the form of prompts and guidance, rather than imparting information, despite participants' reported desire to share their knowledge and experiences.

Stakeholders, particularly students, had a strong predilection for absolute ways of knowing, which had often been their own experience of learning. Students in the science courses were most compelled by knowledge being delivered, and therefore required the biggest epistemological shift to embrace PBL.

The next chapter explores the fourth theme, entitled 'Findings: Site Civilisations'.

8 Findings: Site Civilisations

8.1 Introduction

This chapter describes and explains the institutional environment, and the impact of this on the PBL across the research sites. Whilst gathering data at the five sites, I became aware of some of the formal and informal rules and roles, which often seemed unremarkable to the site civilians. These were the customs, practices and environments which sometimes went without question, but which shaped the teaching and learning. There was variance as to which data sets revealed the details of these site civilisations, and of the participants who told stories about them. Participants who had been site civilians the longest were more likely to acknowledge or discuss some of the cultures and customs that impacted on their agency, particularly where they observed them to have changed over time. Further, participants were more likely to discuss where these cultures and customs *impinged* on their pedagogical agency than where they supported it. Whilst the more supportive structures were often unmentioned, they became evident in the observational data.

Swaminathan and Wade (2016) suggest 'The institutional environment is composed of regulations, customs and taken-for-granted norms prevalent in states, societies, professions and organizations, which impinge upon and shape organizational behaviour and outcomes' (p. 1). As such, this chapter comprises three sections, as follows:

- Site civilians and the laws of the land
- Islands of knowledge and pedagogy
- Site settlements

The first section explores some of the key structural rules and roles that influenced tutor agency across the research sites. Much of this relates to what Giddens (1984) refers to as the authoritative resources that generate 'command over persons or actors' (p. 33) The second section explores the ways in which courses were constructed, and the artificial boundaries affecting the ways in which students might perceive, or construct knowledge. The third section, illustrates and discusses the physical environment, which Giddens (1984) explains as the allocative resources comprised of 'objects, goods, or material phenomena' (p. 33) .

8.2 Site civilians and the laws of the land

This section explores some of the customary roles undertaken by site civilians within the research sites, and the rules that governed them. The roles noted across the research sites were often the contractual or administrative positions held by the participants and other tutors, and these seemed to impact on the PBL, either by enabling or impeding it. Where sites had tutors in different roles facilitating the PBL, I endeavoured to recruit a heterogenous sample of participants, and this elicited a depth of information about how these roles interacted, and the degrees of agency synonymous with each role. Similarly, there was a diversity of rules across the research sites, and they varied in formality. Some were explicit, often relating to the standardisation or centralisation of processes. Others were much more tacit, sometimes a *party line* which appeared to be far less perceptible to the site civilians.

The contractual roles undertaken by staff were crucial in shaping the PBL and the most significant role was that of 'PBL tutor'. In the main, PBL tutors had limited or no other teaching and learning responsibilities, and so were not usually involved in the development of the course or in assessment processes. PBL tutors were a significant part of the staff group at Hillside and River universities, where PBL underpinned the curriculum. These roles were comparable across the two sites and were not present in any of the other three sites. As their roles were PBL focused, they seemed more immersed and invested in PBL, and were attentive to its philosophy in our conversations. In the observational data at Hillside and River universities, there were fewer conversations between students and PBL tutors that related to things outside the sessions, such as assessments.

PBL tutors having fewer responsibilities on the course seemed to correlate to them having less agency. Read and Leathwood (2020) suggest that tutors with part-time or temporary contracts often feel less valued than full-time members of staff due to lack of involvement in the planning and development of the course. However, this did not appear to be the case at River University. There was a strong sense of collegiality, respect, and cooperation throughout the staff team, although it was notably more challenging trying to find time to interview the PBL tutors, due to them being heavily timetabled. Tutors in all roles worked together, and PBL tutors' opinions were sought, at least informally. Nonetheless, Shona, who was a senior academic with course leadership responsibilities, explained her concern that PBL tutors had less agency than others. She asserted that a PBL curriculum, in some ways, encroached on all tutor agency due to its student-centred approach. This, she suggested impinged on tutors being able to bring their own voice, experience, and opinions into the classroom. She reported that this was atypical of the

traditions of teaching law, where the curriculum tends to be research-led, affording the staff the opportunity to disseminate their own research in the classroom. For teaching and academic staff, these opportunities were not within the core of the curriculum, but instead were in other parts of the course, perhaps optional modules, or lectures, where they had more autonomy in the pedagogical approach. However, as PBL tutors did not have this range of teaching opportunities, Shona expressed concern about the increased risk of their academic voices being 'fragmented'. The disparity in agency illustrated by Shona is synonymous with the symbolic violence described by Bourdieu (1977). He explains that symbolic violence is where those with more capital, exert power over others in such a way that it is accepted as legitimate and unremarkable.

Whilst there was a similar staffing model in Hillside University, there was conspicuously less sense of collaboration and collegiality. In fact, the two PBL tutors I interviewed seemed quite socially disconnected from the rest of the team. In part, this may have been due to Hillside University being a less collaborative environment. I discuss this further, later in the chapter. Alternatively, it could have been more directly related to the perceived differences in roles. On one occasion I attended one of the PBL meetings which were held several times a year. I was surprised that instead of this meeting being attended by all tutors, with a focus on PBL, it was mainly attended by PBL tutors, with input from two key academic members of staff. The meeting was friendly, although for the majority of the time, communications were fairly unidirectional, with academic staff relaying information to the tutors, encouraging them to adopt a consistent approach to their PBL sessions. In this example, the symbolic violence relating to the distinct roles was much more apparent.

Andrew was an experienced PBL tutor who had an extensive and varied employment background prior to working at Hillside University. He told stories of a self-determined career where he had followed his passions, and this had led him to a PBL tutor role in his semi-retirement. Whilst Andrew was hugely positive about his enjoyment of this, the lack of agency conflicted with the rest of his career narrative. I felt sure this would have been more problematic for him, had the role been a more significant part of his life. He did talk about it, albeit in a very untroubled manner.

'We're classed as contractors, in other words riff-raff really [laughs], by the full-time staff. They call the shots, and we do what we're told. And it's irritating, but frankly at my stage, it doesn't really bother me, but it does bother some people.'

There was a more observable hierarchy of power at Hillside University, and Andrew mentioned that a couple of PBL tutors had left, as they had felt constrained by what seemed to be the rules of how to facilitate. The consistency of approach was reinforced in the meeting I had attended, where PBL tutors had been reminded that they were not permitted to adapt the structure of their PBL sessions in any way.

Forest, Meadow and Beach universities did not have PBL tutor roles, and so, sessions were facilitated by tutors with academic roles, or substantive teaching roles. In the PBL sessions in these sites, students were observed to initiate more discussions about other matters, usually assessments. One interaction which was particularly interesting to observe was in Robert's session at Meadow University. Robert was a longstanding staff member at Meadow University. He discussed the occupational therapy course having a PBL philosophy, but also having a range of pedagogic approaches across modules. Towards the end of the PBL session that I observed, one student asked Robert a direct question about their dissertation. It was a closed question and he therefore responded with a simple answer. The student then seemed to take the opportunity to add a few more questions about the dissertation, which again, Robert answered. Once this pattern of questioning and responding had developed, the student then asked a question relating more directly to the PBL session and Robert responded to this also. I wondered if this had been the first question the student had asked, if Robert might have maintained his more facilitative approach and reflected it back to the group. Instead, Robert seemed to have been drawn into the types of discussions that perhaps would have usually happened within other teaching and learning activities, such as tutorials or supervision.

Whilst participants at Meadow University were undaunted by the need to approach the PBL sessions differently to other teaching and learning sessions, what seemed more challenging, was the *students'* abilities to adapt to the change in teacher-student relationships. Where students have developed a relationship with tutors and established a style of communicating, there is perhaps an expectation that this pre-existing interpersonal dynamic will be replicated across learning activities. Additionally, the multiple roles of the participants at Meadow University, meant they sometimes had to attend meetings which diverted them from their teaching. This resulted in some groups having several different facilitators. As I walked to Robert's PBL session with him, he explained that someone else had covered this group for him the previous week and remarked that sometimes it could be incredibly difficult trying to maintain consistency of facilitator due to the pressures of other commitments.

Although the academics from Meadow University were passionate about PBL, I was cognisant that their roles require them to adapt to different styles of teaching and learning, whereas PBL tutors were more able to maintain a consistent approach. Nicole, who coordinated the PBL curriculum at Hillside University, explained that she felt the model of staffing used there was ideal for a medical school. In our conversations, she compared Hillside University with another medical school that had previously employed PBL tutors to support the delivery of a PBL curriculum. She explained that the other medical school had changed from this model, and instead of using PBL tutors, had asked the academic staff to facilitate the sessions. The academic staff had not wanted to teach in this way, and so the staff and students were all unhappy. Nicole reported that she thought this had impacted on the success of the course. Undoubtedly, across River and Hillside University sites, where PBL tutors were employed, there was a clear PBL process, and PBL tutors had a good understanding of, and commitment to facilitating PBL.

As well as there being rules that were reinforced by the academic staff at Hillside University, there was also a discernible *party line* at River University. This related to the rules of facilitation, and took me some time to become aware of. Tutors spoke passionately about the PBL on the course and how much they valued this as a pedagogical approach. As I became aware of the co-existence of knowledge values, discussed in the previous chapter, I also began to notice some recurring idioms within my conversations with participants at River University. Whilst there was clearly a high degree of consistency in the PBL at River University due to the close-knit staff group, it became apparent that individually voiced opinions seemed to have been indoctrinated by wider social conversations and connections. As mentioned previously, Bourdieu (1998) explains this as *doxa*, which he asserts is when individuals are socialised into the beliefs and values which influence their habitus, without them realising. He argues that 'doxa is a particular point of view, the point of view of the dominant, which presents and imposes itself as a universal point of view' (p. 57). Whilst this *doxa*, or party line could be considered to be an example of symbolic violence, the ways it is indoctrinated is synonymous with what Bourdieu entitled 'gentle violence' due to the subtle process of indoctrination (Wacquant, 1993, p. 3).

An example of the influence of the gentle violence of the party line related to styles of facilitation, and how much input a facilitator should have. Whilst this was a broader topic of conversation across many of the research sites, at River University, participants repeatedly and consistently

used phrases that related to *being quiet* or *not talking* in PBL sessions. In fact, saying very little in a PBL session was commonly cited as a measure of its success.

Roy, a fairly novice PBL tutor, seemed to find this particularly challenging. He was a habitual storyteller, who embellished all our conversations with anecdotes from his career in legal practice. Whilst he advocated enthusiastically for PBL, it was apparent that his natural passion was to impart information, and this resulted in him being a little contradictory in some conversations. He reported that he had received feedback from his peer review, suggesting that he talked too much within the PBL sessions, and he relayed some of the informal conversations with other tutors, which seemed to contain the doxic *party line*:

'when they're talking to you, they'll say the perfect PBL session is where the PBL tutor says little or nothing, and the students do it themselves.'

Interestingly, whilst these idioms were evident in many conversations at River University, the impact of the *party line* was also evident in observational data. Nigel, who had recently commenced as a lecturer at River University, but who had worked as a PBL tutor for several years previously, seemed to make extra efforts not to speak in his session. This resulted in him communicating using incomplete sentences, such as 'genuinely don't know', and 'not so much', whilst further compensating by using exaggerated non-verbal communications such as slow pronounced head nods to indicate that the students' discussions were on track.

Other site rules that had a clear impact on the PBL related to peer observation processes. These were common in stories at River, Hillside, and Meadow universities but varied in their function across the sites. At Meadow University, peer observations were optional, and were usually considered to be a useful learning opportunity for the observer. Participants discussed how helpful it had been to observe sessions facilitated by their peers, as part of their induction. They particularly valued seeing the range of different styles of facilitation across the staff group as this helped them to consider their unique use of self within their own sessions. At River and Hillside universities, peer observation was also used in tutors' induction period to support their learning. However, following induction, tutors were required to engage with a more formalised peer observation process. Initially, I thought the process appeared very similar across the two sites; however, differences became more obvious as I discussed tutors' experiences of these. At Hillside University, I sensed that these were used to monitor PBL facilitation styles and shape consistency, although tutors did report that the feedback was helpful and constructive. At River University the process was portrayed much more as a collaborative learning experience, where tutors valued in equal measure, their learning as the observer, and as the observed.

At River University, there was no hierarchy enacted in the peer observation process. In fact, Roy, as a relatively novice PBL tutor, discussed his anxieties in having to observe the head of department, and give feedback on her facilitation, which he described jovially as 'a bit scary'. Also, despite being an experienced PBL facilitator, Sandra reported that she highly valued the peer observation process; explaining the impact it had on her facilitation style:

'And so, although I might feel fairly confident that what I'm doing is largely going along the right lines, I'm not somebody who doesn't think I can't learn to do it better... or to see a situation and think oh... actually, I had a situation a bit like that, and I wish I'd dealt with it the way this other tutor had done. I'll remember that for next time.'

She explained that there was no competition between the tutors, and they were all keen to continue to learn and improve their facilitation skills.

At Hillside University, the formal peer observation process was not discussed in such depth; however, was also described as a positive learning experience both by those who had observed, and those who had been observed. Andrew stated that the peer observation process had been suspended for a considerable time but had recently resumed. He suggested the process had been reinstated after a 'debacle about how you should conduct feedback sessions', and this made the peer observation process appear more supervisory in nature. Nonetheless, Andrew reported his feedback as 'critical, but constructive'. Interestingly, there was no mention in any of the conversations of PBL tutors providing feedback to any academic tutors, as had happened at River University, and I wondered if there was more of a *top-down* approach in the process here. Overall, whilst the *party lines* that arose from informal discussions or peer observations perhaps impinged on tutor agency at the medical and law schools at Hillside and River universities, they notably aided the consistency of facilitator approaches and seemed to support the overall design of the course.

The most influential roles across the research sites were those that had a direct responsibility for the day-to-day delivery of the PBL, although these were not commonplace. People in these roles were often the curators of the PBL curriculum, and their roles and names were evident in many stories relating to the protection and shaping of the PBL design in that site. This role was most obvious at Hillside University, as the role explicitly encompassed PBL leadership responsibilities. However, at River and Beach universities, participants told stories of the course leaders being fundamental to the ongoing success of the course and the PBL design. These two sites were therefore also considered to have PBL curators, although these curator roles were less formalised.

At Beach University, this curator role was more straightforward than in the other two sites, as the course team was small and had a shared passion for PBL. As such, there was already a consistent approach to PBL within the team with regular staff meetings in place. Jade, the course leader was mentioned in many stories about the history of the course. She had been passionate about the course itself and about the PBL philosophy, and other participants portrayed a respect for her endeavour to replace the previous course which had been terminated. Jade discussed some of the work she had done to develop the PBL since she started. Initially, there was a sense that the students weren't learning well. They were 'drifting through' and didn't seem to be achieving the standard of work they really needed to. More effort was put into developing a scaffolding of resources, as well as more consideration about the expertise or experience needed to facilitate PBL on the course. She acknowledged it took some time to get the balance right between the amount that the students were required to learn, and their levels of stress in doing so. Designing the new programme had given the opportunity to consider the PBL throughout the course, and Jade was confident that this had resulted in a better overall balance for the students.

Interestingly, Gary mentioned that he had previously held a more formal development role at Beach University, although this had not been within the Natural Sciences course. The role was to lead on the development of PBL, and he explained he had applied for it despite not having extensive PBL knowledge. Nonetheless, he quickly developed a passion for PBL, and the role allowed him to apply for external funding, which he was awarded on three separate occasions to support the development of PBL modules. This role had been crucial in developing much of the PBL in the science courses at Beach University.

At Hillside and River universities, the staff team was much larger and therefore the curators had more of a coordinator role across the course team. They had key responsibilities in shaping the design of the PBL, training new facilitators, and ensuring quality and consistency across the curriculum. This was a significant task and my conversations with Nicole at Hillside University highlighted this. Nicole had direct responsibility for the coordination of the PBL curriculum in the medical school, and this seemed to be a huge undertaking. In all my interactions with Nicole, she seemed somewhat hurried, spoke in incomplete sentences, and was always super-attentive to the clock. I got the impression that her diary was tightly timetabled, with little margin for error. Nonetheless, her passion for PBL meant that she was enthusiastic about PBL research, and therefore she was keen to participate in my study.

Nicole coordinated the PBL across the medical curriculum and had a responsibility for the quality assurance processes, as well as the operational processes, such as training of new tutors, and the development of triggers and course documents. Due to a PBL tutor recruitment drive, I was unable to observe one of Nicole's sessions as she had so many new members of staff shadowing her. It was an extensive role; however, the impact on the PBL curriculum was observable, and another participant had mentioned how much less coordinated things had felt when Nicole had been on a sabbatical.

Tutors at Hillside University had individual nuances in their styles of facilitation; however, the four sessions I observed remained largely comparable. The sessions followed similar patterns and used the same key areas of focus for the students to consider when formulating their learning outcomes. This promoted a consistent and familiar student experience in the sessions, and undoubtedly, this was in part due to the curator role.

One topic of conversation which seemed to be more prevalent in my interviews with more experienced tutors, related to a reduction in pedagogical agency due to standardised or centralised processes across the site. Whilst the curator roles standardised some aspects of the PBL delivery within the course, these tended to be supportive of the PBL curriculum. In contrast, the standardised and centralised processes were the university-wide laws of the land that often seemed more inclined to present challenges.

One such example was the admissions process. With the exception of Forest University, participants at all sites discussed the importance of PBL being a fundamental element of admissions processes. They expressed the importance of ensuring a good 'fit' between prospective students' learning preferences and the pedagogical philosophy of the course. They discussed activities such as mini-PBL sessions in the interviews, and opportunities for prospective students to discuss the teaching and learning with current students or alumni. The aim of tailoring the admissions processes around PBL was two-fold. Firstly, it allowed course tutors to assess a prospective student's ability to engage in collaborative learning activities, and secondly, it allowed prospective students to gain insights into the pedagogical approach of the course, and to consider whether it suited their learning style. Despite these efforts, participants from each of these research sites told stories of students who had found the course incredibly difficult due to the PBL being contra to their preferred approach to learning.

Hannah, an experienced academic from Meadow University, explained she had seen several students embark on the occupational therapy course there, when PBL was in fact, not their

preferred approach to learning. This had then had a negative impact on them, other students, and on the tutors. She suggested that they may have had other motivations to study at Meadow University and had therefore biased their responses to questions about PBL in the admissions interviews, giving what they perceived to be the best answer, rather than answering more genuinely. Nonetheless, the historical PBL exercises within the admissions process had been useful. Robert, who was another experienced academic, expressed frustration at how this had changed:

'The interview process used to be... We give them a situation. We give them a scenario. They would discuss this in a group and then we get them to reflect on that. We get them to write a little reflection on that, all that will be part of the process. The whole basis of the interview would be about not just why they want to be an occupational therapist but, crucially, how are you going to learn on this course? We still do a little bit of that...' '...but it's been cut down. To fit with what's standardised within the school. Which frustrates me.'

In contrast, at River University, the admissions process had not been standardised, and there was a strong sense of agency within the course team, allowing them to tailor open days and admissions events to focus on PBL. Shona asserted that encouraging prospective students to consider whether a collaborative style of learning was best for them, contributed to their low dropout rate on their course.

A regular story to emerge in conversations was about the centralisation of timetabling, and the impact this had on the PBL curriculum. Again, these stories were more apparent in conversations with more experienced tutors, who spoke of an era when course teams had a greater degree of agency in such matters. The influence course teams had on the timetabling of their teaching and learning varied across the sites. The course team at Hillside University seemed to have the most influence on their timetable, with sessions happening on named days of the week, following a crucial pattern of delivery which wasn't necessarily the same each week. Furthermore, Nicole discussed her efforts in negotiating that, where possible, students had an entire day untimetabled, so that they could focus on their self-directed learning.

Students' timetables were also a focus of my conversation with Jasmine, at Forest University, and she discussed the impact on student learning when sessions were timetabled back-to-back, or when there were gaps in the timetable which were not long enough to be useful study time. This did not seem to be something she was able to influence. She did, however, negotiate some of the rooms which the sessions were timetabled into, stating that in the past they had to contend with PBL sessions being timetabled into raked lecture theatres. She described open

discussions with timetabling personnel; however, interestingly, suggested they had been 'lucky' to have been timetabled into their chosen space:

'Because at the minute we're just fitting in with when a room's available, when are staff available..., and the drivers are much more about people's convenience rather than what's educationally beneficial for our students.'... ...'but it's very important to how we run the sessions, where we are, and what we have. And I think that is something that we're realising as a department. We've realised it for a few years now, but it gives us a lot of tension with central university units because we very often are going back and saying that's not adequate. That's not a good room. And the students are very ready to complain to us.'

Conversations were similar at Beach University, where participants also mentioned being able to negotiate their PBL sessions out of raked lecture theatres and into level, more flexible spaces. Mairi discussed the increasing constraints of centralised timetabling processes, acknowledging the course team had less agency in relation to the design of the timetable than they had previously. However, she did acknowledge that they perhaps had more ability to negotiate some aspects of their timetable due to being a small cohort, as she reported that it was the larger spaces that were more challenging to access. Nonetheless, she explained that the course team were no longer able to 'fine tune' the timetables. Previously, Mairi suggested, the course team had been able to consider the best timing of sessions for the students; how much time they needed between sessions to allow students to explore the content; and could also timetable sessions in a way that maximised the students' abilities to productively utilise the gaps between sessions. Unfortunately, centralised timetabling processes had limited the course team's autonomy in doing this now.

At both River and Meadow universities the PBL sessions were timetabled in parallel, and this was advantageous in allowing timely peer discussions between the facilitators. At River University, the session timings allowed a short break between the sessions. This enabled the facilitators to briefly reflect and collaborate, before the same session was repeated with another group of students. Facilitators at Meadow University also did this; however, the timetabling processes were reported as being less supportive than they had been in the past. Robert explained that the sessions had previously been timetabled with a 30-minute break between them. This had afforded the facilitators the opportunity to meet between the sessions, and to reflect, and collaborate about how the session had run. The same PBL session was then repeated with a different group of students, and the discussions would inform how tutors then approached it. However, timetabling structures had changed, resulting in PBL sessions running back-to-back. Consequently, as there was no longer a gap, facilitators had to leave the first

session 15 minutes early, and arrive 15 minutes late to the second session, to accommodate these reflective discussions.

8.3 Islands of knowledge and pedagogy

Across the research sites, there were two educational disconnects that punctuated conversations, and impacted on the PBL. Firstly, there was a disconnect that related to students' abilities to construct and synthesise knowledge and this was often the result of artificial boundaries that compartmentalised students' learning into islands of knowledge, inhibiting their ability to make connections between subjects. These artificial boundaries were often imposed by the structures of the curriculum such as subject areas, or modular learning. Secondly, there was a disconnect that related to pedagogy and this related to the course itself being a pedagogical island within a wider system more inclined towards other approaches to teaching and learning. In other words, where the habitus of the course was in tension with the habitus of the university. These pedagogical islands were more commonly discussed by the participants with more extensive experience in higher education, as these conversations revealed more contextual and historical stories.

Across all research sites, participants discussed 'modules', although these came in many forms. Some modules were short and intense, such as at Hillside University, where each module had one trigger session, followed by two feedback sessions in the following week. Others were more enduring, such as at Meadow University, where each module spanned most of the semester, with weekly PBL sessions and sometimes a lecture to support it. These modules were the jigsaw pieces in an overall learning experience, and although their designs did not appear to impact greatly on the PBL, their assessments did. Where modules were assessed separately, students seemed to find it more difficult to connect their knowledge, thus resulting in disparate islands of knowledge.

At Forest, Beach, and Meadow universities, the modules had assessments attached to them, whereas at River and Hillside universities, the assessments transcended modules, such as end of year exams. Where assessments were module-specific, participants told stories of some compartmentalisation of students' learning. They discussed the students struggling to build on previous knowledge in new modules, and this affected their engagement in PBL sessions, as they failed to engage in discussions relating to prior knowledge. Further, when students had completed an assessment, they often failed to recognise that this knowledge might be the foundation for their learning in future modules. Jasmine explained that she saw this amongst

the chemical engineering students at Forest University, and explained that she considered the modular system to engender islands of knowledge:

'And I think that's a problem a lot of our students have. They just see it as a rite of passage or a torturous path to get through, instead of... you know... how does this link to this much bigger picture that engineering is, and where does it slot in to maybe make a link between something else that I've learned, or actually that step up to the next level.'

Once an exam was completed, the students considered that topic to be complete and the knowledge no longer required. Jasmine explained that students sometimes appeared surprised that subjects reappeared in other modules when they had already 'done that'.

This compartmentalisation of knowledge at Forest University seemed to be further compounded by the process of changing from a framework of 10 credit modules to one of 20 credit modules, and this had resulted in what Jasmine described as a 'poor marriage' of subjects in some modules. Even where efforts were made to connect the subject areas, some students were observed to strategically target their learning, with a view to this carrying them through the exam overall. Samuel explained the problem:

'Another thing that happens is compensation between both halves of the course [module]. And I won't say that's the norm but there have been cases of students who have passed with, for example, marks below 5% in my part of the module and then they got 60% in Jasmine's part. So, they clearly, strategically studied Jasmine's half of the module, completely neglected my part of the module and they ended up scraping through. And we've thought about how to handle that kind of situation and the only real way of doing it I think is to decouple the two and make it into separate courses which are assessed separately.'

I was interested that the solution Samuel had considered, was not to further integrate the two subjects within the PBL sessions, but to separate the assessments, and this is an indication of the ongoing delineation of subject knowledge within the course. The module was clearly still considered to be two 'halves' rather than a whole, much like two neighbouring islands of knowledge. Samuel stated that they did not want to separate the assessments after their sustained efforts to integrate the subjects over a number of years. However, as mentioned in chapter 7, Samuel and Jasmine still facilitated separately in their PBL session, each focusing on their distinct areas of expertise, using different sets of problems.

At Beach, River and Hillside universities, participants discussed their determined efforts to limit the development of islands of knowledge. Participants at Beach University discussed the integrated curriculum, and the learning experiences that attempted to break down artificial boundaries of subject knowledge. Mairi discussed the lack of a 'hard border' between the single

science subjects, although still discussed students feeling less confident about maths and physics. Interestingly, these two subjects were mentioned more distinctively in conversations with all participants at Beach University, and with some at Forest University. Whilst modules were assessed individually at Beach University, the students were assessed on an integrated application of knowledge, rather than it being separate in an exam, and the PBL triggers were developed with this aim of integrating learning. At Hillside and River universities, curators, Nicole and Shona, discussed the modules cutting across subject areas, endeavouring to make them more realistic of working life. They suggested that the integrated design was incredibly challenging, and it sometimes caused PBL facilitators to feel out of their comfort zone, due to sessions covering a broader range of subjects. However, they both asserted that it allowed the students to learn in a more holistic way. Nicole explained that in current health practice, patients would rarely be treated purely in a medical way. Issues such as the patient's economic situation or their social situation were also important to consider simultaneously, and therefore the integrated curriculum encouraged the students to do this.

In contrast, at Meadow University, Robert discussed the challenges of a modular curriculum structure, and the resulting islands of knowledge:

'At some point, we became modular. Modular systems are really good for people who want to pick and mix degrees. They want to do a bit of politics and psychology. They pick modules from whatever they want. But sometimes the modules, I think, on the course are a bit artificial in how we split them up... So do a module on meaningful occupation, a module on approaches and interventions. Sometimes they don't transfer that knowledge across. That's a shame, because with PBL you want them to do that.'

Kirsty, who was an experienced PBL facilitator at Hillside University, and someone who advocated for adhering to a consistent process, reported that discussions of prior knowledge often met student resistance. However, this did not relate to the modular framework of the curriculum, and instead, seemed to relate to students' islands of knowledge. She explained that students simply did not value these discussions, and therefore considered that their time would be better spent researching the learning objectives:

'I think we have quite a hard job selling the objective setting sessions and activation of prior learning because they don't care about that. They just want the objectives to go away and learn. It's very difficult to try and encourage them that it's educationally based, there's lots of research evidence about understanding where you are, so that you can then go on. And creating that shared understanding and working out where everybody's at, and what they have to learn in order to actually get to what the new objectives are from their prior learning. They're not keen on activation of prior knowledge. It's something that I find that often we struggle with.'

Schmidt et al. (2019) stress the value of students discussing their prior knowledge of a problem, even if their knowledge only extends to what might be considered common sense. These group discussions, where students are encouraged to elaborate on prior knowledge have a positive effect on their analysis of the problem, and subsequent learning (Schmidt et al., 2019).

The observational data in Kirsty's session reflected our conversation, and she had to work much harder to facilitate discussions in her objective-setting session than other participants had been observed to in their feedback sessions, despite Kirsty's session being an experienced group of third year students. She asked open and closed questions, trying to generate conversations that connected to prior knowledge, yet students avoided eye contact. Whilst Kirsty had noticed this resistance at Hillside University, overall, the students here still engaged exceptionally well in the PBL sessions. The discretisation of knowledge appeared to be more limited both here and at River University, where curricula were integrated, and the assessments transcended the boundaries of modules.

Conversations with some participants portrayed their course as being or having pedagogical islands. This was when the pedagogy of the course seemed to be in tension with the wider system, or where the pedagogical approach within the course appeared to be more piecemeal, made up of a range of different pedagogical approaches. These stories were most prominent at Beach and Meadow universities. Participants from both these sites told stories of the university not always understanding or supporting their approach to teaching and learning and this was a significant challenge.

At Beach University, participants acknowledged a lack of organisational understanding of their approach to teaching and learning; however, suggested this had limited impact due to the small numbers of students on the course. Gary suggested that the PBL approach on the natural sciences course was 'tolerated', rather than supported by the university, and I remember feeling quite frustrated at the hypocrisy of this. The university had its own prestigious teaching award for those who were considered to deliver exceptional practice and only around six of these were awarded each year. Exceptionally in a university of almost 2000 academic staff, all four participants at Beach University, had won this teaching award and yet their approach to teaching and learning was described as 'tolerated'. The course team had also won national teaching awards, both as a team, and one individually, for their innovative work in developing an integrated PBL curriculum. There was a conspicuous irony in the original course being withdrawn between the call for nominations, and the course team winning and receiving this national award.

At Meadow University, Beth, who had worked there for over a decade, described the occupational therapy teaching philosophy as a 'square peg in a round hole'. Again, there was an irony in the stories she told, as she recounted attending a university organised training session that advocated for PBL, then described spending a significant amount of time having to 'fight for' this very approach within a university system that she suggested neither understood it nor supported it. She told me about the course review process, stating that she had been asked to remove all mention of PBL from the course documentation. She detailed her frustrations of working in a system that she suggested valued expertise, letters before and after staff names, and those who impart knowledge rather than facilitate learning:

'I think there's a tide at the moment in higher education, that we're fighting against in justifying what is seen as a more complex, and potentially less cost-effective approach to learning and teaching.'

I felt saddened that someone with the passion for teaching and learning that Beth clearly had, could appear so battle-weary from repeatedly explaining, justifying, and defending their longstanding PBL approach. I had similar conversations with Robert, also at Meadow University. He discussed the change to the educational philosophy of the course, having merged into a bigger department, and becoming a pedagogical island within that:

'It's changed because we're less in control of our destiny. We are part of a much more bureaucratic organisation. A school of healthcare where everything tries to be standardised.' 'Other programmes do not use problem-based learning within the school. I don't think they really understand it sometimes. So, we have to almost fit in with what's going on with the school.'

From conversations with longstanding members of the occupational therapy team it was apparent that the course had always been a pedagogical island at Meadow University; however the standardisation of processes had clearly exemplified this.

8.4 Site settlements

One aspect of the institutional environment that seemed to have a significant impact on the PBL across the sites, was the physical environment. Mainly this related to the design of the classrooms; however, as the study progressed, it became increasingly apparent that staff working environments were also influential.

Participants across sites told stories about the challenges they had experienced in accessing appropriate rooms with adequate resources. They discussed trying to facilitate groups in raked lecture theatres, not having enough space for students to write on whiteboards or having rooms

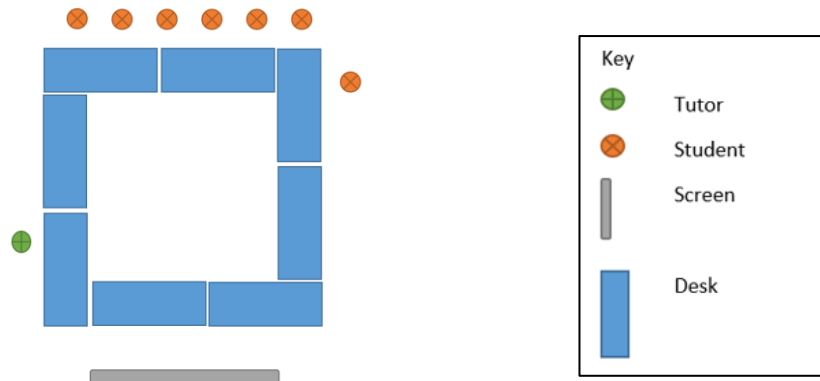
that were too small for the facilitator to move between the groups. Mairi, from Beach University, even discussed having had two different year groups timetabled into the same classroom. The result of this was what she described as the 'meerkat' effect, where students would attend to the conversations in the other group, whilst being distracted from the discussions in their own group.

Mairi suggested that classrooms tended to be considered in terms of the numbers of students they could accommodate instead of the practicality of that space, although suggested that the teaching spaces were improving overall. She reported that the university was starting to use more flexible teaching spaces, where the furniture could be moved around to be configured in whatever style suited the teaching. Whilst Mairi was in support of this, she did report that the students needed encouragement to move the tables and chairs when they arrived, as they preferred to sit down wherever the furniture was positioned, regardless of how impractical it might be.

Mairi discussed a preference for square classrooms rather than oblong classrooms, as she explained that this enabled her to move between the groups easier. Whilst this was a minor point in our conversations, the physical shape of the classroom was noted to impact on the PBL in other sites. River, Hillside and Meadow universities had similar class numbers, but different classroom spaces. The impact of this wasn't really discussed by participants but was evident in observational data.

At Hillside University, the classrooms were usually oversized for the groups of up to eight students. In most of the observations, the sessions felt spacious yet unproblematic, but there was a notable impact on student-student interactions and student-teacher interactions. Figure 11 portrays Paula's PBL session with first year students where they had predominantly positioned themselves along one edge of the quadrangle of tables.

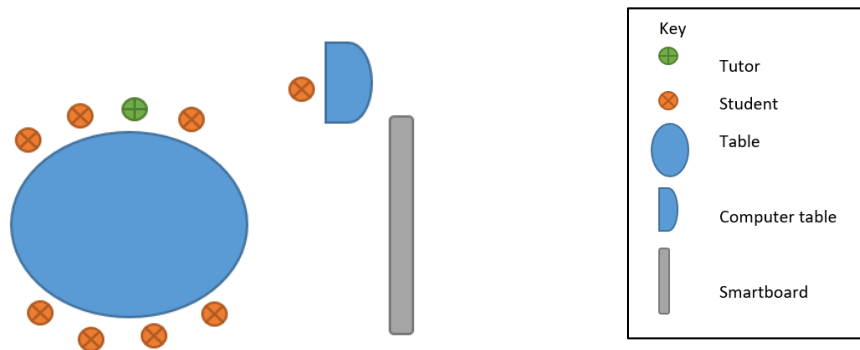
Figure 11: Paula's PBL session with year 1 students at Hillside University



This meant that when Paula arrived, she had little option of sitting amongst the students, resulting in her presence being somewhat more conspicuous. The classroom was spacious around the quadrangle of tables, and this would have allowed the students to move them into a more useful format if they had wanted to. The students did interact with each other, despite sitting in an almost straight line. However, there were two students who engaged very little, and I wondered whether this would have improved with a seating arrangement that encouraged more eye contact amongst the students.

At River University, the PBL rooms had been custom designed when the building was built and is portrayed in figure 12 of Sandra's second year session.

Figure 12: Sandra's PBL session with year 2 students at River University



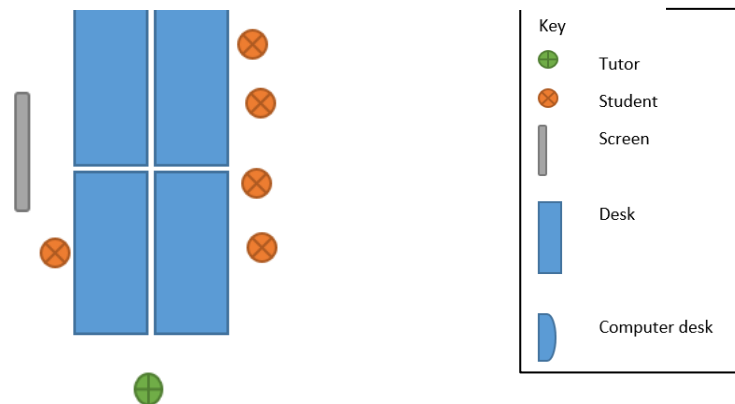
Although the classrooms were an unremarkable shape, instead of more typical oblong desks, there was one large oval meeting table in the middle. This seemed to draw the group together and encouraged collaboration by giving a business-like feel to the room. The students were able to have good eye contact with everyone around the table. The projector screen was at one end of the room and students also had good visibility of this. Facilitators mainly sat amongst the students, with only Nigel opting to take the 'head of the table' position that the students had left for him.

I remember marvelling at the PBL rooms, whilst being cognisant that none of the participants discussed how they supported their PBL. Perhaps, cynically, I had been quick to consider the advantage of it being difficult for centralised timetabling systems to shoehorn in large numbers of students; however, this was not identified by participants.

Smart technologies also supported the students' collaborative working at River University. As the group discussions generated ideas, the scribe would type them up and the group could see these on the projector screen. Once they had a list of ideas, the scribe swapped from using the computer, to writing on the smartboard. This allowed the students to draw mind maps; colouring, categorising, and highlighting areas as they saw fit. When they were finished, the scribe clicked to convert the document into a file which was then saved into a team folder that all students had access to. Although the scribe sometimes needed reminders how to use the smart board, these prompts always came from the students and not the facilitators, and I wondered if this was due to the facilitators not actually using them.

At Meadow University, all three of my observations were in the same corridor of one building, in identical rooms, portrayed in figure 13 of Rose's first year session.

Figure 13: Rose's PBL session with year 1 students at Meadow University



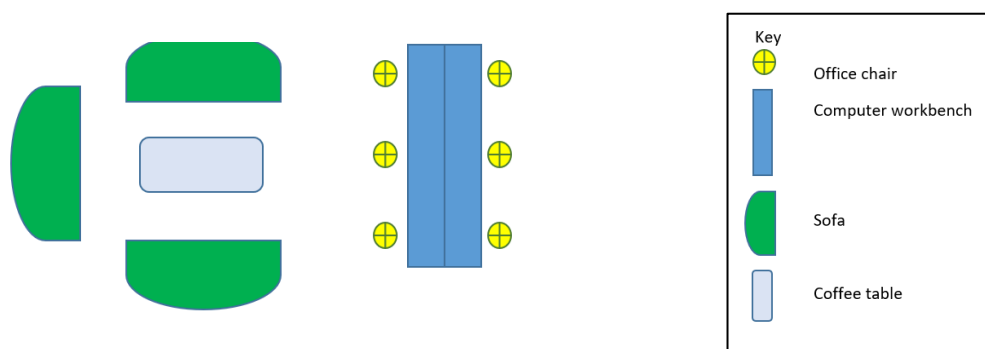
Whilst they accommodated the students adequately, there was little room for manoeuvre once students were seated. Therefore, those who arrived last to the session either had to sit nearest the door, or squeeze through the small gap between the backs of chairs and the wall. As the facilitators tended to be last, or almost last to enter the room, they usually ended up sitting on the short end of the table adopting a 'head of table' position. Whilst Robert sat on the long edge of the desk layout in his session, all the students had sat on the opposite side of the table, therefore, his ability to get amongst the group remained limited. Students at Meadow University understandably tended to cluster down one side of the room due to the projector screen being on one long edge. As the room was so small, it was difficult for the students who had their backs to the projector to turn around to read anything that was displayed.

Initially I had considered the rooms at River and Meadow universities to be very similar. However, after further analysis, I realised that small differences in the physical environment had an impact on the dynamics in the groups. The longer, thin shape of the classroom at Meadow University, combined with the rectangular seating arrangement, seemed to encourage students to split into subgroups occasionally. I was particularly aware of this when I observed Robert's session. Two students who were sitting at the short end of the rectangle, next to the computer desk, were often observed to talk quietly to each other. Initially, I wondered if they were talking about things less relevant to the session. However, later in the session I realised that their discussions seemed to be in parallel with the rest of the group, happening simultaneously, rather than collaborating more fully. Later in the same session, the group then split into three smaller groups: There were two students at each end having discussions, and then three students in the middle having discussions. Whilst all discussions were relevant in their content,

the challenges of their seating arrangement seemed to make it more difficult for them to respond to non-verbal cues. As they were often seated in a row facing the projector screen, they could not maintain eye contact with each other in the same way as the students at River University, seated around an oval table.

Another significant aspect of the physical environment that impacted on the PBL was the design of workspaces for tutors. At River University there was a communal, open-plan PBL tutors' area where all PBL tutors were based. Initially, I felt a bit sorry for the PBL tutors as other tutors were based in shared or individual offices. I viewed the disparity of workspace as an indication of a perceived lower status and impermanency of PBL tutors. However, as I spent more time at River University, I re-evaluated this, instead seeing it as the thriving social hub of a PBL community of practice. In fact, I started to feel a bit sorry for tutors who had their own offices, in case they felt excluded. The PBL tutors' area consisted of around six computer stations, three sofas and a coffee table as portrayed in figure 14 below.

Figure 14: River University PBL tutors' area



In the early stages of participant recruitment at River University, I spent time here, chatting with the tutors. There was a sense of energy as they all arrived together, reflected on the previous session, engaged in social conversations, and then left to facilitate the next session. An observable silence followed.

As with the oval tables in the PBL seminar rooms, the layout of the furniture promoted collaboration and engagement. It seemed to draw other tutors from their offices and was an informal social learning space for the whole team. If the opportunities for professional reflection or social engagement didn't entice people in, then the communal food might. This was where the 'help yourself' chocolates were found, and the souvenir snacks brought back from holidays. As the timing of the PBL sessions was standardised, other tutors knew when the PBL tutors'

area would be empty and when it would be a hive of activity, and they took the opportunity to make arrangements, or share information.

The PBL tutors' area was the heart of the PBL community at River University and it impacted on the consistency of the PBL in this site. Tutors talked repeatedly about how they valued the formal and informal peer support at River University, and this was observable in the collaborative space. Sandra, who was based in a shared office near the PBL tutors' area, discussed how much she valued the regular informal conversations in the communal space:

'As you know, we have an area all the tutors gather and quite often then I'll say 'oh I had ever such a lot of trouble getting them to the outcome' or 'what did your class come up with for outcome three?' And 'how did you get them to unpick that?' So, we share best practice as well regularly.'

I gathered data at Hillside University when I had almost completed my data gathering at River University. As the models of staffing and timetabling were so similar, I had unconsciously assumed that Hillside University would have a similar PBL community of practice. However, the physical environment was entirely different, and this resulted in contact between tutors being much more limited. Andrew explained that he valued the PBL meetings that were held termly, but suggested they were poorly attended, particularly by academic tutors:

'But it's a sort of community, a loose community I suppose. You can run the risk of operating in complete isolation if you're a contractor [PBL tutor] because you come in, do it [PBL session], and go out. And you might not even bump into anybody else. And there's no time to talk really in between. There's a fair bit of to-ing and fro-ing on email, obviously, and covering for other people. I've covered a number of sessions for someone this year, and I've never met her. I wouldn't know her if I tripped over her, but she's really nice. And she's covered for one or two of mine as well, but as I say, I don't know her.'

This was entirely contrary to the nature of the community of practice at River University, and the physical design of the workplace appeared to impact this greatly.

8.5 Chapter summary

This chapter explored the impact of the institutional environment on the PBL across the research sites. Participants discussed the roles and rules that shaped the PBL across the site. Where sites had a curator role and/or PBL tutor roles, this engendered a more consistent approach to PBL, although impinged more on tutor agency. The structural constraints brought about by the centralisation and standardisation of processes also impacted on tutor agency and participants discussed some of the battles they fought to maintain their PBL design, particularly those with more longstanding experience of working at that site.

Participants spoke of the islands of knowledge and of pedagogy that were formed, posing challenges within the PBL process. Students were reported as having a tendency to discretise subject knowledge rather than construct it, and this was compounded by modular structures within some of the courses. They were notably more able to construct knowledge where course content was integrated, and where assessments transcended the structural boundaries of modules.

Whilst it was usually only discussed where it posed difficulties, the physical environment shaped the PBL across the sites. Student interactions were noted to change, with the emergence of subgroups where environments did not engender collaboration. Collaborative workspaces were found to be crucial in supporting facilitator reflection, and in engendering a sense of community.

The next chapter, entitled 'Discussion: Towards an Ecology of PBL' begins with a summary of the findings, and provides a table mapping the four main themes across the five sites. By drawing on these findings, and discussing them in relation to existing scholarly literature, it presents a new model of structural influence that conceptualises the interplay between structure and agency in tutor approaches to facilitating PBL.

9 Discussion – Towards an Ecology of PBL

9.1 Introduction

The four preceding chapters presented the thematic analysis of the influences on tutor approaches to facilitating PBL. They were structured around four themes: namely, Signature Pedagogies, The Law of Curriculum Inertia, Epistemological Values, and Site Civilisations. Signature Pedagogies explored the impact of disciplinary differences on the teaching and learning, revealing some commonalities and differences across the research sites. It explained where tutors were influenced by disciplinary habitus, and by intended graduate destinations and skills, illustrating variances in aims regarding students *knowing* or *being* within their respective disciplines. Next, The Law of Curriculum Inertia explained the impact of various catalysts of, and resistance to change on the PBL across the sites. It explored some of the structural and agentic forces of change, such as the turnover of staff and the resulting changes in personal epistemologies in the course teams; and the increase in work pressures that limited the time for pedagogical discussions. Further, it identified some of the wonky wheels of PBL curriculum development, revealing the nature of some key resistance and challenges that caused inertia in curriculum development. Epistemological Values explained the personal and collective epistemologies that shaped the PBL across the research sites. It illustrated the personal epistemologies of the participants, exploring espoused theories and those in use. Further, it identified some of the key stakeholders; in particular, the students, and revealed the knowledge and ways of knowing that were found to impact on the PBL. Finally, Site Civilisations illustrated the impact of institutional structures on the PBL across the research sites. It explored the influence of customs, practices, and the physical environment, which were often unique to individual research sites. These cultural ways of life revealed the formal and informal rules that shaped the PBL, and yet, were often unremarkable to the site civilians.

Table 10 maps the impact of each of the four themes across the research sites.

Table 11: Themes mapped across the research sites

	<i>Impact of Signature Pedagogies</i>	<i>Impact of The Law of Curriculum Inertia</i>	<i>Impact of Epistemological Values</i>	<i>Impact of Site Civilisations</i>
<p>Forest University:</p> <p>Chemical Engineering</p>	<p>Strong disciplinary traditions relating to teacher-centred methods of teaching and learning in science subjects.</p> <p>PBL underpinned by the following pedagogies:</p> <ul style="list-style-type: none"> • Pedagogies of reasoning • Pedagogies of absolute knowledge 	<p>Significant curriculum inertia due to significance of change. Student resistance and university response to student complaints cause further inertia. Tutors don't always feel safe to innovate.</p> <p>Subject knowledge static in nature and so development less integral to day-to-day practice.</p>	<p>Facilitators mainly involved in PBL relating to own areas of subject expertise.</p> <p>Students' strong predilection for absolute ways of knowing makes student-centred learning particularly challenging for them.</p> <p>Facilitators espoused transitional ways of knowing but often enacted absolute ways of knowing.</p>	<p>Modules being taught and assessed discreetly hinders students' ability to synthesise knowledge.</p> <p>Students taught in entire year groups results in limited contact time with tutors in sessions.</p>

<p>River University:</p> <p>Law</p>	<p>Strong focus on preparation for general graduate employment.</p> <p>PBL underpinned by the following pedagogies:</p> <ul style="list-style-type: none"> • Pedagogies of collaboration • Synoptic pedagogies • Pedagogies of resilience • Pedagogies of dynamic knowledge 	<p>PBL since inception so only incremental development needed.</p> <p>Student feedback also shaped these incremental changes.</p> <p>Subject knowledge dynamic in nature resulting in development work being part of day-to-day practice.</p>	<p>Facilitators were generally consistent in espousing and enacting transitional, independent, and contextual ways of knowing in their PBL, despite students having a slight preference for absolute ways of knowing.</p>	<p>Consistency improved by PBL tutor roles and informal PBL curator.</p> <p>Learning spaces support student collaboration.</p> <p>Collaborative workspaces and peer observations cultivate <i>party lines</i>.</p> <p>PBL curriculum cut across fields of law, and assessments were synoptic. This supported students' synthesis of knowledge.</p> <p>Timetabling and admissions processes accommodated the specific needs of the PBL curriculum.</p>
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<p>Hillside University: Medicine</p>	<p>Strong focus on preparation for medical practice. PBL underpinned by the following pedagogies:</p> <ul style="list-style-type: none"> • Synoptic pedagogies • Pedagogies of resilience • Pedagogies of reasoning • Pedagogies of dynamic knowledge 	<p>PBL since inception so only incremental development needed.</p> <p>General Medical Council processes added curriculum inertia.</p> <p>Subject knowledge was dynamic in nature resulting in development work being part of day-to-day practice.</p>	<p>Facilitators were consistent in espousing and enacting transitional, independent, and contextual ways of knowing in their PBL. Stakeholders such as students, GMC and clinical educators had a slight preference for absolute ways of knowing, although the impact of this on the PBL was not significant.</p>	<p>Consistency of PBL was improved by PBL tutor roles, formal PBL curator role, and formal peer observation process that reinforced site-specific rules.</p> <p>Timetabling processes accommodated the specific needs of the PBL curriculum.</p> <p>PBL curriculum was interdisciplinary, and assessments were synoptic. This supported students' synthesis of knowledge.</p>
<p>Meadow University Occupational Therapy</p>	<p>Very strong focus on preparation for occupational therapy practice. Strengthened by facilitators' own experience from practice. PBL underpinned by the following pedagogies:</p> <ul style="list-style-type: none"> • Pedagogies of collaboration • Synoptic pedagogies • Pedagogies of resilience • Pedagogies of reasoning • Pedagogies of dynamic knowledge • Pedagogies of empiricism 	<p>Turnover of staff caused an erosion of PBL over time following the loss of the PBL architects.</p> <p>Increased work pressures cause curriculum inertia due to challenges in finding time for course team to collaborate regarding pedagogy.</p> <p>Subject knowledge dynamic in nature resulting in development work being part of day-to-day practice.</p>	<p>Facilitators were consistent in espousing and enacting transitional, independent, and contextual ways of knowing in their PBL.</p> <p>Facilitators' areas of clinical expertise formed part of their disciplinary identity.</p>	<p>Small learning spaces posed some challenges around collaboration but helped to maintain small class sizes.</p> <p>Timetabling, admissions, and other centralised systems and processes presented barriers to the PBL curriculum.</p>

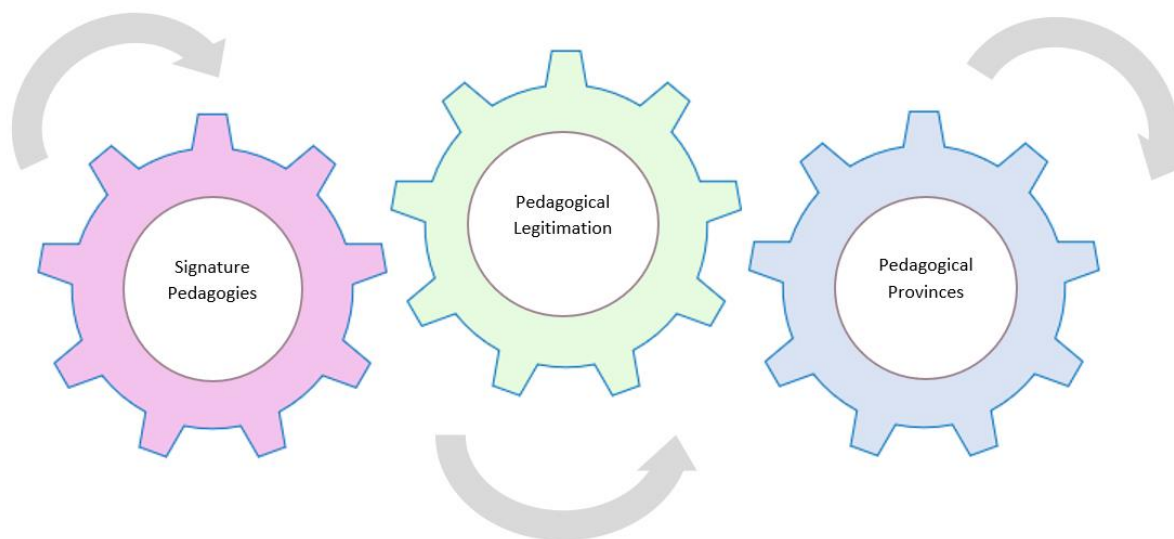
<p>Beach University: Natural Sciences</p>	<p>Strong disciplinary traditions relating to teacher-centred methods of teaching and learning in science subjects. PBL underpinned by the following pedagogies:</p> <ul style="list-style-type: none"> • Synoptic pedagogies • Pedagogies of absolute knowledge 	<p>Previous course was closed which resulted in two fallow years that the course team spent developing a new iteration of the course.</p> <p>Student feedback instrumental in shaping PBL over time.</p> <p>Development work tends to be supported by funding streams.</p> <p>Subject knowledge static in nature and so development less integral to day-to-day practice.</p>	<p>Facilitators mainly involved in PBL relating to own areas of subject expertise.</p> <p>Students' preference for absolute ways of knowing makes student-centred learning particularly challenging for them.</p> <p>Facilitators espoused transitional ways of knowing but often enacted absolute ways of knowing.</p>	<p>Small cohesive team incorporating informal PBL curator increased consistency.</p> <p>Small cohort size allowed facilitators to spend time with the students.</p> <p>Small cohort size allowed the course team more flexibility in making adaptations to students' timetables.</p>
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This chapter draws on these findings and discusses them in relation to existing literature, in order to respond to the research questions. It considers PBL as a learning ecology, where the interactions between individuals and their environments are central (Jackson & Barnett, 2019). Further, Jackson and Barnett (2019) explain that ecologies in nature are not necessarily self-sustaining and may require intervention, arguing that the same is true for a learning economy. As such, they encourage us to ‘inquire into its health’ in order to ensure it is purposeful (p. 2). This chapter argues that the model of structural influence explained next and depicted in figure 15, can be used to guide this inquiry towards a sustainable PBL ecology.

9.2 The model of structural influence

In this section, I explain a model of structural influence that conceptualises the key influences on tutor approaches to facilitating PBL (see figure 15). This model delineates three key cogs of structural influence that emerged from the findings, namely, Signature Pedagogies, Pedagogical Legitimation, and Pedagogical Provinces, and these are used as a framework for the remainder of chapter.

Figure 15: Model of Structural Influence



The central argument in this chapter is that these cogs form an aggregate of structural influence that impacts on tutor approaches to PBL facilitation. Whilst I present these structural cogs in turn, they are interconnected, and it is therefore important to consider the ways in which they interact with each other. Whilst all structural cogs are deemed to be influential, they will vary in their strength dependant on disciplinary and/or site-specific norms or customs, as well as

individual experiences and identity, and this affects the interplay with tutor agency. This model is applied to each of the research sites, illustrating the strength of influence of each of the cogs in appendix 16.

The first cog within the model relates to Signature Pedagogies as a structural influence, and in this section, I argue that these need to be reconsidered as manifesting in two forms: namely, pedagogies of participation and pedagogies of practice. These are discussed, and the implications for pedagogical development within the disciplines are explored. The second cog within the model relates to Pedagogical Legitimation. In this section, I explain some of the key authoritative roles, most notably the pedagogical architects and curators, as structural influences that legitimise PBL as a pedagogical approach, and contribute to its sustainability. Whilst they may be considered to constrain tutor agency, I argue that these structures are invaluable in supporting pedagogical consistency, explaining the ways in which they can engender collaborative communities of practice in which tutors feel supported. The third cog within the model relates to Pedagogical Provinces and this section explores some of the more discernible structural influences that impact on tutor agency. These are often site-specific, and tend to be more conspicuous to individuals, particularly where they are problematic. Here, I argue that learning spaces need to be developed and used in ways that facilitate staff and student collaboration and innovation. Further, I warn that the ongoing decline in tutor agency due to the centralisation of university processes is impacting negatively on pedagogical development, and I urge that this needs to be addressed.

As previously discussed, structure and agency are considered to be interrelated, and therefore this structural model ultimately exists in relation to tutor agency. As such, whilst there are disciplinary and contextual commonalities that are discussed in this chapter, I maintain that there will always be a degree of individuality, where tutors' internal reflexive conversation (Archer, 2003) may cogitate these structural cogs, uniquely shaping their individual approach to PBL. In accordance, Jackson and Barnett (2019) suggest the following:

'Learning ecologies comprise a structure that exerts its own powers upon human beings and their environment. Human beings in turn, have a measure of agency in relation to those ecologies. They can, and do, in significant and meaningful ways, construct and adapt their own learning ecologies for themselves.' (p. 2)

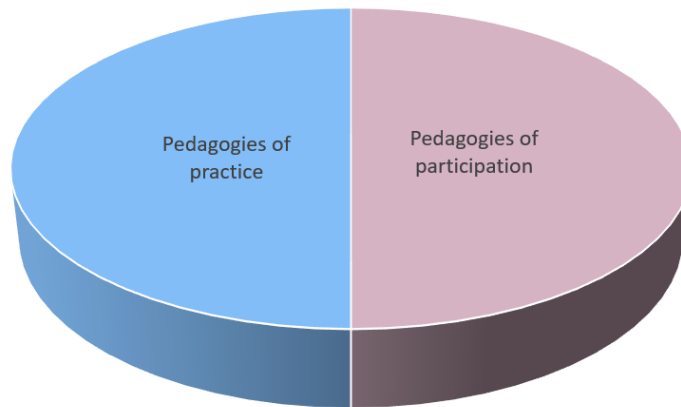
Additionally, I argue that some of the structural influences may be subtly indoctrinated as disciplinary or organisational habitus that is less perceptible to individuals. I recommend that individuals take time to consider each of the cogs within the structural model of influence,

gaining a more holistic awareness of what shapes the PBL ecologies in which they practise, and of their own internal conversations mediating the influences on their approach to PBL facilitation.

9.3 Signature pedagogies reconsidered

The first section of this chapter explains the cog of structural influence entitled signature pedagogies and its impact on tutor approaches to facilitating PBL. It reconsiders signature pedagogies by arguing that they manifest in two crucial forms not previously identified. Much has been published about signature pedagogies within higher education; however, the majority of this literature centres around professional groups with identified vocational roles, such as medicine and law, as discussed by Shulman, (2005) (see other examples such as Larrison & Korr (2013) who explored social work, or Watkins (2020) who explored psychotherapy). Such research focuses on the ways of thinking and being that are considered necessary for graduate employment, often citing Shulman's (2005) focus on developing a student's ability 'to think, to perform, and to act with integrity' (p. 52). Signature pedagogies that are characterised in this way, are what I explain as pedagogies of practice due to being grounded in a conscious focus on the skills and attributes that are synonymous with graduate roles. However, Shulman (2005) also explains signature pedagogies as 'the *characteristic* forms of teaching and learning' (p. 52, emphasis added), and what I argue here is that the signature pedagogies that are synonymous with this definition, may have entirely different structural influences. These disciplinary habits of teaching and learning may be more strongly influenced by historical traditions as well as individuals' own learning experiences borne out of longstanding disciplinary and/or organisational habitus. This habitus may emanate from embodied doxa that has been accepted as a universal norm, thereby being reproduced without question. I explain these as pedagogies of participation due to their foundations being within common and repeated learning experiences that individuals have participated in as a learner. These two forms of signature pedagogies can be illustrated as a lens through which individuals consider their approach to teaching and learning. This is illustrated in figure 16.

Figure 16: Signature pedagogies lens



Whilst I consider both forms to be useful influences that shape our practice, I argue that pedagogies of practice should foreground tutors' pedagogical thinking, to ensure that graduates are employment ready. It is important to acknowledge that tutors may not be aware of their stance in relation to signature pedagogies, due to the obscured nature of disciplinary or localised cultures, and I therefore urge individuals and organisations to consider these more consciously. Tutors need to consider the type of knowledge they aspire for their students and the ways in which PBL might support this endeavour. An example of the signature pedagogies lens applied to two of the research sites, namely, chemical engineering, and occupational therapy, can be seen in appendix 17.

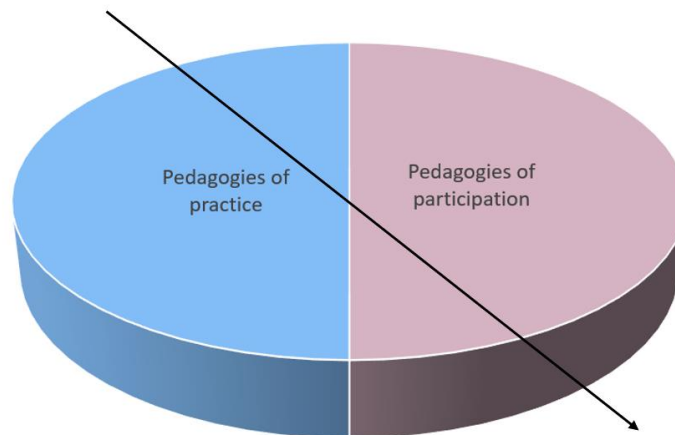
Both pedagogies of practice and pedagogies of participation are shaped by the cultural norms within disciplinary or organisational boundaries. As such they are infused with tradition and convention that harbour the semantic rules that Giddens (1993) describes as structures of signification (p. 130). He explains that these communities or organisations should not in themselves be considered structures, but instead, should be regarded as systems of interaction that have structural properties (p. 128). As such, what shapes the practice of many disciplines or other educational communities, are the unwritten rules within that culture. These become the norms in relation to teaching and learning due to being the 'factual boundaries of social life' (Giddens, 1984, p. 4). These norms of actions and values are what Bourdieu (1984) explains as habitus, asserting that they are created within social groups and replicated unconsciously (p. 170). Further, May and Powell (2008) suggest that this unconscious replication underpins familiar routines.

In considering these two forms of signature pedagogies, I draw on Archer's (2017) morphogenetic/morphostatic framework, which can be used to better understand the processes relating to curricular change and sustainability. This is particularly relevant in responding to concerns around the delays in developing student-centred curricula (Hoidn, 2016). Archer (1982) explains morphogenesis as 'a process, referring to the complex interchanges that produce change in a system's given form, structure or state (morphostasis being the reverse)' (p. 458). More simply, she explains morphogenesis as structural reshaping, and morphostasis as structural reproduction (Archer, 2003, p. 3). Whilst she uses these terms in relation to societies, I suggest that it is also useful to consider them in relation to curricula. As such, I refer to curricula that are seen to incrementally evolve over time, as morphogenetic curricula, and those that tend to be preserved and repeated over time, as morphostatic curricula. These are discussed in relation to the two forms of signature pedagogies.

9.3.1 *Pedagogies of practice*

Pedagogies of practice are explained as the approaches to teaching and learning that are shaped by the vocational skills, experiences, and identities that tutors bring into higher education, as well as those that they consider crucial for their graduates. As a key focus for higher education relates to the abilities of its graduates to respond to the needs of the labour market (EHEA, 2020, p. 113), this needs sustained attention. Tutors who are influenced by pedagogies of practice tend to be conscious of, and explicit about the skills and attributes that students need for practice, and cognisant of the ways in which PBL may aid the cultivation of these. It is well recognised that PBL supports the development of skills required for graduate employment, and chapter 2 presented existing literature in relation to the ability to apply reasoning, the ability to think critically, and the ability to apply knowledge to new situations. What is evident from this study is that by considering pedagogies of practice, tutors are able to identify other skills that are synonymous with distinct disciplinary identities, and this allows them to respond more attentively to the evolving needs of the graduate market. Examples of this relate to the signature pedagogies revealed in chapter 5, such as pedagogies of resilience, or pedagogies of reasoning. It is also of relevance that disciplinary skills and identities were *brought* by the tutors, and these influenced their facilitation and their personal epistemologies. Often, tutors were not consciously aware of these, particularly where course teams lacked interdisciplinarity. Where a tutor's influence is foregrounded by pedagogies of practice, their stance could be illustrated as shown in figure 17.

Figure 17: Foregrounding pedagogies of practice



Pedagogies of practice were a much stronger influence where tutors' careers had progressed significantly outside of higher education, or in vocational disciplines. In professional and vocational disciplines where traditional career pathways would usually involve tutors having worked within the graduate roles anticipated for their students, tutors are well-versed in the skills required for the job, and this is likely to consolidate disciplinary habitus, thus foregrounding pedagogies of practice in their approach to teaching and learning. Where tutors' career pathways typically involved a period of employment outside of education but not in the graduate roles anticipated for the students, pedagogies of practice remained a strong influence; however, the graduate skills and attributes that were valued were perhaps more generic.

Tutors who are influenced by pedagogies of practice are more typically focused on students developing a way of *being*, over a way of *knowing*, and this is more common in, but not exclusive to the professional disciplines. As such, they are not only focused on students' acquisition of knowledge, or even its skilful application, and instead, consider students' journeys through higher education as transformational, where they experience a transition in terms of their behaviours, their values, and their identity. Their personal epistemologies are more likely to be synonymous with Baxter Magolda's (1992) independent and contextual ways of knowing, where students are able to manage uncertain knowledge, can develop and assert their own viewpoint, and can synthesise and apply this knowledge in context. Further, tutors' goals are not only for students to acquire knowledge, or to successfully gain graduate employment, but instead, extend far beyond graduation.

Dall'Alba (2009) describes the formal education of professional disciplines as a transition period, where students undergo a transformation of self. She stresses the importance of

attending to ontological considerations, such as who the students are *becoming*, warning that too great a focus on epistemology risks obscuring this. She suggests that professional disciplines where registration is required to practise, are more likely to direct their focus to the skills and knowledge that students require. I would argue that in the time that has elapsed since Dall'Alba's study, and the increasing focus on graduate employment, the emphasis has moved from these ways of doing, towards ways of being.

Much of this relates to the influence of professional identity, which can be explained as 'the enduring beliefs, values, motives and experiences that are characteristic of individuals who enact the same professional role.' (Winter, 2009, p. 122). Tajfel and Turner (2004) explain that professional groups are frequently well-socialised into their identities, which Trowler (2009) suggests are significant structural influences affiliated to social identity theory. Social identity is explained by Tajfel and Turner (2004), and they conceptualise social groups as follows:

'a collection of individuals who perceive themselves to be members of the same social category, share some emotional involvement in this common definition of themselves, and achieve some degree of social consensus about the evaluation of their group and of their membership of it' (p. 59).

They assert that membership of these social groups engenders a group identification that sets individuals apart from other groups within society, giving rise to social identity. Professional groups are often well-socialised through their educational experiences and into practice, which means they are more predisposed to developing social identities. This socialisation into professional communities engenders a sense of stability and belonging (Hotho, 2008), and those who transition into higher educational roles late in their careers are likely to have stronger professional identities than those who transition earlier, or those who have less affiliation with graduate roles. Hogg and Terry (2000) assert that individuals may experience a stronger sense of identity in relation to their professional group, than in relation to their race, ethnicity, or nationality. As such, these professional social identities emanate disciplinary habitus, and this is a significant component of pedagogies of practice.

Where tutors are more focused on ways of being rather than ways of knowing, it was evident that content knowledge was less certain, and therefore more dynamic in nature. This meant that change and innovation within the teaching and learning activities were more readily accepted as part of day-to-day practice, resulting in morphogenetic curricula predominating. What is significant is that disciplines where curricula tend to be morphogenetic due to evolving

content knowledge are more likely to embrace pedagogical innovation as part of this process of change. This is not the case where pedagogies of participation are foregrounded.

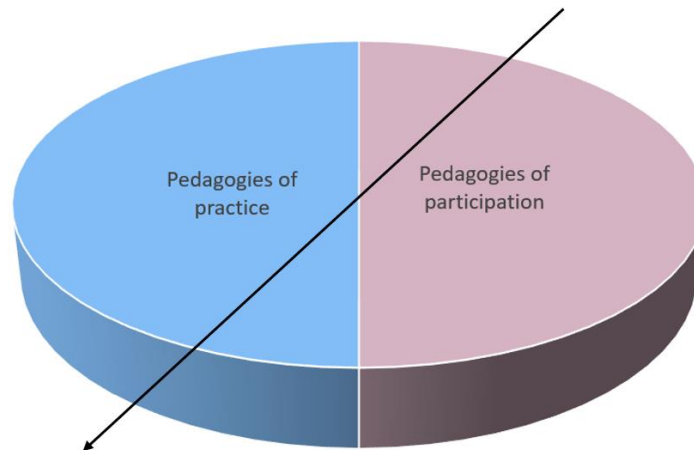
9.3.2 *Pedagogies of participation*

Pedagogies of participation are explained as where approaches to teaching and learning are shaped by the experiences that tutors and students have themselves participated in as learners. These experiences inform subsequent practice, or expectations of teaching practice, and were seen to shape the identity of tutors and students. Our own life history inevitably shapes our identity as individuals, and most participants engaged in some degree of storytelling about their own learning experiences; those they had enjoyed or found useful, or those that they had found to be more challenging or unfavourable. Whether positive or negative, personal experience of learning holds significant meaning for tutors and students, and often underpin ideas around what constitutes good teaching and learning, or the behaviours that are considered to epitomise good PBL facilitation.

For some tutors, the influence of this experience is conscious and explicit, and they will seek to replicate teaching and learning activities that they found to be helpful or will actively avoid those that they found unhelpful. For other tutors, the influence of their own learning experience is more subliminal; the result of indoctrinated disciplinary habitus that then becomes pedagogical recapitulations, almost invisible to those within that culture. May and Powell (2008) argue that indoctrinated habitus develops as 'competent performance' over time when incorporated into routine behaviours (p.129). Similarly, Jones and Bradbury (2017) explain individuals being socialised into the norms within a culture through repeated experiences, as structural consensus and these repeated experiences were evident in this study.

Pedagogies of participation are a stronger influence where tutors' career pathways have had a more linear progression into teaching in higher education. By this, I mean that teaching in higher education would commonly be considered as a *next step* rather than a new direction. As such, tutors may have completed undergraduate and post-graduate studies, followed by doctoral studies, and may then have progressed into teaching in higher education, and so their experiences are mainly within educational environments. They may also have gained some experience of teaching within their doctoral studies. Where a tutor's influence is foregrounded by pedagogies of participation, their stance could be illustrated as shown in figure 18.

Figure 18: Foregrounding pedagogies of participation



Whilst this is more commonplace in some disciplines than others, for example the science disciplines, the disciplinary background of a tutor is not necessarily a reliable predictor of the extent to which they are likely to be influenced by pedagogies of participation. Instead, it is important to consider career pathways at an individual level, as this may be a more useful predictor.

Shulman (2005) described 'deep structures' which he explains as one of three structural dimensions of signature pedagogies in which sets of assumptions shape beliefs about teaching and learning practices (p. 55). Whilst Shulman's work is more focused on pedagogies of practice, I argue that these deep structures are particularly relevant to pedagogies of participation. Further, I warn that where these sets of assumptions become encultured, invisible doxa, and are the dominant structural influence, there is a risk that approaches to teaching and learning become an iterative process of replication and repetition, thus becoming morphostatic curricula. Additionally, these indoctrinated pedagogical recapitulations present a risk to the students as they hinder the advancement of pedagogies of practice, particularly where course content is also more steadfast. Nonetheless, whilst it could be suggested that the notion of morphostasis within teaching and learning would be undesirable, it should be acknowledged that *some* degree of stasis can be advantageous in terms of tutor familiarity and confidence.

Whilst all tutors were influenced to some degree by their own learning experiences, pedagogies of participation were more notably conspicuous in the science sites. There was evidence of teaching content having been delivered and redelivered over a considerable period of time, and tutors who were keen to be innovative in their approach to teaching and learning therefore had to invest significant and sustained effort into making changes. They spoke of traditional,

sustained disciplinary traditions, such as having a two-hour lecture plus a two-hour tutorial, and these seemed to have been their own experiences as students, and then as tutors, revealing deep-rooted disciplinary habitus. It is therefore important to recognise that disciplines that largely focus on certain or absolute knowledge have a higher risk of morphostatic curricula, resulting in there being a higher risk of pedagogical development being divorced from day-to-day practice.

A further challenge within the science disciplines pertinent to pedagogies of participation related to the educational habitus of school learning of science subjects. Students had experienced learning activities that focused on absolute ways of knowing (Baxter Magolda, 1992), where knowledge is memorised without question, and then regurgitated into exam papers. The lack of focus on extending this knowledge into transitional ways of knowing, where students might understand the knowledge well enough to apply it to new scenarios, was problematic when these students transitioned into higher education, as they struggled to contend with uncertain knowledge. Their experiences resulted in significant, inherent expectations of teacher-centred approaches to teaching and learning, and this posed a significant barrier to tutors developing student-centred curricula. It was not uncommon across the other research sites for participants to tell stories of there being challenges for students in adjusting to the more autonomous learning styles within higher education. However, there was evidently a more entrenched educational habitus in science disciplines that proved significantly more challenging, due to the social pressure exerted by these students to experience a repetition of school learning activities.

Another important aspect of pedagogies of participation relates to tutors' experiences of PBL from a learner perspective. Tutors who had themselves learned in a problem-based way were notably in the minority of the participants, yet for those who had, these experiences were seen to influence their personal epistemologies, and their approach to facilitation. Commonly, tutors who had learned in a problem-based way were able to empathise deeply with the student experience and they offered support in this regard. They recalled some experiences which they had found challenging, and would offer guidance and direction to their students, hoping to avoid the incidence of similar frustrations. Without exception, they valued the additional insights they had into PBL, and this raises an important concern.

Whilst participants had discussed valuing the space and time to learn about PBL, and curators discussed 'training' PBL facilitators, not one of the 23 participants in this study made any suggestion of having formally learned about PBL in a problem-based way. They may have learned by observing PBL sessions or may have chosen to explore PBL in a self-directed

manner whilst undertaking their teaching and learning qualification; however, evidently, there had been no PBL about PBL. This is a crucial point to consider in relation to pedagogies of participation. If tutors are influenced by their own experiences of pedagogy, then it is vital that they have opportunities to understand PBL from a learner perspective. It is ironic, and somewhat disheartening, that training for PBL facilitators continues to be *delivered* using more traditional didactic methods, and I would argue that it neglects a valuable experiential learning opportunity for facilitators. It is vital that if student-centred pedagogies are to become the learning ecologies of higher education, they also need to predominate tutors' formal learning experiences, as these are a valuable opportunity to cultivate desirable disciplinary or organisational habitus.

9.3.3 Summary

Signature pedagogies are a structural influence that may be imperceptible to tutors due to being underpinned by doxa that manifests as disciplinary and organisational habitus. Whilst it is likely that tutors are influenced by both pedagogies of practice and pedagogies of participation, I argue that until student-centred learning becomes the learning ecology of both school and higher education, pedagogies of practice need more conscious attention. This will ensure that morphogenetic curricula predominate over morphostatic ones, allowing them to evolve in ways that respond to societal needs.

9.4 Pedagogical legitimation

This section of the chapter explains the second cog of structural influence; namely, the influence of pedagogical legitimation, on tutors' approaches to facilitating PBL. Giddens (1993) explains that structures of legitimation encompass some of the moral rules that shape our behaviours (p. 130), and within this study these moral rules were often gentle violence (Wacquant, 1993) that manifest as indoctrinated *party lines* within some of the research sites. The central argument of this section is that the interplay between structure and agency needs to be considered in relation to its impact on pedagogy, and I argue that key pedagogical roles such as pedagogical architects and curators are well-placed to attend to this due to the symbolic capital they harbour. Often, agency is portrayed as something to aspire to, with structures either supporting this endeavour, or constraining it. Further, much of what is written focuses on the interplay between structure and agency in relation to the experience of tutors. For example, Vähäsantanen et al. (2008) argue that individuals need a degree of agency within an organisation in order to feel committed to it, and Hautala et al. (2021) suggest that individuals need enough structure to feel supported by an organisation, but not so much that they feel

unable to be agentic in terms of innovation. However, Vähäsantanen et al. (2008) also warn that where individuals have strong agency, and their work is largely self-governed, this can in fact form a barrier to organisational change. Indeed, what was found in this study was that where tutors had strong agency, change *was* evident. However, where changes were implemented in isolation from the rest of the course team, this led to an inconsistent approach to the PBL in that site. What I argue, therefore, is that we need to move beyond routinely considering constraints on agency as unfavourable, and instead consider where they may facilitate cohesion and consistency of pedagogy that engenders sustainable PBL ecologies.

This section therefore advocates for some of the key roles that were observed to enhance the consistency of approach to PBL, by constraining the diversity of approaches that may arise from individual agency. These roles were seen to subtly harbour authority, influencing communities of practice through the recapitulation of cultural norms, latent rules, or *party lines*. Further, Falconer (2006) suggests that organisational learning can be obscured when the knowledge and skills of individuals are tacit, and therefore, not expressed. She suggests that this can be improved when such knowledge and skills are more explicit in organisations; however, reports this can be challenging (p. 145). Therefore, whilst Giddens (1993) describes such roles as authoritative resources, where individuals harbour power over others, I argue that where strong communities of practice exist, individuals can be socialised into disciplinary and organisational habitus, supporting knowledge transitions from tacit to explicit. This is important, due to limiting the *experience* of constraint on agency, which Vähäsantanen et al. (2008) asserts will improve individuals' commitment to the organisation they work in.

Whilst the cog of pedagogical legitimation is likely to be more perceptible to individuals than the cog of signature pedagogies, the less authoritative the influence, the less perceptible they will become. What I argue in this section is that pedagogical legitimation requires more conscious consideration as it has potential to engender consistency and sustainability in teaching and learning practices, and cohesion and support in teaching communities. Key authoritative roles such as pedagogical architects and curators need to be developed, and more formally recognised. These roles were seen to strengthen collaborative working, cultivating communities of practice that in turn, shaped the pedagogy of the course. Where these communities of practice became self-sustained, this notably reduced tutors' experiences of constraint on agency. As such, these communities of practice could be an example of what Sibeon (2004) describes as 'structure in agency' (p. 54).

9.4.1 Architects

Pedagogical architects were evident in many stories in this study and were found to be a crucial influence on tutor approaches to PBL. They manifest in various guises, and most commonly, are the formal or informal roles adopted by individuals who undertake pedagogical development of a course. As such, they have the authority to embed pedagogical consistency in the curriculum. Giddens (1993) argues that such authoritative resources harbour transformative capacity, and I argue that this is what supports architects in addressing curriculum inertia. It is paramount that these roles are recognised and developed, in order that pedagogical thinking underpins the teaching and learning practices in higher education. Without the architects, the law of curriculum inertia may overshadow the attempts of individuals to effect change, and this may result in curricula becoming morphostatic, particularly in disciplines that contend with absolute knowledge. Alternatively, where individuals are more successful in effecting change, these changes may happen in diverse ways, resulting in pedagogical islands that become confusing for students.

What was also evident from tutors' stories was that funding had a key architectural influence. Some of the more experienced tutors who had worked in English universities discussed the impact of receiving funding from HEFCE, which supported the development of Centres of Excellence in Teaching and Learning (CETLs) across English universities. Whilst some of these universities continue to have centres of excellence, many were phased out when the funding was no longer available (HEFCE, 2011). As such, without this funding, and without formal architectural roles, some courses will struggle to implement the pedagogical redesigns they would wish.

Findings revealed that the loss of the architects had a significant impact on pedagogy across sites and this lack of constraint, enabled tutor agency to embed pedagogical changes at a modular level, creating a fragmented learning ecology due to inconsistencies in the course. In part, it could be that the architects had adopted an informal curator role within the course team, that had maintained pedagogical consistency. Alternatively, it could be that the symbolic capital held by architects resulted in their presence being enough to influence the practice of others, resulting in sustained consistency of approach. It was common for participants to report that they had felt more able to make changes to teaching materials after the colleagues who had originally developed them had left or retired, thus indicating a degree of symbolic violence within the course teams.

What was apparent across the research sites is that wholesale pedagogical change is incredibly challenging, and this has an impact on the PBL in the sites. River and Hillside universities had developed a PBL curriculum from the inception of the courses, and therefore did not encounter the challenge of running the course whilst simultaneously implementing wholesale pedagogical change. Beach University received HEFCE funding to support its initial development of the PBL curriculum, and then had two fallow years, which would have afforded more time to focus on the development of the PBL curriculum. Forest University exhibited the most protracted change, as they continued to deliver the course with no key architectural role driving the PBL development. Tutors worked hard to make changes at a module level, but with no overarching authoritative role, the influence of tutor agency resulted in there being a tendency to implement PBL in disparate ways. At Meadow University, whilst the curriculum had been underpinned by PBL for some years, this was the only site to have successfully changed their course without funding or fallow years, although notably, this was some considerable time ago. The challenge of finding time to consider or discuss pedagogy was commonplace in stories across the sites, and this needs attention. Without pedagogical architects, large-scale curriculum changes will be problematic, and this may be a contributory factor in the ongoing challenges that are reported in relation to embedding student-centred pedagogies within higher education settings (Hoidn, 2016).

Curriculum inertia varied across the sites, although there are some key factors that those in architectural roles need to consider. Stakeholder resistance to PBL is common, and much of this seems due to the foregrounding of pedagogies of participation. In short, they thought students should be taught in the same ways that they had been, and architects need to engage with them to support a better understanding of pedagogies of practice. Whilst it has been well documented that students may need support to help them understand PBL, wider stakeholder engagement in this regard has been less well considered. Architects need to engage with a broad range of stakeholders about pedagogy, as well as course content, particularly in disciplines with morphogenetic curricula, such as health disciplines. This is particularly important in a marketized higher education system where students are considered customers, and their *experience* of learning risks being prioritised over the learning itself. As Giannakis and Bullivant (2015) suggest, the customers within higher education do not always possess the knowledge and skills required to truly assess whether a course is fit for purpose.

In disciplines that utilise more absolute, or certain knowledge, such as in the science disciplines, architects need a stronger focus on the potential morphostasis in the curriculum. Where course

materials have already been developed, it can be easy to regard pedagogical change as a separate, additional undertaking, and the result of this is that architectural roles in these disciplines are even more crucial.

9.4.2 Curators

Whilst the pedagogical architects are the change agents who instigate and drive curricular change, the pedagogical curators are those who endeavour to preserve it, ensuring sustained pedagogical consistency within courses. Curators emerged as a significant constraint on tutor agency, although were rarely cited as such, and instead, tended to be held in high regard by tutors. These roles were significant in the development of the undiscussed and undisputed doxa mentioned in chapter 5, where values become embodied and universal (Bourdieu, 1977, p. 168). Whilst those in more formal curator roles had the authority to enforce rules within the course teams, their true strength was in the gentle violence (Wacquant, 1993) that manifest as the subtle indoctrination of *party lines* that were accepted, and indeed, commonly espoused by course teams. Giddens (1993) refers to such rules as structures of significance, explaining that they are the semantic rules that govern the traditions or conventions, often existing without question. This may appear similar to the structural consensus mentioned earlier in the chapter, where social structures shape common cultural behaviours (Jones & Bradbury, 2017). However, it could also be explained as conflict theory. Jones and Bradbury (2017) explain conflict theory as where behaviours are shaped by power and domination, and indeed, there were examples of this at Hillside University, where a more authoritative approach was sometimes taken to ensure that tutors adhered to the required PBL approach. They suggest that inequalities exist within societies due to some individuals being more advantaged than others, explaining that this persists by some degree of manipulation of those who have fewer privileges, into feeling more accepting of this. They define this as 'naked coercion', highlighting the difference between this and a more authentic consensus. This naked coercion became evident with the emergence of *party lines*. Individuals appeared to espouse and enact a *party line* in relation to their epistemological beliefs and were not always consciously aware of where these were in fact, in tension with co-existing epistemological beliefs. The impact of this was that whilst curators may have been a particularly strong constraint of their agency, this was not necessarily the experience or perception of the tutors.

Whilst the distinction between structural consensus and naked coercion may appear clear in the literature, I would argue that in reality, this may be much less apparent. In some sites, the *party lines* only became apparent when I gained awareness of a repetition of language across

tutor stories, or where less formal discussions revealed some contradictory standpoints. Nonetheless, those with less academic agency, such as those undertaking PBL tutor roles, seemed to espouse *and* enact the *party lines* more consistently, and this was observed to engender a comparable approach to facilitation in those sites, whilst limiting tutors' experience of constraint. As such, the curators had been instrumental in cultivating sustained habitus through *party lines*. These may be less conspicuous forms of what Argyris and Schön (1974) refer to as theories of practice, which they describe as a collection of theories of action, which govern our behaviours. They suggest that 'A theory is not necessarily accepted, good, or true; it is only a set of interconnected propositions that have the same referent – the subject of the theory.' (p. 4). In this instance, the subject of the theory is PBL, or PBL facilitation, and the theory of practice develops out of the rules and *party lines* within the sites. Whilst Argyris and Schön explain that the theories that individuals espouse, may not necessarily be what governs their actions (ie. their theories in use), what I argue is that where *party lines* exist, individuals' espoused theories and theories in use are considerably more likely to correspond, particularly where there is a strong sense of community within a site. It is important to note however, that where tutors' espoused theories and theories in use are in harmony, it should not be assumed that they do not have epistemological values that are in tension with these. Rather, it is useful to consider that they may have co-existing epistemological values, that are neither espoused nor enacted due to the imperceptible gentle violence enacted by the pedagogical curators.

What is important to consider is that where individuals are influenced by authoritative curators, they are more likely to experience a sense of constraint than when habitus develops as a result of socialised *party lines*. Where curators engender a sense of community, the *party lines* are more likely to reverberate through this community, arguably then manifesting as collective agency. Creating a supportive community ensures that the norms and conventions are nurtured into doxa, and new members of staff are then socialised into them. Both Giddens (1984) and Bourdieu (1977) explain that individuals are less likely to discuss or question these norms and conventions when they have become part of the culture of a group. This may be why they are espoused as their own beliefs and values, rather than as constraining rules.

Although these communities of practice may subtly harbour the rules that Giddens (1993) explains as structures of significance, they have a beneficial effect on the PBL. Cultivating pedagogical communities of practice supports learning among staff and ensures that pedagogy is not overshadowed by content. Wenger et al. (2002) define communities of practice as 'groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen

their knowledge and expertise in this area by interacting on an ongoing basis.’ (p. 4), and PBL communities of practice evidently supported a sustained consistent approach to PBL facilitation, where they existed in some of the research sites. Further, Wenger (2000) asserts that an organisation’s success depends on its ability to cultivate such social learning systems, although I suggest that this is often under-valued by organisational leadership. Even before working from home become mandatory in the Covid-19 pandemic, it was becoming more normal for organisations to be encouraging, or allowing their employees to do so (Rupietta & Beckmann, 2018). Whilst working from home has many benefits, there is a risk to social learning systems; therefore, it is increasingly important that organisations take time to consider how their employees interact, creating opportunities for informal social interactions as well as more formal meetings and gatherings, as these play a crucial, yet perhaps undervalued role in maintaining consistency of pedagogy.

The formality of a community of practice is an important point to consider. Wenger et al. (2002) explains that communities of practice should be organic in nature, advocating for ‘shepherding their evolution’ rather than formally creating them, warning that many intentional communities may be quick to fall apart. This poses a challenge. How can pedagogical communities of practice be cultivated, without doing so intentionally? I contend that pedagogical curators are ideally placed to meet this challenge. Wenger et al. (2002) suggests that communities of practice are well supported by someone in a coordinator role, explaining that in addition to organising events, they can nurture connections and collaboration between community members. This encourages socialisation into pedagogical cultures, and this is more likely to engender experiences of collective agency, thus limiting tutors’ experiences of being constrained by authoritative rules.

What is important for curators to nurture in these communities of practice are the informal interactions that support the learning of its members, rather than the more formal structural processes. For example, two of the research sites used peer observations; however, one appeared to be owned and led by a PBL community of practice, whereas the other seemed to have much more of an authoritative top-down approach to it. Whilst peer observations were cited as valuable in both sites, where they were led by the community of practice, a deeper learning was portrayed, and *party lines* were more evident, thus limiting perceived constraint on agency. The learning spaces in which these communities of practice are likely to thrive were also important, and these are discussed in the next section.

9.4.3 Summary

Authoritative roles are those with transformative capacity and are crucial in improving the pedagogical consistency of PBL, often, by constraining tutor agency. Pedagogical architects drive the development of teaching and learning across entire courses and therefore address curriculum inertia. I argue that these roles are most crucial when morphostatic curricula are evident, as these harbour more inertia. Pedagogical curators are crucial in *sustaining* consistent approaches to PBL facilitation through gentle violence. They can engender habitus through indoctrinated *party lines*, using communities of practice that socialise tutors into the desired approaches, thus limiting the experience of constraint. I argue that these roles are most crucial where morphogenetic curricula are evident, to ensure a cohesive approach to change.

9.5 Pedagogical provinces

This section of the chapter discusses the cog of structural influence entitled pedagogical provinces. It explores the educational environment in which PBL happens, highlighting the impact of some of the site-specific structures, and where they constrained or supported tutor agency. The structures encapsulated within this cog are arguably the ones that are more traditionally thought of when considering structure and agency. As such, they are the more formal processes, systems, and constructions that were evident within the research sites. The central argument of this section is that pedagogy needs to be firmly placed at the heart of these systems and processes in order to develop and maintain an educational system that is fit for purpose. Further, I argue that collaborative and reflective learning spaces are essential for both students and staff in order to develop PBL ecologies. This section highlights some of the key structural constraints and enablers in this regard.

Whilst the influences within the pedagogical provinces cog are those that are most perceptible to individuals, self-reported data only tended to reveal those that facilitators experienced as *constraints* on their practice. The structural influences that *enabled* good practice were rarely explicitly identified by participants; however, were evident in observational data. Accordingly, Evans, (2019) asserts that where individuals can exercise agency in relation to learning spaces, this can be 'taken for granted by the privileged' (p. 163). This chapter discusses some of the cultures, habits, and processes that shape PBL, explaining how PBL ecologies might be supported in higher education, illustrating some of the ideals that have not yet been detailed in published literature.

I begin with a discussion on the ways in which learning spaces impact on the PBL. In this regard, the physical environment, and resources are crucial in shaping PBL practice. Giddens (1993) refers to these resources as structures of domination, describing material resources as 'allocative' (p. 130). I also discuss learning spaces more broadly, considering it as an individual's cognitive capacity in terms of their space and time to think, and to learn. Following this, I discuss pedagogical provinces in terms of the systems and operations that were observed to have an impact on the PBL. Giddens (1993) suggests that organisations in themselves are not structures, and instead, are systems of interaction that contain structural properties (p. 128). These systems were often the most perceptible influence on tutor agency.

9.5.1 Learning spaces

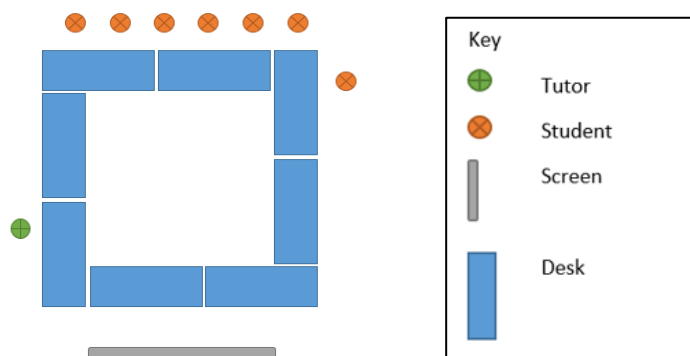
The physical structures within higher education are a conspicuous influence on our teaching and learning practices. Conversations about classroom sizes, availability, and design are commonplace, as they notably impact on curriculum design. Shulman (2005) suggested that pedagogy determines the architectural design of classroom spaces; however, much has changed since this claim, and the massification of higher education (Giannakis & Bullivant, 2015) and resulting increase in student numbers has arguably outpaced necessary changes to the physical environment. As teaching practices have evolved, so too have the requirements in terms of learning spaces, although these changes are likely to be slow and expensive to implement. An example of this could be lecture theatres. Whilst lectures have developed over time, encouraging more student engagement than other more passive styles of learning (Baepler et al., 2014), the scope to use a lecture theatre for anything other than a lecture remains limited. Therefore, such learning spaces harbour more structural constraint, and are inconsistent with the more collaborative spaces required for PBL. Despite this, several participants told stories of having had their PBL sessions timetabled into raked lecture theatres, explaining the challenges of trying to facilitate in learning spaces where they struggled to engage with students. The suitability of learning spaces as regards PBL needs ongoing attention.

The essential foundation for a good PBL learning environment is the space for student collaboration as this is crucial for good teamwork. Students should be able to sit together in a formation that promotes interaction, and a key factor in this is that they should be able to make good eye contact whilst communicating with all other team members. This promotes inclusivity and will limit the risk of the student teams dividing into sub-groups. Even where teams are small, they have a tendency to split into sub-groups when they are positioned in a row. Interestingly,

whilst there is evidence of research advocating that informal collaborative learning spaces aid student learning and improve their educational experience, there is less focus on the formal learning environments, which would conceivably be considered more significant. Eley (2018) offers a useful perspective, explaining how informal collaborative learning spaces might be designed. She discusses the ways in which the design furniture such as pods can support collaborative engagement by creating a more contained environment that separates students into groups, thus providing some ‘quiet space’ (p. 74). I argue that equal consideration needs to be given to collaborative engagement in the design of formal learning spaces.

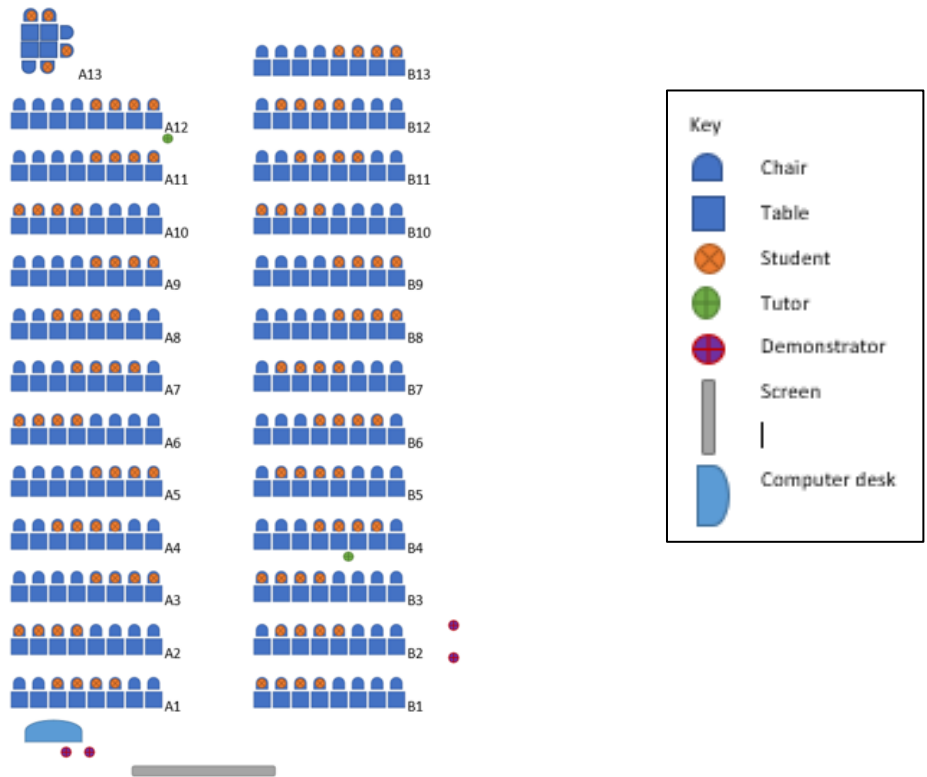
Crouch (2021) explains that in therapeutic groups, group members need to be able to engage in ways that allow them to have influence over each other, rather than merely talk or connect, and I argue that the same is true in PBL groups. She argues that a style of communication where the group members speak with the facilitator in turn, does not constitute interaction (p. 42). Positioning such as is seen in figure 19, which illustrates the positioning of group members in Paula’s session at Hillside University, are a higher risk of this style of engagement due to there being a ‘face the facilitator’ seating style.

Figure 19: Positioning in Paula's PBL session with year 1 students at Hillside University



Further, communications that were predominantly to, and from the facilitator, rather than between students, were also observed at Forest University in Jasmine and Samuel’s session (see figure 20). Despite the teams only having four students in each, they were also observed to split into sub-groups, often working in two pairs, with no attempts to collaborate as a team of four.

Figure 20: Forest University PBL session with year 2 students



There was significant variance in these two sessions. At Hillside University there was only one team in each session, with around eight students, whilst at Forest University, there were around 25 teams of four students, with tutors moving between teams. Nonetheless, the students in both sessions sat in rows, and this seemed to be at the heart of the divisions. It is important therefore, that learning spaces foster collaboration, rather than just accommodating the correct number of students. Park and Choi (2014) suggest that whilst teaching methods have moved towards more student-centred pedagogies over time, classrooms have failed to evolve beyond a change in size and I would assert that this is largely true. They researched the impact of changing from traditional front-facing seating positions within learning spaces, to students being seated in small groups around circular tables. This resulted in increased student to student interactions, more close relationships between classmates, and improved motivation for learning. Whilst Park and Choi’s study also reduced the overall number of students in the classroom, what I argue is that even where there are small number of students in a session, the seating positions need consideration in order to maximise student to student interactions and group cohesion.

Classroom spaces need to allow facilitators to sit amongst the student teams in a way that engenders collaborative working, rather than encouraging more authoritative facilitator positions, such as standing over the students, or directly facing them. A challenge to this is where learning spaces allow the students to determine seating positions, as they may create this more authoritative positioning themselves. Indeed, this was the case in Figure 19: Positioning in Paula's PBL session with year 1 students at Hillside University, where the students had arrived in the classroom in advance of Paula, the facilitator, leaving her the limited options of adopting a face the facilitator positionality, or disrupting them by reorganising their seating positions.

Clark (2008) explains the value of team cohesion between group members and suggests that it increases with the number of connections made by the team (p. 88). Whilst her discussion relates more to the number of times a team meets up, I would suggest that the number of connections *within* these meetings is equally important for team cohesion. This may be through social conversations, establishing commonalities, engaging in conversations, or indeed, making eye contact. Thus, classroom spaces that encourage student-to-student connections must be a priority for PBL and other student-centred learning.

The most collaborative team dynamics were observed at River University, where the table was oval. This facilitated a connectedness between students that enabled a cohesive approach to team working, whilst also avoiding any occurrences of face the facilitator positioning. Fung (2017) suggests that connectedness lies at the heart of university education, stating the importance of student-to-student connections, particularly in instilling confidence in team working. Nonetheless, oval tables are not commonplace in university settings, and this may be due to there being no flexibility in connecting them to other tables to make larger working spaces. This was not problematic at River University as the classroom could only accommodate one table and there was therefore no requirement to reconfigure the environment. This would have worked well in reducing the formation of sub-groups at Meadow University, where the group and classroom sizes were similar.

As well as being essential for student learning, collaborative learning spaces are crucial for staff. It was evident that in the sites where tutors had more opportunities to collaborate, this afforded more reflection, support, and learning in their course teams. In many ways, this should be no surprise. If course teams value socially constructed learning activities for their students, then it could be anticipated that they would also value socially constructed learning opportunities for themselves. Jackson (2019) argues that staff collaboration and collegiality are

crucial for learning and innovation in higher education (p. 83). Whilst the formal collaborative learning spaces that staff use are likely to be the same spaces their students use, more attention needs to be given to the informal collaborative learning spaces. This has been explored in relation to student learning (see Walton & Matthews (2018) as a useful example); however, the value of informal learning spaces for staff receives less attention.

At River University the learning that happened in the PBL tutors' open plan workspace was significant. The physical space was collaborative, and tutors engaged with each other both socially, and in relation to their teaching. It drew other colleagues from their offices and was evidently a nucleus for social learning. This was in contrast to all other sites, where tutors tended to be based in disparate offices, with no obvious community meeting point. Whilst the tutors at River University talked openly about the supportive community, they did not explicitly discuss the ways in which this was cultivated within their own learning spaces. Evans (2019) discusses the importance of understanding the learning of an individual in relation to the learning ecology of their workplace. She argues that traditional learning regimes have evolved into social ecologies of learning, valuing the learning spaces where individual and collective agency can be expressed. Further, she acknowledges that learning spaces are not only the physical spaces but can be the opportunities to learn from the experience of others. In contrast, at Hillside University, whilst there was acknowledgment of a PBL community, and reports of valuing the PBL meetings that happened several times a year, it was clear that tutors did not regularly encounter each other or learn from each other outside of these formal meetings.

As well as the perceptible difference in social learning opportunities, collaborative learning spaces also engender the communities of practice discussed earlier. The same cohesion and connectedness that is valuable for students' learning, is instilled in tutors where the environment facilitates frequent tutor-to-tutor interactions. As discussed earlier, where communities of practice are cultivated, individuals are less likely to perceive constraint on their agency and it is therefore essential to attend to the physical structure of the working environment that supports this.

Savin-Baden (2008) describes learning spaces as 'places of engagement where often disconnected thoughts and ideas, that have been inchoate, begin to cohere as a result of the creation of some kind of suspension from daily life' (p. 1). Not enough attention has been paid to this suspension from daily life, and I argue that it is as crucial as the physical structures that support informal learning. This was apparent in the reflective conversations that happened in the course of this study. Participants took time out from their daily academic lives to tell me their

stories, and in this suspension from their daily lives created a reflective learning space, which often seemed as enlightening for them, as it was for me. This is synonymous with what Savin-Baden (2008) describes as 'hidden spaces', which she asserts are often under-valued by university leadership (p. 1). For me, these hidden spaces are fundamental in developing education that is informed by the lifelong learning of those who work there. Such learning spaces are at risk of being compromised by the rapid-fire task-focused work that seems to dominate higher education, engulfing tutors' cognitive capacity. This was evident in the findings, where tutors discussed the need to prioritise back-to-back tasks, emails, and meetings, with little or no space, or time to reflect on their practice.

It is essential that in addition to having more formal learning opportunities, tutors have time to think about, reflect on, and develop their PBL practice, and these opportunities need to be embedded in day-to-day academic life. Whilst this can be generalised to teaching practices more broadly, it is particularly crucial when facilitating PBL, due to the more intensive interpersonal involvement of facilitators. Hmelo-Silver et al. (2019) assert that dialogic processes such as reflective debriefings are a crucial part of facilitator development (p. 308); however, the lack of research in this area suggests this is currently under-valued. As Argyris and Schön (1974) assert, the ways in which knowledge informs our actions, are initiated, developed and adapted through effective reflective practice, and I argue that more attention needs paid to them.

9.5.2 Provincial systems and operations

Whilst the availability of time and appropriate resources can be challenging for tutors, what is also evident is the increasing challenge around the control or influence of these resources. As university systems and operations become increasingly centralised and standardised, this has a clear impact on tutor agency. Giddens (1984) explains this as structures of domination (p. 31). It relates to the power relations and authority, and resources and how they are controlled or allocated. He describes those who have access to key resources as having transformative capacity (Giddens, 1993) and what was evident in the findings was that increasingly, those with transformative capacity are not those most involved in pedagogical development, due to the upsurge in centralised processes within universities.

The increase in student numbers caused by the massification of universities in the UK has also resulted in challenges to the quality of teaching and learning. Giannakis and Bullivant (2015) suggest that this reduction in quality is, in part, due to a reduction in face-to-face interactions, which they found to be a source of student dissatisfaction. There are apparent risks to PBL in

this, as stories from all sites revealed a pressure to increase student numbers within seminars, whilst reporting a simultaneous reduction in tutor agency relating to the processes around grouping and timetabling students. This decline in agency is a result of the devolution of transformative capacity in universities, from academic tutors to centralised timetabling teams. As PBL relies on interaction between students, and interaction between students and tutors, there is a more significant impact from increasing student numbers, than in more didactic teaching and learning activities, such as lectures.

This is clearly a source of tension and frustration for those undertaking pedagogical development. However, it is acknowledged that the massification of higher education makes it difficult for these processes to be organised entirely by a range of different course teams, each wanting the best spaces for their students. Demands for classroom space are increasing, as resources are diminishing, and this results in the dissatisfaction of students, staff, and organisations (Oude Vrielink et al., 2019). Nonetheless, educational quality needs to be prioritised, and this should be underpinned by the pedagogical reasoning of those with the knowledge and skills to do so. It is crucial therefore, that universities consider how this pedagogical reasoning can become more integral to their centralised processes.

The physical structure of classroom spaces provided a useful ceiling for student numbers in some of the research sites. Those that had been designed specifically for small group learning, could not accommodate higher student numbers, and in these sites, there had been a much more limited increase in numbers within each team or session. This was in stark contrast to the stories told within the science sites, where all students within a cohort could be accommodated in one large room, meaning that the increase in numbers year on year were commonly absorbed. Whilst there was no issue with the amount of space, as they could all be seated comfortably, there was a significant impact on the PBL facilitation. Whilst *roaming* or *floating* facilitators are commonly used in PBL, facilitators still need a presence within groups in order to prompt critical thinking, facilitate reflection, and monitor group dynamics (Hmelo-Silver et al., 2019). Without further research, it is difficult to know what number of teams within a session would be optimal. Nonetheless, it was evident at Forest University that despite the incredible energy of the facilitators, having over 25 discreet teams within sessions meant they had limited time for any depth of discussion that might address the unique learning needs and style of each team. Ellis and Goodyear (2016) assert that where tutors are required to manage multiple students working simultaneously on complex tasks, this may result in an 'excessive mental load' on tutors (p. 167). Further, I argue that without adequate facilitator input, there is a risk that the

intended pedagogical approach is compromised, and students may not perceive a difference between PBL and learning that is more entirely self-directed.

Another crucial aspect of timetabling processes that impacted greatly on the PBL, related to the degree to which course teams had agency in determining the specific timing of the sessions in relation to the students' overall learning experience. As with other structures of domination, this was generally site-specific, and was more prevalent in conversations where participants considered it to be problematic. At Forest and Beach universities, the PBL timetable was generated by central timetabling, and the timing of the sessions was random. Nonetheless, participants at both sites suggested that they were able to negotiate some changes in timing that had supported the PBL requirements. At River, Hillside, and Meadow universities, the PBL timetable was much more specific to particular days or times, and random timetabling of sessions would clearly have been problematic. An example of this would be Hillside University. Here, the PBL was timetabled ensuring that there was one session in the first week, where students would explore the trigger scenario, followed by two sessions the following week, where students would feedback their learning. The course team had been able to ensure that these sessions all happened on the same days for all groups, ensuring useful gaps between sessions, despite the large cohort of students.

At Meadow and River universities, the PBL sessions also ran in parallel, and the rooms tended to be in close proximity. This afforded the facilitators more opportunity to engage in reflective debriefs between sessions. At River University, the short gap between sessions allowed for this, whereas at Meadow University, participants reported that this had changed over time, and they could now only engage in such discussions by leaving one PBL session early, and then arriving late to the following one. This had been the result of timetabling becoming centralised, and the course teams having less agency to determine details of session timings. Whilst it is inevitable that timetabling systems will need to make the most efficient use of space, the somewhat latent impact of this on learning, requires increased attention.

It was clear from stories told, that tutors in some sites were frustrated by their lack of agency in relation to systems and operations. Their endeavour to maintain consistency and quality within the PBL was portrayed as an ongoing fight against these systems and operations. Vähäsantanen et al. (2020) advocate for university leadership that promotes agency in its staff, rather than focusing on control and monitoring. Whilst they discuss this in relation to managerial practices, I argue that tutor agency needs to be re-prioritised in relation to other key educational structures. Ensuring that tutors experience a strong sense of agency within their roles will

improve their motivation and commitment to the organisation that they work for (Hautala et al., 2021); however, as argued earlier, constraints on agency are not necessarily always undesirable.

9.5.3 Summary

Pedagogical provinces is the structural cog that is most perceptible to individuals when they experience *constraint* on their agency. When pedagogical provinces *enable* tutor agency, it is often unremarkable to individuals. I argue that collaborative learning spaces are crucial for PBL to thrive, both in terms of the classroom spaces for students, and the social spaces for staff, and these are currently undervalued. Students should be able to sit in ways where they can fully engage with each other, and that allows the facilitator to be less intrusive in discussions. Tutors should have the space and time for reflective discussions, which are invaluable in developing communities of practice, and also due to the interpersonal nature of PBL. Whilst it is acknowledged that centralised and standardised processes and systems may provide some efficiency, there needs to be more opportunities for pedagogical reasoning to be integral to these.

9.6 Key messages – implications and recommendations

The central argument of this thesis is that there are three interconnected cogs of structural influence that impact on tutor approaches to PBL: namely, signature pedagogies, pedagogical legitimation, and pedagogical provides. There is interplay between these structural cogs and tutor agency, and these influences may be perceived differently, often relating to individual internal reflexive conversations. Higher education institutions, course teams, and PBL tutors need to consider the degrees to which these structural cogs are constraining, or enabling tutor agency, and the resulting impact of the consistency, quality, and development of the PBL. The key messages in this regard are as follows:

- ***Pedagogies of practice must predominate over pedagogies of participation until student-centred pedagogies have become the new ‘traditional’.***

At present there is disparity in terms of the signature pedagogies in use across academic disciplines. Where pedagogies of participation underpin our practice, there is a risk of morphostatic curricula, and this inertia risks university courses becoming unable to adequately respond to the changing needs of society. PBL tutors must consciously consider their unique stance in relation to signature pedagogies; however, course teams also need to engage in open discussions in this regard. This may be part of development

meetings or course review events, although should also be encouraged in day-to-day conversations. Ensuring that pedagogies of practice predominate within courses will ensure that course teams are able to retain or develop a focus on the knowledge, skills, and ways of being that are considered essential for graduate employment, rather than merely repeating familiar habits and disciplinary traditions.

Academic developers need to ensure that pedagogies of practice are a strong theme within staff learning activities. Tutors will be enriched through experiencing the pedagogies that they consider most fitting for their own students, and this will limit the tension between the influence of pedagogies of participation, and the influence of pedagogies of practice

Pedagogies of practice also need to be considered within schools in order that students are supported to develop the skills required to reason, and to contend with uncertain knowledge. In subjects where knowledge might be considered to be absolute, there is a greater risk of students developing unhelpful learning habits, such as memorising and repeating knowledge. A continued focus on certainty over understanding will not serve them well beyond the protective boundaries of secondary education.

- ***Pedagogical architects and curators are needed to transform curricula and maintain pedagogical consistency.***

Curricular change requires substantial time and effort, particularly when embracing complex pedagogical change. Where there are no pedagogical architects, tutors will transform teaching and learning activities at a module level rather than course level, and this is likely to result in lack of consistency and coherency within courses. Pedagogical change is often large-scale change and therefore requires a position of authority to coordinate and support the process. Once curricula have been developed with coherency of pedagogy, it should not be assumed that this will continue without sustained attention. The role of pedagogical curator is essential in this regard, and I argue that this is currently undervalued in higher education.

Whilst I argue that both roles are crucial, it could be considered that pedagogical architects are most critical where curricula are morphostatic, in order to instigate development work; whilst pedagogical curators are most critical in morphogenetic curricula, in order to maintain consistency of approach. In aiming for coherency in change and consistency in pedagogical approach, consideration should be given to the

impact of such constraint on tutor agency, and this may vary according to individuals' roles and personal epistemologies.

- ***Communities of practice limit the experience of constraint on tutor agency.***

As mentioned above, it is important to note that balancing tutor agency with consistency of pedagogy is challenging. It is acknowledged that staff may not feel committed to an organisation if they do not feel agentic in their work (Vähäsantanen et al., 2008). However, if all tutors are unrestricted in their approaches to PBL, it is likely that students will have inconsistent experiences as they progress through their studies, and this is likely to cause confusion. It is evident, therefore that constraint on agency is necessary; however, cultivating pedagogical communities of practice within course teams will help to reduce tutors' perceptions of this. Promoting collaboration and community discussion will socialise tutors into cultural norms and this is argued as being more propitious than the enforcement of authoritative rules, where tutors are more likely to perceive constraint.

- ***Development of the educational environment needs to focus more strongly on collaborative learning spaces.***

Learning spaces for students need to account for the student-centred learning activities that universities are being encouraged to provide. Whilst the availability and size of classrooms is a significant aspect of this, resources within this are also crucial. Students need opportunities to make valuable connections within PBL sessions and thought needs to be given to the ways in which the environment can support this. Whilst furniture such as oval tables were noted as preferable over traditional oblong tables, where more flexibility is required, universities should consider whether furniture such as pods might be valuable. Seating arrangements must support interpersonal connection and engagement by allowing eye contact between all team members, and between the PBL facilitator and team members. As such, where tutors adopt a roaming facilitator approach within sessions, they must be able to sit amongst the team members in order to limit the appearance of a more didactic approach to teaching.

Collaborative learning spaces are also crucial for staff as these engender the communities of practice that are explained above. These spaces should be informal and accessible day-to-day, rather than used by more formal arrangement, and this is particularly crucial where staff are non-substantive and therefore have fewer

opportunities to connect. Currently these spaces are under-valued, and I argue that more attention is needed in this regard.

- ***University leadership needs to ensure that centralised processes do not undermine pedagogic reasoning.***

Evidently, tutor agency in relation to centralised processes is in decline, and this risks hindering pedagogic development. Policies and procedures must ensure a strong focus on pedagogic reasoning, and more agency should be bestowed upon those whose roles are pedagogically focused, such as the pedagogical architects and curators. Whilst it is acknowledged that there is a need for many centralised systems to ensure that processes are streamlined and efficient, tutors must be able to voice the pedagogical reasoning that underpins their teaching and learning. This allows a degree of central organisation without losing sight of pedagogy in processes and systems such as timetabling or admissions.

9.7 Chapter summary

This chapter explored the findings in relation to existing literature, arguing some key considerations in relation to cultivating valuable PBL ecologies. It conceptualised these in a model of structural influence, consisting of three cogs that form an aggregate, impacting on tutor agency. Signature pedagogies were explained as pedagogies of practice, and pedagogies of participation, and I argued that pedagogies of practice should foreground pedagogies of participation in order that graduate skills and attributes underpin learning ecologies. I explained the roles of pedagogical architects and curators, arguing their importance in developing and maintaining PBL ecologies. I suggested that the pedagogical provinces cog is the most perceptible to individuals, and argued the importance of collaborative learning spaces, both for students, and staff. Further, I argued that whilst centralised and standardised processes and systems are valuable, there is a need to emphasise the importance of pedagogy. The chapter concluded with an outline of the key messages from the study.

The next chapter, entitled 'Conclusion: A Story without an Epilogue' concludes the thesis, noting its originality, limitations, and areas for future research.

10 Conclusion – A Story Without an Epilogue

10.1 Introduction

The previous chapter discussed the key findings of the study in relation to existing scholarly literature. It presented a model of structural influence, that I argued provides guidance for individuals and organisations to support the development of sustainable ecologies of PBL. This chapter summarises the originality of the study, detailing the contribution to knowledge that this thesis offers. Next, it discusses the key limitations of the study, highlighting those whose voices were not heard. Some suggestions of future research follow this, and the chapter, and indeed the thesis then concludes with a brief closing summary.

A story would usually conclude with an epilogue that brings finality and closure. However, the title of this chapter signifies that there is much that can still be learned about PBL and so, this thesis now forms part of the expanding and unfolding narrative of PBL knowledge.

10.2 Originality of study

This study has engaged with the complexities of multi-site, multi-disciplinary research, and has revealed new insights about PBL, the influence of structure and agency on the design and development of PBL, and tutors approaches to facilitation. These are as follows:

1. Developed a new model of structural influence that will guide tutors and organisations in developing their understanding of the unique ways in which structure and agency shapes PBL in disciplinary and/or organisational communities. Argyris and Schön (1974) reported there being a reluctance to embark on multi-disciplinary research, explaining that 'The few hardy souls who plunge into cross-disciplinary waters find that their colleagues view the effort with scepticism' (p. 3). However, it is the multi-disciplinary nature of this research that has unveiled some of the structural influences illustrated in the three cogs of the model developed through this study, that were commonly imperceptible in those communities.
2. Built on previous knowledge of signature pedagogies, presenting seven contemporary signature pedagogies of PBL that manifest as disciplinary habitus. This has resulted in a more comprehensive understanding of the significance of this influence, and the ways in which disciplinary habitus develops both from the desire for students to develop the skills and attributes required for graduate roles, and from the recapitulation of tutors'

own learning experiences within their discipline. This has illuminated the ways in which signature pedagogies may engender morphostatic or morphogenetic curricula.

3. Outlined the concepts of pedagogical architects and pedagogical curators explaining how these roles in curriculum design influence both pedagogy and facilitation and are crucial in sustainable PBL ecologies. Key insights have been presented regarding the ways these roles impact on the PBL, its development, and the consistency of facilitation. For example, architects are understood as being particularly crucial in morphostatic curricula, where structures may inhibit PBL development; and curators are understood as being particularly crucial in morphogenetic curricula, where inconsistencies may manifest due to tutor agency.
4. The impact of institutional structures on pedagogical reasoning, and the ways in which these may engender or interrupt collaborative learning spaces. The findings indicate ways in which students can be supported to learn collaboratively in the classroom environment; however, valuable insights have also been gained into the benefits of social and reflective learning spaces for staff, at a time when such spaces are dwindling in higher education.

10.3 Limitations of study

In accordance with other qualitative research, there are limitations in this study that relate to the generalisability of the findings. However, this does not negate the value of the study. In accordance with Archer (2003), I invite individuals to consciously attend to their own internal conversations in relation to the findings of the research.

For me, the most significant limitation of the study relates to who was, or was not, included in the study as there are voices that were not heard. My aim was to have representation from each of the four Advance HE disciplinary clusters: namely, arts and humanities, health and social care, social sciences, and STEM (science, technology, engineering, and mathematics). However, despite my endeavour, I was unsuccessful in recruiting any site from the arts and humanities clusters. The reasons for this are not entirely clear. As I do not teach within arts and humanities and this disciplinary cluster is not well known to me, this may have limited my search strategy. Alternatively, it may be that PBL is not commonly used within this disciplinary cluster. If this is the case, it would be interesting to explore the reasoning behind that.

Although I managed to recruit disciplines from the other Advance HE disciplinary clusters, these clearly cannot be considered a representative sample due to the limited number of disciplines

included. With more time and resources, this study could have extended into the exploration of other disciplines. Whilst I was in awe of the number of disciplines included in Shulman's work, I realised the significant scope of my own study when I realised his research had involved additional personnel and had extended over a 10 year period (Shulman, 2005a).

Others whose voices were not heard in the study included other members of the course teams who did not offer to participate in the study. Whilst there would be clear ethical and practical implications of mandatory participation in research, it is acknowledged that studies that rely on voluntary participation have a higher degree of sample bias (Cheung et al., 2017). It is likely that there will be many reasons for not participating in research, such as feeling exposed, or not feeling able to invest the time; however, it is highly probable that the tutors who volunteered to participate in this study were those with more passion for, and confidence in facilitating PBL. This obscures valuable insights from other tutors, who may have revealed divergent stories about the influences on their approaches to PBL. Nonetheless, I would argue that this research has portrayed a story that is true to life, rather than necessarily true *of* life, which was the endeavour explained earlier in chapter 3.

A similar limitation in relation to sample bias, relates to the research sites themselves, as the sites where PBL was **not** happening were not included in the study. This may have offered additional insights, as the influence of structure and agency may manifest differently in these sites and may be significant in their absence of PBL. I discuss this again in the next section, which suggests areas for future research.

10.4 Future research

In conducting this research, many areas of personal interest have developed, and it is tempting to present the extensive list of recommended research that would arise from this. Instead, I will confine my recommendations to those considered to have the most significance. My main broad recommendation is that research builds on this study by including other disciplines and research sites. In particular, I would encourage researchers to consider the ways in which the model of structural influence might provide a useful framework within such research, whether focusing specifically on PBL, or extending to consider the influence of structure and agency on teaching and learning more broadly. The value of using structure and agency as a conceptual lens has been explained in this thesis and I recommend that other researchers consider the insights that this may add to other studies. As such, I invite other researchers to detail the influences that they observe within their research that are in keeping with the three structural cogs in the model,

or even suggest further structural cogs that they may have found to be of significance. Other questions that this study has raised are outlined below:

- ***What is the impact of signature pedagogies on graduate outcomes?***

Whilst this study discussed many of the skills and attributes intended as graduate outcomes, it would be invaluable to understand the degree to which signature pedagogies impacts on this, particularly in relation to the contemporary signature pedagogies presented in chapter 5. The recent progression from the Destination of Leavers of Higher Education Survey to the Graduate Outcomes Survey denotes that this topic is currently attracting attention.

- ***What are the signature pedagogies in compulsory education and how do they vary across subjects?***

This study revealed some challenges in relation to students transitioning into higher education and adapting to new approaches to teaching and learning. Whilst in this study, tutors within science disciplines reported this as a more significant challenge than others, it is important to understand this more broadly. Research that transcends both compulsory and post-compulsory educations would gain better understanding of the pedagogies that support students.

- ***How do social learning spaces support the development of communities of practice in higher education?***

Whilst this study has concluded that social learning spaces are crucial for the reflective conversations that support the interpersonal nature of PBL, there is a pressing need for this to be explored in post-pandemic higher education. The data in this study was gathered before the Covid-19 pandemic took hold and the impact of the loss of informal social learning is yet to be understood.

- ***How does PBL evolve over time?***

By adopting a life history approach, this study captured some detail in relation to how PBL evolved over time in the sites, a longitudinal study would add further insights to this. In the recruitment phase of the study, I had contacted research sites where I had found publications about the implementation of PBL in a particular course; yet was regularly informed that they did not use PBL. The reasons for this are not known; however, it

raised questions for me about the longevity of PBL. The courses in this study are obviously the sites where PBL is more steadfast, despite some of the structural challenges that were revealed. What is also important to understand is where PBL is *not* happening, and why. Are structural influences in some sites or some disciplines resulting in it being a transient pedagogy with a *shelf life*? This could build on the reflective observations of Moust et al. (2005) who also noted an ‘erosion’ of PBL curricula at Maastricht University, a university that is internationally recognised for its PBL philosophy (p. 665).

10.5 Thesis summary

This thesis has presented the stories of five different disciplines in five UK higher education institutions, exploring the influence of structure and agency on tutor approaches to facilitating PBL. By utilising structure and agency as a theoretical lens, and by adopting a life history approach to narrative inquiry, it has contextualised these stories, portraying the cultural, social, and historical contexts in which they happened.

Student-centred learning, such as PBL, is a recommended pedagogical approach within UK higher education due to its effectiveness in supporting students to develop the skills and attributes required in graduate roles, and within society more broadly. The increased attention to graduate outcomes begets a shift in focus within higher education, from absolute ways of knowing, where knowledge is objective, to ways of being, where students develop independence, graduate identities, and are confident in contending with uncertain knowledge. PBL is well-placed to support students with a diverse range of learning needs, therefore the findings of this study are both timely and relevant.

The thesis presented five chapters that revealed the findings of the study. These included the Introduction to the Research Sites, followed by four thematic chapters entitled Signature Pedagogies, The Law of Curriculum Inertia, Epistemological Values, and Site Civilisations. In the chapter that followed, these were considered in relation to scholarly literature and a model of structural influence was presented. This provides a conceptual framework to guide the conscious consideration of the ways in which structures may enable or constrain tutor agency and can support the development of sustainable PBL ecologies.

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Appendix 1: confirmation of ethical approval



HUMANITIES, ARTS AND SOCIAL SCIENCES RESEARCH ETHICS COMMITTEE (HASSREC) **CONFIRMATION OF APPROVAL**

26 March 2018

HASSREC CODE: HCA17180040-R

The influence of structure and agency on tutor approaches to problem-based learning

Dear Heather

Thank you for your application for proportionate review ethical approval to the Humanities, Arts & Social Sciences Research Ethics Committee on the 7 March 2018 and subsequent revised application received on the 15 March 2018.

Your application has been reviewed in accordance with the University of Worcester Ethics Policy and in compliance with the Standard Operating Procedures for proportionate ethical review.

The outcome of the review is that the Committee is now happy to grant this project ethical approval to proceed.

Your research must be undertaken as set out in the approved application for the approval to be valid. You must review your answers to the checklist on an ongoing basis and resubmit for approval where you intend to deviate from the approved research. Any major deviation from the approved application will require a new application for approval.

As part of the University Ethic Policy, the University undertakes an audit of a random sample of approved research. You may be required to complete a questionnaire about your research.

Yours sincerely

Bere

BERE MAHONEY

Chair - Proportionate Review Committee

Humanities, Arts and Social Sciences Research Ethics Committee (HASSREC) Ethics@worc.ac.uk

Appendix 2: Participant Information Sheet

Participant Information Sheet

What is the purpose of the study?

I am studying the influences of tutors' approaches to facilitating problem-based learning (PBL) across different disciplines and different universities.

What is involved in participating?

If you agree to participate in the study, I would interview you and would then return to observe one of the PBL sessions you facilitate. I would check the content of the transcribed interview with you and would also check the presentation of my findings relating to your data.



One to one interview: It is likely that this would take around an hour of your time and would be in a location convenient to you. If this is within your place of work, I would ask you to organise a space for the interview. The discussion would be around your experiences of facilitating problem-based learning.

PBL observation: This will involve me attending a PBL session you facilitate to observe it and take some field notes. During this observation, I would remain a passive participant in the session. I would not have any audio-visual recording device but would take some field notes to remind me of the session. Students would be informed of the reasons for my being there and given the opportunity to say they would rather I did not attend. I would ask you to post a student information letter on to your online learning environment, or make available for the students in another way, prior to the session. I would also introduce myself at the beginning of the session and encourage the students to say, should they wish me to leave at any point. The observation would be on a different day to the interview, to allow some reflective space. Ideally this will be arranged with you at the same time as arranging the observation. Depending on the initial outcomes, I may request to interview you a second time.

Member checking: This interview would be audio recorded and subsequently transcribed, either by myself or a transcription service. Once transcribed, I would send the verbatim transcription back to you for validation and would also ask you to highlight any aspects of the discussion where you feel there is a risk of you, other people, or your employing organisation being identified. Following this, I would check that you consider the presentations of findings regarding your data to be fitting.



What are the risks and benefits?

The study is not considered to have any significant risks involved. The drawbacks regarding participation are most likely to be the time invested as detailed above. Although there are not thought to be direct benefit to participants, it is hoped that you will find the results useful for your own PBL practice.

How will confidentiality be maintained?

Both you and your place of work will be assigned pseudonyms to replace names. Identifying names and features will be removed from the data, and you will be asked to check the verbatim transcriptions to ensure this happens. Data will not be collected from the students directly and as such, they will not be quoted or individually identified.

What happens if I want to withdraw from the study?

Participation is entirely voluntary, and you are free to withdraw during the study, or within 14 days of data collection. Withdrawal from the study would prompt your data to be removed from the study and securely destroyed. It is also acceptable for you to omit to answer any questions.

What do I do if I am unhappy with the study?

If there is anything you feel unhappy with regarding the study or the way it is being carried out, then please do contact me about it. If you feel unable to, or uncomfortable discussing matters with me directly, then you may prefer to contact my Director of Studies instead.

What will happen to the data collected?

Data from the study will be stored securely, in accordance with the Data Protection Act, the General Data Protection Regulations 2018 and my own data management plan. If you want further details of my data management plan, then please ask and I will happily forward this.

The findings of the research will be written up as part of a PhD thesis and through other research outputs. As such, anonymised research data may be archived with UK Data Service, with a view to it being shared with other researchers. You can find out more about the principles of data archiving and sharing here:

<https://www.ukdataservice.ac.uk/manage-data/legal-ethical/consent-data-sharing/inform-participants>

Who is funding the research?

The research is funded as part of a part-time PhD at the University of Worcester.

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If you would like to speak to an independent person who is not a member of the research team, please contact Louise Heath at the University of Worcester, using the following details:

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Appendix 3: Consent form

Consent form

Study title: The influence of structure and agency on tutor approaches to facilitating problem-based learning across disciplines.

Please read the statements below and initial either the 'yes' or 'no' column to indicate your response for each statement.

Statement	YES	NO
<i>Participation in the study</i>		
I have read and understood the participant information sheet, and understand the nature of the study and the risks involved.		
I have been given the opportunity to ask questions and am satisfied with any responses.		
I understand that my participation in the study is voluntary and that I can withdraw at any time during the study, without giving reason. I understand I am also free to withdraw up to 14 days following data collection and the data will be removed from the study and securely destroyed.		
I agree to participate in the study. I understand that this involves being interviewed as well as one of my problem-based learning sessions being observed, as detailed in the participant information sheet. I understand that interviews will be audio recorded.		
<i>Use of information</i>		
I have read, and understand the ways in which confidentiality and anonymity will be protected in this study, as detailed in the participant information sheet.		
I understand that I may be directly quoted, both within the study and in other research outputs. These quotes will not identify me or the organisation I work for.		
I agree to anonymised data I provide, being stored on the UK Data Archive site.		
I understand that this data may be accessed by those interested in the findings of this study, and by researchers completing other studies.		

Participant's statement

I agree that the research study named above has been clearly explained to me, to my satisfaction and I agree to take part. I confirm I have read the notes above and the Participant Information Sheet and understand what the study involves.

Signed:

Date:

Researcher's Statement

I, Heather Fraser, confirm I have explained the nature of the study and the risks involved to the proposed research participant.

Signed:

Date:

Appendix 4: Student consent form

Student consent form

Study title: The influence of structure and agency on tutor approaches to facilitating problem-based learning across disciplines.

Please read the statements below and initial either the 'yes' or 'no' column to indicate your response to each statement.

Statement	YES	NO
<i>Participation in the study</i>		
I have read and understood the student information letter and understand the nature of the study.		
I have had the opportunity to ask questions and am satisfied with any responses.		
I understand that I am not obliged to consent to the researcher attending the session and that if I do consent, this can be withdrawn at any time, without giving a reason. The researcher will leave the seminar at that point.		
I understand that I am not being asked to be a participant in the research.		
I am willing to allow the researcher to attend my problem-based learning session and understand she may take notes during the session.		

I, agree that the researcher has explained the nature of the research study to me, to my satisfaction and I consent to the researcher observing today's problem-based learning session. I have read the student information letter and the notes above.

Signed:

Date:

I, Heather Fraser have explained the nature of the study regarding my involvement in today's problem-based learning session.

Signed:

Date:

Appendix 5: Inclusion / exclusion criteria

<i>Inclusion</i>	<i>Exclusion</i>	<i>Justification</i>
Current PBL programme		Information needs to be up to date and needs to be observable.
UK based studies at undergraduate level.		Different considerations across different locations so narrowing down to UK will allow analysis of cultural comparisons across disciplines and educational settings without complicating with much more diverse educational / financial / social environments.
Courses have a focus on face-to-face support from facilitators.	Courses where online facilitation is more significant than the face-to-face facilitation.	It is suggested that there may be different challenges in online facilitation and this is not specifically what this study aims to explore.
Students should work in small teams (around 12 or fewer). There may be more students within the teaching session if the facilitator acts as a 'roaming tutor' (T. Barrett, 2011, p. 6).		Predominantly literature suggests that PBL is carried out with small groups.
Students should work on ill-structured problems. Barrett and Moore (2011) define problems as follows: 'A scenario A story A dilemma A trigger derived from any media or A starting point for learning' (p. 19) The students should be able to demonstrate innovation and individuality in their learning.	Main focus is around problem-solving learning (ie students having to work in a self-directed manner to find what is perceived to be a correct answer)	This is key to the definition of problem-based learning and may filter out where students work on projects towards what is perceived to be a correct answer.
Facilitators have experience of PBL and a sense of competence.	Facilitators who do not feel they have a reasonable understanding of problem-based learning.	There is much written about the challenges in facilitation and tutors feeling they need specific training. This is not specifically what this study aims to explore.
Courses should have the potential to provide around 4 or 5 participants for the study.		It was felt important to have consistency in the data collected.

Appendix 6: Interview schedule

- Thank participant for time.
- Check re PIS and consent form.
- Explain narrative interviewing. Story, not question / answer.
- Interview, observe, transcribe, member check.
- Check is participant need to be finished by a certain time.

Discussion topics

Current role within setting.

So, I am interested in you as a tutor - Tell me about your current overall role and how you came into it. Prompt re discipline, time, place and person.

Experience of PBL

Tell me about your journey into PBL facilitation (prompt re how long facilitating PBL, when would you use PBL)

Observed PBL session

Tell me more about the session I am due to observe? (Prompt for overall course info, typical session or not, typical learning activity for students or not.)

PBL facilitation

Tell me about how you tend to facilitate PBL. (prompt for examples – good and where things have perhaps not gone so well. What does good PBL look like, how easy is it to achieve. Other teaching commitments.)

Teaching influences

Prompt discussion about general considerations / influences to teaching. Discuss in relation to PBL facilitation.

Inquiry threading through conversation

Relating broader discussions to PBL facilitation. Eg You mentioned, does that influence your approach to PBL? I'm interested to hear more about that.

Relate more specific discussions to disciplinary areas. Eg You have talked about, is that something which is customary to [disciplinary group]?

Closing discussion

Finally, tell me about anything you feel would be useful to my study that I should perhaps have asked.

Thank participant for their time, ask if they have any questions and remind what will happen now.

Appendix 7: Example of interview data

The following is approximately half of the transcribed interview with Gary from Beach University. I have removed any data that was considered to risk identifying individuals or organisations and have note where this has been removed. This includes some seemingly minor details, such as dates, that could reveal identity through their assemblance:

Gary So I did my PhD in a subject-focused research area, so I did [removed] up at the University of [English city]. While I was doing my PhD. I got quite heavily involved in teaching, so I volunteered to do laboratory demonstration and I volunteered to do some classroom-based teaching as well. So, I did some support teaching in maths workshops and physical chemistry workshops and I really enjoyed that. I really enjoyed working with students, giving them feedback on their work and supporting their development as they went through.

So, when I was looking for a career, finding something that was in higher education, but also teaching focused was something that was quite important to me. I was quite lucky at the time, because here at Beach they had some [removed] funding to support a post that was to help introduce problem-based learning into the chemistry curriculum here at Beach.

00:01:30

And the idea was we were doing this as part of a national level project and we'd be comparing findings with other institutions and using that as an evidence base to disseminate back to the sector about the effectiveness of PBL in chemistry, at higher education level. So, I spent two years and about two months doing that initial role, which was a kind of a postdoctoral kind of level role. When I was doing that, I was working with people developing new PBL problems.

We borrowed some from other degree programs. We integrated some content from the natural sciences program, for example, into chemistry, and we evaluated a lot of that. We did some of that ourselves internally, but we also brought some external agencies in to help do that. So, we had the National Foundation for Educational Research help us with some of that as well.

From [dates removed], I was a teaching fellow, which meant I went from having a fixed term contract to a permanent contract. I also took on more responsibility during that time, so I became entirely responsible for our PBL at that stage. So, anything new that we were doing, I led rather than just being a part of the team, which is what I was before that.

00:02:48

During that time, I managed to get external funding on three separate occasions to develop new PBL modules. So, I developed one on the role of sustainability in chemistry. So, it was all about some generating power for a small European nation and all the alternative approaches that can be used. And getting students to think about how chemistry fits into those, because that's often not very obvious. I did a module on the role of chemistry in food security, so thinking about how we verify the authenticity of food supplies, how we can protect the rights of all the different stakeholders involved in the manufacture and sales of food products to the public.

And I did another module, which was really fun, got to work with lots of different people from around the university, and from actually outside of academia, on interdisciplinary contexts in chemistry. So that was kind of a module of small PBL activities that focused on the overlap of chemistry with geology, with physics, with biology and so on. So, two of those were funded directly by the [removed] They kind of subleased the body back out to us. But that was really enjoyable.

At the same time, I was taking on a couple of non-PBL responsibilities here, so I became year two tutor during that time. I like to cover more module convenorships here at Beach. That led to me becoming a lecturer in [removed], which I did for just over the three years, and during that time I worked my way into the teaching and learning committee and started taking on more strategic level responsibilities.

00:04:40

Just towards the end of that time I [small section removed].

Heather Wow. That's quite a lot of changes in the recent years.

Gary Yes, absolutely.

Heather So it feels like there's been a change for you from more of a chemistry focus towards more of a teaching and learning focus.

Gary Yes, completely. So, I left laboratory chemistry the day I started here, so I haven't done any, what some of my colleagues might call traditional chemistry research, since [removed]. And everything that I've done and everything I've published since then has been educational focused in nature.

Heather Right, okay. That's interesting. I'm thinking about when you said you finished your PhD and, you came here, and the role was about introducing PBL. What interested you in that, what drew you to it?

00:05:55

Gary Well like I said, I was looking for teaching focused roles in HE, and actually they weren't that many in Chemistry at the time. It's still the case now actually. They're fairly unusual teaching focused roles. So, this one came up here at Beach. I'd never actually heard of PBL, it's not something I did as an undergraduate student, it's not a learning approach I was familiar with from my teaching experience at university level. So, I went away and did a lot of reading about it to find out, because I thought well if I'm going to apply for this I need to have an idea of what it is.

I actually got quite excited that the concept behind it and the fact that it does give a lot of the control for the learning experience back over to the students and gets them thinking about how to structure and how to plan their way through a set of learning outcomes of their learning experience. So, it really appealed to me on that level.

Heather So it sounds like it was just like all worlds collided.

Gary Yes, absolutely.

Heather Everything came together. Okay. So, going back to before your PhD, was your undergraduate degree in chemistry?

Gary Yes.

Heather When was that?

00:07:04

Gary So I did my undergraduate degree [removed]

Heather Right. And then when did you do your PhD?

Gary [removed].

Heather Okay. So, you went straight from one to the other?

Gary Yes.

Heather Glutton for punishment. Excellent. And did you start here, did you say in [removed] with the PBL?

Gary No, [removed]. I was up in [English city] for eight years and then I've been here since then.

Heather All right, got you. Okay. So, it feels like you kind of changed that focus from focusing on content in terms of chemistry to the approach to teaching it. And it sounds like PBL, it was almost coincidental why you applied for it. What has kept you motivated because it feels like that's something that you became interested in and developed?

Gary I think initially, probably the challenge, because it was very difficult embedding PBL in chemistry. It was a lot more challenging than I initially anticipated it was going to be. We made mistakes in our initial approach. Definitely. So, some of the PBL problems that we imported from other degree programs weren't a good fit for our student cohort, for example. So, we borrowed a PBL problem where students were put in the role of Hollywood movie consultants. They were making a Sci-Fi film based on a team of scientists who'd been shrunk down.

00:08:38

And I can't remember how, but they'd gone into someone's body and they were encountered with all these cellular structures, and what have you. And the students were expected to describe these processes for the animator in the studio. Well, our students hated it. Absolutely hated it. They thought it was insulting, they thought it was patronising the way that we'd given them this storyline to work on. So, it wasn't an easy integration and we learnt very quickly, that if you want to do it right, you've got to actually engage with the students. You've got to think about what do YOU want from this.

And what they actually wanted was PBL problems that matched their professional expectations. They were doing problems based on the kind of roles they think chemists do. They want to see something that is a potentially useful experience or something that's insightful in terms of teaching them more about how chemists use that understanding in a professional capacity. They didn't want something that was just a bit quirky and funny, because they saw that of being less value than something that was aligned on to a graduate who is working into an analytical lab, for example.

00:09:45

Heather So it sounds like they wanted it more true to life.

Gary Yes, absolutely. They wanted something that was very much fixed in the real world, not as kind of farfetched and fictional as what we originally went with. So clearly right from the very start there was a big challenge in getting it right and I was quite determined to make sure we got that right. So, it spurred me on, it kept me going and thinking, okay, we've got to adapt and change this. And I would say, it probably, in all honesty, to the point where I got happy with it, it took at least 10 years from there.

I mean, we made big improvements in the second year. We made big improvements in the third year of doing it. The students were a lot happier. In terms of the learning experience, we were delivering something been meaningful.

We were happy with the results and the data that we were collecting, but it wasn't until we got the induction process right, which was between about 2015 and 2016, that I really felt we were starting to hit upon something. And really get something that was where I wanted it to be originally. So, it took a long time.

Heather So it sounds like a lot of perseverance and just determination to get it right.

Gary Yes, absolutely.

Heather And so you said about getting the induction right.

Gary Yes.

Heather What was that about?

00:11:08

Gary So we used to chuck them in the deep end with this. So, we used to do an introduction to PBL lecture, there's an irony in there somewhere. And then we used to start with the movie scenario problem, that was the first thing we did first year, and we went straight into it. When we dropped the movie scenario problem in the second year, we replaced it with another PBL problem, but we didn't really think, how do we introduce the students to PBL? We just thought, well what we'll do, we'll do that talk again and we'll get them doing the first problem.

If you go back to the literature, one of the key messages that keeps coming up is you have to prepare students for that type of learning experience. So, like I was I saying, it was new to me when I came here, it's also new to all of our students when they come here. There's a small number of schools and colleges that are using PBL or context-based learning type approaches. Not very many. There's one local school that does a great job of it actually. It's one out in [English town] that does context-based laboratories, gets students working in teams, gets students being creative in terms of how they do lab investigations.

Absolutely fantastic. Unfortunately, they're very much in the minority. There's not many other schools that have the flexibility to do that. So, most of our students come into it and they see this for the first time when they get here. So, we did two things to try and prepare our students for this. One was change the way we did open days. So as soon as students come in, essentially the applicant visitor day that we changed, the UCAS day, in old money.

00:12:42

We have always done a taste of university life in that day, so we've given them a very condensed chemistry timetable, which includes some lab, includes usually a very short tutorial, includes a lecture, includes some opportunity to socialise with some of our existing students. What we added to that was a short PBL activity, so we added a kind of self-contained thirty-minute... I would say it's not a proper PBL activity, because you can't do to do it 30 minutes? But it's a PBL-style activity because it gets them working in teams, get some being creative, gets them producing some kind of output, in half an hour.

We get them to make a poster on a bit of flip chart paper, it works, it's fine. And it gets them presenting their findings to others. So, it gives them a taste of that experience that they're going to have when they're at university. And we evaluate this. We get them to do a questionnaire afterwards. They're always phenomenally positive about it, because we were very wary when we introduced this, it's all different to everything else they will have seen on our open day, and the things they will see on other open days. We thought, are we actually going to end up putting them off by doing this?

But they're always hugely positive about it, which is great. So, what we do at the start of first year now... I was a bit worried about doing this initially, because I thought I was giving a lot of time up to it, but I went for that. Give them the entire first half of the first semester to do a PBL induction. So, I wrote a new PBL problem in 2015, which I almost chucked the chemistry out. I almost felt, well let's forget about the chemistry.

00:14:24

Let's just get being creative, get them working in teams, get them talking to each other, get them used to making decisions, and not depending on us to kind of guide their decisions too much. And get them used to the kind of qualities that they will have to use in the more chemically focused PBL problems later on in their degree.

So, in this problem, they are tasked with designing... It's a kind of mini educational project actually. They're asked to plan, design and evaluate a small self-contained educational resource. That educational resource has to be something that's suitable for use on the bus commute from the halls of residence onto campus. It has to be chemistry, so I suppose it is still a chemistry theme in there. It's very light touch compared to what we used to do. They can choose what chemistry theme they want to use, it has to map somehow onto our general chemistry module, which is our kind of bootcamp intro to chemistry module we do at the start of the degree.

And it has to be something that is of a suitable level for other students at the start of a university degree. So, what they typically do, they will go out and they'll do some market research. So, the very least they will do, they will discuss this in a group, and they'll have a vote over what topic they will do, what type of learning resource they will do, over the format of their evaluation. How they are they going to pilot it and trial it. Some groups go beyond that. Some groups actually go out and they generate a questionnaire and they'll talk to the rest of the cohort.

00:15:49

Sometimes the students go beyond their own cohort, they talk to friends that have gone off to other universities and get them to give them some feedback. And they generate all these wonderful things. So, we have videos, we have games, we have had copy resources. So, I've got this thing on here, one of them actually. This is like a little revision; a set of notes have been put together on a topic that they do very early on at their time in university. So, they're really, really creative and they're probably more creative than we would ever be in terms of the scope of different types of things that they make.

The evaluations are lovely as well. They do some really good work piloting these out of small focus groups and they do some kind of discussion with the group afterwards, finding out what they could improve. And what we do, we get the students to write a very short report, like a one-page report stating what they've done, why they did it, and what they learned from their evaluation, and what recommendations they would make. If I was to say, okay, I'm going to take your idea and I'm going to polish it up a little bit into a full learning resource, what recommendations did your evaluation lead to that would help inform the process of me turning this into a final version of a resource?

And actually, one of the outputs about was a card game that was developed two years ago, which we're in the process of writing that up for the [details of journal removed] at the moment. So, we do get some really nice outputs from that. Students, they warmly received, there's a very positive vibe. They get quite competitive about it which is good.

00:17:28

And we do some work on measuring their skills development as they work through their degrees. And we see that this raises their awareness of the importance of a number of skills, which they rate quite low in importance when they first arrive at university. So, it's good at increasing their awareness of the importance of the communication skills or organisational skills, for example. I guess this coming academic year will be the fourth or fifth academic year we'll have done it under that format. But we devote a lot of time to doing just the general introductions to PBL and not worrying about the chemistry so much.

Worrying more about the process of getting students working in teams, working on open-ended things and being creative, because that is actually something that, when we

they get here, we know 50% of our students don't think chemistry involves creativity when they arrive. So, we've got to a population of 200 over the last two academic years that we surveyed. I reckon it comes out with 50 or 51% of them saying that they don't think their degree will give them the opportunity to be creative. That's the survey we give them in their first week at university. So, I'm trying to shatter that right at the very start of the degree.

Heather So how does it fit with the traditional teaching of chemistry, I guess?

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Gary It works alongside it. Especially in the first year, we do go to some lengths to harmonise what we do in the PBL with what they do in their other modules. So, they're not necessarily encountering something six months in advance in the PBL, relative to the lectures and the lab that they do. We give them things that usually approximately, at least in the same semester, but sometimes they might encounter it in the PBL first. And we tell them that's fine, because it's all part of the process so that they are defining their own learning, they're doing their own research as part of the PBL.

And the students do accept that, they do see that, especially when it's helpful for something they do two or three weeks later down the line. They actually think it's quite good. It's almost like a little trick we use to get them to do the reading before they do the lecture sometimes.

With the later years there's a less alignment. The theme is more on the big challenges that chemists face. So, it's more about how do the chemists contribute to sustainability in power generation, for example. How do chemists contribute to the food industry? Though with those problems, they may have encountered a lot of in the theoretical content in previous modules, but there'll be a lot of novel stuff that they'll be learning for the first time as they do the PBL. So, I'd say we map it fairly closely onto what they do in the lectures and the lab in first year, but that it becomes less closely aligned as they go into later years, to give them more scope to go out and do that novel research.

Heather So from a student perspective, having these different ways of learning, how do they respond to that?

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Gary So they see it as a normal part of their degree. And that was why we did it in year one, initially. Because when we had all the options on the table just over a decade ago, we thought well how can we do this? How can we roll this out? We thought, well we could go straight in at year four or year three level. And that definitely has its advantages, because the students, by that point, they've got a good grasp of core chemistry, they have exposure to research themes. So, they're aware of different research topics in the subject. And that clearly is beneficial if you want to do really in depth PBL activity on a given application to the subject.

However, we were worried that those students had already been here for two or three years and they'd already had lots of lectures, they'd had lots of small group session, they'd had lots of labs, but they'd never had anything quite like PBL. And we worried that they would reject it as something that we had dropped on them, especially in their final year. They might worry that we're experimenting on them, at the point where their degree classification is being defined essentially. So, we thought right from the very start, we'll make this an integrated part of the program from year one. So, we started with year one and we followed that cohort through, and we spread through that degree with that initial cohort.

It wasn't smooth with that cohort. It would be unfair of me to say that that first cohort saw PBL as an equally valuable part of their course as everything else. I would probably be

inaccurate to say that was true of any of the probably the first three or four cohorts that did it actually, because it took us quite a while to get it right.

00:22:09 Now the students value it, the students see it as an important part. We look at the end of module evaluations, it's actually embedded in the module where they do lots of different types of learning. So, they have some lectures, they have some workshops, they have some PBL and they often highlight the PBL as one of the most positive aspects of the module. So, they do see the value. They do see a lot of value in it. All of the separate research away from the module evaluation stuff that I do.

So, I do a lot of questionnaires, questionnaire-based research with them on their development as individuals as they work through their degree that shows they've got a good level of appreciation of how it's feeding into their professional development. And then ultimately, the other thing that comes back to my current role as [removed] is that their employability is fantastic. We've got third best employability in the university, behind [course detail removed] which is a very, very small cohort size, and medicine, which you'd always expect to be number one.

[employability details removed] So, on the DHLE stats we've got the [position removed] best for overall employability and highly skilled employability. So, this kind of stuff is having a positive impact on them, which is carrying food to their graduate skillset. They're impressing their employers, they're getting good jobs, and they're getting promoted pretty quickly as well. So, it's having this really far reaching impact.

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What we're now starting to do is to bring some of those alumni back to talk to the students. So, we had two one-day workshops that were run for students in all of our years, actually, last year. It was one of our graduates that went out to work for [organisation removed]. He put a little team together of other people from his company. They came down to Beach, spent two days here. And that's what we want to do more of now, we want to show them the results, we want to show them the end product and show them what they're working towards.

Heather So they came back a bit and talked about how that had been useful to them?

Gary They did. They some of that, yes. They also did some workshops on CV writing and cover letter writing, and all kind of articulation of skills. They did some surgery sessions where students could come, you know, what are your career worries? What are you, what do you need? Well, what general stuff you need to know about career development. But they also did some chemistry workshops. They also said, okay, this is how you might have done this in an academic context. This is what the expectation would be in industry. And if you're given this problem in industry, we want you to get it absolutely 100% right.

In academia, if you get 80% score, you're delighted with that. You've got a good first-class score. If you get 80% score with industry, you've lost money probably. So, it's kind of teaching them that cultural difference about how to tackle problems in different scenarios, and that's something that we really, really want to build on going into later years. Last year was the first time we did it.

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Heather It's almost like, the difference between assessment and actual real life.

Gary Absolutely, yes. Thinking about your targets and who your stakeholders are, when your stakeholder is the... Maybe the shareholders, the chief executive, the director. It's puts an entirely different context on it.

Heather Absolutely. So, it sounds like you're feeling that problem-based learning promotes that employability.

Gary Yes.

Heather Did you see a difference, because obviously you came in to implement PBL? Did you see a difference from the cohorts going out to the ones that had picked up on PBL?

Gary Yes, so I think where we've seen the biggest difference is over the last five years of data that we've got for graduate destinations. So, the graduate destinations data lags a little bit because the questionnaire is done... think it's interviews actually, not questionnaires. I think it might be interviews and a questionnaire. They had done 18-months post-graduation, so the data we've got now is essentially for the graduates that been out for the six months already as well. So, it's probably the graduating class of 2017, I think, the data that we've got at the moment.

If you track that back, we've got five years' worth of data. We're seeing a steady increase in both of those metrics.

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The employment and the highly skilled employment. And that kind of tracks the... Where I've started to feel where it's really getting to the PBL point that I was happy with. It's where we started introducing the PBL induction, for example. It's where we started being a lot more creative in terms of how we use PBL in the later years as well. So, one of my colleagues has developed a PBL problem, which is, I don't even know if you can call it a PBL problem. There's almost no contact time associated with it. It's a virtual PBL. And he does it with...

Format-wise it's very similar to conventional PBL? They get put in groups, open-ended task, they get a budget to work within, so it's an analytical chemistry test. They get a budget so they can spend money on buying in a time of analytical chemists to run some tests for them. They have to work within the constraints of that budget. They can't get any extra money. And then at the end of it they have to write the short report, which is all done virtually again, but they also have to do a presentation. That's the one thing that they actually come in and have a contact session for.

The only contact time they have for that, are drop-in classes which are voluntary. The rest of it is all directed... Sorry, independent study time. So, they're asked to meet outside of timetabled hours. It's a skill that we try and get our students to work on in first year, actually. We try and get our students to think very carefully about how to organise their time between sessions. We give them access to the library study space booking engine on the virtual learning environment. So, we put a link straight through to the study space booking system and our students, they have historically dominated that at parts of the academic year.

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So, you can go over there at certain points in the academic year. Go into the library and there's loads of small independent study spaces in there, and you can find nearly every one of them is occupied by chemists at certain points of the year. So that's the kind of thing that we've developed over that kind of period of time. And we're starting to see that feed into those stats? I think we are seeing a very different type of graduate now, compared to where we were maybe six, seven years ago.

Heather So some of the courses that I've been talking to have kind of started from PBL and yours is one that's really spent a lot of time changing from something into PBL?

Gary [detail removed] natural sciences is essentially a PBL degree. Chemistry is a degree, which a lot of what we do is recognised. But to anybody who teaches chemistry in the UK, a lot of what we do would be... At least have analogues in every other chemistry department. But the PBL it's quite different and quite unique. I suppose it's not entirely unique. I suppose you have other departments doing it, but there's not many of us doing it.

We've always gone with that. We never wanted to make this a PBL degree in chemistry, partly because we didn't feel that there were some topics that could be done in that format. There was some things that weren't suited to the PBL format, but also because we wanted to give a very mixed learning experience.

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We wanted a diverse range of different types of learning experience for our students so we were finding things that everybody could latch onto. There's something for everybody in there somewhere.

Heather Tell me more about that topic, some being more appropriate for PBL, and some not?

Gary So there are a lot of things that I wouldn't dream of teaching by problem-based learning. I teach quantum mechanics, for example, which is a very deeply mathematical topic. It's very abstract. When students come in, I say to them, if you haven't done an A level Physics, which a lot of them haven't, I say, one of the best things you can do in order to learn about quantum mechanics is to forget everything you've been told about the structure of the atom from before university. And we'll go back, and we revisit all of those ideas. The problem is everything we do in QM, everything we do in quantum mechanics is very counterintuitive.

If a student who comes to me and says, oh that all makes perfect sense immediately, there's something wrong there, because it shouldn't make sense to anyone. It shouldn't make sense. It's so out of everybody's comfort zone. It should not be something that you think, oh this all seems fine. And initially what you will get is a lot of people thinking this is crazy. This does not obey the laws of the universe that we are aware of, because atoms, electrons, protons, neutrons they don't obey the same laws of the things that we can actually see.

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They don't behave the same way. Okay so people like to visualise an atom as being a nucleus, which is like a ball with an electron going around it, which is like a smaller ball, going around it, like a mini-solar system or something like that. And that's reinforced at school and obviously what happens, and you start thinking, okay, there's a force holding electron there and that's what's making it go around. And it's a bit like gravity holding the moon going around the earth. And then people start to think, well, okay, it's not gravity, but it's a different type of force.

That's not helpful because it's not really like that. It's not as simple as that. It's not like the electron has got a very closely defined... It's not like you could look at an atom and say at any one time, where the electron is going to be going around that nucleus, because it's almost everywhere at the same time. And that's the abstract conceptual nature of it. Now giving that to someone as a PBL problem and getting somebody to some introductory QM in a PBL, I could see people going off in so many different directions that were not necessarily productive. It's one of those things that needs a little bit more guidance study.

Now what is good with that kind of thing, is doing things that are maybe more guided, maybe more context-based learning, than problem-based learning. We've done introductory stuff in lectures, and then set CBL activities which share a lot of the attributes with the PBL

activities. They're still working in small groups; they still have some scope to be creative. It's just that it is a little bit less open-ended than the problem-based learning.

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And usually when we define our learning style, when I talk about doing PBL, I would almost always say, we do CPBL. Sometimes we do CBL, sometimes we do PBL, sometimes we do something that is somewhere in the middle or somewhere between the two. And a lot of chemists tend to not make much of a distinction between the two anymore, actually. It's not a term that we invented. It's something that is quite widely used in chemistry.

Heather So it sounds like whether it's the way the students learn or whether it's about the content of what they're learning, it's kind of all mapped together so that nothing is standing out as just being kind of on its own, like in the way you teach it or what it is you teach.

Gary Yes, absolutely. And we're also trying to make it part of a holistic learning experience. So, we're trying to tie everything together, make those links very explicit. And that was one of our initial core aims of the PBL, because the PBL gave us the opportunity to bring together ideas from organic chemistry and ideas from physical chemistry, because they taught like different sets of people.

Chemistry departments are funny places actually, you can divide them down into three immediately. You've got physical chemists, organic chemists, inorganic chemists. It's very unusual, they will join and that you will get two or more of them teaching on the same module in year one or two. Because normally the modules in one and two will be very compartmentalized in those disciplines, subdisciplines, and you'll have teams made up of individuals that belong to that sort of discipline.

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Well we've tried to break that down a little bit recently, so we've redesigned that curriculum. We're going through this at the moment. We've just completed our first year of the redesign. We'll be doing year two of the redesign this year. And so, our first modules the students do is now interdisciplinary within chemistry, which means it's got inorganic, organic, and physical, in the same module. So, we'll have sessions that are maybe taught by myself and I... Depending on what day of the week it is, I will tell you I'm in an inorganic chemist or a physical chemist.

Maybe one of my colleagues who's an organic chemist, will be teaching in the same session, because we've designed it to break down that barrier a little bit. But the PBL has really helped with that. It's helped us to show how we can take something that is very, very physical in nature... And physical Chemistry is often very mathematical. It's very based on explaining **why** things happen in a particular way, explaining why we activate a molecule, we act in a particular way. Or explaining why something reacts at a particular rate.

And mapping that onto the organic chemistry, which is maybe more product focused. The organic chemist might be more interested in, how do you make this particular type of molecule? If I want to make a drug that would interact with an enzyme in a given way, how do I build that functionality into the molecule I'm making so that it latches onto the enzyme and has the effect in the body to make it an effective drug?

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So, what we're trying to do is bring together those two different things, because if you're making the molecule to react in the body, what you also need to know, as well as having the right structure, you also need to make sure it interacts at the right rate, which is a physical thing. You need to bring those two things together. There's lots of ways we've been able to do that in some of our context and problem-based learning.

Heather So it sounds like you're trying to... That the problem-based learning is helping across disciplines rather than keeping things in silos.

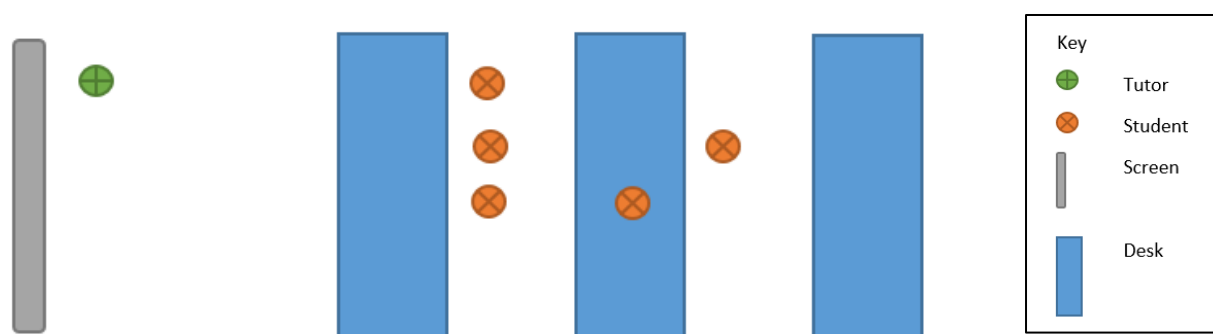
Gary It is, yes. Absolutely.

Appendix 8: Example of observational data

Jade Maddison observation

Prior to the session Jade and I had chatted generally about workload. Jade works part-time although admits her day off is spent mainly doing work duties. She talked [detail removed] and said that this influences the amount of work that she takes on. She noted that [sensitive information removed].

This is a small class with only five students. Three students are male, and two students are female. The session starts with a very didactic lecture about cells although Jade suggests that this should be revision for the students. There was no real introduction to the lecturer or no social conversation about the session, rather, Jade quickly started delivering the content.

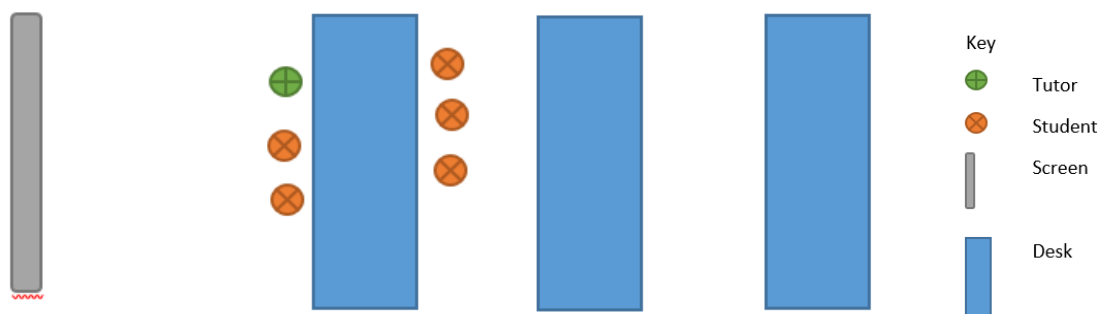


The students are on their laptops typing with no interaction either with each other or with Jade. Two students at the back share a joke about something on a laptop, but otherwise there continues to be no interaction. Jade spends most of the time facing the screen and so is side on to the students. The session is comparing types of cells and the content is quite complex with lots of detail. The students are in the first semester of the course. Some students are not looking at the screen or at Jade. One student seems to be taking copious notes, whilst others are engaged on their laptops but neither typing notes nor watching the screen. The lecture is quite fast paced. The students become more attentive to the lecture when Jade shows them pictures of cells. The slides have diagrams with labels attached. I felt there could have been more engagement with the students by even asking them to label the cell rather than this information just been delivered to them. One student sits with his phone under the desk and the appears to be typing a message. At this point there only appears to be one student who is paying attention to the lecture. Another student is frantically typing and the other three appear disengaged.

40 minutes into the session and Jade hasn't asked a single question of the students or acknowledged them in any way. There's been no checking out of their learning or understanding. One of the slides Jade admits to not knowing what it's about as she says that the slides were originally someone else's. She apologises to the students. 45 minutes into the session, Jade asks the students if they have any questions, although this feels like a rhetorical question and she moves on quite quickly. Jade then tries to show the students

a YouTube clip which she says they didn't have time to watch last week. However, there is no sound to the clip. She encourages the students to find the clip on their own devices, but they don't appear to do this. Eventually, she manages to get sound to work, and they watch the YouTube clip. After the YouTube clip she encourages the students to have a 10-minute break between the two parts of the session. The students don't move from the classroom, but they do engage in social conversation. Jade goes to print the materials for the second part of the session as she had been struggling to get the printers to work previously.

Jade prompts the students to sit in their 'deliverables' groups. One student suggests it's not worth it as there are only five of them. Jade prompts them to do so anyway, suggesting that later in the semester when they are having to deliver on things it will be useful for them to have worked in their teams.



This means there is now a team of two students and a team of three students. The students move when prompted by Jade. She asks one group a question, to which they give a very brief response. Jade then elaborates on this answer and continues to prompt around the next question on the worksheet. The next question is a closed question. Jade starts to explain; however, then stops and reflects the question back to the students. One student gives a brief answer and Jade asks him if he wants to explain why. The student says 'no'. Jade encourages the students to discuss the reasoning behind the answer and the students have a go. Jade adds further explanation to the discussions. As she does so all the students are on their laptop typing when she's talking, and giving no eye contact.

I find myself feeling slightly annoyed within the session as the students are presenting as quite rude and not even acknowledging Jade's presence or making any effort to discuss things with her. That said, Jade doesn't ask them many questions or make any request for them to change these behaviours. Often, when Jade asks a question, students avoid eye contact. After a particularly long silence one student does add something to the discussion. However, Jade then adds more explanation. The students give very short answers to any questions and most of the information in the discussion is coming from Jade. Most questions seem to be multiple choice rather than discursive.

The students are trying to type what Jade says as soon as she says anything. I noted that in the break the students had been having a conversation about notes. I think the student who was frantically typing is relied on by other students to provide the notes for the session as they were complimenting her on her good notes.

One of the questions that Jade asks throughout the session is 'does anyone have any thoughts on this?' or 'any thoughts?'. She tends to then add more specific prompts after a period of silence. There are no student roles evident within the group and Jade is very much the chair of the session. There continues to be no student-to-student interaction in the

session and all communications are either to or from Jade. Jade tends to impart lots of explanations rather than any sort of storytelling. She chairs, dictates the pace and content of the session and students respond directly to her. At 11:25 am Jade gives all the students a worksheet and suggests they work through this individually. At this point, she encourages them to split into the smaller groups. One student notices there is no number seven on the worksheet and this exact same comment is made by another student five minutes later. I think this shows how disengaged the students are, particularly to what other students may discuss in sessions. The students sit and quietly work through the worksheet with no discussions.

Jade talks to the students about the next few sessions of the module, encouraging them to bring their work and talk through what they are planning to do for their 'deliverable', which is their assessed work. She also discusses the potential industrial action due to happen next week and the potential impact on their session.

Jade moves to the other side of the group and discusses in more depth the students in a group of two. I hadn't realised prior to this but her discussions were with the group of three, as it felt like she was discussing with all five students. There are discussions about playing to each other's strengths, and discussions about how they have divided the work up, based on students having strengths in chemistry or physics etc. Jade highlights that this is one of the benefits of working in groups but stresses that they all need to know all of the content. One student seems to have done more work than the other and discusses her notes with Jade who checks them. Jade talks about where she could discuss things with other people, or where she could add some detail to her notes. At this stage the students in the group of three seem to be chatting informally and having a laugh, rather than remaining focused on the task.

Jade closes the session by asking 'anyone have any questions now'. And the session ends.

Jade and I spent some time chatting after the session. She states that the session was very light on problem-based learning input and explains that student autonomy increases as the semester progresses. She explains that the students need some content prior to being able to apply that knowledge within their problem-based learning groups. And so it feels as though the more factual content is delivered didactically and then the students are encouraged to develop more autonomy in how they apply that content to a trigger scenario as the course progresses.

Appendix 9: Example of interview analysis and interpretation

Signature pedagogies

Epistemological values

The law of curriculum inertia

Site civilisations

<i>Life stories</i>	<i>Site stories</i>
<p>Did [removed] PhD but enjoyed the teaching element of this.</p> <p>Beach had funding to implement PBL and research its effectiveness in one science discipline. Spent 2 years doing that. Developed PBL problems. Supported by external evaluation.</p> <p>Moved from fixed term contract to permanent. Teaching fellow from [removed]. Took on lead responsibility for PBL. Worked with external funding for module development – PBL in real-life contexts. Lecturer from [removed] then associate professor. Director of teaching and learning. National teaching fellowship. Royal Society Chemistry Teaching award.</p> <p>Progression through teaching. Focus more on teaching and learning than science discipline.</p> <p>No traditional chemistry research since 2007. All about education.</p> <p>Didn't know anything about PBL when he applied for the role but knew he had passion for T&L.</p> <p>Challenging embedding PBL in chemistry. Made mistakes at first. Problems weren't true to life and so the students rejected the problems which were more quirky in nature. Took about 10 years to get it to a point where he was happy with it.</p> <p>Very output focused. Shares best practice regularly at conferences and in written articles.</p> <p>Students seem to appreciate the impact PBL has on their CPD. Talks about the difference between assessment and real life. 80% not good enough in practice.</p> <p>Quantum mechanics very maths based and so not good to learn by PBL. Gave an example of where students have learned things in perhaps simplistic way, but then have to deconstruct that knowledge in order to move forward.</p>	<p>Consistency in staff allowed ongoing development of the modules and triggers.</p> <p>Need to prepare students for that kind of learning. Did this through open days (small group work exercise). Also, through PBL induction. First semester is PBL induction. Get them used to it and thinking creatively. Less focused on the content.</p> <p>PBL is embedded in the module with other types of learning eg lectures.</p> <p>Very high employability for chemistry course. Also get promoted earlier.</p> <p>Talks a lot about the PBL experience of students. Helping them to consider how to manage their time, giving them space to get used to this way of learning.</p> <p>Feels that some topics not suited to PBL format.</p> <p>Chemistry has a range of different learning activities.</p> <p>Tries to tie things together to develop a more holistic learning experience. Pedagogies fit together and content fits together. Makes links explicit.</p> <p>There are sub-disciplines within chemistry and they try to synthesise them now rather than teaching them separately.</p> <p>Manage student expectations re PBL.</p> <p>Reduced number of groups per room. Run the groups concurrently and used to pop between the rooms.</p> <p>Needs flat reconfigurable space rather than tiered lecture space. Can limit numbers. Can also request specific rooms sometimes. More competition for the flexible teaching spaces rather than lecture theatres now.</p>

<p>Talks about a colleague doing a virtual PBL with almost no contact time.</p>	<p>People come to observe. PBL generates curiosity among researchers and visitors.</p>
<p>Thinks that lectures don't give students the opportunity to think beyond the basics of science and consider in context eg society, sustainability etc.</p>	<p>Beach has big focus on sharing best practice. There is a learning institute. Newsletter giving bite-sized snippets of good practice. There is a structure of leadership specifically relating to teaching and learning.</p>
<p>Enthusiasm ++</p>	<p>There is a sense of culture that the uni values teaching. Hence the "tolerance" of PBL.</p>
<p>Talks about grading the students on their engagement. There were inconsistencies, partly due to different levels of expectation from facilitators (eg PhD students) Now more peer assessment. Students encouraged to reflect on their team working skills.</p>	<p>Has in-house teaching award. Hard to get but almost all tutors on natural sciences course had won it.</p>
<p>Students who fail to engage in PBL are the same ones who fail to engage with other learning.</p>	<p>Training for new PBL facilitators. Usually, it is the PhD students and there is therefore a turnover of facilitators.</p>
<p>Funding gave buy-out time to work on PBL development. Funding less available now. Challenges is in getting it started then changes less of a problem.</p>	<p>PBL needs respect from colleague so they let their PhD students do it. Can lose good demonstrator if no support.</p>
<p>University support is 'tolerance of the approach'. Some other places would say 'that's not a chemistry thing...' '...that shouldn't be here'.</p>	<p>Not a cheap way of teaching.</p>
<p>Time is allocated to workloads to do PBL. Won in-house teaching award. Not easy to get but almost everyone in natural sciences has one. A good session is noisy, discursive, students get stuck in. Energy in the room.</p>	<p>Talked about broad increase in staff time pressures. Same teaching load but increase in other commitments.</p>
<p>Passionate about all teaching. Passionate about PBL but people say the same about lectures etc. More confident and outgoing in teaching than in other aspects of life. External community of educators – goes to lots of conferences on education. These and the informal conversations from this re-energises him re teaching practices. Also online discussions with them and social media.</p>	<p>Lots about changing roles and contracts – permanent vs temporary Taking work home with them.</p>
<p>Demands on time make teaching focus more challenging. Structural changes. Sits on many committees now.</p>	
<p>Less time to focus on refreshing PBL triggers etc.</p>	
<p>Research is more of a "hobby" now. It's an evening and weekend job now.</p>	
<p>External community is big influence. Discipline-focused PBL community or education -focused community. This seems particular to chemistry. They realised students needed more graduate skills.</p>	
<p>Values mentorship from this.</p>	

Appendix 10: Example of observation analysis and interpretation

Signature pedagogies

Epistemological values

The law of curriculum inertia

Site civilisations

<i>Life stories</i>	<i>Site stories</i>
<p>There is very limited tutor engagement in the session. No real attempts to generate discussion and information tends to be delivered rather than making use of opportunities to embed inquiry.</p>	<p>Classroom very lecture focused.</p>
<p>There is a lack of collaboration between students throughout the session.</p>	<p>Small class size in an oversized classroom. Young student cohort rather than having a diversity of ages.</p>
<p>Students appear to value delivered content from the tutor and do not seem to value discussions.</p>	<p>Work is given to those who are considered to teach better.</p>
<p>There is a focus on 'gathering knowledge' for future use, particularly in note form, with no sense of trying to understand it.</p>	<p>This is the first semester of the students' course and there is therefore more focus on delivered knowledge that they will then draw on in a more problem-based way later in the course.</p>
<p>There is limited student engagement throughout the session and no real attempts to address this. They don't speak to each other or listen. Some parts of the session were focused on working individually when students could have been encouraged to collaborate.</p>	<p>There is a strong focus on objective knowledge.</p>
<p>Tutor to student discussions are often individual in nature rather than encouraging group discussions.</p>	<p>Industrial action ongoing.</p>
<p>Students do not value teamwork. Resistant to splitting into smaller groups. Focus on splitting up the content rather than all learning and collaborating.</p>	
<p>Tutor provides lots of explanations to students and very little questioning of their understanding.</p>	

Appendix 11: Forest University Participant Vignettes

Jasmine – The Life Coach

‘a good coach asks great questions to help you remove the obstacles in your mind’

Farshad Asl

After spending time with Jasmine, the ‘coach’ metaphor seemed appropriate as it portrays the style of relationship that seemed important to Jasmine. Coaches are nurturing and empowering, encouraging others to drive their own changes, take responsibility, and solve challenges in a way that fosters their independence. This resonated with my conversations with Jasmine, and she seemed to consider the student experience more holistically than other participants. She empathised with students’ overall university experience and she gained satisfaction from watching them grow in confidence. As her teaching commitments were mainly in the first and second year of the programme, there was theme in our conversation about supporting students to deconstruct their ‘school mentality’ learning habits and develop more autonomous approaches to learning. These learning habits manifest as students having a desire to follow a set of procedures or repeat information, with no true understanding or ability to reason through it.

Jasmine also talked about the need to make connections. She encouraged students to draw on knowledge from all modules, and facilitated conversations about the ways in which the subjects related to day-to-day life. She reflected on changes in her own teaching approach, suggesting that compartmentalised learning was less problematic when she had taught on a single-science course with less focus on application and reasoning.

Patrick – The builder

‘We shape our buildings: Thereafter, they shape us.’

Winston Churchill

Patrick’s career had started within a single-science discipline prior to moving into chemical engineering, although his passion for this discipline remained. He had encountered PBL at various points in his career and had embarked on PBL curriculum development roles as well as PBL facilitator training roles.

There was an interesting theme around autonomy and responsibility in our conversations. Patrick was keen for students to develop these attributes; however, felt frustrated at some of the university processes which he felt undermined this. He suggested that student complaints were upheld when they were matters of academic judgement, and this seemed to have a strong impact on his motivation to drive change in the curriculum. There was a sense of risk-aversion and insecurity regarding potential repercussions. Indeed, Patrick likened this to ‘sticking your head above the parapet’. Consequently, despite Patrick’s strong affinity with PBL, he was open about not developing the model of PBL that he considered most valuable. As such, he said he didn’t really feel that his sessions were ‘true’ PBL.

Patrick talked about doing what was ‘least different from what was already done’, rather than developing the teaching and learning to be something more in keeping with his own pedagogical values. He suggested that any changes he had made had been minor, and he argued that the time and effort required to develop a PBL curriculum would need a more formal buy-out of his time and university leadership who would be accepting of the likelihood that it would not be right first time.

Samuel – The explainer

'If you can't explain it simply, you don't understand it well enough'

Albert Einstein

One of my first observations when meeting Samuel was that his office appeared to be wallpapered with student-nominated teaching awards. His passion for teaching quality was evident throughout our conversation, and he was engaging to listen to.

Samuel's own learning was an influence to his approach to teaching as he had worked hard in his own studies, valuing the lecturers who explained things well, and avoiding lectures of those who didn't. He explained that the UK has far more quality assurance mechanisms than the country he studies in and he argued that this meant he had to be far more self-directed in his learning. He was open about his frustrations about some students' sense of entitlement that he felt was a barrier to their learning.

Samuel was focused on students developing the skills and attributes that would help them to work as chemical engineers and as such, argued that they needed to 'break nasty habits' of learning that they had developed at school. He described one such habit as following a recipe and said that applying a formula without understanding the process would not be sufficient if they wanted to become a chemical engineer.

Samuel's facilitation seemed to alternate between inquiry and explanation. He prompted students' reasoning until they had explained the breadth of their understanding, and then he gave explanations. He explained things passionately, and managed to maintain this passion, attentiveness, and energy throughout the session. This was despite the session being 3 hours long with over 20 student groups, often requiring explanations about the same troublesome areas.

Sylvia – The Mediator

'the great mediator of any community is human morality.'

Armstrong Williams

Sylvia's passion for facilitating student learning was quickly evident in our interviews, and was inspiring to listen to. Although from an engineering background, she identified more with being within the discipline of education. Stories from her career were about her own learning, as well as her roles focused on curriculum development and pedagogy.

Sylvia had educational experience in a range of different countries and remarked at how strong the student voice is in the UK, and their confidence in asserting their opinions on matters. She suggested however, that their opinions were not always well informed and was keen to engage in open and adult conversations with them about such matters. There was a sense of frustration regarding the barriers to engaging with students in such ways. Similarly, Sylvia reported that she had been under pressure to improve students' learning experience by delivering some content in a more teacher-centred manner. Instead, in the session I observed, she delivered a PowerPoint presentation that seemed to aim to manage student expectation in relation to the approach to learning rather than change it. During our conversations, Sylvia talked about a range of PBL development work that she had been involved with and explained mediation between staff and students had helped to manage students' expectations, particularly as regards their fear of pedagogical change.

Sylvia's approach to facilitator was against the flow of the tide at Forest University. She was motivated to develop the teaching and learning activities in ways that she thought were most beneficial to the students, even where this might result in less favourable module evaluations or even where it might hinder her own career progression.

Appendix 12: River University Participant Vignettes

Diane - The relationship counsellor

'We can improve relationships by leaps and bounds if we become encouragers instead of critics.'

Joyce Meyer

Finding a time to meet Diane was challenging, as PBL tutors were usually heavily timetabled on their working days. She had kindly offered to meet me in the 45-minute break between her 2nd and 3rd session; however, I was keen that participants did not forego their lunch break to meet with me. Instead, she offered to meet me before teaching started one morning, as she said she tended to arrive early to avoid traffic.

Diane talked about her career, and her values became apparent during our conversation. She described herself as a 'people person', and human relationships and interactions were a theme in many stories told. Diane enjoyed getting to know people and working with the small groups in her PBL session as she said this afforded her more opportunities to observe their progress of challenges. Diane also describes what she considered to be the added value of PBL in supporting the *students'* abilities to develop good relationships, and the impact on their work skills and indeed, life skills. She explained 'You're not just teaching them knowledge; you're teaching them a way of being in the workplace, which is really important, and a way of being for themselves going through life.'

Despite describing herself as a solitary learner, Diane had left previous teaching positions because she had felt frustrated by restrictive didactic teaching and learning experiences that she considered to only suit a few students 'by chance'. She considered PBL to be much more inclusive, building on strengths such as interpersonal skills instead of only prioritising academic skills.

Nigel – The quality assurance officer

'Quality is never an accident. It is always the result of intelligent effort'

John Ruskin

I had met Nigel the day before our interview and he had been open and engaging in conversation. Within the recorded interview, I quickly observed a change in dynamics. I sensed that Nigel became more self-aware in the interview, and initially I had thought that might be due to the presence of recording equipment. However, during the interview I became aware of Nigel's meticulous nature and strong desire to do a good job. This endeavour seemed to manifest in the interview by perhaps making Nigel more self-conscious and careful in his responses.

Nigel described having an obsessive attention to detail and planning, which he felt improved the quality of his teaching. He discussed reading tutor notes several days in advance, and plenaries being diligently organised and well-considered and was keen to make a good impression to staff and students. He was relatively new into his academic post; however, had worked as a PBL tutor whilst completing his PhD. Nigel also discussed his own learning experiences which had a mixture of PBL learning and didactic learning which he suggested could compliment each other well. He had valued the teamwork in PBL as he felt this allowed a more thorough exploration of a topic, stating it was more likely that an important point was missed when working independently. However, Nigel explained that his own experience of PBL afforded him more empathy with his students, particularly as regards the transition into new ways of learning.

Our conversation turned to what a good PBL session looked like. Nigel suggested that this was where he said very little as facilitator due to the students being well engaged, and the chair

suitably directing the session. This was apparent within the session I observed, where Nigel endeavoured to remain quiet, occasionally giving a slow but deliberate nod instead of verbal affirmation. He talked about breaking his silence when students struggled with the less factual aspects of the trigger scenarios. He reported that students found it much more challenging to discuss the normative, or evaluative aspects of the trigger, due to being more comfortable with right or wrong answers than critical opinions.

Roy – The sheepdog

‘He stays behind the flock, letting the most nimble go out ahead, whereupon the others follow, not realising they are being directed from behind’

Nelson Mandela

Roy was one of the most engaging participants during the study. He was one of the first to email me offering to participate in the study, introducing me to colleagues and was keen to help in whatever way he could. Whilst some participants’ main passion was PBL, Roy’s was his legal practice and stories of this punctuated all conversations. He made connections between my profession and his, and embellished discussions with anecdotes from his career practicing law. In fact, Roy told many stories about law, linking it to the learning experience of the students, day to day life, and even to recent events on soap operas on the television. It felt as though Roy’s discipline was integral to his very being, and I could imagine captivated dinner party guests listening to these engaging stories, each of them taking away some degree of understanding of, or interest in an aspect of law.

Roy admitted that although he enjoyed facilitating PBL, ‘teaching’ came more naturally. I suspect that his natural affinity for storytelling, was what made PBL more challenging, and he acknowledged that he had received feedback that he should talk a bit less in sessions. Whilst Roy asserted a belief in PBL as a useful pedagogy, it felt a bit like he was repeating a ‘party line’. He explained that he valued students learning by finding things out for themselves, so that they could become more autonomous in their practice and develop teamwork skills; however, he also revealed his beliefs that important information should perhaps be included in a lecture to ensure students did not miss it. This seemed to result in what Roy described as ‘sheep-dogging’ where he described ‘nudging’ the students towards the information he thought they were missing. The observation was synonymous with the interview. Roy was positive, encouraging, and engaging with the students and his ‘sheep-dogging’ style of facilitation was regularly demonstrated as he questioned students in a way that guided them towards the end goal.

Shona – The art curator

‘Art is not what you see, but what you make others see’

Edgar Degas

Shona added a new perspective on PBL within our conversations. She had a passion for PBL, and for educational theory and research. However, she also discussed the broader context, both in terms of the learning experiences for students, and the teaching experiences for staff. She asserted that PBL was relevant to contemporary working practice in law; however, suggested that there was an unhelpful culture of teaching and learning within law that related to students memorising and regurgitating information. In a more digital era, she suggested, workplace demands were increasingly about knowing where to access relevant information, and understanding how to apply it, which mirrors the PBL process.

Shona thought deeply about the experience of facilitating PBL whilst undertaking various roles in the law school. She suggested that PBL impacted on tutor agency by silencing the voices of individuals. For academic staff, she said that there would usually be an expectation that their research would inform their teaching and PBL did not give them the freedom to do this. However,

she remarked that academic staff had the opportunity to bring their 'war stories' into other teaching on the course, whereas PBL tutors did not.

Shona talked about her transition into PBL facilitation and admitted that she used to over-prepare before the sessions, going through the tutors' notes in detail, and highlighting and learning about all key aspects for the session. This need for preparation, and diligent attention to detail is something that she identified as a personality trait of those within the discipline of law. She remarked that the unstructured nature of PBL was in tension with this, and this could be challenging for staff and students.

Sandra – The conductor

'...an orchestra can actually play without a conductor at all. Of course a great conductor will have a concept and will help them play together and unify them.'

Joshua Bell

Throughout my conversations with Sandra, she was open about her aspirations regarding PBL facilitation, and she was reflective about the challenges. She was open about and insightful into the pleasure of explaining things to students, and seeing those 'lightbulb moments' which she suggested are not always observable in PBL sessions. She talked about this being a little frustrating sometimes, and suggested that the role of facilitator was perhaps in slight conflict with her identity as a teacher. Nonetheless, she clearly valued the PBL ethos of the law school at River University, and explained that the complex triggers prepared them for working practice, where problems would not come 'neatly wrapped'.

Sandra had worked at River University for several years and had extensive experience of teaching law prior to this. Whilst she clearly valued the PBL ethos of the law school, she was open about the sense of satisfaction that she got from explaining something to students and being witness to the 'lightbulb moments' that were less visible in PBL. Nonetheless, she valued the collaborative nature of learning with and from the students, acknowledging that her more formal learning experiences had been less student-centred and had encouraged her to become a surface learner.

A strong theme throughout our discussions was about making connections, unifying information and about the application of knowledge. She talked about the lack of structure to knowledge when students fed back what they had researched, and was concerned that without input from their facilitator, they might just have a 'collection of stuff'. She saw the facilitator's role as supporting them to bring this knowledge together, consider how it all connects, and to then relate it back to the trigger scenario. She suggested this was akin to conducting an orchestra, asserting that 'you are not just waving a stick around'. Instead, she suggested that facilitation was complex, and was hard work.

Sandra talked about the relevance of using PBL within the law school. She suggested that the problem-solving nature of PBL helped students to develop problem-solving skills which they would need in legal practice. She advocated that the complex nature of the trigger scenarios would help them prepare for issues that would not be 'neatly wrapped' in practice.

Appendix 13: Hillside University Participant Vignettes

Andrew – The altruistic leader

'A leader is best when people barely know he [she] exists, when his [her] work is done, his [her] aim fulfilled, they will say: we did it ourselves'

Lao Tsu

Andrew had a background in healthcare prior to moving into academia. His career narrative depicted stories of change, achievement and innovation, although he told his story in a calm and modest manner. Despite achieving an array of qualifications in his career, Andrew presented as almost apologetic for not having completed a PhD. We talked about a range of learning encounters he had experienced, both formal and informal. Some he had undertaken out of interest, and others due to expectations within the role he had been in. It was clear that learning was a passion, and that Andrew enjoyed learning in a range of situations. He talked of learning from students, and also from informal mentors. I felt a strong sense of him being part of a learning community within PBL sessions as he stated, 'we learn together really'. I particularly enjoyed observing Andrew's session for this reason. Not only were the students autonomous and engaged, but the usual tutor/student hierarchy was barely evident at all. Andrew's body language portrayed a sense of genuine interest and curiosity around the topic being discussed. He listened attentively and was unobtrusive, sitting amongst the students and only interjecting to prompt more depth of exploration within student discussions.

In our conversations Andrew portrayed a strong sense of agency throughout his career, embarking on and leaving courses and employment dependant on his interest, enjoyment and personal circumstance. There was little negativity in his stories, and I had a sense that he would move on from positions that conflicted with his values or interests. Within his current role he talked about conforming to some of the rules whilst rebelling against others, and he joked that PBL tutors were the 'riff-raff' of the staff group. This seemed of nominal significance, as Andrew talked positively about his role overall, stating how good it was for him, and how much he enjoyed it.

Emily – The protector

'The protection of a man's person is more sacred than the protection of his property'

Thomas Paine

Emily presented with confidence and competence throughout our conversation, and within the observed PBL session. We talked about her disciplinary background and how this had changed over her career. She had a chameleon-like ability to adapt to new roles and environments, and she suggested that her ability to 'read any subject' helped her to do this.

Emily talked about her family connections to the medical profession. These personal insights clearly added to her understanding of the profession, and she seemed to consider the students' journey far beyond their graduation. Indeed, she remarked that she had more focus on how students would cope with a medical career than how they would cope with medical school. She empathised with the lack of support for the medical profession and appeared protective of them. Not in a way that shields them from challenges or experiences, but instead by supporting them to anticipate and cope with these challenges and experiences, and to foster their emotional resilience.

Within the interview, Emily had presented more of a two-sided discussion around PBL than most other participants. Whilst she talked about the value of PBL, she also suggested that students risk missing out on specialist expertise by focusing on broader topic areas within a PBL curriculum. We discussed the depth of knowledge required for the job and this seemed to influence how much she would encourage them to read more on a subject or instead limit their

learning. This seemed to be a stronger influence than matters such as exams or objectives, and I sensed Emily being influenced by her own career in this regard. This seemed to manifest in the observed PBL session as Emily would prompt for further discussion on topic areas, and also encouraged the students to read in more depth on some topics.

Kirsty – The honeybee

'Even though the bee is small, there she is on the flower, doing something of value. And the value she creates there contributes to a larger ecosystem of value, in that mountain meadow, in that range of mountains, in the world and even the universe.'

Jay Ebben

I first met Kirsty at the PBL meeting I had been invited to. She was quick to offer her time to participate in my study and seemed naturally open, friendly and talkative. In fact, she joked that she would always have things to talk about in interview. It came as a surprise therefore, when Kirsty described herself as having been exceptionally shy and introvert when she had been a student. Whilst she remembered other students complaining of not understanding lectures, she recounted that didactic teaching approaches and learning in isolation had worked well for her

Throughout our conversation, Kirsty used metaphors and made connections between the students' learning activities within the medical school, and learning activities within personal and professional lives beyond university. I sensed that Kirsty thought about PBL quite holistically, considering how the problem-solving skills related to students' lives beyond the boundaries of the university, and even their professional careers. This holistic emphasis meant that Kirsty was keen to facilitate conversations on prior knowledge in the PBL sessions. She remarked that she found it frustrating that students often appeared not to value this aspect of the PBL process, and would instead jump to formulating the learning outcomes.

Students were not keen to engage with discussions of prior knowledge in the PBL session that I observed. Kirsty's efforts to 'cross pollinate' their learning was apparent in her efforts to activate the students. She used a balance of open and closed questions; and formal and informal discussions. Students engaged more with informal conversations and so Kirsty encouraged these interactions. When students had become more comfortable talking about personal and professional experiences, Kirsty then summarised their conversations, highlighting how this discussion had actually connected to the content of the session, to other modules, and to their professional identity.

Nicole – the head gardener

'The glory of gardening: hands in the dirt, head in the sun, heart with nature. To nurture a garden is to feed not just the body, but the soul.'

Alfred Austin

Nicole has been employed by the medical school since its inception, and her role was to coordinate PBL throughout the curriculum. Her role seemed incredibly busy, and in all of our encounters she was acutely aware of the time, seeming to have each minute of her day mapped out. I was grateful that she had taken time to participate, and this may have been motivated by a desire to support a PhD candidate as well as by her interest in PBL. She expressed an interest in the results, inviting me to come back in the future to talk through my results with the staff team.

Much like a garden, the PBL curriculum needed ongoing nurturing and pest control and Nicole's role appeared fundamental to the ongoing preservation of the PBL ecosystem. She collaborated with a range of stakeholders, such as students, PBL facilitators, medical practitioners, the General Medical Council, and faculty leadership. This collaboration unearthed a range of viewpoints regarding PBL, and arbitration seemed to be a regular part of these interactions. In this regard, she cited the support from faculty leadership as 'really, really critical'. Nicole would

also collaborate with the range of expertise within the team that arose from having tutors from a range of disciplinary backgrounds

Nicole also keeps her 'hands in the dirt' on the course, facilitating PBL with different year groups. Regrettably, I was unable to observe Nicole, as her role in training new team members meant her sessions were already earmarked to be observed by others. However, her belief in PBL was apparent throughout the interview as she talked about its value in supporting the development of useful skills for medical practice. She talked of students gaining confidence in working in teams, speaking out in groups, articulating reasoning, and supporting and challenging each other.

Paula – the 'good enough' facilitator

'The good-enough mother...starts off with an almost complete adaptation to her infant's needs, and as time proceeds she adapts less and less completely, gradually, according to the infant's growing ability to deal with her failure...'

D.W Winnicott

My metaphoric reference to Paula being 'good enough' does not refer to her skills being average in any way, but instead alludes to a more psychological way of thinking. A 'good enough' mother balances giving support and attention to their child, with allowing them to experience challenge and frustration in order that they gain confidence and independence, and this seemed to be played out in the classroom. Paula's self-scrutiny threaded through our conversations and there was a strong sense of it being important for students to like and respect her, considering her to be knowledgeable and doing a good job. She was attentive to student feedback and took time to reflect on it with the PBL coordinator.

Paula was a relatively new member of the medical school and she talked about her journey into it, including the challenges she had experienced in a previous position. She talked openly about feeling heavily criticised, and I wondered if this may have contributed to her heightened self-awareness. Paula had a notable nurturing demeanour, and discussed her concern for the wellbeing of the medical student population. She considered them to be motivated and hard-working, but also highly anxious in a way she had not experienced when teaching students from other disciplines. She discussed other differences remarking how hard working the medical students were, taking little time away from studying. She also noted their attention to factual detail and their perceived need for accuracy and being right. This tended to manifest in their desire to illustrate their knowledge using charts and diagrams and their passion for systems and processes. This seemed slightly in contrast to Paula's own epistemological views, as she talked about her tendency to be more vocal when discussing the social sciences learning objectives than the medical sciences ones, due to the knowledge being more subjective in nature.

Appendix 14: Meadow University Participant Vignettes

Beth – The freshwater salmon

'Remember a dead fish can float down a stream, but it takes a live one to swim upstream.'

W.C. Fields

Beth was passionate about PBL, and it was likely that this had motivated her to participate in my study. She talked about the unrelenting busy nature of the job yet had kindly afforded me the time and space to discuss PBL, which she suggested was like 'swimming against the tide' within higher education. She talked of her frustrations at there being a pressure for staff to be perceived as the knower, and imparter of knowledge, suggesting the current climate of higher education holds staff in higher regard when they are the experts in something, or have letters after their name. These tensions threaded through our conversations. Timetabling was described as a battle, where the focus was on rooms rather than pedagogy. This was further complicated by the fact that PBL didn't seem to be used widely at Meadow University, in fact Beth described the occupational therapy course as a 'square peg in a round hole'. This made it challenging in course approval events as tutors wanted to be explicit about the nature of learning on the course; however, had to negotiate to keep references to PBL in course documentation due to others not understanding it.

There were themes within my conversations with Beth about relationships, and about her sense of self. She talked about bringing her own personal characteristics into her PBL sessions and becoming more comfortable about her own natural style of facilitation. She talked about her feelings of imposter syndrome when she started at Meadow, as she felt under pressure to be the expert. She admitted that she hated giving lectures and part of this seemed to be the lack of relational pedagogy. Over time, she had become more comfortable in, and accepting of, not being an expert in all subjects. She described the PBL sessions as going on a journey with the students, and it sounded collaborative and collegiate. Unfortunately, I was unable to observe Beth due to work pressures that had resulted in her changing her teaching commitments.

Hannah – The scrum master

'When you hand good people possibility, they do great things.'

Biz Stone

Hannah and I shared a similar career trajectory, and so I felt a sense of familiarity as I listened to her story. Despite having been in an academic position for a significant period, her clinical skills seemed to reverberate within her current role and were a focus in our conversations. She discussed the ways in which PBL supported the students to develop skills for practice, and also about how she had observed the turnover of staff to impact on the PBL at Meadow over time.

Hannah referred to the skills she brought from her clinical background, such as facilitating clinical groups, and the ways in which they supported her in her facilitator role. She was confident therefore in managing challenging group dynamics and hoped that the students would also gain skills in this area.

Hannah had been part of the course team for a considerable time and discussed that some PBL expertise had been lost due to a turnover of staff. This change in staffing brought about a change in the knowledge values of the team and Hannah discussed the ways in which modules now had a broader range of learning approaches. She talked about the PBL design in the course being 'less purist' than it had been previously. Nonetheless, Hannah talked about the use of self in groups, and how PBL facilitators took time to find their own unique style of facilitation, bringing in their own personalities.

Hannah seemed to take on the role of a scrum master. She was focused on the students' end goal; however, would also coordinate, mentor, and support other team members, aiming to provide a collaborative and consistent approach across modules, simultaneously balancing this with tutors developing their own style of facilitation.

Jennie – The reflector

'The reflective person opens up her inner world and embarks on the greatest adventure that life has to offer – getting to know and understand oneself!'

Kristine Carlson

Reflection threaded through all conversations with Jennie. Not only did she talk about the value of reflection throughout her career and for students, but the conversation itself felt a moment of reflection. Jennie was forthcoming in our discussion and it was punctuated with her own wonderings and questions. Not only was the story engaging, but I felt witness to its creation.

Jennie explained that she had experienced PBL as an occupational therapy student, and this allowed her to empathise with the students' experiences at Meadow University. She explained that PBL had given her the confidence to challenge information in practice and to articulate her clinical reasoning, particularly where practitioners might have had differences of opinion. She reflected on this being in contrast to her school learning experiences, where questioning and challenging were more likely to be perceived as disruptive.

A theme which seemed intertwined with reflection, was about courage and confidence. We talked about Jennie feeling that her PBL experience as a student gave her courage and confidence which she took into her clinical practice. She gave examples of having to justify clinical reasoning within teams, or discuss differences of opinions with other professionals, and felt that the challenging learning environment had been good preparation for this. She also talked about the importance of having a confidence in relation to professional identity, and being able to 'fly the flag' for the occupational therapy profession. Jennie reported herself as still needing to gain confidence in her PBL facilitation, although this was not evident within the observed session. Jennie facilitated the group with a quiet, calm demeanour, but portrayed a reassuring sense of confidence that seemed to put the students at ease.

Jennie said that she was still developing her unique approach to PBL facilitation and that reflection was crucial in this ongoing learning. She discussed there being a tension between the PBL facilitator role and her natural personality, suggesting that her instinct was to get involved in discussions, offering her own suggestions and ideas. However, she explained that this was not in keeping with her view of the facilitator role, and therefore described having to 'sit on my hands' to stop herself from contributing too much.

Robert– The Goalkeeper

'As a goalkeeper, you need to be good at organising the people in front of you, and motivating them. You need to see what's going on, and react to the threats.'

Peter Shilton

Robert had a wealth of knowledge and experience of PBL, as a learner, a facilitator and as a researcher. He also had a wealth of experience in relation to working on the Meadow University occupational therapy course and our conversation therefore captured many comparisons in relation to the ways in which the course, the pedagogy, and the university had changed over time. He was protective of the educational philosophy, although described the occupational therapy course as being a slight misfit within the wider school, due to differences in pedagogical values.

Robert talked about a loss of agency of the course team, due to processes having been standardised across the school. The course had changed from having end of year assessments to a modular delivery, and Robert suggested that this caused students to compartmentalise knowledge more. He explained that this was evident when facilitating discussions about prior knowledge, as the students would often fail to recognise the value in discussing knowledge from previous modules. Robert also discussed the changes to interview and open days. Previously, these had been considered to be a useful opportunity to manage student expectations of PBL, and to assess their abilities to work in groups. However, again, this had been standardised across the school, and they were no longer able to do this.

Robert reflected on other changes that had happened over time, such as an increase in workload and the change in staffing. The combination of these changes had an impact on the PBL community and the ways in which new members of staff learned about the role of PBL facilitator. Consequently, Robert acknowledged that there was more diversity in approaches to things like module development.

Robert talked about the PBL process mirroring the occupational therapy process, and he advocated its value in supporting students to develop skill required for practice. He talked about their increased confidence in being able to justify their reasoning and articulate their opinions within teams, and also an increased awareness of their own professional identity.

Rose – The swimmer

‘You cannot be so afraid to sink, that you forget you have the ability to swim.’

Rose still considered herself to be a novice PBL facilitator at Beach University, although had been there for several years. She talked about the transition into academic life as being a ‘steep, steep learning curve’, moving from a role where she was confident in her expertise, to something new and less familiar. She discussed the need to sink or swim, and this was a theme in our conversations.

Rose had worked with teams for many years and her understanding of the nature of groups, their dynamics, and the roles individuals might adopt influenced her approach to PBL facilitation. In her clinical career, she had undertaken many leadership roles where she had managerial responsibilities and had been involved in transformation. These had required a more directive style of leadership than the PBL facilitator role and she acknowledged this was taking time to adjust to. She had also been involved in delivering training sessions for staff in her clinical role. As these tended to be fairly didactic in nature, this further compounded the adjustments Rose was experiencing and she described a ‘steep, steep learning curve’.

Some of the changes Rose talked about seemed to be around her identity. Having gained extensive experience within her clinical area, she had an identity as an expert in her field, and therefore described feeling like a ‘fish out of water’ when she started at Meadow University. A thread within our conversations was about lifelong learning, and indeed this was something Rose discussed as critical for herself as well as for students. She acknowledged that it was taking time for her to gain confidence in her facilitator role but discussed the ways in which her own learning supported this. She also explained that the self-directed nature of PBL supported the students to develop the lifelong learning skills that they would need in practice.

Appendix 15: Beach University Participant Vignettes

Gary – The enthusiast

‘Enthusiasm is excitement with inspiration, motivation and a pinch of creativity.’

Robert Foster Bennett

Of all the conversations I had in the course of this study, my conversation with Gary captured the most passion and enthusiasm for teaching and learning. He spoke with great energy, almost excitement in his voice and was inspiring to listen to. His passion was contagious, and I found myself contemplating how I might be able to replicate some of his good practice. I had become the motivated learner within our discussions.

Gary’s passion for teaching and learning started as a PhD student where the role involved being a demonstrator within teaching sessions. Over the course of his career, it had also enticed him into more strategic roles, and we talked about his membership on various teaching and learning committees at Beach University. His passion seemed to translate into practice that had been recognised by various awards for teaching excellence. He had received an award within Beach University, one from his disciplinary professional body, and another prestigious national award. These were mentioned very matter-of-factly and tended to be embedded within conversations about creativity and improvement.

Gary talked about leaving the science laboratories behind him and explained that all of his research was educationally focused, rather than science focused. He did, however, explain that he gained great support from an educational community within his disciplinary field. He collaborated with others, both formally and informally; spent time at conferences and engaged with social media within this learning community. This was cited as a great influence on his practice, and somewhere he would share his own good practice.

Jade – The tightrope walker

‘Science means constantly walking a tightrope between blind faith and curiosity; between expertise and creativity; between bias and openness; between experience and epiphany; between ambition and passion; and between arrogance and conviction - in short, between an old today and a new tomorrow.’

Heinrich Roher

A strong theme in the conversations I had with Jade was about balance. She talked passionately about the Natural Sciences course and was keen to encourage ongoing improvements, suggesting that nothing was ever perfect. Throughout the discussion she clearly tried to achieve a balance between narrating candid stories about some of the improvements, changes and challenges she had experienced; and being sensitive to the experiences of others, and not being critical of anyone else’s efforts.

Jade had clearly been instrumental in the development of the Natural Science course and was central to the collaboration and cohesion within the small course team. Her stories portrayed an iterative process working towards achieving the right balance of ‘scaffolding’ for the course, allowing students to develop skills in autonomous learning.

She had a strong focus on the quality of the teaching and learning on the course and was keen for the PBL facilitators to have a good understanding of pedagogy. She argued that content expertise didn’t always translate into expertise as a facilitator, suggesting that it can be easier to ‘be the Sage on the stage’ than to relinquish control and facilitate a depth of discussion.

Karen – The chameleon

‘A wise man adapts himself to circumstance, as water shapes itself to the vessel that contains it.’

Chinese proverb.

Karen initially gave me the impression that she was quite new to her role. However, our conversations captured a range of both research and teaching experiences in a number of different roles and institutions. The casual nature of some of Karen’s previous roles seemed to limit the amount of agency she had within them, and often she was covering for absences. These stories illustrated her ability to adapt to change, and to adapt to different environments and this was a theme in some of our conversations.

Karen recounted that her first PBL session was covering a staff absence and had not been a positive one. In keeping with disciplinary norms within science disciplines, Karen had delivered a more teacher-centred tutorial, subsequently realising that this was not what had been expected.

Karen talked about her own approach to PBL. She valued the interpersonal nature of the small group learning and enjoyed getting to know the students. Her empathy for students was evident throughout our conversations as she considered their experience of things such as their timetable across the week and across the academic year, their transition from schools, and the impact on their confidence without the right balance of support and challenge. This was evident in the observed session, which was longer than the other sessions I observed. Karen presented as friendly and supportive throughout the session, but balanced this with challenging the students, and encouraging them to reason through their answers.

Mairi – The lamplighter

‘Curiosity is the wick in the candle of learning’


William Arthur Ward

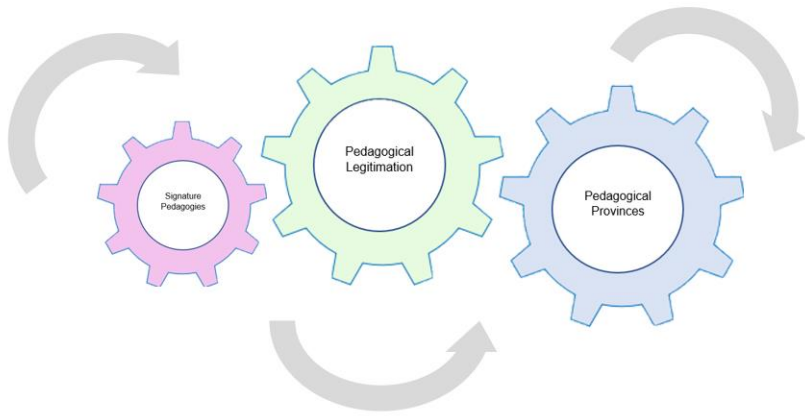
Mairi was a self-confessed ‘geek’ with an enthusiasm for science, and a desire to ignite students’ passion for the topic. She also had a clear affinity with storytelling, and so, was easy to listen to, as she naturally punctuated discussions with illustrative stories and metaphors relating to her experiences. She was keen for students to not only gain a degree, but to leave university with a curiosity for science, and with some sense of identity as being a scientist. She likened this to dangling wool in front of kittens.

Mairi discussed her efforts to prevent students from compartmentalising their learning or to regurgitate information instead of understanding it. She valued the interdisciplinary nature of the course and the trigger in this regard, arguing that there are not ‘hard borders’ between the single-science disciplines. A strong theme through Mairi’s interview was her desire for orderliness. She strived for consistency, logic, and order in what she and I found myself wondering if this might relate to the nature of knowledge within science disciplines.

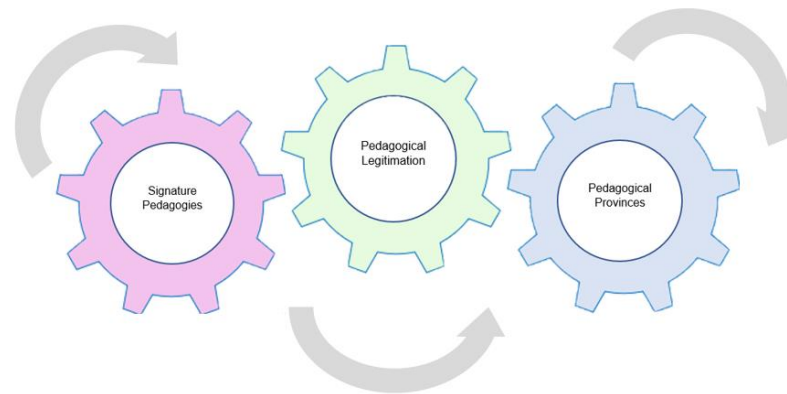
Mairi’s PBL facilitation was clearly influenced by her own experiences as a student and by her broader empathy for students. She recalled feeling as though she had been thrown in at the deep end, with little support to understand PBL. On one occasion, her team had gone off-track, and this hadn’t been highlighted until it was too late to retrieve. Mairi was keen for her students to avoid such experiences.

Appendix 16: Model of Structural Influence Applied to Research Sites

<i>Forest University: Chemical Engineering</i>

<p>Reasoning Traditions of teaching and learning appeared steadfast at Forest university and within school learning of science subjects. There were no overarching pedagogical architects or curators influencing the consistency of approach to PBL. Class sizes were large to accommodate entire cohorts of students.</p>

<i>River University: Law</i>

<p>Reasoning Skills for graduate employment were influential but less powerful than the other two cogs. The role of curator was very powerful at River University, indoctrinating habitus into the community. Collaborative learning spaces supported both students and staff.</p>

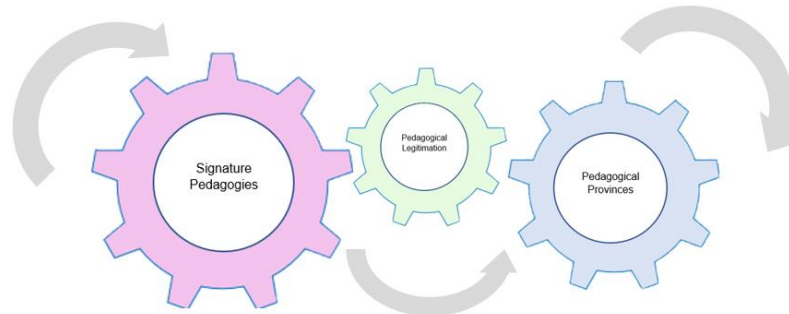
Hillside University: Medicine



Reasoning

The cogs seemed to influence the PBL in fairly equal measure at Hillside University. The skills required to practise medicine influenced the pedagogical design and the formal curator role reinforced the philosophy. Administrative structures influenced the pattern of delivery of the PBL.

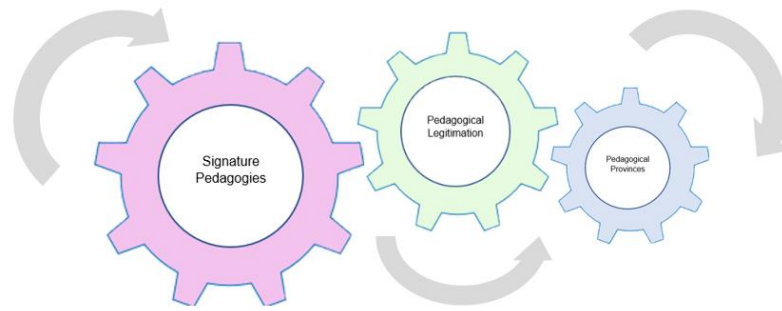
Meadow University: Occupational Therapy



Reasoning

Signature pedagogies were a significant influence as tutors were influenced by their aims in relation to graduate outcomes and also by the own disciplinary habitus developed in clinical practice. There was no pedagogical curator maintaining consistency on the course and the pedagogical architects had left. Whilst classroom spaces were a supportive structure, centralised processes were a barrier.

Beach University: Natural Sciences

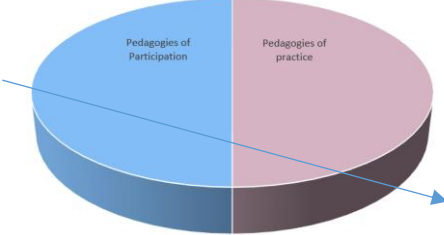
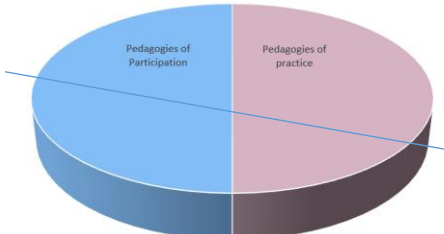


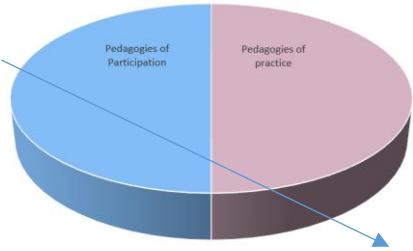
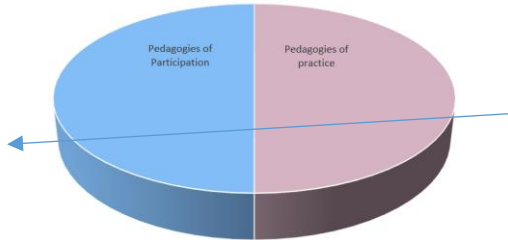
Reasoning

The PBL at Beach University was strongly influenced by the traditions of teaching and learning in the science disciplines. Architect and curator roles had been crucial in the development of the PBL here. Due to being a small cohort, standardised processes were not a significant influence.

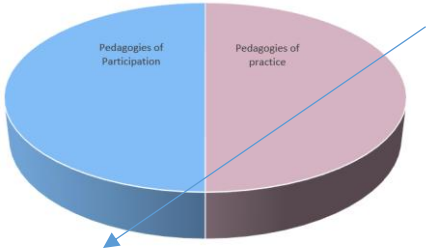
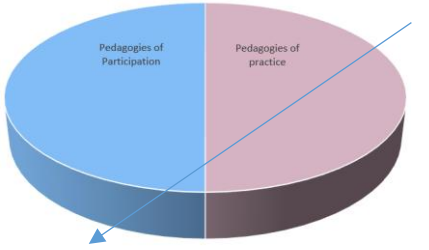
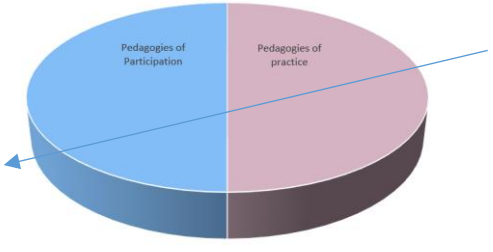
Appendix 17: The influence of signature pedagogies of occupational therapy and chemical engineering

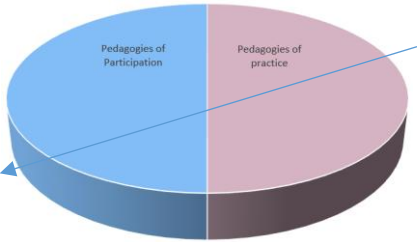
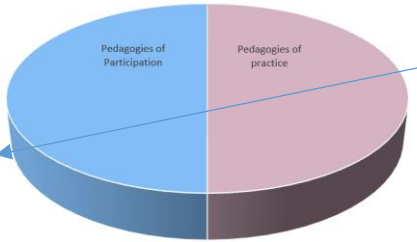
Forest University – Chemical Engineering

<i>Participant</i>	<i>Illustration of lens of signature pedagogies</i>	<i>Explanation</i>
Jasmine	<p style="text-align: center;">Signature Pedagogies</p> 	<p>Jasmine was influenced by many of the traditional norms of teaching and learning within the science disciplines.</p> <p>Whilst she was motivated to ensure students had a better understanding of what they were learning, this was not often directly linked with graduate life.</p>
Samuel	<p style="text-align: center;">Signature Pedagogies</p> 	<p>Samuel was influenced by many of the traditional norms of teaching and learning within the science disciplines.</p> <p>He was keen that students should acquire the knowledge and skills needed to become a chemical engineer, rather than just pass exams.</p> <p>Samuel had studied chemical engineering although had not practised in this role outside of higher education.</p>

<p>Patrick</p>	<p>Signature Pedagogies</p> 	<p>Patrick was influenced by many of the traditional norms of teaching and learning within the science disciplines. He tended to be more subject focused and there was little conversation about students acquiring an identity relating to chemical engineering.</p>
<p>Sylvia</p>	<p>Signature Pedagogies</p> 	<p>Sylvia had a strong focus on the students' graduate destinations and becoming autonomous learners and employees. She was conscious of the traditional norms of teaching and learning within the science disciplines, although did not always consider them to be in the students' best interests. Sylvia had studied chemical engineering but had not practised in this role outside of higher education.</p>

Meadow University – Occupational Therapy

<i>Participant</i>	<i>Illustration of lens of signature pedagogies</i>	<i>Explanation</i>
Robert	<p style="text-align: center;">Signature Pedagogies</p> 	<p>Robert had a clear identity as a mental health occupational therapist as this was the area that he had practised in. He had a strong focus on the students acquiring the knowledge, skills and professional identity required for graduate employment.</p>
Hannah	<p style="text-align: center;">Signature Pedagogies</p> 	<p>Hannah had a clear identity as a mental health occupational therapist as this was the area that she had practised in. She had a strong focus on the students acquiring the knowledge, skills and professional identity required for graduate employment. There was evidence of Hannah drawing on her skills from practice in her PBL facilitation.</p>
Rose	<p style="text-align: center;">Signature Pedagogies</p> 	<p>Rose had a clear identity as an occupational therapist and there was evidence of her drawing on some of the skills she had used in practice. Whilst Rose was open about valuing the ways in which PBL supported students to gain skills required for graduate employment, she acknowledged that her teaching experiences from her previous roles outside of higher education were of a more didactic style of teaching. She acknowledged that facilitation was more challenging as she had to resist the urge to continue with didactic teaching.</p>

<p>Beth</p>	<p>Signature Pedagogies</p> 	<p>Beth had a clear identity as a mental health occupational therapist as this was the area that she had practised in. She had a strong focus on the students acquiring the knowledge, skills and professional identity required for graduate employment. Beth was strongly influenced by her own learning experiences as she had not considered them useful.</p>
<p>Jennie</p>	<p>Signature Pedagogies</p> 	<p>Jennie had a clear identity as an occupational therapist, and it was evident where she drew on the skills she had used in practice. Jennie's occupational therapy qualification had been acquired at Meadow University and so she was influenced by her own experienced of learning using PBL</p>