A social realist challenge to the structuring of professional practice knowledge for initial teacher education in England.

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Abstract

Professional practice knowledge for beginning teachers involves grappling with the extent to which 'theory' and 'practice' should be evident during initial teacher education courses. The end point assessment tool for such programmes in England is that of the Teachers' Standards (DfE, 2011). Successful achievement in relation to these, results in the award of Qualified Teacher Status (QTS). Of concern is the number of teachers who successfully secure QTS and subsequently leave the profession early. This thesis contributes an analysis of the particular way that the theory/practice relationship has been structured within the Teachers' Standards and the impact that this form has had on professional agency.

The prioritisation of the observable is contrasted with manifestations that recognise that within a moment of practice, invisible yet durable knowledge structuring mechanisms are also present. In order to accord these mechanisms due agency, the concept of diffraction (the physical phenomenon of wave interference), (Barad 2007) was drawn upon to enrich Bernstein's (2000) social realist analysis of discourse. The data was gathered from a School Centered Initial Teacher Training (SCITT) provider in the West Midlands. The knowledge structuring dialogues from eight pairs of Teacher Educators and Beginning Teachers were analysed using Legitimation Code Theory (Maton, 2014) to reveal the extent to which practice was time and space bound.

The findings suggest that when context-transcending forms of knowledge specialise observable practices relationally, there is increased potential for coherent professional knowledges to result. Structuring professional practice knowledge in this way, contrasts with forms of knowledge particularisation evident within the Teachers' Standards and the knowledge dualisms that are often conspicuous in the literature. Therefore a challenge is offered to existing forms of professional practice knowledge structuring by drawing on quantum (entangling materials and minds) rather than Cartesian (separation of mind and matter) conceptions of time and space.

Keywords

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Glossary of Abbreviations

AT	Associate Teacher, the term used within Keele and North Staffordshire Teacher Education to refer to a trainee
BT	Beginning Teacher, a more generic term that refers to someone training to teach, and encompasses a meaning that goes beyond trainee, towards 'becoming' a teacher.
CCoT	The Chartered College of Teaching succeeds the College of Teachers, who previously held the Royal Charter for the teaching profession. The CCT's mission is improve the quality of education for children and young people by supporting teachers, championing great teaching and raising the status of the profession. It was formed in 2017.
CCF	Core Content Framework , introduced by the Department for Education in 2019 defines in detail the minimum content entitlement for all trainee teachers
DES	Department of Education and Science 1962-1992
DCSF	Between 2007 and 2010, The Department for Children, Schools and Families was then the Government department with responsibility for education in England.
DfEE	Department for Education and Employment, was the then Government department with responsibility for education in England.
DfE	Department for Education 1992-1995 and then from 2010, The Department for Education has been the Government department with responsibility for education in England since 2010.
DfES	Department for Education and Skills was the Government department in England responsible for schools from 2001 to 2007
ECF	Early Career Framework, a two-year package to support new teachers at the start of their career, developed by the DfE in 2019
ECT	Early Career Teacher, from 2021 the designation of a new entrant to the profession, covering their first two years of employed practice.
GTC England	Created in 2000 and disbanded in 2012, the General Teaching Council for England had a regulatory role for teachers in England
HEI	Higher Education Institution

HMI	Her / His Majesty's Inspectorate
ITE	Initial Teacher Education, a term used by those who wish to represent teaching as a complex scholarly activity that involves education rather than simply training.
ITT	Initial Teacher Training, a term often used by the DfE, typifying teaching as an occupation best developed through training (usually in schools)
KNSTE	Keele and North Staffordshire Teacher Education, a partnership of over 120 primary, middle and special schools that, together with Keele University offer initial teach education.
LCT	Legitimation Code Theory
LEA / LA	Local Education Authority / Local Authority. **Local** government is responsible for a range of vital services for people and businesses in defined areas, including education.
NCTL	The National College for Teaching and Leadership (NCTL) (inheritor of the site and functions of the National College for School Leadership (NCSL)) was an executive agency of the Department for Education. NCTL had two key aims, to improve academic standards by ensuring there was a well-qualified and motivated teaching profession in sufficient numbers to meet the needs of the school system; and to help schools to help each other to improve.
NPQ	National Professional Qualification
NASBTT	The National Association of School-Based Teacher Trainers in England
NQT	Newly Qualified Teacher, a teacher in their first year of teaching, following the award of QTS (up until August 2021, then replaced by ECT)
Ofsted	The Office for Standards in Education is the schools' regulator in England
OECD	Organisation for Economic and Co-operation and Development
PGCE	Post Graduate Certificate in Education, now refers to the academic element of teacher education, formerly a PGCE often encompassed the professional element as well. This is now recognised separately through QTS
Provider	An accredited legal entity, recognised by the DfE, to offer initial teacher training / education.

QTS	Qualified Teacher Status, achieved in recognition of performance in relation to the Teachers' Standards
SCITT	School Centred Initial Teacher Training
TE	Teacher Educator, a colleague responsible for the professional development and achievement of a trainee / AT (Associate Teacher)
Trainee	A candidate who is being assessed in relation to the Teachers' Standards for the award of QTS (they may also be undertaking a PGCE simultaneously).
UCET	The Universities' Council for the Education of Teachers, representing predominately university departments of education in the UK, but also SCITTs

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For: Teacher Educators, as 'a relationship with knowledge is not an answer. It is a way of questioning' (Charlot 2010: 7).

Chapter 1: Introducing the challenges

1.1 Introduction

It has been acknowledged that 'behind every national system of initial teacher education (ITE) lies a conception of teacher professionalism and behind that, fundamental assumptions about what education is and how best it is realised nationally' (Furlong et al, 2021: 61). Consequently, analysing the ways in which professional knowledge is constructed through policy documentation and recontextualised in sites of professional practice is an important area of study. This thesis seeks to explore the relationship between knowledge structures and knowledge structuring in the development of professional practice knowledge in initial teacher education in England. It focuses on the impact that different forms of knowledge structure have on professional identities and the status of the profession itself. I make the case for paying more attention to epistemological concerns in relation to knowledge structuring within the field of initial teacher education, and in particular in relation to the work of teacher educators (TEs). TEs in this study, are school-based colleagues with responsibility for the professional formation of beginning teachers (BTs). BTs are trainees experiencing their initial teacher education programmes.

Eight pairs of TEs and BTs in the SCITT (School Centered Initial Teacher Training) provider where I am director volunteered to participate in the study. I examine my own researcher positionality carefully in Chapter Five (methodology). The analysis of each pair's dialogues is presented as a discrete case-study (Yin, 2018), offering a realisation of the intermeshing of micro (individual) and macro (national) articulations of teacher

education priorities within the context of the SCITT (meso-scale)(Hargreaves, 1995). The data from the eight pairs of TEs and BTs are analysed as a materialised response to the intersection of policy priorities, accountability frameworks and local needs for initial teacher education. Insights gained from the data focus on the material consequences of the (im)mobility of professional knowledge forms between these different scales. I therefore felt that I needed to focus on the movement of knowledge between situations, which was a key element in Bernstein's (2000) pedagogic device that I use as a key theoretical framework. What is distinctive about Bernstein's work is his interest in 're-working the same set of ideas and concepts and attempts to link micro to macro processes' (Singh, 2020: xi). The application of the same concepts at different scales brings to the fore the significance of time and space in knowledge structuring, as different forms of knowledge carry different conceptions of time and space and these conceptions have different material effects.

The social sciences have been predominantly dependent on classical physics for conceptions of time and space (Lingard and Thompson, 2017). Such articulations underpin mind/body dualisms rather than recognise the significance of mind/matter relationships. In order to contribute an extension of Bernstein's (2000) framework, one that pays closer attention to the significance of time-space relationships in knowledge structures and structuring, the theoretical insights of the feminist physicist philosopher Karen Barad (1956-) are drawn upon. Barad (2007) applies insights from quantum physics to social phenomena, drawing in particular on Niels Bohr's complementarity principle. The complementarity principle states that objects have certain pairs of complementary properties (for example an electron can be observed as being both a

particle and a wave) which cannot all be observed or measured simultaneously. The apparatus used to measure the object is therefore also significant. Barad (2007) draws on Bohr's insights in relation to the social sciences. In this study I draw on Barad's conceptual framework to draw attention to the material effects of the 'apparatus' used to 'measure' knowledge structuring.

One form of apparatus is that of Bernstein's (2000) concepts of Horizontal and Vertical discourses. These are explored in depth in Chapter Three. Horizontal discourses are those connected with, common sense knowledge and have often been associated with practices. Vertical discourses are differentiated by Bernstein (2000) into two types, those that are hierarchical are recognised as being integrative in nature with specialised languages and concepts. The second type of Vertical discourse is that of the horizontal type, connecting nodes or sites in relation to conceptual ideas. Vertical discourses of a horizontal type are significantly different from Horizontal discourses. Often practice knowledge has been associated with Horizontal discourses rather than with Vertical discourses of a Horizontal type (Gamble, 2003, 2018; Muller, 2007b; Råde, 2019).

Concepts are legitimately part of Vertical discourses of a horizontal type and so differ in form from Horizontal discourses that are context (time and space) bound. Drawing on the data generated by this research study, I argue that there is much to be gained by carefully examining Vertical discourses of a horizontal type in relation to professional practice knowledge and that in doing so, challenges can be offered to the 'strong turn towards practice and the practical' (Vanassche, Kidd and Murray, 2019: 470) that

teacher-education has experienced globally, and in England in particular (Whitty and Furlong, 2017).

In the English context, there has been a focus on preparing teachers to be classroom ready quickly (Orchard and Winch, 2015), justified through arguments of relevance (Burstow and Winch, 2014; Winch, 2017) associated with a 'turn to the practical' (Furlong and Lawn, 2011). The introduction of the White Paper, 'The Importance of Teaching' (DfE, 2010), heralded an era during which official and policy documentation has consistently foregrounded school-based experiences as the most relevant form of inculcation into the profession of teaching. Consequently, classroom experience plays a critical role in the formation of teachers. How such experiences are developed into professional epistemic knowledge remains a contested area (Biesta and Aldridge, 2021; Darling-Hammond and Lieberman, 2013; Furlong and Whitty, 2017; Orchard and Winch, 2015). Questions about both the structure (curriculum) and structuring (pedagogy) remain because there is 'still uncertainty about what models of professional experience best prepare pre-service teachers for a productive working life' (Howley, Reynolds, and Southgate, 2016: 32). These debates often centre on the theory/practice binary and the extent to which each form of knowledge should frame professional practices. This thesis is concerned with the impact that different forms and types of knowledge, with different time and space realisations have on professional formation and consequently on the professional identities of individuals and the profession itself.

1.2 Identifying the problem(s)

The appropriateness of the ways in which professional knowledge is specified within the Teachers' Standards (DfE, 2011) have been cited as a factor in explaining why so many teachers who successfully achieve QTS, then leave the profession early in their careers (Nunn, 2016). In England, attrition rates are high, with 43% of teachers leaving after five years' service compared with only 2% in Germany (Winch, 2017: 206). Teachers' lack of epistemic agency and autonomy have been cited as factors in their decision to leave teaching (Perryman and Calvert, 2019). Additionally, researchers have noted that 'teachers are sixteen percentage points less likely than similar professionals to report having "a lot" of influence over how they do their job' (Worth and Van den Brande for NFER, 2020: 4). I was therefore motivated to explore how and why professional knowledge is articulated in a particular way in the Teachers' Standards from both the perspective of the beginning teacher and the teacher educator.

In addition to the Teachers' Standards, there are standards for TEs, known officially as school-based mentors (DfE, 2016b), these Standards are non-statutory and little used (Murtagh and Dawes, 2020). They were created following the recommendations of the Carter Review (2015) which recognised that ITE partnerships should have access to a 'critical mass of expertise' (Carter, 2015: 42). School-based teacher educators have a pivotal role in such partnerships, indeed they are the lynchpins (Husbands, 2013). Support for their professional learning therefore underpins a successful partnership. Yet the literature recognises that school-based teacher educators often have varied backgrounds, (White, Timmermans and Dickerson, 2020) and are expected to engage in

a multitude of roles (Mena et al, 2016) but lack access to a coherent curriculum or pedagogy. Consequently, teacher educators' work is 'characterised by the uncertain, ill-defined and under-valued nature of professional knowledge and skills needed to teach teachers' (Vanassche, Kidd and Murray, 2019: 479).

The lack of systemisation in relation to the structuring of professional practice knowledge leaves school-based teacher educators with a number of dilemmas, these include the role that experience plays, the relationship between practice and specialising professional purposes, as well as which pedagogic approaches might be most appropriate to access when. In order to respond to these challenges, I argue that there is much to be gained by engaging with discussions in relation to the nature of practice knowledge itself.

 In addition to these first two lines of enquiry, the form of practice knowledge prioritised in the Teachers' Standards, and TE's access to the epistemic configurations of practice knowledge for the professions, a third focus is that of the way that practice knowledge is both represented and structured within professional dialogues and the impact that such discourses have on professional formation.

The focus on knowledge structuring within dialogues is significant, as the majority, if not all, of the 256 registered initial teacher education partnerships, responsible for the education of over 40,000 trainee teachers (Ofsted, 2021) require some form of formal professional discussion to take place between the TE (mentor) and BT (mentee). However, 'knowledge as dialectically constituted through mentor-mentee dialogue has

not been subjected to extended empirical study despite wide spread acknowledgement that mentoring is of crucial importance' (Mena et al: 2016, 54). This research contributes an analysis of TE/BT discourses in relation to the themes and challenges identified in the literature review of professional practice knowledge. The analysis is underpinned by Bernstein's (2000) social realist pedagogic device, augmented by Barad's (2007) social materialist perspectives, explored through Maton's (2014) methodological and sociological framework.

This thesis is in the social realist tradition in that it aims to 'restate the case for looking at knowledge, its variational forms and some of their educational implications' (Muller, 2014: 264) for initial teacher education in England and in particular the work of school-based teacher educators. Social realism, recognises that different forms of knowledge have active and different consequential roles in pedagogic transmission. Consequently if such differences are under appreciated then the 'power' of knowledge can be limited. It is the 'social reality of unobservable concepts (whether scientific or religious) that gives them power (and claim to objectivity and truth) relative to our common-sense concepts and enables them to transcend the specific instances and circumstances of everyday life' (Young 2008: 43). A key element in understanding the nature of different forms of knowledge is that of time and space. Every-day or common-sense knowledge is context bound, limited by the time and space of its realisation. In contrast conceptual or substantive knowledge has the potential to connect and coheres a range of contexts as it is abstract and abstracted. Such knowledge has both specialising and organising powers that can be materialised in matter. In turn, matter, such as the Teachers' Standards have

material effects, and so are not neutral carriers of professional practice(s). A sociomaterialist lens helps accord heightened sensitivity to the consequences of the ways in which time and space are engendered in such materials, enriching social realist perspectives. Such a focus is significant as the professions, including teaching, are dependent on accessing conceptual knowledge in practice (Kuhlee and Winch 2017).

1.3 Research aims and questions

Teaching has been recognised as being a fragile profession (Young and Muller, 2014) due in large part to its dependence on the pedagogies of observation and modelling which foreground the immediate and visible present in practice (Mutton, Burn and Menter, 2017). Consequently that which is experienced or observed has being taken as a proxy for the epistemic (Winch 2013b). A key aim of this study is to developing the means to dis (entangle) and reassemble observed practices in an epistemically coherent manner. If both TEs and BTs can be offered the apparatus to recognise, access and develop the profession's organising concepts in practice, then professional agency can be (re)enabled. Such a resource has the potential to cohere professional practice knowledge in a way that is simultaneously both contextually relevant and conceptually meaningful, calling into question the current official articulation of professional practice knowledge.

Each research question contributes towards the overall ambition of this study to challenge current knowledge structuring practices within initial teacher education in

England. Drawing on the data generated from the analysis of the knowledge structuring profiles from the eight pairs of teacher educators and beginning teachers, the study sought to answer the following research questions:

1. How do school-based teacher educators structure professional practice knowledge for beginning teachers?

2. In what ways do these forms of knowledge structuring reflect or deviate from policy conceptions of teachers' professional knowledge in England?

3. How can teachers' knowledge structuring take more account of both professional and policy constraints?

The first research question establishes current practices evident at the local level. The second question addresses the complex relationship between macro national policy priorities, the forms of knowledge prioritised by providers (meso) and local micro contexts. The third research question directs attention to the legitimate constraints required by a profession that specialises and organises practice in a distinctive way together with society's expectations of the profession of teaching. Answers to these questions will afford a theoretical analysis of the status of professional practice knowledge within the profession; an empirical contribution in relation to different forms of knowledge structuring and a methodological contribution in relation to the innovative analysis of discourses applied in this study. This novel approach involves applying

Legitimation Code Theory (LCT) (Maton, 2014), diffractively, overlaying the analysis of the TEs and BTs insights to expose how they affect each other's knowledge structuring.

It is not my intention to prioritise one form of knowledge structuring, rather the study aims to contribute the means to make visible the complex nature of professional practice knowledge in order that the profession can benefit from more informed knowledge structuring.

1.4 Contributions of the research study.

Drawing on work in relation to the sociology of educational knowledge, the sociology of the professions and philosophical reflections of the nature of practice, this thesis offers an empirical, theoretical and methodological contribution in relation to the structuring of professional practice knowledge in initial teacher education. The empirical contribution relates to the recognition that within the visibility of observable knowledge structuring is present the invisibility of the conceptual in professional practice knowledge. How the conceptual is conceived matters, including the relationship between different knowledge forms. The theoretical contribution of the study therefore relates to offering a more expansive appreciation of the significance of the theory practice relationship in professional practice knowledge, including re-emphasising the distinctive difference between Bernstein's concepts of Horizontal discourse and Vertical discourses of horizontal and hierarchical types. The methodological contribution relates to the way in which the Semantic dimension of LCT has been applied diffractively. What is new about this study is its focus on the epistemic significance of discourses in the

structuring of professional practice knowledge. The research data reveals the difference that epistemic awareness makes to knowledge structuring and the potential of such insights for professional agency in practice.

As illustrated in table 1.1, teacher education has been a significant area of government activity over the decades, with major increases in policy initiatives evident since 2010. One of the significant drivers underpinning this change was the growth in an interpretation of globalisation as necessitating the pursuit of neoliberal policies (Furlong, 2013). Neither globalisation nor neoliberalism are settled or static concepts themselves, and so both are open to ideological interpretations. For example, globalisation has been presented as an inevitable force one that is irresistible. However 'globalisation is not a force of nature, it is a product of society – a political and economic project' (Massey, 2002: 3) and as such is open to challenge. A neoliberal interpretation of globalisation values market exchange as ' an ethic in itself, capable of acting as a guide to all human action, and substituting for all previously held ethical beliefs' (Harvey, 2005: 3). In this sense neoliberalism ' sees competition as the defining characteristic of human relations. It redefines citizens as consumers' (Monbiot, 2016).

Rather than sustaining the market and consumer representation of professional knowledge structuring, this thesis argues that professional practice knowledge structuring involves the strong referencing of professional purposes or substantive concepts which distinguish the specialised nature of the profession of teaching. In order for these principles to inform and influence policy, the means must be open for professionals themselves to inform the evidence-base that is referenced in policy documentation.

Table 1.1: Key Events Impacting on Initial Teacher Education 1984 – 2022

(Grey shading denotes changes since 2010)

Year	Event
1984	Council for Accreditation of Teacher Education (CATE) was established.
1989	Partnership management of ITT provision was introduced, minimum length of training for PGCE routes was 75 days (100 for undergraduates)
1993	Partnership management arrangements became mandatory, the minimum length of school-based training increased to 90 days (160 for undergraduate routes)
	School Centred Initial Teacher Training (SCITT) introduced
1994	Teacher Training Agency (TTA) replaced CATE
	Ofsted Established
1998	Qualified Teacher Status (QTS) was introduced.
	One-year induction was mandated to confirm QTS for newly qualified teachers
	General Teaching Council (England) was established
	Graduate Teacher Programme under the umbrella of Employment Based ITT (EBITT) (previously Licensed and Articled Teacher Scheme)
1998	Training schools established to increase capacity and quality in school-based training.
2001	QTS skills testing was introduced
2002	QTS standards document replaced (revised in 2007 and 2012)
	National Partnership Project launched to build capacity and quality in partnership schools
	Training bursaries introduced
	Teach First introduced in London (and rolled out to the regions from 2005/6)
2005	TTA became TDA (Training and Development Agency) with extended remit for training and development of school workforce and workforce remodelling.
	Undergraduate sector reduced to 37% (from 53% in 1998) and half of undergraduates taking (shortened) 3-year degrees with QTS.

2007	Split imposed between Masters (M Level 7) PGCE – Postgraduate Certificate of Education, and the award of QTS
2010	The School's White Paper 'The Importance of Teaching' confirmed and intensified school-based emphasis in Initial Teacher Education / Training.
2011	Establishment of Teaching Schools providing school-led Initial Teacher Training (ITT).
2012	Increase in school-based time from 90 to 120 days
	Revised Ofsted Framework introduced
	Teachers' Standards Introduced
2012/13	School Direct Salaried (SDS) Route established
2013/14	Graduate Teacher Programme (GTP) ceased.
2014	Two phase ITE Ofsted Framework introduced
2015	Carter Review of Initial Teacher Education
2015/16	School Direct accounts for one third of the primary training places
2016	Schools' White Paper – Educational Excellence Everywhere
2016	National Standards for School-based ITT Mentors published
2016	Core Content Framework published, that relates to the Teachers' Standards.
2017	Formation of the Chartered College of Teaching
2019	A revised Framework of Core Content for Initial Education published so as to focus on connections with the Early Career Framework
2019	Early Career Framework published
2019	Abolition of the Skills Tests for Literacy and Numeracy, providers now responsible for the assessment of Fundamental Maths and English.
2020	Ofsted publish revised ITE Inspection Framework for pilot inspections
2020	Revision to the ITT Criteria to include the ITT Core Content Framework
2021	Reduction of Teaching Schools from 750 to 87 Hubs who have responsibility for initial teacher education, and the National Professional Qualifications within their geographic areas.
2021	Announcement of the formation of a National Institute of Teaching
2022	Publication of the results of the Market Review of Initial Teacher Training.

In order to facilitate a productive policy-evidence relationship, a quantum rather than Cartesian perspective is drawn upon. In Cartesianism, policy and evidence are 'othered' and international policy differences between nations are viewed in a linear fashion with nations being considered to be 'behind' rather than 'different', (Massey, 2002) As such international policy comparisons focus on competition rather than learning from the effects of the values and principles prioritised. (Alexander, 2012) . It was the notion of global competition that was used to justify the approach taken in the 2010 White paper, 'The Importance of Teaching' which heralded the current policy zeitgeist.

Teacher education become a focus because 'the teaching profession is now seen as they key element of global competitive success' (Furlong, 2013: 29) . This was the result of 'evidence' such as the McKinsey Report (Barber and Mourshed, 2007) being used to justify teacher education as a policy problem to be solved. The report was quoted seven times in the first twenty pages in the 2010 White Paper and used to justify increasing the Department for Education's use of 'targeted instructive documents and white papers' to 'determine the actions of educationalists' (Helgetun and Menter, 2020: 88).

This thesis seeks to unsettle the current policy-evidence relationship by ' 'disentangling what we may call scientific evidence rooted in good research practices from politically constructed evidence rooted in dogmatic ideology and popular ideation' (Helgetun and Mentor, 2020: 89). It has been acknowledged that ' 'very little policy impact or innovation has emerged out of the work of teachers or teacher educators themselves' (Loughran and Mentor, 2019: 219). Consequently 'politics, economics and ideology has driven many government initiatives rather than knowledge derived of scholarship in teacher education' (Loughran and Mentor, 2019: 219).

The focus on ideology rather than scholarship is a result of the conception of 'evidence and policy as two separate domains' (Lancaster and Rhodes, 2022: 145). One that has been sustained by a Cartesian perspective in which 'objective evidence is thought to sit outside of policy processes waiting to be "brought in "' (Lancaster and Rhodes, 2022: 145). It is this view of time and space that has been used by neoliberalists to sustain the 'hopeless illusion' (Boaz et al, 2008) of evidence-based policy making. When policy and evidence are conceived of as separate entities, then evidence is seen as being external to policy and vice-versa. This results in an under valuing of the co-constitutive nature of both evidence and policy making. In this thesis, by recognising how practice and policy inter-relate and entangle to co-constitute evidence, the means is offered for professionals to 'actively articulate the specialist knowledge, skills and abilities that underpin expertise in teaching' (Loughran and Mentor, 2019: 216). A challenge can therefore be offered to the current orientation towards the 'new science' evidence era prioritises 'hypothesis-driven and quasi-experimental strategies of inquiry' (Hordern and Brooks, 2023; 5). This is a significant contribution as the reliance on approaches which objectify evidence have encouraged 'an image of teaching as a decontextualized series of interventions with narrow objectives' (Hordern and Brooks, 2023: 1). As such the distinctive values and purposes of teaching have been marginalised, limiting the profession's contribution to policy. In recognising that local sites of practice involve policy deliberation and by valuing the co-constructive nature of both evidence and policy making, the professional knowledge structuring proposed in this thesis extends the ways in which professional practice knowledge can travel into policy and public life.

In the remainder of this introductory chapter I now offer my personal and professional reasons for pursuing the study. I expand further on the research project's aims and rationale. In order to contextualise the study, an overview of the data collection site and its relationship with the initial teacher education sector in England is provided.

1.5 Background to the study

I became Director of the SCITT, at the time of its formation in 2014. Previously I had spent two years as primary PGCE director at the HEI that now works in a collaborative partnership arrangement with the SCITT. In 2012, the HEI had re-commenced, its primary ITE programmes after a 15-year gap in provision. The decision to develop a new programme was a response to local demand generated by schools who were eager to work in partnership with a locally based HEI. They wanted to enable school-based colleagues to benefit from collaborative opportunities to evaluate their practices, rather than solely draw on their current experiences. The partnership was informed by the premise that that 'what passes for intuition or common sense is an unreliable basis on which to make good decisions in the classroom' (Orchard and Winch, 2015: 13). The conception of the course coincided with the policy movement that increased school involvement in initial teacher education (ITE) (see table 1.1). One of the main instruments for expanding practitioner opportunities in ITE was the School Direct programme.

The School Direct courses were first introduced as a small-scale pilot in 2011, and by 2013/14, 25% of all ITE places were allocated through School Direct (UCET, 2014). Such programmes required schools to both recruit BTs and provide the majority of school

experiences and training. Like for many HEIs, 'the scale and speed of growth' (UCET, 2014: 2) of such courses was destabilising for our local HEI. Many HEI based colleagues felt that the 'market-driven' (Burstow and Winch, 2014) approach to ITE not only changed the language (e.g. students became trainees, schools became providers), but also the culture (from scholarship to pragmatism), governance (from HEIs to schools) and epistemology (from reflection to experiential) of ITE to such an extent that the HEI made the decision in 2013/14 to close their primary PGCE programmes.

Whilst the partnership of schools appreciated the dilemmas faced by the HEI, they also perceived that the newly established courses were having a positive impact on local schools and the communities that they served. Consequently, the Strategic Board that oversaw the development of the provision requested that a lead school took over the legal entity from the HEI.

The migration of the designation was supported by the Department for Education (DfE) who hailed it as a 'blueprint' for other providers to follow. In an email exchange in 2013/4 the DfE suggested that the SCITT had the potential to offer 'the best of both worlds. The two worlds referenced, were those of theory and practice, the former associated with HEIs and latter with schools. Such demarcation, associating HEIs with context independent theoretical knowledge structures and schools as locations for context-dependent have resulted in bifurcations and defensive positioning. The move to School Direct has become synonymous with government's turn to practice and so has been interpreted as being dismissive of the role of both HEIs and theory in teaching (Vanassche, Kidd and Murray, 2019). The focus in such circumstances has been on the

boundaries between forms of knowledge, ideological positions and types of institutions rather than on epistemological concerns in relation to professional practice knowledge structuring itself. Consequently, forms of knowledge and types of institutions have become conflated such that debates centre on organisational positions rather than on the structure and structuring of knowledge. I argue that such adversarial concerns have obscured a focus on the nature of professional practice knowledge itself, and that such an obscuration has been detrimental to the status of the profession.

As Director of a SCITT, that included an HEI, I became increasingly concerned about the school/HEI divisions that were being promulgated politically and highlighted in the literature were resulting in vacillations between the extent of theory and practice in professional knowledge rather than re-examining the nature of professional practice knowledge itself. I was eager to ascertain how all our SCITT partners could best contribute to professional formation through the development of practice knowledge. I recognised that our partnership was in a unique position to make such a contribution to the field, since to date we are the only SCITT that has been formed by a migration of legal entity from an HEI that then became a collaborative partner.

The SCITT partnership consists of 150 primary, middle and special schools in addition to the HEI. It is governed by a Strategic Board of head-teachers, senior leaders and university representatives. The SCITT is accountable to the DfE via its responsibilities to manage programmes which are compliant with the Core Content Framework (DfE, 2019) and that prepare BTs to achieve in relation to the end point assessment criteria encapsulated in the Teachers' Standards (DfE, 2011) (see figure 1.1). In addition, the

partnership is subject to regular inspections by Ofsted. Locally the SCITT is responsible to

its partnership of schools who serve an area of high social deprivation, which included a

designated social mobility opportunity area (DfE 2017a) and the 13th most deprived

local authority (out of 317) in England (English Indices of Deprivation 2019).

The SCITT's programmes are informed by research which recognises that, 'moving a

child from an average to a top teacher's class means that they will learn in six months

what would otherwise have taken them twelve. Moreover, good teachers seem to have

disproportionately strong impact on pupils from disadvantaged homes. Good teachers

therefore also help to close the gap in attainment' (Allen and Sims, 2018: 3). The

partnership was therefore also bound by its commitment to social transformation

through education.

I began to realise what also bound the SCITT partnership together was a view of what

makes for an effective public professional who teaches, and as such the SCITT occupied a

third space, a space different to the separate and often competing accountability

measures of either HEIs or schools. The conception of a 'third space' (Bhabha, 1994;

Zeichner, 2010) foregrounds collaborative approaches creating a hybrid space within

which knowledge can be co-constructed. In the case of the SCITT partnership such co-

construction involves both schools and an HEI in structuring professional practice.

Significantly in the third space there is the opportunity to replace divisive binaries with

conceptions of 'both / and also' (Soja, 1998). Importantly such a conception of 'both/

and also' does not involve a blurring or eradication of boundaries or else conflation and

unhelpful substitutions can occur; rather it requires a respect for differences so that

productive relational partnerships can be built.

Figure 1.1 The Teachers' Standards: Overview. (DfE, 2011)

PREAMBLE

Teachers make the education of their pupils their first concern, and are accountable for achieving the highest possible standards in work and conduct. Teachers act with honesty and integrity; have strong subject knowledge, keep their knowledge and skills as teachers up-to-date and are self-critical; forge positive professional relationships; and work with parents in the best interests of their pupils.

PART ONE: TEACHING

A teacher must:

1   Set high expectations which inspire, motivate and challenge pupils

- establish a safe and stimulating environment for pupils, rooted in mutual respect
- set goals that stretch and challenge pupils of all backgrounds, abilities and dispositions
- demonstrate consistently the positive attitudes, values and behaviour which are expected of pupils.

2   Promote good progress and outcomes by pupils

- be accountable for pupils' attainment, progress and outcomes
- be aware of pupils' capabilities and their prior knowledge, and plan teaching to build on these
- guide pupils to reflect on the progress they have made and their emerging needs
- demonstrate knowledge and understanding of how pupils learn and how this impacts on teaching
- encourage pupils to take a responsible and conscientious attitude to their own work and study.

3   Demonstrate good subject and curriculum knowledge

- have a secure knowledge of the relevant subject(s) and curriculum areas, foster and maintain pupils' interest in the subject, and address misunderstandings
- demonstrate a critical understanding of developments in the subject and curriculum areas, and promote the value of scholarship
- demonstrate an understanding of and take responsibility for promoting high standards of literacy, articulacy and the correct use of standard English, whatever the teacher's specialist subject
- if teaching early reading, demonstrate a clear understanding of systematic synthetic phonics
- if teaching early mathematics, demonstrate a clear understanding of appropriate teaching strategies.

4   Plan and teach well structured lessons

- impart knowledge and develop understanding through effective use of lesson time
- promote a love of learning and children's intellectual curiosity
- set homework and plan other out-of-class activities to consolidate and extend the knowledge and understanding pupils have acquired
- reflect systematically on the effectiveness of lessons and approaches to teaching
- contribute to the design and provision of an engaging curriculum within the relevant subject area(s).

5   Adapt teaching to respond to the strengths and needs of all pupils

- know when and how to differentiate appropriately, using approaches which enable pupils to be taught effectively
- have a secure understanding of how a range of factors can inhibit pupils' ability to learn, and how best to overcome these
- demonstrate an awareness of the physical, social and intellectual development of children, and know how to adapt teaching to support pupils' education at different stages of development
- have a clear understanding of the needs of all pupils, including those with special educational needs; those of high ability; those with English as an additional language; those with disabilities; and be able to use and evaluate distinctive teaching approaches to engage and support them.

6   Make accurate and productive use of assessment

- know and understand how to assess the relevant subject and curriculum areas, including statutory assessment requirements
- make use of formative and summative assessment to secure pupils' progress
- use relevant data to monitor progress, set targets, and plan subsequent lessons
- give pupils regular feedback, both orally and through accurate marking, and encourage pupils to respond to the feedback.

7   Manage behaviour effectively to ensure a good and safe learning environment

- have clear rules and routines for behaviour in classrooms, and take responsibility for promoting good and courteous behaviour both in classrooms and around the school, in accordance with the school's behaviour policy
- have high expectations of behaviour, and establish a framework for discipline with a range of strategies, using praise, sanctions and rewards consistently and fairly
- manage classes effectively, using approaches which are appropriate to pupils' needs in order to involve and motivate them
- maintain good relationships with pupils, exercise appropriate authority, and act decisively when necessary.

8   Fulfil wider professional responsibilities

- make a positive contribution to the wider life and ethos of the school
- develop effective professional relationships with colleagues, knowing how and when to draw on advice and specialist support
- deploy support staff effectively
- take responsibility for improving teaching through appropriate professional development, responding to advice and feedback from colleagues
- communicate effectively with parents with regard to pupils' achievements and well-being.

PART TWO: PERSONAL AND PROFESSIONAL CONDUCT

A teacher is expected to demonstrate consistently high standards of personal and professional conduct. The following statements define the behaviour and attitudes which set the required standard for conduct throughout a teacher's career.

- Teachers uphold public trust in the profession and maintain high standards of ethics and behaviour, within and outside school, by:
  o treating pupils with dignity, building relationships rooted in mutual respect, and at all times observing proper boundaries appropriate to a teacher's professional position
  o having regard for the need to safeguard pupils' well-being, in accordance with statutory provisions
  o showing tolerance of and respect for the rights of others
  o not undermining fundamental British values, including democracy, the rule of law, individual liberty and mutual respect, and tolerance of those with different faiths and beliefs
  o ensuring that personal beliefs are not expressed in ways which exploit pupils' vulnerability or might lead them to break the law.

- Teachers must have proper and professional regard for the ethos, policies and practices of the school in which they teach, and maintain high standards in their own attendance and punctuality.

- Teachers must have an understanding of, and always act within, the statutory frameworks which set out their professional duties and responsibilities.

The Teachers' Standards can be found on the GOV.UK website: https://www.gov.uk/government/publications/teachers-standards

The SCITT predominately recruits its beginning teachers from the locality, and whilst it

has strong ambitions in terms of the quality of the programmes that it offers, the

partnership is also mindful that it draws from a population of low post-compulsory educational qualifications. In 2019 only 25.8% of the local population held Level 4 or higher qualifications compared with a unitary authority average of 36.6%, placing it as the 6th lowest ranking area in England. These circumstances were significant in relation to the development of professional practice knowledge for four reasons.

Firstly, the SCITT requires a Level 6 qualification for entry onto its programmes. The majority of our beginning teachers did not have the benefit of being able to reference what it is to be a public professional via either friends or family or local connections. The professions can be understood as being 'knowledge-based or service occupations which usually follow a period of tertiary education and vocational training and experience… [and are] extensively engaged with risk' (Evetts, 2013: 781). The lack of accessibility to professional knowledge within the community placed an additional obligation on the SCITT to raise awareness of what it is to be a public professional who teaches. There is a significant social justice element to this endeavour. Students for whom the course assumes knowledge that they are not already familiar with lack, 'the means to consider, choose and *select* appropriate applications of knowledge' (Wheelahan, 2018: 238, original emphasis). It is therefore incumbent on the SCITT to ensure that its articulation of professional practice knowledge provides beginning teachers such means so that they can work in complex educational environments. The issue of complexity and risk takes us to the second reason why paying attention to the nature of professional practice knowledge matters.

The second reason relates to the articulation of the apprenticeship model of teaching. In his introduction to the 2010 White Paper that informed the creation of the Teachers' Standards, the then Secretary of State for Education, Michael Gove drew on an argument concerning the form of knowledge appropriate for teaching, claiming that: *'Teaching is a craft* and it is best learnt as an apprentice observing a master craftsman or woman' (Gove, 2010). As it was the same White Paper that prioritised the move to school-based experience, almost inevitably the 'traditional' apprenticeship model became synonymous with school-led training. I became curious about the impact of this association. I began to explore the literature in order to develop an informed and more nuanced understanding the apprenticeship model by focusing on the nature of craft knowledge, a term often used in relation to both craft workers the professional formation of teachers. Consequently I paid attention to epistemological rather than institutional boundaries and became intrigued about what bound a profession together and what boundaries were created by that profession to secure its distinctiveness.

An epistemological focus contrasted with previous work in relation to the professions which foregrounded social relationships (Lave and Wenger, 1991) and has been criticised for its vague analysis of practice and participation (Fenwick, 2015). Whilst social relations are, of course, important, what is missing from such studies is an epistemological focus. I struggled to find research that recognised the material impact of different forms of knowledge on the formation of professional identities, hence my interest in both social realism and social materialism. It was a focus on the materialisation of knowledge that led to the third reason as to why I wanted to understand more about professional knowledge structuring.

The third reason related to the evidence bases that recognised that for areas of high social need, the retention of teachers is vital (Allen and Sims, 2018). I became increasingly concerned about the national data in relation to recruitment and retention rates, which indicated that 14.6% of teachers left in their first year (Worth and Van den Brande, 2020). For those that stayed, research into initial teacher education (ITE) curriculum reveals that effective mentoring and prioritising the needs of a trainee are two key indicators of quality. (Ofsted, 2018). This led to the fourth reason as to why I was ambitious to embark on this research study. I became increasingly aware of the significance of the role of the school-based teacher educator and the effects of their representation of professional knowledge on the professional identity of the beginning teacher (Hobson and Malderez, 2013).

It was clear that the SCITT, in occupying a 'third space' (Soja, 1998) faced both challenges, but also had opportunities. The opportunities included being able to share the different and novel insights that our programme could facilitate. It seemed important that such understandings were lifted out of our context and examined in relation to the research literature so as to identify whether they are of value to others. There is recognition that little is known about how such partnerships systematically enable professional practice knowledge and so there has been a call for more research 'as micro-level analysis particularly those combining observational data and conversational data are largely missing within educational research' (Risan, 2021: 103559), hence the motivation for this thesis. In order to make such a contribution I drew on both social realism and social materialism. Social realists offer a defence of the

role of knowledge in the curriculum (Wheelahan, 2006; Young, 2008), and this research study applies this defence to curricula for initial teacher education, including a framework for teacher-educators.

1.6 Social Realism

Social realism developed initially out of a concern shared among a group of sociologists of education (Barrett and Rata, 2014; Maton and Moore, 2009) about the general neglect of knowledge in education research. They 'attributed this neglect to widespread and longstanding impulse to reduce knowledge to social relations of power and the often-incommensurate standpoints of different groups of knowers' (Hoadley et al, 2019: 99). Social realists are concerned to ensure that knowledge is not merely seen as a 'reflection of either some essential truth or social power but as something in its own right, whose different forms have effects for intellectual and educational practices.' (Maton and Moore, 2009: 3). Social realists build on the work of Durkheim (1912/2008) who considered knowledge as an object of study in its own right. Durkheim distinguished between the sacred (i.e., conceptual, systematic or substantive knowledge) and the profane (i.e. knowledge about how to live in the everyday world, knowledge acquired by experience). It is particularly important to recognise that 'the Durkheimian project was never that of segregation but of understanding the play of contradiction' (Muller and Taylor, 1995: 265). Systematic and everyday knowledge should be differentiated as they are recognised as being structurally dissimilar. These structural differences offer different affordances for curriculum design and pedagogic transmission.

Conceptual knowledge therefore has a different time and space dimension to it than that of context dependent knowledge. The objectivity of substantive knowledge is secured by different communities in different spaces recognising and developing its substance. Such knowledge is able to transcend the social conditions of its production (Muller, 2000; Young 2008) and is not reducible to them. Systematic knowledge takes professionals beyond the contexts of individualised experiences by providing access to the enduring (but not fixed) forms of knowledge that specialise, organise and hold to account (in an evaluative sense) the distinctive nature of the profession. Such knowledge has powers of abstraction that enable knowledge-building through evaluation and connection across different times and spaces. Systematic knowledge therefore 'constitutes a "disturbance" to an individual's subjective ways of understanding the world as they acquire the means to think objectively and, perhaps most significantly, to be critical of the social order in order to improve it' (Rata, McPhail, and Barrett, 2018: 164).

In contrast, context dependent knowledge is bound to the time and space of its realisation and so is recognised as having strong connections with knowledge by acquaintance. Social realists appreciate that the 'professions are about doing things, but doing complex things that cannot rely on experience alone' (Young and Muller 2014: 13). For this reason, for social realists, experiential knowledge on its own is an insufficient knowledge base for the professions. Social realists are concerned that 'the nature of professional knowledge has escaped scholarly notice' (Young and Muller, 2014: 5), and that as a consequence the impact of the different forms of knowledge within professional formation has been under researched. As a result much research in education has been 'characterised by knowledge blindness; knowledge as an object of

study is obscured' (Maton, 2020: 60). The importance of this perspective is recognised as it is vital to acknowledge that 'not all forms of knowledge are equal, and that these differentiations have significant implications' (Shay, 2013: 563).

Social realists support these claims by drawing on critical realism (Bhaskar, 1978/2013) and its commitment to depth ontology that conceptualises real structures and mechanisms that lie within, surface appearances, but are not observable. 'Realism' for social realists denotes the ontological status of knowledge as having real effects in the world (Popper, 1981) whilst 'social' denotes the collective production of knowledge within epistemic communities. Individuals can distinguish between the world and their experience of it. Reality for critical realists is identified at three levels, the real, actual and empirical. These are hierarchical domains, the foundation of which is the real. The real is made up of objects which have structures and have causal powers. When these structures interact with other mechanisms, something new is generated, and this cannot be reduced to its constituent parts despite the parts being necessary for its existence.

Epistemologically, social realists acknowledge that knowledge is produced through descriptions and discourses and so is subject to 'change over time and across social-contexts' (Maton and Moore, 2009: 4). It is important to clarify that such a stance does not imply judgemental relativism, which simply foregrounds individual experiences, but rather it is based on the concept of judgemental rationality enabling us to be 'more secure in what we choose to believe' (Moore, 2013b: 345). Social realists recognise that the effects of knowledge are influenced, but not exhausted by the social and historical

contexts of its production. In combination, the social and the realist elements allow for the identification of certain forms of knowledge as worth making available to all in order to share the distinctiveness of a particular discipline or field. Basil Bernstein (1924-2000) has provided the most sustained theoretical source for this work, by developing a theoretical language to describe fields conceptually so as to analyse their status in terms of knowledge structures and knowledge structuring (forms of pedagogic communication, including types of transmission and acquisition). This thesis draws in particular on Bernstein's later work on knowledge structures and their relation to forms of pedagogic discourse.

1.7 Social Materialism

More recently Bernsteinian scholars (Ivinson and Singh, 2018; Singh, 2020) have begun to explore what can be gained by reading Bernstein alongside the work of feminised philosophers such as Karen Barad (1956-). In so doing they bring to the fore an expanding conception of 'realism' by referencing agential realism (Barad, 2007). Agential realism foregrounds the significance of the 'intra-actions' between matter and discourse. Agential realists claim that such intra-active agency has effects, and these effects alter that which is practised and prioritised. Critical and agential realists share concerns in relation to the relativism of post-structural theorising. A Baradian social materialist perspective enables a reading of Bernstein's pedagogic device such that researchers can 'take much more seriously the implicit, invisible and affective aspects of the pedagogic device' (Ivinson and Singh, 2018: 467). Importantly for this thesis, such an

approach 'widens the terrain of the pedagogic device to get a better grasp on quantum time-space configurations' (Ivinson and Singh 2018: 467)

Social materialists acknowledge that materials, including objects, bodies, technologies, checklists, protocols, both enable and limit practices and forms of knowledge. Social materialism does not erase the importance of human choice, but rather traces how materials intra-act within such choices. In this way social materialism acknowledges that the boundaries between humans and non-humans are not as distinct as previously thought. Social materialists recognise that appreciating the significance of context may be critical in developing an understanding of professional practice knowledge, but if context is seen as 'an abstract container is to miss the turmoil of relationships amongst these myriad nonhuman as well as human elements' (Fenwick, 2015: 84). Such relationships are referred to as 'assemblages'. These assemblages are the complex and emergent outcomes of intra-actions of people, materials, systems and ideas. They are (re)produced across multiple chains. Materials are not inert in such assemblages, 'they are matter and they matter' (Fenwick, 2016: 16).   The aim of social materialism is 'not simply to identify the things involved in learning, but to make visible and analyse the particular relations among them' (Fenwick 2015: 85). Social materialism offers the theoretical and conceptual means to analyse the Teachers' Standards as an integral and active element in the structuring of professional practice knowledge.

One of the challenges of articulating what makes for a social materialist study is that there 'is not a single "social material" theory to apply to practice and education'

(Fenwick, 2016: 15). Consequently researchers are encouraged to 'situate their particular analysis in terms of one particular set of ideas or writer' (Fenwick, 2016: 15). Barad (2007) recognises that 'non-human elements pulse through most apparently human activities of diagnosis, decision and action' (Fenwick, 2016: 11). Barad is concerned by research that reduces explanations to social structures, and so her concepts move the focus away from the personal and social by making 'visible the capillaries of action' (Fenwick, 2016: 19). Consequently her theoretical framework explores how social structures are perpetuated through material practices, including material inequalities rather than through individual stories. By drawing on the work of Barad (2007)' the materiality of professional practice' (Fenwick, 2016: 10) can be analysed. Rather than the Teachers' Standards (DfE, 2011) being seen as passive and inert, questions can be addressed, such as how and why particular elements of professional practice became assembled in the Teachers' Standards (DfE, 2011), including an analysis as to why some forms of practice knowledge have been included and others excluded. The regulatory effect that these particular assemblages have on practices and identities can then be analysed.

A criticism of sociomaterialist studies has been that they do not address political concerns (Edwards and Fenwick, 2015). This is perhaps because they are not focused on individual activism. Whilst this research is not concerned with activism, it is concerned with agency and democracy in professionalism and so in order to avoid such a criticism, insights will be included that offer alternative, more equitable relational solutions to the structuring of professional practice knowledge which includes how by making

knowledge as an object of study visible, changes in the appreciation of teaching as a craft-based knowledge has material implications for professional identities. These implications include improving the democratic rights of professionals.

Bernstein (2000) argued that democratic access to conceptual knowledge was a precondition for an effective democracy. Bernstein's theoretical position was underpinned by a strong desire for social justice. According to Bernstein, three pedagogic rights are necessary if pedagogic encounters are to contribute to democracy, the right to individual enhancement, the right to social inclusion and the right to political participation. These rights offer the means for evaluating how expertise can operate in society and so will be returned to in the concluding chapter so as to ascertain whether this thesis's contribution does indeed counter the criticism that socio-materialist studies lack challenge in relation to political concerns.

1.8 Clarifying terminology

The careful use of terms becomes a key theme within this thesis, particularly in relation to practise, practice, practical, experiences and craft. A range of terminology is used throughout this study that relates to the field itself but also to the theoretical and conceptual frameworks. In the field of teacher education, the term initial teacher education is used by Ofsted and a number of providers, whilst the nomenclature, initial teacher training (ITT) is preferred by the DfE. In the field itself these terms carry contested positioning in relation to professional knowledge. In the thesis the term ITE is preferred, unless alternatives appear in direct quotes or referenced documents. Similarly

the terms teacher educator and beginning teacher are preferred to those of mentor and trainee or mentee. The phrase 'professional practice knowledge' is used to emphasise the epistemological focus of this study and to link practices with professional purposes. The terms context-dependent and context-independent are used not in a binary sense but to recognise gradations in how sensitive knowledge structuring is to the time and space of its origination. The phrase systematic knowledge is used to refer to established context-independent, conceptual knowledge, this is the form of knowledge that holds the 'substance' of the profession, and has specialising, organising and evaluative powers.

The term semantics is also used in this thesis. It refers to the connections between words and meanings in a professional discourse. Lexical semantics includes the study of how words structure their meanings, and how they act in grammar and composition. Grammar also becomes a significant concept in this research. Grammar refers to words used as a structural constraint in knowledge structuring. Such terms are also referred to as a meta-language in this study. Meta-language, in this case, denotes the language used to describe the supervening concepts that specialise and constrain (in the sense of holding to account) the profession of teaching. A contrast also needs to be made between the terms teaching, used to signify the profession, and teacher(s) which refers to individual or individuals.

The professions of teaching and teacher education are delineated in this study. Whilst they may have overlapping elements, they are distinctively different. Additionally I would like to note some of the gendered language used in the literature when referring

to craft knowledge. The term 'mastery' is used in some of the literature and this has been associated the pronoun 'he'. In this thesis where-ever possible the term 'expert' or 'expertise' is used as a more inclusive frame of reference. Some direct quotations however do include the gendered terminology.

1.9 The structure of the thesis

An overview of the study has been set out in this chapter. It identified professional practice knowledge as an under-theorised field. The aims and rationale for the research were stated and the study situated in a social realist framework enriched by a materialist approach. The thesis, is then made up of a further seven chapters which proceed on the following basis.

Chapter Two will explore the scholarly literature relating to the sociology of the professions with a particular emphasis on the epistemic fragilities associated with the profession of teaching. It will focus on the nature of practice knowledge in particular and the significance of tacit knowledge. This will draw attention to the contested nature of knowledge-how, knowledge-that and associated forms of know-how. The implications that these different philosophical insights offer in relation to knowledge, for the pedagogical work of teacher-educators will be explored. The chapter concludes with a recognition of the contribution that this literature makes to the study. The limitations, particularly regarding the articulation of certain forms of craft knowledge for the professions, foregrounds the setting out of the theoretical and conceptual frameworks in Chapters Three and Four.

In Chapter Three I consider Bernstein's (2000) pedagogical device and in particular his differentiation between forms of discourse (Vertical and Horizontal). An in-depth analysis is undertaken in relation to how this social realist framework theorises the crafts. This is a contested area, and so key dilemmas will be highlighted. In order to further the exploration of the structuring of craft knowledge for the professions, Barad's (2007) concepts of diffraction, intra-action and agential realism are investigated in Chapter Four. These offer a quantum rather than a Cartesian approach to appreciating the significance of the different forms that knowledge structuring can materialise in.

In Chapter Five, I offer a detailed account of the research methodology, including Maton's (2014) Legitimation Code Theory (LCT) and describe the way that this is employed diffractively. Connections are made with Bernstein's (2000) social realist framework, upon which LCT is based, and Barad's (2007) conception of diffraction. Maton's (2014) framework enables an analysis of the effects of different forms of knowledge within knowledge structuring practices. The Semantic dimension consists of two organising principles, semantic density (SD) and semantic gravity (SG). Semantic density recognises degrees of complexity encapsulated in practices, whilst semantic gravity relates to the degrees of context dependency. These two concepts (SD and SG) can be enacted separately or together to explore semantic codes. In this study sematic gravity is used to profile the context dependency of the knowledge-structuring processes of eight pairs of teacher-educators and beginning teachers.

I make explicit the reasons why the study uses a qualitative research methodology with an intervention design. Ethical considerations are particularly significant within the study due to my role as both researcher and Director of the SCITT, and so these are explored in depth. A detailed account of the staged approach to analysis is clarified, culminating in the prioritisation of the themes identified by the theoretical and conceptual framework. Chapters Six and Seven present the outcomes of this analysis.

Chapter Six provides an account of how teacher educators (TEs) and beginning teachers (BTs) currently structure professional knowledge in practice, so as to address the first two research questions. In order to develop a carefully informed response, graphical profiles are included and discussed in this chapter. These visual tools illustrate different forms of knowledge structuring drawing on the concept of semantic gravity from the Semantic dimension of LCT. Following this explication, a response is offered to the second research question, which in turn generated the need for further investigations in relation to knowledge structuring. These were facilitated and discussed in Chapter Seven.

Chapter Seven considers alternative forms of knowledge-structuring generated through insights gained by interrogating the profiles shared in Chapter Six. A response is offered in relation to research questions 2 and 3. The chapter reports on how a diffractive analysis results in discernments that can productively inform the pedagogic work of teacher educators. The chapter offers 'possibilities for reimagining prevalent practices and [for] transforming them' (Rusznyak et al, 2021: 9). Chapter Eight concludes the thesis, making the case for a more expansive appreciation of professional practice

knowledge. The chapter also addresses limitations in relation to the study, its empirical

and theoretical contributions to knowledge and its recommendations for future

research.

Chapter 2: Literature Review: Establishing the Challenges

2.1 Introduction

This literature review establishes the key challenges associated with both the structuring and structure of professional practice knowledge within and for initial teacher education in England. Given the study's research questions, it is relevant to ascertain what is distinctive about practice knowledge within practical professions such as teaching. It is also important to establish how policy imperatives intersect with the professional field so as to consider how such interactions affect the formation of professional identities. In this chapter, professional knowledge structures are considered through a social realist lens, so as to maintain the study's epistemological focus. Therefore, the chapter foregrounds an appreciation of the significance of different types of knowledge within professional practices. The importance of the material influence of knowledge types and documents that carry forms of knowledge, such as the Teachers' Standards (DfE, 2011) and the Core Content Framework (DfE, 2019), are also examined, sustaining the study's social material focus.

In order to realise these ambitions, the review is organised into seven sections. Firstly, the structure of knowledge for 'the professions' is considered. Secondly an analysis of the professional knowledge for teaching is presented, which includes a particular focus on the English context. Next, the nature of practical knowledge for the professions is considered. The fourth section explores different conceptions of know-how and their relationship with knowledge-that and knowledge-how. Implications are then considered

both professional practice knowledge structuring and the formation of particular professional identities that different forms of know-how underpin. The fifth section foregrounds an in-depth analysis of the 'craft-worker' conception of teaching, one that is prevalent in official policy documentation in England. Craft knowledge is recognised as an epistemically heterogeneous rather than universal concept (Winch 2013b). The consequences of the diversity of perspectives concerning craft knowledge for tacit knowledge, knowledge that relates observed practices to purposing principles and is often difficult to express, (Polanyi, 1966/2009) are then explored in the sixth section. The implications and challenges surfaced in the review are considered in relation to the discourse and dialogic work of teacher educators in the final section. The conclusion focuses on the relationship between forms of discourse and knowledge structuring, justifying why professional dialogues are the focus for the methodological element of this thesis.

2.2 Knowledge and the Professions.

A century ago, Durkheim (1912/2008) recognised that specialised knowledge is at the heart of what distinguished professions from other occupations and yet 'the sociology of [the] professions remains a frustratingly under-specified area' (Young and Muller, 2014: 3). In attempting to examine how knowledge needed in a profession differed from that required for an everyday or common-sense pursuit, Durkheim (1912/2008) considered the knowledge needed for the priesthood. Durkheim argued that the specialised nature of professional work necessitated the production of conceptual knowledge that disciplined, or organised and cohered realised actions. Such knowledge both specialised and transcended specific contexts, consequentially possessing different time and space

properties to that of the knowledge needed to perform 'profane' or everyday pursuits.

Durkheim referred to professional knowledge as being 'sacred', a form of systematic

knowledge that is central or 'inner' to the profession. The 'inner' in this sense relates to

the collectively established principles for a profession; the connecting knowledge that

lies between individuals and individual contexts. Collective knowledge is used by the

individual in individual circumstances to specialise their actions through accessing

established purposes that relate to the profession. In order for a professional to be able

to draw on collective knowledge, they need to be able to have the intellectual means to

access it, to evaluate it, and to contribute to its ongoing development. Acquiring access

to collective knowledge can be challenging. Conceptual knowledge has a different time

and space reference to knowledge which is immediately and locally observable.

When Durkheim (1912/2008) first analysed the priesthood as a profession, he stated

that 'the religious life and the profane life cannot co-exist in the same place' and that

'the religious life and the profane life cannot coexist in the same unit of time' (Durkheim,

1912/2008: 308). These statements draw our attention to the contrasting time and

space dimensions of the 'profane' (every day) and sacred (specialised) knowledges. A

profession is about more than visible 'in the moment' behaviours. It is concerned with

accessing an 'inner' collective knowledge base, one to which connected communities

have contributed to and continue to contribute to over time and across different

locations or spaces. It is by the 'inner' being present in the evaluation and elaboration of

the observable 'outer' that professional knowledge gains its 'very special intellectuality

that is infinitely richer and more complex than that of the individual' (Durkheim

1912/2008: 15). Durkheim is drawing attention to the 'special intellectuality' that exits

beyond (in time and space) particular contexts and individuals, but that at the same time, needs to be part of an individual's inculcation to a profession. It is appreciating the simultaneity of the different forms of knowledge in the professions that becomes a key theme for this study.

Having recognised that access to collective knowledge is an essential element in distinguishing professional knowledge, it is of concern that there is 'widespread scepticism about whether there is actually such a body of theory to which teachers can appeal in their day to day action' (Winch 2017: 54). Consequently, unease has been expressed about the profession of teaching. It has been suggested that 'without any inner sacred knowledge as the basis for professional judgement, the knowledge basis for teachers is of a practical nature – with an emphasis on the 'how' of learning and not the 'what' of the learned' (Robertson and Sorensen, 2018: 472). In order to address such concerns, social realists have argued that more attention needs to be paid to understanding the properties of conceptual or systematic knowledge and the role that such knowledge can powerfully play in the development of the professions. It has been recognised that it is 'important to distinguish between *contingent* and *acquaintance* knowledge on the one hand and *systematic*, *theoretical* and *scientific* knowledge on the other as they have different roles to play in professional action' (Winch 2014: 171, original emphasis). Professionals are regarded to be 'carriers of formal knowledge' (Freidson, 1986: 13). A professional not only appeals to such conceptual knowledge but is also expected to 'employ it in decision-making' (Winch 2014: 172, original emphasis).

A concept is an abstraction that carries symbolic meaning, usually communicated through language. Concepts are created by communities over time and space and are a 'thought product' (Popper, 1981: 161) Concept formation 'occurs in the process of objectification, as an idea takes on a generalisable capacity to exist "in the mind", although able to be connected to material content or used in skilful procedures' (Rata, 2019: 690). Concepts are not fixed, but enduring and have 'real' effects in the realist tradition which accepts the objectivity of ideas (Moore 2007). Social realists therefore distinguish between 'thought products' and 'thought processes' (Popper 1981: 167). Processes use products, recognising that such thought products have particular properties that differentiate them from everyday knowledge.

Social realists (Moore, 2007; Young, 2008; Young and Muller, 2010, 2014) identify four properties for such conceptual or principled knowledge. There is recognition that such knowledge is systematic and so is developed over time. This enables a field's 'disciplinary community to arrive, with greater or lesser degree of consensus as a judgement of this 'best-ness' or the nearest we have to truth at any time' (Young and Muller 2014: 236). Principled or conceptual knowledge is 'produced by social conditions and contexts but cannot be reduced to them... the value of the knowledge is independent of these original contexts and their agents' (Young and Muller 2014: 237). Here social realists are following in the Durkheimian tradition and recognising that co-present in professional practice is both the immediacy of the visible and a connection or connections with purposing principles. The invisibility of such connections can cause difficulties. Conceptual knowledge has the 'power' to transcend moments of realisation.

Such power can only be released if a relationship to such knowledge is enabled. This is complex territory. It will be argued that such complexity has been under-appreciated. In part such undervaluing has resulted from a drive to classify knowledge as having either a practical or a theoretical form rather than acknowledging in the Durkheimian tradition that different forms of knowledge can be simultaneously present and through their simultaneity change each other. In order to effect change the nature of the relationship between the two distinct forms needs to be more fully appreciated. Social realists further this understanding by acknowledging that principled knowledge is 'robustly reliable' (Young and Muller, 2014: 238). Substantive knowledge is not perceptual but conceptual. It is about more than individuals or particular moments and so it is both material (it has real effects) and social in the sense that 'specialised knowledge is produced in particular socio-epistemic formations' (Young and Muller 2014: 238).

The development of such specialising knowledge is a consistent feature in articulations of what makes for a profession. Drawing on the work of sociologists (Abbott, 1988; Freidson, 1986) and philosophers of education (Carr, 1999), the characteristics which enable a profession to develop can be summarised as:

- Practice is underpinned by systematic, substantive knowledge

- Such knowledge can then be applied to complex situations

- There are required professional qualifications recognised at a tertiary or higher level

- There is a regulatory body

- There is a distinguishing ethical or moral purpose.

In relation to these five characteristics, it has been suggested that 'teaching does not fulfil even one of them in many countries' (Winch 2017: 30) and that the 'failure to fulfil some of the criteria reflects the political power of the occupation' (Winch 2017: 30). In England, currently such political power for ITE is predominately materialised through the Teachers' Standards (DfE, 2011) (see figure 1.1), the Core Content Framework (DfE, 2019), the Ofsted inspection framework (Ofsted, 2022) and associated official documentation. Such documents have been critiqued as representing a 'turn to practice' that replaces inner 'beliefs and desires' with outer 'embodied capacities, know-how, skills, tacit understandings and dispositions' (Hager, 2013: 85). Indeed, the Teachers' Standards have been described as being a set of 'policy derived precepts encoded in competences and standards to which teachers are expected to conform' (Burstow and Winch, 2014: 192). Whilst official documentation for ITE in England is considered to be a particularly intense example of the 'turn to practice', the domination of the practical is also evident in some of the profession's own pedagogic traditions.

The next section of the literature review explores why visible 'doings' rather than purposeful principles have dominated the material structuring of professional practice knowledge. It contrasts ideas in relation to individualisation and particularisation with conceptions of the collective and coherence within the structuring of professional practice knowledge.

2.3 Teachers, teaching and professional knowledge

In 1966, UNESCO's International Labour Organisation (ILO/UNESCO, 1966), recommended that teaching be recognised as a profession. The ILO is quoted as describing teaching as 'a form of public service which requires of teachers, expert knowledge and specialised skills, acquired and maintained through rigorous and continuing studies' (Robertson, 2012: 9). Despite this assertion, teaching has been described as a partial profession' (Gardner, 2007: 19) and as a 'minor or semi-profession' (Young and Muller, 2014: 1). The justification for questioning the status of teaching as a profession, relates to the perceived lack of access to a collective and reliable knowledge base. One of the reasons for such dubiousness can be attributed to the forms of knowledge structuring that have been prioritised in policy documentation in a number of jurisdictions, including in England. The form that such knowledge takes has material consequences for the status of the profession as 'knowledge has its own causal powers and tendencies. That is, different structurings of knowledge possess different affordances – they lend themselves more to certain forms of pedagogy, evaluation, identity, change over time and so forth, than others' (Maton 2009: 55). In this section a particular focus will be taken on examining the political literature for teaching in England. Table 1.1 shared the range of policy documents that have informed and influenced the development of the profession and illustrates the increase in volume of such documentation since 2010 and the introduction of the White Paper, 'The Importance of Teaching' (DfE, 2010). It was this document that heralded both School Direct (school-led initial teacher training) and the revised Teachers' Standards (DfE, 2011) (see figure 1.1).

When introducing the 2010 White Paper, the then Secretary of State for Education, Michael Gove stated that the best way to develop as a teacher is by: 'Watching others, and being rigorously observed yourself as you develop, is the best route to acquiring mastery in the classroom.' (Gove, 2010, speech to the National College Annual Conference, Birmingham). Three years later he introduced the revisions to the Teachers' Standards stating that the 'strongest schools will take the lead and trainees will be able to develop their skills, learning from our best teachers' (Gove, 2013: 23). Subsequent documentation, supporting the use of the Teachers' Standards stated; 'The most successful education systems in the world are characterised by high levels of lesson observation. Teachers benefit from observing one another's practice in the classroom. Teachers learn best from other professionals. Observing teaching and being observed, and having the opportunity to plan, prepare, reflect and teach with other teachers can help to improve the quality of teaching' (DfE, 2014, online). The consequences of the prioritisation of such forms of knowledge structuring 'has led to a shift in emphasis from professional conceptions to something more akin to a training focus through which the 'doing of teaching' becomes' a proxy for pedagogical expertise' (Loughran and Menter, 2019: 1). The Teachers' Standards are felt to encapsulate 'an unnecessary and perilous separation of performance and formalised knowledge' (Aitken, Sinnema, and Meyer 2013: 6). Such articulations result in 'reductive accounts of teacher ability (e.g. in terms of skills) [which] will fail to capture what is involved in the work of teachers' (Winch, 2017: 3).

One of the many concerns about the structure of the Teachers' Standards (see figure 1.1), relates to the fact that they refer to individual 'teachers', rather than to 'teaching'. The Teachers' Standards (DfE, 2011) prioritise statements in relation to demonstrable professional behaviours rather than references to the cohering and specialising purposes of the profession. However, it is not only a political prioritisation of forms of knowledge structuring that have led to such a focus on individual behaviours, but also some forms of reflective practice promoted from within the profession (Kotzee and Smith, 2019). Whilst the Teachers' Standards encapsulate the current official articulation of professional knowledge for teachers in England, there has been a long-held concern within the profession itself about the relationship between the individual and collective knowledge base. The introduction of the Teachers' Standards was contextualised in the pedagogies of observation and modelling. Whilst these are legitimate approaches to learning to teach, they can take on different forms. In practice-based professions such as teaching, analysing the appropriateness of different forms pedagogic approaches remains an area of challenge (Hordern, 2020; Winch, 2013b).

A lack of reference to a collective professional knowledge base raises concerns that the profession is 'devoid of a history of practice' (Shulman and Wilson, 2005: 232). The individualisation of knowledge results in 'individual and collective amnesia' (Shulman and Wilson, 2005: 232) because there is not an ecology of specialising and organising concepts to reference to substantiate professional practices. Consequently, moments of practice are likened to dry ice (Shulman 2005) as there is a lack of a reference point to cohere them to and sustain their visibility. Whilst experiential knowledge is an essential

element in professional practice knowledge as there 'is much to be learned from one another's stories' (Shay 2012: 321). There has also been recognition that such 'learning is constrained by the comparability of contexts: what works for them, does not necessarily work for us' (Shay 2012: 321). An over-reliance on individualised reflections can restrict a profession's capacity to build up a reservoir of shared knowledge through an over-focus on individuals and contexts. Such an over-focus has in part been driven by some interpretations of reflective pedagogic practices.

2.3.1 Teaching and reflective practices

Since John Dewey (1904) introduced reflection as a pedagogic approach to draw meaning from experience, many different insights have emerged in relation to reflective practices. These include the works of Argyris (1977), Habermas (1971), Kolb (1984), Moon (2001) and perhaps most notably Schön (1983, 1987). Schön argued that professional practice could be defined as reflective practice, and in particular as reflection in practice, when a teacher becomes 'a researcher in the practice context' and so constructs 'a new theory of each unique case' (Schön 1983: 68-69). In this way experiences become the resource for future judgement. Schön's articulation of what makes for professional knowledge is individualistic, the professional accumulates experiences and these stored experiences become the basis of their specialist knowledge. Schön is focussed on the specific case. The potential destabilising effect of such knowledge structuring for the profession is acknowledged as when 'experience replaces theory as the author of knowledge, the privileging of the mundane does not abolish theory; it systematically denies and obscures its own theoretical genesis' (Moore

and Muller, 1999: 202). In other words, if there is an over-emphasis on context specific experiential knowledge 'the volatility of our contexts compounded by the weakness of our knowledge base may give rise to ambivalent professional identities' (Shay 2012: 314).

Insecurity in professional identities results because whilst gaining experience is an important aspect of a beginning teachers' professional development 'what passes for intuition or common sense is an unreliable basis on which to make good decisions in the classroom' (Orchard and Winch, 2015: 13). Without 'transparent, clear and authoritative sources on which to base classroom decisions, teachers' conflicting common-sense judgements are difficult if not impossible to resolve' (Orchard and Winch, 2015: 13).

It is by accessing a conceptual reservoir of professional knowledge that the professions become 'reason-giving' (Sciulli, 2005: 958). As a consequence, professionals can make 'rationally defensible professional judgements' (Hirst, 1982: 179). The structuring of such professional judgements is 'distilled from collective understandings and experience' (Alexander, 2008: 44). The professions access collective conceptual knowledge and put this knowledge to work in practice. In order to 'make authoritative judgements, professionals need access to a knowledge base that has explanatory power to engage with practice complexities' (Hordern 2016: 428). It is this form of authoritative knowledge that offers the professions the resource to 'transcend the limits of individual experiences to see beyond appearances' (Wheelahan, 2012: 95).

This section of the review has recognised that a focus on individuals and the particulars of teaching can be in tension with a profession's development of collective or substantive knowledge. This tension has in part arisen when there is an over focus on the visible aspects of practices and a lack or under appreciation of the invisible elements of professional practices. Such invisibility occurs because of a lack of a conceptual framework that can encompass the simultaneity of visible practice and the invisible but present professional principles that specialise recontextualisation. The next section of the review explores some of the dilemmas highlighted in the literature in regard to articulating practice in a way that encompasses both its visible and invisible elements. Such a discussion is particularly pertinent in relation to a practical profession such as teaching, which is strongly reliant on a practicum element during a period of professional formation.

2.4 Professional Practice Knowledge

Practice 'has remained significantly under-theorised in the education and workplace literature' (Reich and Hager, 2014: 3). Consequently, 'practice is often defined by what we do rather than who we are or how we think' (Grossman, Hammerness and McDonald, 2009: 2058). Recently there have been calls to 'reclaim the dignity of practice and treat practice as the essential frame of reference for theorising' (Deng 2020: 11), acknowledging the need for a 'practice epistemology' (Green, 2009: 4). A lack of a practice epistemology or systematic underpinning for professional practice within initial teacher education had led to this element being used to serve a variety of concerns with there being a 'seemingly illimitable scope for the deployment of the term practice'

(Hager, 2011: 557). I draw on the literature to contrast professional practice knowledge and everyday experiences so as to justify the 'relinquishing [of] the notion of "practice" as everyday experiential learning in local contexts' (Gamble, 2018: 256) for the profession of teaching.

In this section the use of the terms 'practice knowledge' and 'professional practice knowledge' are reviewed. First the concept of 'practice' is explored. Next the ways in which practice is used in relation to structuring professional practice is examined. Within initial teacher education the practicum element of programmes, is the period of school-based practice. Whilst professionals need to remain 'sensitive to the experiential quality of practical knowledge' (Van Manen, 1995: 37). The extent of such sensitivities has been questioned as well as that nature of how contexts are related to concepts during a period of professional formation. If it is accepted that the professions involve 'uncommon-sense' knowledge, then a differentiation occurs between the practice of an everyday activity and a professional action.

An activity, according to Leontyev, (1978/2009) depends on the relationship between the motive and the objective. 'When they coincide, it is a real activity; if not, it is merely an action' (Charlot 2012: 216). In other words, to 'analyse an activity….one has to be interested in the meaning of the activity and its efficacy' (Charlot, 2012: 217). Describing a witnessed action is therefore insufficient for professions. As 'it is only by reference to the intention that we can describe the activity, and of course there is no guarantee that our external judgement of the intention, based on our observation, is in fact correct'

(Hirst,1971: 9). The intention therefore needs to be codified in some way. Without such codification, the intention cannot be accessed or examined in practice, only the action can. The codification relates to the 'inner goods' of the profession, and the 'outer' to the external goods, the techniques associated with the profession. If the relationship between the inner and outer is broken then action rather than activity results. This is because external goods, when achieved or demonstrated 'are always some individual's property and possession' (Hager, 2011: 547) rather than 'a good for the whole community who participate in the practice' (Hager, 2011: 547) because they 'reveal no underlying idea of a field of knowledge' (Connell, 2009: 224). The Teachers' Standards (DfE, 2011) have been recognised as codifying actions rather than the 'inner goods' of the profession. Commentators have acknowledged that 'if the task of teaching is understood in narrow technical terms, then a narrow set of standards will suffice' (Hayes and Doherty, 2017:124). In individualising and isolating actions from their shared professional purposes 'government skills policies reify skills and treat them as divisible, additive, tangible or concrete entities. In this way the notion of skill takes for granted what it is supposed to explain' (Wheelahan, Moodie and Doughney, 2022: 486). It is in relation to the Teachers' Standards that beginning teachers in England, need to evidence their achievements against at the end of a period of initial teacher education (ITE) and this evidence is often secured during a period of school-based practice.

The practicum element of any programme of ITE 'typically constitutes the longest and most intensive exposure to the teaching profession experienced by prospective teachers' (Cohen, Hoz and Kaplan 2013: 345). Exposing the validity, legitimation or trust

in the knowledge structuring that takes place during 'teaching practices' is therefore significant in relation to professional identity formation. Not only has the practicum element found to be the longest in terms of exposure to the professional practice, but also its contents have been recognised as being diverse. In a review (Cohen, Hoz and Kaplan, 2013) of 113 empirical studies into the practice experience of beginning teachers a range of experiences were acknowledged as being evident, encouraging researchers to 'search for coherence within teacher education programmes' (Cohen, Hoz and Kaplan, 2013: 345). Similarly, in a literature review (Ellis, Alonszo and Nguyen, 2020) of seventy peer reviewed publications that related to the work of teacher-educators, it was noted that 'there continues to be a need to focus on developing a pedagogy of practicum learning' (Ellis, Alonszo and Nguyen, 2020: 5).

Within initial teacher education, the term practice has often been associated with the practicum element, separating or 'othering' it from the theory and specifying school as the physical location for 'practice' as distinct from the ITE provider as the space for theory. Such 'othering' has been justified by separating the traditional three forms of knowledge recognised in epistemology. The three common forms have been recognised as being knowledge by acquaintance, knowing-how and knowing- that. When articulated as separate rather than as distinct forms of knowledge 'othering' occurs. Drawing on the Durkheimian tradition this research study challenges 'othering' by drawing on a relational approach. Othering is based on Cartesian dualisms and a relational approach is based on quantum entanglements. Separations or bifurcations occur when brutal classifications are sought, by claiming something as being one thing or the other. In articulating the practicum as a period of either knowledge by acquaintance (an

experience); a period of practice to develop 'know-how' skills and techniques', separate to any theoretical understanding; or as a length of time when theory is 'practised', with minimal attention to the significance of contextual variation,' othering' results. In such circumstances practice is not examined as a relational form of knowledge, which draws on all three knowledge forms.

When 'theory' and 'practice' are presented as separate forms of knowledge, then 'practice' knowledge is seen as 'other' to 'theory'. The theory/practice divide then becomes a problem to be solved in terms of how much of each should be poured into the time and space limited experience of practice during an ITE programme. Indeed, the Carter Review (2015) identified the problematic 'conceptual binary around theory/practice' (Murray and Mutton, 2015: 23) as a key issue to be addressed. The conceptual lens of the 'wicked problem' has been used to explore why the theory / practice relationship within professional experience elements in ITE 'seems to never be "solved", always needs "fixing" and [are] a constant topic of debate' (Southgate, Reynolds and Howley, 2013: 14).

An alternative perspective to the 'othering' of theory and practice, is to draw on social materialism so as to view practice knowledge as an entanglement (assemblage) of both context specific and substantive knowledge. In this sense 'a practice or its outcomes simultaneously exhibit both internal and external goods' (Hager, 2013: 100). As such a professional practice is 'undertaken in a certain distinctive way, by one or more agents who are appropriately trained and credentialed and both experienced and ethical'

(Green, 2009: 12). If practice is understood as being 'coherent and complex forms of cooperative human activity in which people engage in recognisable patterns towards a common purpose' (MacIntyre, 1981: 187) then a different form of practice epistemology is required to that which is dependent on Cartesian dualisms that lead to bifurcations. This is a challenge because 'conceptual, normative and empirical claims are often difficult to disentangle' (Winch 2013a: 135). It is a challenge that needs facing, as if the nature of a practice, observed empirically is claimed to represented x normatively, the conceptual justification needs to be articulated in a way in which it can be examined and scrutinised for the quality of its justification. It is significant that 'the visible behavioural and performance aspect of know-how' is not prioritised 'at the expense of what might not be so immediately apparent' (Winch 2013b: 282).

If this is the case then the 'assumed divide between theoretical knowledge and professional practice is the product of binary thinking' (Guile, 2014: 89). In other words, the ways that the Teachers Standards prioritise visible practice is because of a lack of an adequate theory of professional practice knowledge, 'rather than the existence of an absolute separation between theory and practice' (Guile, 2014: 89).

If it is accepted that in the practicum element of professional formation 'taking part in a practice also involves being involves in recurrent activity bound by common purpose' (Winch 2013b: 287), then recognising practice in its more attenuated form is insufficient (Antonacopoulou, 2018a, 2018b). Profession practices in the practicum element 'are not simply a set of standard operating procedures that are reproduced by obeying a particular set of rules' (Antonacopoulou, 2008: 116) but rather they are opportunities to

develop 'proficient practitioners' who are 'adept at adapting and interpreting the rules in order to fit the particular circumstances. (Hager 2013: 95). As such 'experiences have their content by virtue of the fact that conceptual capacities are operative within them' (McDowell, 1994: 196) In order to facilitate this approach, there is the need to 'shift thinking away from an excessive concentration on skill to focus on other forms of know-how whose development is vital to any professional or vocational education worthy of the name' (Winch 2013b: 282).

It is argued that there is much to be gained by drawing on the literature that pays close attention to the forms that practice knowledge can take. It has been suggested that the term practice can be viewed as 'being on a continuum from a more to a less attenuated form. The more attenuated form being either generic or over specified. The less attenuated from is when practice relates to criteria that hold it to account, not too micro or generic' (Antonacopoulou 2008: 114). Arguably professional practice knowledge in the Teachers' Standards has been typified by the 'more attenuated form' and this matters as 'how practitioner knowledge is conceived has a bearing on the kind of teacher education that is promoted in policy (Heilbronn and Foreman-Peck 2015: xix).

2.5 Different conceptions of know-how

Following in the Durkheimian tradition, social realists have been concerned with differentiating between forms of knowledge rather than separating them. If forms of knowledge are seen as being separate and apart, then they are presented as isolated in nature rather as distinctive but related forms. If different forms of knowledge are

distinguished from each other, then the nature of the discerning relationship can be appreciated. Cartesianism promotes separation and isolation and this has been the fundamental paradigm that social scientists have reached for in order to represent time and space. In seeking to isolate or classify forms of knowledge, it is argued that some nuances in previous theoretical positions have been under appreciated. Social realism and social materialism offer framings that enable closer attention to be paid to the real effects of social rather than clock time. I therefore now turn to the work of Winch (2013a, 2013b) who has examined in detail the relationship between knowledge by acquaintance, knowing-how and knowing-that forms of knowledge for the professions, including teaching, and who has in turn drawn on realist framings. In developing his own perspectives, Winch drew heavily on the work of Ryle (1949/ 2000). Recently it has been stated that although 'Ryle would not have intended it, it would appear that his distinction between "knowing how" and "knowing that" have been used to legitimise intellectualist accounts in educational thinking and have been detrimental to practical pursuits' (Stolz 2013: 393). Intellectualist accounts, emphasise the life of the mind at the expense of contextual sensitivities, often reducing the nature of practice knowledge to that of a know-how form without recourse to knowing-that. Ryle distinguished between knowing how to do something and knowing that something is a case as being two different forms of ability rather than, know how being an ability and knowing that, a form of mental state. Knowing how and knowing that are therefore both forms of ability, but the ability to know that something is a case and the ability to know how to do something involve drawing on both knowing-how and knowing-that differently. Knowing-how and knowing-that are brought into a relationship in know-how. That relationship can vary. It is the variation in the relationship that becomes significant for

this study. What we know and how we know it is changed by the relationship between knowing-how and knowing that.

Ryle typified 'doing' as being an 'intelligent practice' but different from 'knowing that'. However, Ryle does offer the following caveat; 'an action exhibits intelligence, if and only if, the agent is thinking what he is doing while he is doing it, and thinking what he is doing in such a manner that he would not do the action so well if he were not thinking what he is doing' (Ryle, 1949/2000: 29). This is an important insight as Ryle explains; 'When I do something intelligently i.e. thinking what I am doing, I am doing one thing not two. My performance has a special procedure or manner, not special antecedents' (Ryle, 1949/2000: 32). In other words, in the moment of the professional activity thought and action are in a relational form. The nature of that relationship determines the form that the activity takes. In a professional activity the thoughts will relate to 'the permissible means to its achievement and the degree and character of success achieved' (Winch, 2010: 563). It is these thoughts that purpose the action in a professional activity. In order to realise the 'permissible means' the professional needs to be able to access the collective concepts, the systematic knowledge for the profession so that they can carry out 'intelligent know-how' (Winch, 2013b).

Ryle states that 'that '[o]vert intelligent performances are not clues to the workings of minds; they are those workings' (Ryle, 1949/2000: 57). Ryle therefore contends that it 'is not a double process of thought first and execution second' (Ryle 1949/ 2000: 57). He explains that as thought is part of the action, neither are a proxy for the other. He stated that an individual 'is bodily active and he is mentally active, but he is not being

synchronously active in two different "places", or with two different "engines"' (Ryle 1949/2000: 50). In other words, 'someone who acts skilfully is not doing two things, carrying out a task and acting skilfully. The skilfulness is the *manner* in which the task is done' (Winch 2014: 174, original emphasis). Ryle continues: 'There is one activity, but it is one susceptible of and requiring more than one kind of explanatory description' (Ryle 1949/2000: 50). Thought and action are synchronous in time and place in an observed moment, but maybe explained in different forms. Explanation is also a form of professional activity. Explanation can take place with others or individually and itself can take different forms. When judgement and reasoning are involved in an evaluative activity the relationship between thought and action may vary, but both thought and action are co-present in some form. In an explanation dependent on description, more time might be spent considering the observable actions. In contrast an explanation that focused on reasoning may involve more emphasis on the logic of the relationship between thought and action. In both cases thought and action are co-present. The Weekly Development Meetings, (WDMs) analysed in this research study are forms of explanatory or evaluative professional practice activities. The extent to which the WDM dialogues comprise of both thoughts and actions in their structure forms the focus of the empirical investigation. Winch has developed Ryle's articulation of knowing how into a nested typology (not hierarchy) of different forms and their consequences for the professional identities of teachers. The three main identities are those of craft-worker, executive technician and professional technician.

These three conceptions have been developed as an analytical tool so as to reveal 'the ways in which teachers' knowledge is understood in different jurisdictions' (Kuhlee and

Winch, 2017: 231). The craft-worker conception depends on an interpretation of know-how as a skill or a technique. Know-how as a skill, involves the acquisition of the ability to carry out the skill in *'contextually relevant conditions'* (Winch 2014: 52, emphasis in the original)'. This form of know-how involves elements from knowledge by acquaintance, and so has a sensory and perception aspect to its conception. However, for Winch, no form of know-how is completely devoid of knowledge-that, although of course, it is not reducible to the aspects of know-that which can be found within know-how. If this knowledge structure is misunderstood then know how could be reduced to its observed empirical element, rendering invisible and inert the reason for the action contained within the ability. Skill and technique are contrasted as forms of know-how in that a technique is recognised as being a way of carrying out a procedure. The 'way may be more or less fully describable by the performer or observer' (Winch 2014: 52). Mastering techniques can therefore form part of a professional education but not its entirety (Winch, 2013b, 2014). One key reason that training in techniques is insufficient as professional practice knowledge is because it restricts access to systematic knowledge.

Despite this restriction, it is the attenuated craft-worker conception that can be seen to be prioritised in policy and official documentation in the English context, based on the pedagogies of modelling and observation. In such an articulation a teacher relies 'strongly on his/her own experience and, vicariously, on the experience of seasoned practitioners' (Kuhlee and Winch, 2017: 233). The craft-worker designation is the least expansive of the three forms, and the one most closely with the knowledge structure associated with a 'traditional craft-worker'. In the traditional case 'know-how is based

on 'manual skills and situational judgement' with relevant knowledge being deemed as being context specific and learning 'through apprenticeship conditions' (Kuhlee and Winch 2017: 232).

In Kuhlee and Winch's typology the craft-worker type is informed by the most reductive articulation of know-how. Winch contrasts this form with that of teachers as 'executive technicians', teachers 'whose operations are controlled by protocols derived from a theoretical basis by a technologist in order to achieve an aim determined by someone else' (Kuhlee and Winch 2017: 212). The practising of transversal know-how involves more than the practising of a skill and recognises the significance of explicitly accessing theoretical and systematic knowledge, however one of the characteristics, commonly recognised by sociologists of being a professional is that of autonomy, 'the ability to act without instruction or supervision' (Winch, 2014: 54). In order to act autonomously in a professionally defensible manner, systematic knowledge, distinctive to the purpose of the profession needs to be accessed so that well-reasoned intentional situational judgements can be both articulated and enacted.

Systematic knowledge needs to be accessed so as to justify or give reasons for the judgement. Such reasons are subject to evaluation for their reasonableness. Winch associates this form of know-how with teachers who are 'professional technicians' (Winch 2017: 232) and able to draw on an inferential (Brandom, 2007) or judgement capability. Judgements involve the evaluation of reasons, and the ability to reason has previously be recognised by sociologists of education as being one of the key

characteristics of professionalism. In order for reasoning to be non-arbitrary, it involves a commitment to a set of collective principles that connect or cohere segments of practices, such connections have been established over time in different locations by professionals who endorse 'the connections by applying concepts in the particular way that we do. We have *committed* ourselves to certain connections that in turn entitle us with others' (Derry, 2017a: 412, original emphasis). Such evaluation of judgements makes visible 'the constraints of the social and material world we inhabit' (Derry, 2017a: 413) As the 'application of any concept illustrates the systematic character of knowledge' (Derry, 2017a: 414). Concepts are central to Vygotsky's insights, as he claims that 'the capacity for education is only possible within a definitive system of relationships among concepts' (Vygotsky, 1987: 192). Such capacity 'is not acquired by the type of template much loved by policy makers, what Joseph Dunne (2011) called "teacher-proof practice". Rather they require qualities of listening, of respect for the individuals who make up a classroom and an interest in engaging with their reasoning, taking utterances seriously and unpacking the commitments entailed in such utterances' (Derry 2017a: 416). Such understanding requires a semantic appreciation, one which explores the logic between symbolic representations and meanings in professional discourses. Such symbolic representations are often kinetic in traditional crafts and linguistic in professions such as teaching. Semantic appreciation in both cases is manifested differently and so depends on a different logic of the relationship between knowing-how and knowing that.

Language is one form of symbolic communication, what is important to note however is that 'Concepts can only be known through their form as symbols' (Rata 2021: 451). Concepts are therefore created in an epistemic structure of inferential or logical relationships derived from a field's identified key concepts represented through a meta-language or communicated and shared through some form of symbolised meanings. The symbolised meanings may be communicated visibly in the crafts to a greater extent than in other occupations and professions. One form of symbolic communication is not 'better' than the other, rather they are differently appropriate and different forms have different effects. The craft-conception has however been questioned by scholars for the form and extent of its appropriateness. Whilst recent policy documentation references teaching as a craft, it has been acknowledged that 'most professionals (other than teachers) would not see themselves as craft-workers' (Winch 2017: 31).

2.6 The craft of teaching

In this section I explore the different ways in which craft-worker knowledge is conceived and its appropriateness for the profession of teaching. The previous section contrasted different forms of know-how, recognising that both knowing- how and knowing that are abilities. The abilities referenced by the term 'craft-worker' can vary, with the term a traditional craft-worker often being associated with manual and kinetic abilities. The social realist Bernstein acknowledged that traditionally 'manual practice was never integrated into formal public systems of knowledge and tradition. Manual practice was relayed through family and guild' (Bernstein 2000: 8). In such traditional conceptions of craft, knowledge is 'implicit, informal and non-codifiable and it is manifested in practice

rather than in any book of rules and principles' (Winch 2014: 17). Such an approach is dependent on the traditional apprenticeship model where the development of abilities 'is more a tacit achievement rather than the consequence of explicit pedagogy' (Bernstein, 1996: 181). The term 'tacit' is explored more fully in the next section, as like the term 'craft-worker' it is used heterogeneously in the literature and this variation has hindered some debates. In the traditional apprenticeship model when symbolic transmission is largely individualised, the communication of systematic knowledge is 'largely hidden because there are no institutional arrangements for codifying, legitimating and sharing it' (Burney, 2004: 526).

These analyses accept that there are forms of symbolic meaning (principles of practice) present within craft-worker knowledge but the means or way of communication affects access to these and their form. If craft knowledge is viewed as being a realisation of 'principle in the particular' (Gamble 2004: 197), then a principle in some form is present in the ability. This contrasts with the view of craft knowledge as 'the procedure in the particular' (Gamble, 2004: 197). In latter 'the principle no longer operates' (Gamble 2004: 197). It is the former that enables the profession to 'conceive teachers' practical knowledge within the craft conception of teaching in a generous way' (Winch, 2017: 104). A contrast can be made between medicine and teaching. In the medical professions, craft knowledge 'expands the body of medical knowledge and holds the profession to very high standards' because it is 'collected, codified, legitimated and shared by professional bodies' (Burney, 2004: 527). Medical professionals benefit from both clinical reasoning and clinical practice. In contrasts teachers do not share 'an

authoritative, proven understanding of the work that they are charged to do. Educators, therefore are more vulnerable to politics than doctors' (Burney, 2004: 526).

Craft-worker knowledge can therefore, like practical knowledge be conceived of in a variety of forms including an attenuated form. In its thin or reduced configuration, principles only form a limited element of the structuring (Schatzki, 2011, 2012, 2017). If principles are absent then craft is an every-day, common sense pursuit rather than a specialised occupation. The form of the craft-worker knowledge drawn upon by the profession of teaching matters. The less attenuated form includes the communication of both the thoughts and actions involved in a practical ability. The thoughts include accessing the specialising concepts, the criteria. These thoughts are part of the ability, they are what the craft-worker used to determine the logic of the relationship between thoughts and actions realised in an activity. The logic of the relationship is a form of judgement. As a profession, teaching potentially has much to gain by focussing on acquiring a cognisance of 'the criteria by which judgements can be evaluated' (Hordern, 2020: 6). There is therefore the need for an external language of description, shared by the profession that offers a conceptual or meta- language to specialise proximal or visible practices. A focus on language as the means of communication for symbolic means is not necessarily shared by the traditional-crafts. Individual stories or demonstrations (observation and modelling) without reference to substantive knowledges that form part of practical abilities are insufficient as a prospective professional knowledge form. If symbolic means are communicated then in this way the 'teacher is not only master of procedure but also of content and rational, and capable of explaining why something is done' (Shulman, 1987: 13). The challenge is to therefore to

effect the means to generate discourses which 'provide a defensible account rather than a description of professional actions' (Eraut, 2000: 120) so that as a profession, practitioners benefit from 'the commingling of theoretical understanding and professional experience associated with professional reasoning' (Guile, 2014: 85).

Eliciting the means to access both the action and thought elements of professional activities is a particular challenge for teacher educators. The challenge is exacerbated if an attenuated form of craft-knowledge is prioritised. In its attenuated form action rather than thought dominates in a practical ability. Whilst there are elements of practice when a focus on actions is appropriate, and indeed times when a focus on thought is appropriate, in practice there is usually a 'comingling' and so the means needs to be available to teacher educators so that they can 'embrace the particulars of relevant action-situations with the grasp of universals' (Green 2009: 10) with and for their beginning teacher. It is the 'ability to engage in the kind of deliberative process that can yield concrete, context-sensitive judgements' (Dunne 2005: 376). In order to rise to this challenge, there is recognition that 'deliberation and judgement clearly presupposes a conceptually structured, as opposed to a common-sense, way of thinking, because a professional has to understand the conventions and standards associated with professional practice in order to infer how to make a judgement in accordance with them' (Guile 2018: 188). If craft knowledge is reduced to every-day actions then it does not offer the means for professional judgement. The means are the symbolic meanings of the profession. In the case of teaching, the concept of pedagogy is one such key means. The term pedagogy is absent from the Teachers' Standards (DfE, 2011). This is significant as without a 'common language and a set of identified pedagogies, teacher

educators are left on their own to figure out how to prepare teachers' (McDonald, Kazemi, and Kavanagh, 2013: 381). The development of such a common language is challenging in an environment where the Teachers' Standards focus on demonstrations of actions rather than also referencing systematic knowledge. In order to access systematic knowledge, knowing how to do something involves 'learning to take part in conversations and discussions that employ those concepts' (Winch 2013a: 132). Beginning to learn to be a public professional who teaches 'involves beginning to use the language of the subject and this is primarily a practical ability, as the grasp of concepts is, on this conception a practical ability that is learned, norm governed and can be appraised' (Winch 2013a: 132). Subject is being used here in the sense of a field of knowledge, which includes professional fields, such as teacher education. A professional field therefore needs access to a collection of concepts that can be drawn upon to prepare those in training to act intentionally within a defined range of contexts within which that profession operates. Any professional field therefore benefits from being 'clear about what type of actions they need to prepare people to carry out and what the relationships are between them' (Winch 2013b: 283). Accessing such a collection of meanings can be challenging in teaching, as often, as a practical profession, it is thought to be dependent on tacit rather than explicit knowledge. Tacit knowledge is commonly defined as being a form of knowledge that is 'far from fully describable' (Winch, 2017: 62). The lack of a means to articulate knowledge presents an issue in professional formation. If a knowledge form can't be described then the profession becomes dependent on experiential knowledge, but how do we know that an experience is accessing that which was intended? Such a conundrum demonstrates the 'problematic nature of tacit knowledge' (Eraut, 2000: 113).

2.7 Tacit knowledge

A lack of attention to the complex epistemology of tacit knowledge has led to confusion and conflation, resulting in tacit knowledge becoming a 'widely distributed phenomena which has acquired a wide range of meanings' (Eraut, 2000: 118). In this section of the literature review, a focus is taken on tacit knowledge as it is 'a key element in almost all occupations' (Winch 2017: 62). Tacit knowledge is often referenced as being a form of knowledge whereby 'we know more than we can tell' (Polanyi, 1966 / 2009: 4). Whilst Polanyi's original articulation continues: 'This fact seems obvious enough; but it is not easy to say exactly what it means' (Polanyi, 1966/2009: 4) others have taken the abbreviated definition at face value. Consequently, tacit knowledge has been referenced to justify a prioritisation of knowledge by acquaintance 'generating confusion between tacit knowledge and the kind of kinetic knowledge exhibited by a ballet dancer' (Spender, 1996: 67). Kinetic knowledge is knowledge associated with physical movement, it is observable. If tacit knowledge is conflated with kinetic knowledge then it can be perceived as being knowledge which cannot be communicated other than through movement or action. Polanyi is clear that movement is an essential part of tacit knowledge, but that this is only one part, and so tacit knowledge cannot be solely communicated through movement. Tacit knowledge is concerned with an internalised connection between two forms of knowledge, the proximal and the distal. If a focus is taken on one without the other, tacit knowledge is destroyed. Tacit knowledge involves attending to the 'logical relationship' between the two forms of knowledge. Therefore, tacit knowledge, as defined by Polanyi involves an appreciation of more than that which can be observed. An understanding of tacit knowledge cannot be developed solely

through modelling and observation but involves other forms of communication which may involve language but could be pictorial, diagrammatic or graphical. There is also a sensory element to it. Tacit knowledge cannot be reduced to either an observed action (the proximal) or a theoretical form of knowledge (distal) but is present in a relationship between the two. It is the epistemology and ontology of the relationship that concerns Polanyi. Tacit knowledge refers to the 'logical relationship', the internalised recontextualisation of theoretical knowledge realised in a particular activity. In order to practice tacit knowledge an individual has to have knowledge of the collective, theoretical knowledge so that they can internalize and realize this in action. In this sense tacit knowledge is an internalized recontextualisation of collective or systematic concepts realized in a context. Recontextualisations involve two forms of knowledge, the contextual and conceptual. It both forms are realized then there is a flow. Polanyi defines these two two elements of tacit knowing are 'the proximal, which includes the particulars, and the distal, which is their comprehensive meaning' (Polanyi 1966/2009: 34). Tacit knowledge is found in the internalised 'logical relation' between these two forms (Polanyi 1966/2009: 10).

Like Ryle, Polanyi acknowledges that there are 'two aspects of knowing…and neither is ever present without the other' (Polanyi, 1966/2008: 6/7). The proximal and the distal 'are the two terms of an act of tacit knowing which jointly comprehends them' (Polanyi 1966/2009: 35). Polanyi is recognising that in order to explain tacit knowing, both the proximal and the distal need to be attended to, so that the 'logical relation' between the two can be understood and the way in which each transforms the other is appreciated.

It is the relationship that is significant. Both forms of knowledge are co-present in tacit knowledge. In an attempt to classify knowledge as being either a practice (proximal) or a theory (distal), the relationship is destroyed. Tacit knowledge is destroyed, as tacit knowledge is found in the relationship between the different forms of knowledge, not within either form of knowledge as a separated entity. It is 'tacit knowing [that] established a meaningful relation between the two terms' (Polanyi, 1966/2009: 13). In order to explain the significance of the concept of the 'logical relation' further, Polanyi offers a much fuller explanation of the oft quoted paraphrase 'we know more than we can tell'. He states that 'in an act of tacit knowing we *attend from* something for attending to something else; namely *from* the first term to the second term of the tacit relation. In many ways the first term of this relation will prove to be nearer to us, the second further away from us. Using the language of anatomy, we may call the first term proximal, and the second distal. It is the proximal term, then, of which we have a knowledge that we may not be able to tell' (Polanyi, 1966/2009: 10). Here Polanyi is explaining that within the proximal is the specialising distal, but when communicating through observable movements we may not always be able to tell of the distal. Therefore, it is not that the distal cannot be communicated. It is that in an individual act the distal is internalised. The distal represents the collective and the proximal represents the particular individual circumstances. Both change each other through a relationship, and it is the logic of the relationship that is significant. It is in the relationship that 'we see the basic structure of tacit knowing. It always involves two things or two kinds of things. We may call then the two terms of tacit knowing' (Polanyi, 1966/2009: 9). Tacit knowing cannot be reduced to either a practice to a theory, it must be appreciated as an entanglement of two forms. The challenge that is faced is that Cartesian dualisms are an

inadequate epistemological framing of tacit knowledge. In trying to articulate tacit knowledge as either / or its essence is lost. Polanyi associates tacit knowledge with the concept of 'indwelling' and in so doing recognises that this involves a 'shift of emphasis in our conception of tacit knowing' (Polanyi, 1966/2009: 17). He goes on to state that tacit knowing is appreciated 'not by looking at things, but by dwelling in them' and that it is by 'dwelling in them' that we understand the joint meaning of the proximal and distal terms. In this sense tacit knowing is an 'integration of particulars as an interiorisation' (Polanyi, 1966/2009: 17-18). He explains that to 'interiorise is to identify ourselves with the teachings in question, to make them function as a proximal term of a tacit moral knowledge as applied in practice' (Polanyi 1966/2009: 17). An individual needs to be made aware of the substantive collective knowledge so that they can draw on this to specialise their knowledge 'in practice'. In practising the application of the theory, 'our true knowledge lies in our ability to use it' (Polanyi 1966/2009, 17), so that we develop an 'understanding of the comprehensive entity which these two terms jointly constitute' (Polanyi, 1966/2009: 13).

The term 'comprehensive' is significant and has resonance with Ryle's recognition of 'one activity, not two'. A professional not only appeals to conceptual knowledge but is also expected to 'employ it in decision-making' (Winch 2014: 172, original emphasis). The flow of knowledge is not one –way. In this way professional communities take part in knowledge creation. (Guile, 2018; Nerland and Jenson, 2012: Winch, 2014). Indeed 'the two genera (sacred / profane) cannot, at the same time, come close to one another and remain what they were' (Durkheim 1912/2008: 28).

The importance of the recognition of professional communities taking part in knowledge creation is significant. At the collective level, what is sacred can be subject to change. It is an enduring rather than fixed form of knowledge. Significantly the sacred can only be altered if it is present in professional activities. To be present in an individual activity it needs to form the distal element. To form the distal element a new professional, a BT needs to access this. As it is an uncommon-sense form of knowledge and so cannot be found in the proximal, it needs to be communicated in some form. A craft-worker may communicate this kinetically, a profession such as teaching needs a language to communicate the distal and therefore the sacred. Without a meta-language or some form of symbolic communication, activity becomes action. An action is common-sense form of knowledge. It does not have recourse to supervening principles. When an action is represented as a professional activity a boundary has been crossed. Such boundary crossing 'damages' knowledge. It damages it as a distal or sacred form has been replaced by a proximal or profane form. The logic of the relationship has been destroyed as one form of knowledge has replaced the other rendering it inert. In the Teachers' Standards (DfE 2011) particular actions are referenced. A 'belief that, since particulars are more tangible, their knowledge offers a true conception of things is fundamentally mistaken' (Polanyi 1966/2009: 19). The Teachers Standards (DfE, 2011) focus on focus on individual particular externalised actions, justified through the pedagogies of modelling and observation. Such a pedagogic approach prioritises the proximal element of tacit knowledge, detaching it from the distal. Both need to be co-present so that 'indwelling' can be developed as a professional capability. An emphasis on the proximal overemphasises the particular individual or individual context leaving 'knowledge open

to the whims of the observer' rather than 'the knower being controlled by impersonal requirements' (Polanyi 1966/2009: 77).

Reference to the 'whims of the observer' and 'impersonal requirements' acknowledges the significance of the TE/BT relationship and the 'way' in which the TE represents professional practice knowledge to the BT. If the TE references the proximal only then they are likely to draw on arbitrary rather than non-arbitrary criteria. Non-arbitrary criteria include the 'collective mind' that Durkheim referred to, the sacred, substantive knowledge of the profession that connect individuals when individuals dwell in them through there realised purposeful actions. Such 'acts are personal judgements exercised responsibly with a view to a reality with which [an individual] is seeking to establish contact' (Polanyi 1966/2009: 77). Individuals therefore need to be aware of the bodies of shared knowledge that have been abstracted over time and space by specialised communities so that through their indwelling or tacit knowing, they in turn can contribute to such bodies of knowledge and develop it further. It is therefore important that the 'term tacit must not be used as a form of mystification' (Spender, 1996: 67). If it is then perception rather than conception results. In order to develop tacit knowing, the observer and performer need to bring into view the distal and the proximal and examine both in relation to each other. Tacit knowing involves an iterative process during which we attend 'from these internal processes to the qualities outside' (Polanyi, 1966/2009: 14). Tacit knowing therefore depends on a knowledge structuring process that bring into view both forms of knowledge. If we only pay attention to the 'visible practices we see, without attending to the role these practices have' beginning teachers are likely to

use 'their newly acquired practice at the wrong times, in the wrong place or for the wrong reason' (Kennedy, 2016a: 9).

In a similar way to that there were thin forms of craft knowledge, there are also thin forms of tacit knowledge (Eraut 2000). Thin forms of tacit knowledge are highly condensed. In the process of condensation, meaning can be lost. In constrained circumstances when time and space are condensed, 'the proximal factors tend to be salient' (Winch 2022: 24). In such situations 'meanings are condensed and accessible to those who have been inculcated, socialised or initiated into the code' (Singh, 2013: 781). The code, being the codification of the symbolic meanings, which are realised in the distal element. Condensation results in the purpose becoming 'largely unknown to the acquirer' (Bernstein 2000: 200) but used by the transmitter (teacher or teacher educator) to frame the pedagogic transmission of knowledge Bernstein adds that 'it is possible to make explicit the implicit interactional practices' of pedagogy (Bernstein, 2000: 200). Indeed ' if human beings did not have the ability to make knowledge explicit, the idea of tacit would not exist' (Shalem and Slonimsky 2014: 206) The ability to articulate the logic of the pedagogical relationship that holds professional actions to account has been a concern of the Chartered College of Teaching who state: 'Teachers should be able to give a coherent justification for their practices citing (i) evidence, (ii) pedagogical principle and (iii) educational aim, rather than offering the unsafe defence of compliance with what others expect. Anything else is educationally unsound' (Peacock, 2021 : 8). The College, as the professional body for teachers is emphasising that 'it is only when resultant professional knowledge is articulated and made explicit

that teachers' pedagogical expertise is able to be recognised as something more that 'just doing teaching' and as a consequence, able to be more highly valued as 'informed knowledge-based practice' (Loughran 2019: 525). Ryle notes that 'if we cannot tell…we then speak of 'inspiration' and 'intuition' and this exempts us from having to answers questions' (Ryle 1949/2000: 143). Being able 'to tell' is consistent with not the antithesis of tacit knowledge. Telling in this case involves referencing the systematising or supervening purposes that specialise the profession rather than referencing individual storied accounts.

This has important implications for the work of the teacher –educator. The challenge relates to how to make conceptual knowledge, knowledge abstracted from contexts, but simultaneously found within contexts, accessible to BTs without presenting it as a dislocated form of knowledge from professional practice. This challenge is exacerbated in England as the Teachers' Standards draw on condensed or thin forms of practice knowledge.

2.8 Teacher Educators and the role of discourse

Social realists warn that if common-sense, appears as a form of sacred knowledge a 'form of professional self-deception' (Winch 2017: 140) has taken place. Equally if theoretical knowledge is presented as a practical knowledge, devoid of contextual sensitivities, the significance of the particular has been rendered inert. Professional practice knowledge depends on recognition that professional activities depend on the logic of the relationship between two forms of knowledge. Professional practice

knowledge is therefore a relational knowledge. In order to access the relationship, BTs

need to access both forms of knowledge (the sacred / profane, proximal/distal,

everyday/scientific, knowing-that/knowing-how, theoretical/practical) so that they can

build the means to examine the logic of the relationship. It is through the examination of

the relationship that new knowledge is formed both individually and collectively. In

order for BTs to be inculcated into such knowledge, TEs need to consider how to

structure access to both forms of knowledge and access to appreciating the different

ways that the forms can be brought into a relationship to each other. Therefore, the

expertise of the TE 'lies as much in the selection of material for closer observation and

comment as in the comment itself' (Eraut, 2000: 134).

The TE needs to select from their own professional understanding in such a way so that

they can appreciate 'the structure of systematic knowledge from the point of view of the

learner rather than the expert' (Winch, 2017:81). Developing such knowledge –

structuring capabilities is complex, made more so when there are a set of Teachers'

Standards (DfE,2011) that articulate professional knowledge in a certain form. The

Teachers' Standards have been supplemented by the Core Content Framework (CCF)

(DfE, 2019) which lays out professional knowledge for TEs and BTs as 'learn how' and

'learn that' statements. This format (see figure 2.1) detaches 'learn how' and 'learn that'

rendering invisible the logic of any relationship between these two elements. More

significantly this document uses the term 'learn' rather than 'know'. The 'learnification'

(Biesta, 2015) approach 'removes the knowledge product from the process' (Rata, 2021:

451) In removing reference to the knowledge products, arbitrary rather that non-arbitrary criteria are more likely to be accessed by TEs.

Figure 2.1 Extract from the Core Content Framework (DfE, 2019: 17)

Classroom Practice (Standard 4 – 'Plan and teach well structured lessons')	
Learn that…	**Learn how to…**
1. Effective teaching can transform pupils' knowledge, capabilities and beliefs about learning. 2. Effective teachers introduce new material in steps, explicitly linking new ideas to what has been previously studied and learned. 3. Modelling helps pupils understand new processes and ideas; good models make abstract ideas concrete and accessible. 4. Guides, scaffolds and worked examples can help pupils apply new ideas, but should be gradually removed as pupil expertise increases.	**Plan effective lessons, by:** • *Observing how expert colleagues break tasks down into constituent components when first setting up independent practice (e.g. using tasks that scaffold pupils through meta-cognitive and procedural processes) and deconstructing this approach.* **And - following expert input - by taking opportunities to practise, receive feedback and improve at:** • *Using modelling, explanations and scaffolds, acknowledging that novices need more structure early in a domain.* • *Enabling critical thinking and problem solving by first teaching the necessary foundational content knowledge.* • *Removing scaffolding only when pupils are achieving a high degree of success in applying previously taught material.*

The material of the Teachers' Standards (DfE, 2011) and the CCF (DfE, 2019) have material effects. TEs are less likely to engage with the essential 'objective product' as it is not present in the official material representations of the profession. Such an omission is potentially problematic as it is 'engagement with the generalising concepts and materialised content found in disciplinary-derived knowledge which builds cognitive thinking, the permanent change in understanding which constitutes "learning"' (Rata, 2021: 451).

It is therefore important that this research study, in acknowledging the challenges, recognises that 'materials – things that matter- are often missing from accounts of learning and practice' (Fenwick, 2015: 84). Rather than 'material' being seen as an external object, 'material' is considered as an integral element within the ongoing iterations of knowledge production in this thesis. Developing an understanding of how

TEs structure professional practice knowledge is therefore highly significant in relation to the development of the professional itself.

Significantly teacher educators have been recognised as a 'profession increasingly in the public eye' (European Commission 2013: 6). It is important to acknowledge in this sense that the profession of being a teacher educator is seen to be different to that of being a teacher. If TEs are to enjoy a distinctive professional status then there is a need not only to make the professional practice knowledge for teachers explicit, but also that of professional practice knowledge for teacher educators. It is felt that currently such knowledge is 'uncertain [and] ill-defined' because of the 'under-valued nature of professional knowledge and skills needed to teach teachers' (Vanassche, Kidd and Murray, 2019: 479). Significant elements of such undervaluing relate to the key themes of time, space and matter which have been highlighted in this review. A brief analysis of time, space and matter is now offered, related to both Bernstein's (2000) and Barad's (2007) theoretical insights. These themes are then further developed in relation to Bernstein in Chapter Three and Barad in Chapter Four and further materialised in Chapter Five, which shares the methodology.

2.9 Time, Space and Matter in Education

Whilst the concepts of time, space, scale and matter have been variously interpreted within the sociology of education, it is the consequences that different interpretations of time, space and matter have on articulations of professional practice knowledge that are the particular concern of this study. It will be argued, following the social-realist and

sociomaterialist underpinnings of this research that how time is conceived of has a bearing on how space, scale and matter are represented and vice versa. As such each concept is entangled with the other. However given the constraints of the linear format of this section's written conventions, each concept will be examined in turn, building to a crescendo of relational (not relativist) insights.

The driver for a focus on time, space, scale and matter came from the contrasts of the 'thick' and 'thin' articulations of practice and craft knowledge shared in the literature review. In addition the insights from Ryle (1949/2000), Polanyi (1966/2009) and Winch (2013a, 2013b) who all discussed the nature of intelligent know-how as being a single event, but not one that is singular in knowledge form, but rather constituted as a relational phenomenon in which there is an inter-play of difference. Such articulations are based on a non-linear sense of time, a sense of space that is not classically bounded, that gift agency to matter and recognise the complexity of scale. Such insights differ from Cartesian dualisms (the separation of mind and material) and align more with quantum entanglements (an appreciation of the complex interplay between time, space, environment, the material and immaterial and apparatus).

2.9.1 Time

Different perceptions of time have different consequences for practice knowledge. When discussing time, both time and temporality are key concepts and neither are settled. Time can be thought of in relation to clock or fixed time, biological and social time. Temporality is concerned with a relationship with time, it is used as a term to

signify 'the messy, moving relations between past, present and future' (McLeod, 2017: 13) . Biological time refers to developmental measures, such as chronological time, fixed or clock time has been referred to as the '"spacialisation of time", broken into finite moments' (Lingard and Thompson, 2017: 5). It has been suggested that 'education has inherited clock time' (Lingard and Thompson, 2017: 5) as the sociology of education has been dominated by time conceived of as linear and progressive.

Such a perception of time has implications for conceptions of professional practice knowledge, as time is broken into 'finite moments' (Lingard and Thompson, 2017: 5) and so tends to support the observation of visible techniques as time in this sense is 'measurable when it is made divisible' (Scott, 2006: 186). Consequently divided time 'results in punctuations of observation' (McLeod, 2016: 13) creating 'moments of exposure for the teacher' (Thompson and Cook, 2017: 34). The Teachers' Standards' associated pedagogies of observation and modelling are framed by clock time. The present is omnipotent.

However, clock or fixed time can be contrasted with social time, the social construction of time, whereby time becomes a 'social fact' (Durkheim, 1912/2008) in which 'qualitatively equal periods of time are rendered socially unequal and unequal periods of time are socially equalised' (Sorokin and Merton, 1937: 623). Such social time 'destabilises and calls into question the taken-for-granted-ness of concepts such as linearity and the neatly evolving identities that seem to be the results of tidy chronological time' (Shelton and Melchior, 2020: 54). Sociologists of education have

drawn on different conceptions of social time as clock time 'fails to recognise how a sense of time acts or is forceful' (Lingard and Thompson, 2017: 6) , consequently the 'power geometries of time' (Massey, 1993) are not rendered visible or examinable. Social time can be drawn upon 'to demonstrate social imperfections' (Leaton Gray, 2017: 66).

Social conceptions of time recognise that 'time is lived, and this lived time flows in multiple directions, such that the past and future [are] always available in the present' (Lingard and Thompson, 2017: 5). In this sense time is 'both multiple and dynamic' (Lingard and Thompson, 2017: 1) and so can usefully frame our understanding of practice knowledge and practical actions differently. In this sense practice, and as shown in the analysis section of the findings, knowledge is underpinned by 'intelligent or active recognition' (Lingard and Thompson 2017:1) rather than reproductive habituation. Such articulations of time have resonance with Ryle's notion of intelligent epithets, Winch's conception of 'intelligent know-how' and Polanyi's discussions of the relationship between the distal and proximal forms within tacit knowledge. In this sense 'temporalities are questions of being / becoming' (Barad, 2014a: 17).

Whilst it is important to 'give time to time' (Lingard and Thompson, 2017: 3), this should not be at the expense of the spatial as 'space without time is as improbable as time without space' (Crang and Thrift, 2000: 1). How both time and space are presented have implications for each other as 'time flows shift in and out of various spaces' (Shelton and Melchior, 2020: 55).

2.9.2 Space

Space has been written about as if it were neutral, an 'empty vessel' (Massey, 1994; Gulson and Symes, 2007) as such the spatiality of the social life appears innocent of the relations of power that are realised in space (Soja, 1989). A contrast can be made between descriptions of the physicality of space and space that is 'not only produced by social relations [but} is also a producer of social relations' (Gulson, 2005: 142). In this sense space is active in being, it is 'more of a verb than a noun' (Gulson and Symes, 2007: 98). When appreciating professional practice knowledge, 'thinking spatially means recognising the integral spatiality of things and processes, and recognising too the difference that spatiality might make' (Massey, 1999: 5). Due diligence needs therefore be given to both time and space and the way the two relate and specialise each other, so that when space is given space and time is given time, an appreciation of the structuring of knowledge is altered.

Whilst the relationship between time and space are important to consider, so is matter, as 'our experiences individually and together are melded with matter' (Sheldon and Melchior, 2020: 55). Such an approach acknowledges that materials play an agentive role in our experiences of time and space and vice versa, practices engender time, space and matter. In this sense matter 'materialises and enfolds different temporalities' (Barad, 2014a: 17) and different spatialities.

In acknowledging the significance of non-linear time and non-Euclidian space, practices of knowing can no longer be claimed as being solely human practices unsettling the

Cartesian dualism of mind and material. Consequently a different theoretical underpinning needs to be sought, one that encompasses matter as in changing the boundaries of space-time-matter relationships, it is 'not just physical boundaries that may be breached, but social and psychic boundaries of self and identity as well (Hargreaves, 2000: 174).

2.9.3 Matter

That matter 'matters in human and social life is not new, rather what is new is the increasing role granted to materiality in explaining all things social and how this role has been conceptualised' (Carlile et al, 2014: 6). Matter in a sociomaterial sense is 'not mere stuff…it is not an inert canvas' (Barad, 2014a: 17). Something becomes material 'when it helps to instantiate ideas in practice (Carlile et al, 2014: 5) and so can include 'symbolic objects such as rules, policies and software (Carlile et al, 2014: 5). The Teachers' Standards (DfE, 2011) and the Core Content Framework (DfE, 2019) are in this sense examples of matter, materialisations of time and space. They have an 'agentive role' in professional practice knowledge construction and in the 'ongoing materialisation' (Barad, 2014a: 17) of professional identities. In this sense matter 'is not a thing, but a doing, a congealing of agency, it is morphologically active, responsive, generative, articulate and alive' (Barad, 2014a: 17).

Sociomaterialists recognise that time and space 'are phenomenal, that is they are intra-actively configured and re-configured in the ongoing materialisation of phenomena' (Barad, 2014a: 17). In this sense 'the present is not simply here and now' (Barad, 2014a:

18) but rather it is a 'non-linear enfolding of spacetimemattering, a topology that defies any suggestion of a smooth continuous manifold' (Barad, 2014a: 18). Consequently sociomaterialists argue that to 'know and learn involves the material world (including the body) as much as it involves the mind' (Carlile et al, 2014: 2) and so posit that there is much to be gained if researchers move on from the classical view of individuals 'living in a wold of separate things' (Carlile et al, 2014: 3). They argue that matter, matters as it generates consequences and that the distinction between subject and object is 'the 'result of historically situated human activity, not an ontological condition' (Carlile et al, 2014: 3).

Barad's work (2007, 2011, 2013, 2014a, 2014b) explicitly problematises the separation of matter and discourse, responding to a perceived over-reliance on individualisation and language utterances. Barad 'interrogates the nexus of what is known, how it is known, who claims to know and on what basis this knowledge rests' (Everth and Gurney, 2022: 7) whilst resisting the poles of positivism and social constructivism. Barad recognises that 'matter, matters not only as an intellectual effort, but also in an ontological and practical sense, i.e., it generates consequences for how we experience and act in our world ' (Carlile et al, 2014: 3). Any practical action therefore includes 'some things and excludes others and so consequences and accountability naturally arise' (Carlile et al, 2014: 9). In this sense any materialisation is a cut and 'any cut is also an intra-action of other cuts' (Carlile et al, 2014: 9) and so any cut bears a 'respons-ability' (Barad, 2007) as it is the materialisation of spacetimematterings (Barad, 2007) such that practice and practises 'never rest, but are reconfigured within, dispersed

across and threaded through one another' (Barad, 2014a: 16). Consequently 'the stability of human social orders can only be explained when one allows for the active role played by material objects' (Carlile et al, 2014: 7). It is by examining the materialisation of forms of time and space in matter that 'unbalanced forms of empowerment' (Carlile et al, 2014: 8) can be revealed. A passive view of materiality leads to relativism as the consequences of different materialisations are rendered neutral. It is therefore important to recognise that not only does matter generate consequences but so does the 'attribution of materiality' (Carlile et al, 2014: 5) . Each cut therefore diffracts various temporalities and spatialities and so these need to be examined if a fuller understanding of professional practice knowledge is to be reached.

Barad argues that agential cuts are enacted, contrasting agential realism with Cartesian cuts which separate rather than distinguish between subject and object (or knower and known). In an intra-action different forces entangle and inform and influence each other within an enactment. These are distinctive forces (the material and immaterial) at play simultaneously specialising each other. They are not asynchronous forces. It is pivotal that in entanglements discernment occurs, as without this one dominates rendering the other inert. As Barad states entanglements 'are not unities' (Barad, 2014b: 176). They do not erase differences; on the contrary, entanglings entail differentiatings, differentiatings entail entanglings. One move – cutting together-part' (Barad, 2014b: 176). Barad (2007) argues that agential reality comprises material-discursive phenomena, which are continually reconstructed through the intra-actions of agents and apparatus. An over focus on agents, renders the here and now of dialogue

dominant, excluding a focus on the structuring materials that inform and form the dialogue by carrying both retrospective and potentially prospective meanings. A superficial observation of practice is likely to focus on that which is experienced at the expense of appreciating the ways in which materialisations affect knowledge structuring. In this sense observation of the empirical is insufficient and so Barad's insights can be enhanced by social and critical realism. Consequently the data collection and analysis included in this study consists of a three-part inter-related process so as to offer rich (material – discursive) rather than thin insights in relation to time, space and matter in professional practice knowledge for teacher education.

The Teachers' Standards (DfE, 2011) and the Core Content Framework articulate one form of materialisation, based on a linear sense of time and a Euclidian sense of space and a Cartesian outlook. Sense-making is done in relation to that which is visible. Critical realism suggests that whilst we may observe and experience events, such events are however being generated by often unobservable, but very real, mechanisms that are independent of the observable time and space context of the experience. Critical realism (CR) is a way of thinking that informs investigations into lived realities (Archer et al, 2016). CR aids enquiries into the unseen mechanisms that have causal influences on professional practices, offering an alternative to positivist and constructivist approaches. CR suggests that reality consists of the inter-play between three domains, the empirical (experiences), the actual (events) and the real (causal mechanisms). CR accepts the possibility of complexity, recognising that generative mechanisms interact differently in different circumstances. These differences in turn generate new insights that may

inform future mechanisms. Critical realists recognise that whilst observation gives us a

confidence about what we think exists, existence itself is not dependent on observation

(Sayer, 2000, Koopmans and Schiller, 2022). Appreciating the relationship between

agency and structure is therefore fundamental to sociomaterialists, social realists and

critical realists.

2.9.4 Agency

Agency and structure are perceived of as being separate and yet interdependent entities

(Bhaskar, 2014; Archer, 1995). Human agency is constrained by structures, other agents

and resources, agents can reproduce and/or resist change or work with structures as

they interact (Koopmans and Schiller, 2022) if such structures are made visible to them.

Agency in this sense is determined by an accessibility to an understanding of structures.

Conceptions of time, space and matter are fundamental to an appreciation of such

structures and structuring, hence the prioritisation of these in this thesis. These concepts

have not previously been drawn upon overtly in relation to Bernstein's pedagogic device

and it is argued that there is much to be gained by doing so, particularly in relation to

differentiating between forms of knowledge structuring for teacher educators.

2.10 Conclusion

The development of curriculum and pedagogic knowledge for TEs presents a significant

challenge, due to the complex nature of professional knowledge, practice knowledge

and know-how. These issues have been exacerbated by concerns surrounding 'tensions

arising from the fragmentation of the profession over a variety of institutional contexts'

(European Commission, 2013: 12). In England such fragmentation results in part from the fact that TEs are also often school-based colleagues. As such they often have multiple responsibilities including 'being a teacher of teachers, researcher, mentor and gatekeeper' (Ping, Schellings and Beijard, 2018: 94). As a 'diverse and heterogeneous group with highly diverse backgrounds' (Schipper et al, 2020: 2), it is challenging for TEs to access any 'overarching theory of teaching or of teacher learning' (Kennedy 2016b: 946). Without access to such systematic knowledge decisions concerning 'what teachers need to know are typically prefaced by stipulations about what teachers actually do' (Kennedy, 2016b: 946). This is because it is access to the systematic knowledge that offers 'the means societies use to transcend the limits of individual experience to see beyond appearances to the real nature of relations in the (natural and social) world.' (Wheelahan, 2010: 55) is limited as it is not included in official documentation.

Consequently, there is the 'need to consider the sort of knowledge engagement and opportunities that are open to newer actors, both educators and students' (Clegg, 2016: 459). Arguably there is much to be gained by this endeavour as 'just as the quality of learning in schools is dependent in considerable part on the quality of teachers, so the quality of teacher education is dependent on teacher educators' (Vanassche, Kidd and Murray, 2019: 479). It is therefore significant, in relation to the perspectives elicited in this literature review to consider:

- How do school-based teacher educators structure professional practice knowledge for beginning teachers?

- In what ways do these forms of knowledge structuring reflect or deviate from policy conceptions of teachers' professional knowledge in England?

- How can teachers' knowledge structuring take more account of both professional and policy constraints?

Chapter 3: The theoretical approach to researching the challenges

3.1 Introduction

This is the first of two chapters that focus on the theoretical framework which underpins this study's empirical investigation of knowledge structuring evident the weekly discourses between TEs and BTs. The thesis offers a theoretical, methodological and empirical contribution to knowledge structuring practices (pedagogy) in ITE in order to respond to the issues identified in the literature review. The challenges included dilemmas associated with:

- the nature of professional practice knowledge

- different forms of know-how and their effects on professional identities

- dualisms that result from Cartesianism

- thick and thin forms of craft knowledge and tacit knowledge

- the role of official materials in professional knowledge structuring

- the differences between professional knowledge for teachers and teacher educators

- the pedagogic relationship between collective knowledge and individual knowledge development

This chapter outlines how and why Bernstein's work in the field of the sociology of education has been drawn upon to inform a response to these challenges. Pedagogy as a concept, has been referenced in this study as a substantive knowledge for initial teacher education and concerns have been raised in relation to its absence in the Teachers' Standards (DfE, 2011). Issues surrounding TEs lack of access to shared

pedagogic approaches were also considered within the literature review. Pedagogy or the structuring of knowledge is therefore a key concept for this study. Pedagogic relationships in Bernstein's framework embrace more than those found in educational settings, they are part of the transformation of wider society. As such Bernstein's pedagogic device 'is a mechanism for conceptualising the production, reproduction and transformation of culture' (Bernstein, 2000: 38). A key tenet of Bernstein's theory is the consideration of the ways in which power (classification, curriculum, space) and control (framing, sequencing, time, pedagogic choices) operate within pedagogic relations. Chapter Two concluded by recognising the significance of the pedagogic relation between TEs and official materials in the knowledge structuring processes of professional practice knowledge. Classification and framing enable connections to be revealed between the micro discourses of weekly development meetings, and the macro discourses represented in official policy documentation such as the Teachers' Standards (DfE, 2011) and the CCF (DfE, 2019). Bernstein's conceptual framework therefore offers the theoretical means to analyse how the structuring educational knowledge specialise discourses in ways that shape professional identities. Consequently Bernstein's work on making explicit the ways in which pedagogic discourses form and function enables me to 'show the process whereby selective acquisition takes place' (Bernstein, 1996: 17) in initial teacher education in England. Bernstein's conceptual framework offers the means to understand how and why different discourses prioritise different forms of professional knowledge and the consequential impacts of these for the profession. Importantly the framework also offers the means to effect changes in pedagogic relations.

I have drawn on Bernstein rather than Foucault or Bourdieu or theorists associated with their oeuvre, as whilst they all are interested in discourse, there are key differences in their positions. These differences were something that Bernstein himself acknowledged (Bernstein 2000, 2001a, 2001b). Bernstein posited that pedagogic discourse has a voice of its own, 'but for Bourdieu and the reproduction theorists it as no 'voice', it is no more than a message from outside,' (Moore 2013a: 94). In addition 'in Bernstein's view, Foucault's discourse, is a 'discourse without social relations' (Diaz, 2001: 93). It is Bernstein's appreciation of the significance of the 'transmission practices in all pedagogic agencies' (Bernstein, 1996: 17) that makes his framework particularly relevant for this thesis. In other words how knowledge is structured differently in each discourse by different agents (e.g.) TEs, BTs, the SCITT, the DfE) affects knowledge structures and is affected by them.

Chapter Two shared different conceptions of 'know-how', each materialising a different form of professional practice understanding and professional identity. Issues were shared concerning teachings status as a semi-profession. The role of the TE was identified as being pivotal in the structuring of professional knowledge, and so the form of the discourses that TEs create are fundamental to the nature of the profession. The extent to which TEs are aware of the role that different forms of knowledge structures and knowledge structuring plays in their work matters as such knowledge impacts on professional formation and professional status. Importantly for this study, there is a strong social justice aspect to Bernstein's work. His theoretical framework foregrounded the insight that access to systematic knowledge is a precondition for an effective democracy, as it is by accessing principled knowledge that individuals access society's or

indeed a profession's collective representations. Such knowledge represents the means 'to connect the material and immaterial, the known and the unknown, the thinkable and the unthinkable, the here and the not here, the specific and the general, and the past, present and future' (Wheelahan, 2007b: 2). As the motivation for this study was to address issues in relation to teachers' epistemic agency in order to better understand how professionals could be sustained in professional practice; Bernstein's focus on democratic access to pedagogic knowledge is fundamental to this research.

3.2 The Pedagogic Device

Bernstein argued that pedagogic discourses shape consciousness, differentially distributing knowledge and experience. Consequently the 'relation between knowledge structure, curriculum and pedagogy in different disciplinary subject fields has crucial consequences for teacher competence' (Gamble, 2014a: 68). Bernstein explained that 'curriculum defines what counts as valid knowledge, pedagogy defines what counts as valid transmission of knowledge, and evaluation counts as a valid realisation of the knowledge on the part of the taught' (Bernstein, 1975: 85). Bernstein further defines the term pedagogy as being 'a sustained process whereby somebody(s) acquires new forms or develops existing forms of conduct, knowledge practices and criteria from somebody(s) or something deemed to be an appropriate provider and evaluator – appropriate either from the point of view of the acquirer or by somebody(s) or both' (Bernstein, 2000: 78). In the empirical element of this thesis, where the weekly development meetings held between the BT and T are the object of study, the acquirer is the BT and the appropriate provider and evaluator of the knowledge practices is the TE.

The pedagogic device works through distributive rules, recontextualising rules and evaluative rules. Distributive rules determine access to the forms of knowledge, recontextualising rules relate to pedagogic discourse and evaluative rules relate to the criteria used to authenticate the forms of knowledge communicated. 'Thus the device or apparatus becomes the focus of challenge, resistance and conflict (Bernstein, 1996: 193). The notion that pedagogic devices, including pedagogic discourses are a form of 'apparatus' will be further discussed in Chapter Four, as 'apparatus' is also a significant concept within Barad's framework.

Chapter Four extends Bernstein's conceptual framework by drawing on Barad's work in relation to how time and space can be conceived of differently in the social sciences. Barad draws on quantum rather than Cartesian insights. I argue that some of the dilemmas associated with applying Bernstein's framework to professional practice knowledge can be overcome when his theory is enriched by a more sensitive appreciation of time and space. What is significant for both Barad and Bernstein is the recognition that the materialised form of the pedagogic discourse, like an apparatus, has a material effect on knowledge structuring. Discourse is not simply a carrier of knowledge, but the structure of the discourse has consequential effects. Discourses are therefore active elements in knowledge structures and so are worthy of close empirical investigation, particularly as 'arenas of struggle' (Bernstein, 2000). In relation to Bernstein's three identified arenas (distribution, recontextualisation and evaluation), is the arena of recontextualisation that is the most pertinent focus for this thesis as this is the field of pedagogic discourse.

The study's research questions reference both policy and professional conceptions of knowledge structuring. Within the recontextualisation field, the struggle for knowledge structuring is between that of the official recontextualising field (ORF) and pedagogic recontextualising field (PRF). Bernstein defines official knowledge as 'the educational knowledge which the state constructs and distributes in educational institutions' (Bernstein, 2000: 65). The PRF is defined as 'pedagogues in schools and colleges' (Bernstein, 2000: 33). The term 'pedagogue' is being used here, in the sense of a professional who teaches rather than its more specific reference to a formal or pedantic teacher. The outcomes of struggles between the ORF and PRF in the recontextualising field affect the form of the field's knowledge structure. Bernstein's framework enables an exploration as to the relationship between knowledge structuring (pedagogic discourses) and knowledge structures.

3.3 Regions, regionalisation and recontextualisation. `

Bernstein initially described three main knowledge structures, those of singulars, regions and generic. In his discussion of regions, he differentiated between ' classical' and ' new' regions. The contrast between a 'classical' region and a 'new' region becomes notable for this thesis. A singular is a strongly bounded knowledge structure, examples include physics, chemistry and history. Regions are 'recontextualisations of singulars and face inwards towards singulars and outwards towards external fields of practice' (Bernstein, 2000: 55). A classical region can be exemplified by medicine, engineering and architecture. Such regions reflect a strong relationship between a field of practice and the disciplinary structures that specialise, organise and cohere them. In contrast a 'new'

region, such as travel and tourism, tend to exhibit a weaker relationship between the field of practice and the fundamental disciplines that inform the region. For example some geographical concepts may be weak whereas managerial or generic concepts may be prioritised. Generic structures 'are produced by a functional analysis of what is taken to be the underlying features necessary to the performance of a skill, task, practice or even area of work' (Bernstein 2000: 53).   Significantly generic modes are 'constructed and distributed outside, and independently of, pedagogic recontextualising fields' (Bernstein 2000: 53). The literature review identified that a key feature of professional knowledge is having access to substantive principled concepts and so the generic structure would not fulfil this criterion. The regional structure does. In this sense professional practice knowledge includes both specialising knowledge from the singular fields that inform teacher education and the contextual knowledge of practice environments. In the region both forms of knowledge are brought into a relationship with each other. In contrast a 'new region' is 'more likely to face outwards to fields of practice' with the 'volatility of that context' (Bernstein 2000: 55) controlling the nature of the regionalisation. The contrast in structure between a 'classical' region and 'new' region brings to the fore some of the concerns expressed in the literature in regards to the structuring of professional practice knowledge. Namely the extent of the influence of the field of practice. Bernstein (2000) places the professions in the regional structure dependent on recontextualisations that 'face both' ways. The notion of facing 'both ways' is important. Bernstein acknowledges that both contextual and conceptual knowledge are brought into a particular form of pedagogic relationship in a regional field. Both forms of knowledge are present and so there is a two-way flow between each form that results in a region. The nature of the flow, or the pedagogic relationship

affects the region. Chapter Two highlighted that different conceptions of know-how resulted in different conceptions of the profession. Bernstein's framework enables an exploration as to how and why the relationship between systematic knowledge and contextual knowledge is so significant in regional knowledge structures. The fact that Bernstein recognises that a region faces both towards systematic and contextual knowledge as part of a coherent field is important for this thesis. Such recognition is consistent with the perspectives of Durkheim (1912/2008), Ryle (1949/2000), Polanyi (1966/2009), Winch's (2013b) professional technician articulation and Brandom's (2007) concept of inferentialism. It is a theoretical perspective that aligns with the less attenuated forms of practice, craft and tacit knowledge and with the sociologists of education (Freidson, 2001) who foreground the significance of substantive knowledge being an element within practice knowledge. A region has a different structure to the new regions (context is more significant in a new region) and generic (particular techniques dominate). As such a strong regional field requires pedagogic discourses which brings into a pedagogic relationship recontextualising principles informed by both substantive knowledge and contextual knowledge. A new region lacks the coherence of a region and so is weaker. The weakness is caused because the knowledge structure is 'more diffuse, fluid and less organised, and consequently sends out more ambiguous, frequently contradictory signals about professional requirements' (Muller, 2009: 214). A weak region is less coherent as practice contexts dominate and these are more idiosyncratic in nature as they are not specialised in relation to cohering concepts to the same extent.

In professional regions transmitters and aquirers ideally 'partake of the sacred' (Beck and Young 2005: 185) accessing the profession's reservoir of knowledge that carries the 'special significance' of the profession that is 'not ordinary or mundane, but something esoteric' (Bernstein, 1971: 63). It is therefore significant that knowledge structuring for professional practice accesses both context-specific and substantive knowledge. In order to secure the field's status as a region, both the official and the pedagogic recontextualising fields need to promote forms of pedagogic discourse within which conceptual or principled knowledge is 'a component of all forms of occupational knowledge, for epistemological, economic and social justice reasons' (Muller, 2009: 219).

3.3.1 The relationship between the ORF and PRF in education.

Enabling the productive and relational entanglement of both substantive and contextual knowledge within professional practice is dependent on the capabilities of 'recontexualising agents' with 'recontextualising functions' within the 'recontextualising field' (Bernstein 2000: 33). Recontextualising agents, include both members of both the PRF (TEs, BTs, the SCITT) and ORF (the DfE). Significantly the relationship between the ORF and PRF can change over time. Recontextualising agents within the field of ITE have accountability both to the state (ORF) as well as to the professional (PRF) field. Some two decades ago, Bernstein presciently stated that, 'the state is attempting to weaken the PRF through the ORF, and thus attempting to reduce relative autonomy over the construction of pedagogic discourse and over its social contexts' (Bernstein, 2000: 33). This position was contrasted with the 1960s and early 1970s when the 'British state has no direct control over the pedagogic contents and modalities of transmission…the PRF

enjoyed at that time a considerable autonomy with respect to the training of teachers. This training was the outcome of discursive pedagogical positions in that field which regulated the recontextualising principles' (Bernstein 2000: 56). Prior to the 1980s (see table 1.1) regulation of the 'discursive pedagogical position' for ITE predominately originated from within the profession itself rather than from the ORF in England. Arguably since Bernstein's death in 2000, the ORF has become even more dominant, evidenced by the increased activity recorded on table 1.1. The ascendency of the ORF is worthy of further analysis socially and epistemically. Socially in terms of the concept of autonomy within professional regions, and epistemically in terms of the knowledge structures that are determining the regulation of the pedagogic discourse. If regulation by the ORF weakens the region then the knowledge structure becomes more typical of a new region (more context dependent) or could be characterised as a generic structure (techniques that depend on training rather than education). The insufficiency of such knowledge structures has been highlighted in the literature review when the need for intelligent know how and prospective identities is justified as being fundamental in sustaining the integrity of the professions (Winch 2013b; Young and Muller, 2014).

3.3.2 Teaching and Pedagogy

Exploring the differences between education and training is significant for this thesis, as is establishing the differences between teaching and pedagogy. It is argued that it is knowledge about pedagogy rather than simply experiencing the activity of teaching that facilitates access to educative purposes. Teaching 'has structure and form; it is situated in, and governed by, space, time and patterns of student organisation; and is undertaken for a purpose' (Alexander 2008: 77). What is important is that the actions of teaching

should not be divested of their ' justifications, values, theories, evidence and – especially – divested of that relationship with the wider world that makes teaching and educative process rather than a merely technical one' (Alexander 2008: 1).

Alexander went on to offer a fuller definition of pedagogy stating it as being 'the act of teaching together with its attendant discourse of educational theories, values, evidence and justifications. It is what one needs to know, and the skills one needs to command, in order to make and justify the many different kinds of decision of which teaching is constituted' (Alexander, 2008: 47).

Accessing the concept of pedagogy is recognised as being a core element in the structuring of professional knowledge (Kriewaldt and Turnidge, 2013; Langsford, 2021; Mutton, Burn and Mentor, 2017; Ovenden-Hope and la Velle, 2015; Pollard et al, 2014; Rusznyak and Bertram, 2021; Whitty, 2017). It has been acknowledged that 'learning to teach without access to shared ethical orientation, a knowledge base or understanding of what constitutes effective practice reduces practice to a collection of arbitrary actions' (Rusznyak and Bertram 2021: 41). It is therefore somewhat surprising that the term pedagogy does not appear in the Teachers' Standards (DfE, 2011). The OECD states that there is 'widespread recognition that countries need to have clear and concise statements of what teachers are expected to know and be able to do' (OEDC, 2007: 9) Yet the specific content of such statements remains 'a matter of lively political debate in many countries' (Winch, 2017: 17).

The use of the term 'political' recognises that decisions about the structure of professional programmes includes representatives from within the profession but also from wider society, through political means; 'like other recognised professions and other occupations, [teaching] is a national interest' (Winch, 2017: 183) and so what is not in question here is that the government is involved in determining 'how new teachers are trained and educated...the balance however must be right' (Noble-Rogers,2019). In relation to 'balance', Bernstein (2000) recognised that regional fields, such as teacher-education would always be arenas of struggle between the ORF and PRF. A weak region indicates a weak PRF, whilst a strong region sustains and is sustained by a PRF that is in a healthy balance with the ORF.

3.3.3 Strong and weak regions and professional identities

A weak region therefore, ill serves a professional community, a strong region develops a stable collective intellectual base with the associated social and cognitive means to induct new colleagues into the profession in a recognised manner (Hordern, 2018a). The manner being 'the way(s)' of the profession, and such ways involve an evaluative ability informed by access to the collective principled knowledge that coheres and specialises professional endeavours. The 'Importance of Teaching' White Paper (DfE, 2010) which heralded the creation of the Teachers' Standards (DfE, 2011) has been described as a document that 'diminishes the importance of academic capital' (McIntyre, Youens and Stevenson 2019: 159) creating the need to 'evaluate how far policies are leading to the deliberate silencing of particular voices' (McIntyre, Youens and Stevenson 2019: 159). The emphasis on externalised competencies evident in the Teachers' Standards is thought to have silenced, or rendered inert the profession's collective knowledge. Some

claim that 'Gove's intention was to change the balance of power and content of ITE programmes' (Ellis and Spendlove, 2020). Strong regions have the means to resist programmes that are perceived to undermine the status of the profession, due to explicit access to their shared principles which underpin professional identities. A weak professional identity lacks such a resource. Bernstein describes a weak identity as one that is vacuous of the recontextualising principles required to effect meaningful and relevant professional judgements, dependent on training rather than education.

Training, for Bernstein, places the emphasis upon an externalised, visible, '"something" the actor must possess' (Bernstein, 2001b: 365/6). He goes on to explain that this 'something' is an 'ability'. He details this as 'the ability to be taught, the ability to respond effectively to concurrent, subsequent, or intermittent pedagogies' (Bernstein, 2001b 366). In this sense the 'ability' involves receiving an instruction or direction that is then replicated or reproduced as a competency. The 'identity produced by trainability is socially empty' (Bernstein 2001b: 366). The 'emptiness… makes the concept [of trainability] self-referential and thus excluding' (Bernstein 2000: 59). In other words there is no reference to the specialising substantive principles that might give an action purpose. The purpose is replaced by the action and so is self-referencing. In such cases 'the pedagogy is exhausted in the context of its enactment' (Bernstein, 1999: 161). It is momentary rather than enduring. It excludes all but the time and space of the realised action.

Bernstein contrasts trainability with the prospective identities produced by more educative means. Prospective, in the sense that the professional gains the means to respond to complex future unpredictable situations. The professional is able 'to project him/herself meaningfully rather than relevantly into this future, and recover a coherent past' (Bernstein, 2000: 59). The 'coherent past' is a reference to the collective substantive principled knowledge base of the profession that is drawn upon to evaluate the logic of the relationship evident in contemporary professional activities. A professional identity arises through relations 'with other identities of reciprocal recognition, support, mutual legitimisation and finally through a negotiated collective purpose' (Bernstein 2000:59). The relationship facilitated between the BT and TE should enable the development of such relational knowledge by accessing the shared specialising principles of the profession. These can then be drawn upon to evaluate activities in a professional context. Bernstein was 'against any kind of pedagogy which leaves the self-empty' (Bernstein 2001b: 380). He cautioned against 'trainability' in professional contexts as this form of pedagogy denied access to recontextualising principles, weakening a region. He feared the consequences of this stating that in such cases the focus 'is on the short term rather than the long term, on the extrinsic rather than the intrinsic, upon exploration of vocational applications rather than on exploration of knowledge' (Bernstein 2000: 69). Having articulated these concerns, Bernstein was motivated 'to mount a critique…. a critique which enables us to show how pedagogic discourse works. How it is produced, is distributed and particularly looking at…you see, its effectiveness' (Bernstein 2001c: 380). In order to mount such a critique Bernstein developed the concepts of *Vertical and Horizontal discourse* (Bernstein, 1999, 2000, original emphasis). He used these two contrasting concepts to analyse how knowledge

structuring (pedagogic discourses) affect and were affected by knowledge structures. These terms are italicised throughout this chapter to signify reference Bernstein's theoretical framework. *Vertical discourses* facilitate access to recontextualising principles, including a profession's specialising concepts.

3.4 Vertical and Horizontal Discourses

The concepts of *Vertical* and *Horizontal* discourse offer the means to analyse pedagogic discourses for their material effects. Discourses are not passive carriers of knowledge. The form of discourse is affected by and affects knowledge structures. In order to recognise discourse as an active element, the means for analysing 'the internal structure of the discourse' (Bernstein 2001b: 373) needed to be realised. The means that Bernstein developed was that of contrasting *Vertical* and *Horizontal discourse* forms. The two forms are oppositional. It is important that they are not seen as complementary, as 'one form is often seen as the destruction of the other' (Bernstein, 1999: 157-8). The destruction is caused because each has different time and space properties. The distinguishing time and space characteristics must be respected, discerned, and not conflated. If confused then epistemic injustices result. I will draw on Bernstein's concepts theoretically and empirically to suggest that such injustices have occurred within the field of ITE, and that such occurrences can in fact be challenged.

Horizontal discourses are time and space bound. They are momentary. A *Horizontal discourse* is the discourse associated with the everyday or 'common-sense' knowledge. If the professions rely on non-common-sense knowledge (Winch 2013a, 2013b, 2017),

then *Horizontal discourses* are inappropriate in professional contexts. Bernstein

describes *Horizontal discourses* as having a 'strong affective loading' (Bernstein, 1999:

161) and likely to be 'oral, local, context dependent and specific' (Bernstein,1999: 159).

Significantly the 'pedagogy is exhausted in the context of its enactment or repeated until

the particular competence is acquired' (Bernstein, 1999: 161). *Horizontal discourses* are

sensory rather than perceptive or conceptual, and so lack the systematic and

prospective facilities required by a profession. In *Horizontal discourses*, 'contributors

cannot think beyond the sensibility which initially formed them, a sensibility embedded

in a knowledge structure and on an experiential base, local in time and space'

(Bernstein,1999: 167). A *Horizontal discourse* is therefore not appropriate for the

transmission or structuring of professional knowledge that depends on some form of

specialisation. A *Horizontal discourse* is restrictive in nature due to its context

dependency. Time and space restrict its form to the immediate. Horizontal discourses

remain specific. They lack the capacity to cohere. *Horizontal discourses* cannot be 'part

of a *Vertical discourse* for space, time, disposition, social relation and relevance have all

changed' (Bernstein, 1999: 169). The significance of these time and space differences are

fundamental to Bernstein's theory. These are differences that form a key element in the

discussion of professional practice knowledge in this thesis.

3.4.1 Vertical discourse

Vertical discourse is a specialised discourse. It is specialised by a field's recontextualising

principles. Importantly a *Vertical discourse* structures knowledge by connecting contexts

with collective knowledge that exits 'beyond the present and the particular' (Moore,

2009: 247). *Vertical discourses* are generative in nature. They generate understandings

that have the capacity to cohere through integration or connection. The key point here

is that the pedagogic potential of a *Vertical discourse* is not 'consumed' at the point of its

realisation, 'but is an ongoing process in extended time' (Bernstein, 1999: 161). *Vertical*

discourses therefore include a different time space dimension to *Horizontal discourses*.

A *Vertical discourse* contains knowledge that is both contextual – sensitive to the

moment of realisation, and substantive, knowledge that exits across time and space. A

Vertical discourse is an entanglement of both contextual (time and space dependent)

knowledge and conceptual (time and space independent) knowledge. *Vertical discourses*

cannot be classified as representing one form or the other. What can be differentiated is

the way that a *Vertical discourse* realises the relationship between the two forms of

knowledge. There can be variations in the relationship. In order to recognise this,

Bernstein differentiated between two main types of *Vertical discourse* to acknowledge

variations in the way that the relationship between forms of knowledge can be realised.

 Bernstein differentiates between a *Vertical discourse* that takes 'the form of a coherent

explicit and systematically principled structure, hierarchically organised, as in the

sciences' (Bernstein, 1999: 159) and describes this as having a *Hierarchical Knowledge*

Structure. This type is contracted with a *Vertical discourse* that 'takes the form of a series

of specialised modes of interrogation and specialised criteria for the production and

circulation of texts as in the social sciences and humanities' (Bernstein, 1999: 159) and

describes this as having a *Horizontal Knowledge Structure*. The two types of knowledge

structure carried by *Vertical discourses* are therefore *Horizontal and Hierarchical*

Knowledge Structures. Horizontal Knowledge Structures are those that 'form a series of specialised modes' (Bernstein, 1999: 159) and *Hierarchical Knowledge Structures* which facilitate coherence and connection through integration.

3.4.2 Horizontal and Hierarchical Knowledge Structures as types of Vertical discourse

In both types of knowledge structure, a principle for the ordering of meaning is always present. The principle is the means for sequencing and cohering of knowledge. This is the field's recontextualising principle(s). The principle(s) provide the systematic way of relating segments of practice (*Horizontal Knowledge Structures)* or integrating segments (*Hierarchical Knowledge Structures)*. What is emphasised or reflected in the recontextualisation process depends on the type of structure that is represented within the discourse (classification). In turn the discourse impacts on the type of structuring (framing). In both types the principle and segments are in a cohering relationship. Principles have a different time and space properties to the segments. The segments would remain time and space bound without being related to a principle. It is the principle that lifts segments out of the specifics of their context. Context-independent meaning is produced through a *Vertical discourse*. In a *Vertical discourse* segments (contexts) and principles (systematic knowledge) are co-present and inter-related through the contextual and the substantive. *Vertical discourses* give access to conceptual relations, these are the 'symbolic order constructed by an accretion of collective representations that are the work of the community' (Muller and Taylor, 1995: 263).

The difference between the *Horizontal* and the *Hierarchical Knowledge Structure* types is in the type of relationship that exists between the contextual segments and the substantive principles. In the *Hierarchical Knowledge Structure* of *Vertical discourse* the relationship is integrative. Bernstein represents this diagrammatically as a triangle. The apex of the triangle representing the integrating principle and the base to the phenomena. In a footnote Bernstein commented that that 'there is likely to be more than one triangle in a hierarchical knowledge structure' but that 'the motivation is toward triangles with the broadest base and the most powerful apex' (Bernstein, 2000: 172)

Figure 3.1 Hierarchical Knowledge Structure (Bernstein, 2000: 161)
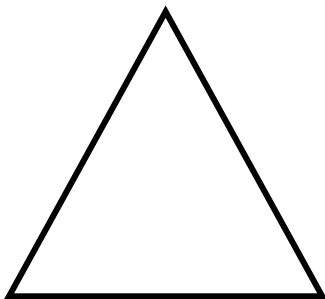
In the *Horizontal Knowledge Structure* of *Vertical discourse*, knowledge connections are represented through a series of 'specialised languages', each offering alternative interpretations without necessarily subsuming previous ideas.

Figure 3.2: Horizontal Knowledge Structure (Bernstein, 2000: 161)

$$L^1 \; L^2 \; L^3 \; L^4 \; L^5 \; L^6 \; L^7 \; ... \; L^n$$

The contrast between *Hierarchical* and *Horizontal Knowledge Structures* has stimulated debates concerning the morphology of intellectual fields. Understanding the shape of a field's knowledge structure is significant as this determines how and why specialisation occurs. An analysis of knowledge structures offers an explanatory framework concerning what knowledge is made available to whom and why. To re-cap, in this study, ITE is being analysed as a regional field, dependent on recontextualising principles. Therefore the appropriate form of knowledge structuring for a region is that of a *Vertical discourse*. Within Bernstein's concept of *Vertical discourse* there are two contrasting knowledge types, *Horizontal* and *Hierarchical*. The extent to which professional practice knowledge should be dependent on integrating principles typified by *Hierarchical Knowledge Structures* or the specialising languages of *Horizontal Knowledge Structures* will now be analysed. The literature review revealed several notable challenges in relation to the structuring of professional practice knowledge in ITE. These related to the nature of 'know-how' in the professions, varying conceptions of practice knowledge itself, the form of craft knowledge, and the role of tacit knowledge in discourses aimed at accessing professional practice knowledge. Each of these five challenges will now be analysed using Bernstein's constructs of *Hierarchical and Horizontal Knowledge Structures* as types of *Vertical discourse*.

3.5 Know-how and verticality

A dilemma faced by scholars in relation to interpretations of Bernstein's conceptual framework relates to the positioning of know-how and know-that. 'It is all too easy to conclude from Bernstein's account of *Hierarchical Knowledge Structure* that knowledge is defined only as theory, propositional knowledge' (Muller, 2014: 262). In other words

that know-that rests in the *Hierarchical Knowledge Structure* type of *Vertical discourse* and know-how rests in *Horizontal discourse* rather than as a form of *Vertical discourse*. If such (mis) interpretations are promoted by scholars, 'the door is opened to conflating knowledge structure with theory and to consign practice knowledge to *Horizontal discourse*. Both moves are wrong' (Muller, 2014: 262). These 'wrong moves' have been facilitated when a reductive rather than expansive view is taken of know-how. If know-how is conceived as solely 'contextual or practical knowledge in the corporeal sense' (Muller 2014: 263), then scholars have placed practice knowledge as a *Horizontal discourse* denying any access to recontextualising principles. Such harsh distinctions have been sustained by Cartesian dualisms seeking bifurcations. The literature review shared how the professions are characterised by more expansive forms of know-how. Visible actions are specialised by recontextualised principles and so know-how in the professions is characterised as *a Vertical discourse*. Within *Vertical discourse* there is then some debate about the concept of verticality. Verticality refers to how constituent concepts within a field are interrelated. Verticality is the faculty to 'move between subordinate and super ordinate levels of classificatory abstraction' (Muller, 2000: 182) – this is the essential characteristic of *Vertical discourse*, whether the *Knowledge Structure* is *Hierarchical* or *Horizontal*.

Within *Hierarchical Knowledge Structures*, verticality is achieved through integration. How verticality is achieved within *Horizontal Knowledge Structures* is less clear. Indeed this is a dilemma continues to occupy Bernsteinian scholars. For example some argue that knowledge structures either have 'verticality' or not (Muller, 2007b). Whereas

others, drawing on the work of systematic functional linguistics argue that there is a

cline of degrees of verticality (Martin and Maton, 2017), so that within each segment or

phenomena of a *Vertical discourse* with *Horizontal Knowledge Structure* there are

degrees of verticality. Figure 3.3 demonstrates how this interpretation of Bernstein's

knowledge structures can be represented diagrammatically.

Figure 3.3 Perspective on Knowledge Structures (Martin and Maton, 2017: 6)
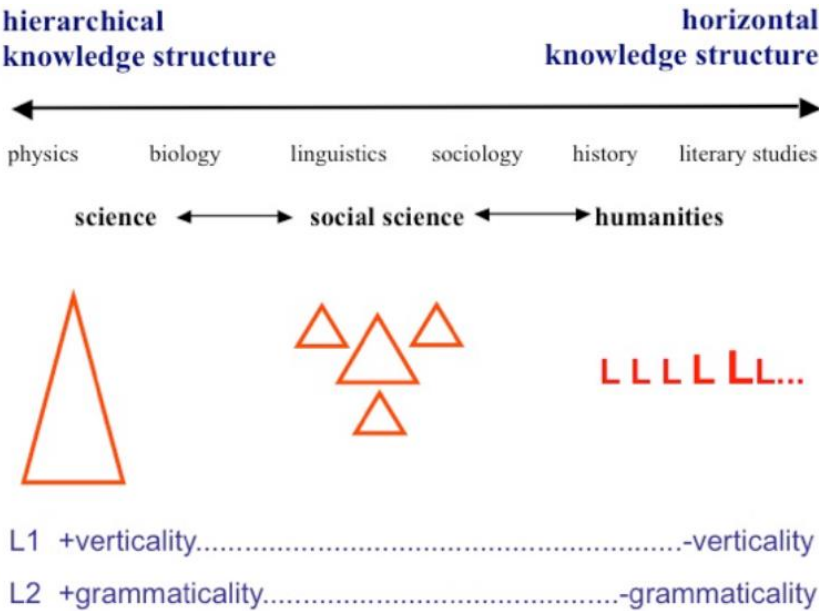
In this way, the social sciences can be represented as consisting of a collection of

concepts, each of which has varying degrees of verticality. The humanities are

represented by a series of specialised languages with the size of the Ls representing the

varying significance of each phenomena. In figure 3.3 the terms L1 and L2 have been

used to represent the internal (L1, verticality) and external (L2, grammaticality)

'languages of description' (Bernstein, 2000: 131). Verticality represents the organising

power of collective knowledge inner to the profession, and grammaticality represents

the ways in which specialised terminology is used to represent and so offer access such knowledge. If the professions are to meet the criteria of drawing on sacred knowledge, knowledge that distinguishes them from the everyday then verticality and grammaticality must be present in professional discourses. If ITE is understood to be a sub-field of the social science of education, drawing on the model represented in figure 3.3, it should have the capacity to be represented as a series of triangles of varying sizes. Some triangles will have a wide base and small apex, whereby lots of segments are drawn together through weak integration, and others that may exhibit fewer examples and greater integration, and so have a narrower base, representing fewer segments and a larger apex representing greater integration. Discourses in ITE should therefore enable the access to recontextualising principles that offer a form of connection and coherence between segments of practice. The empirical section of this thesis will analyse this claim.

If *Horizontal Knowledge Structures* can have a number of triangles, and Bernstein argues that a *Hierarchical Knowledge Structure* can also have a number of triangles, what distinguishes a *Hierarchical Knowledge Structure* from a *Horizontal Knowledge Structure*? Bernstein differentiates using the concept of grammar. Grammar refers to the external language of description for a field. Bernstein claims that *Hierarchical Knowledge Structures* do not need the concept of grammar as such intellectual fields comprise of fewer clearer integrating principles. *Horizontal Knowledge Structures* do need to pay attention to their grammar as the principles that connect and cohere separate segments are less visible. It is the strength of grammar that determines how conscious recontextualising agents or knowers are of their field's specialising concepts.

3.6 Practice and Grammar

Bernstein states that 'the recognition and construction of legitimate texts in a *Hierarchical Knowledge Structure* is much less problematic, much less a tacit process than is the case of a *Horizontal Knowledge Structure*, particularly those with weak grammars' (Bernstein 1999: 165). The use of the terms 'tacit' and 'legitimate' are particularly significant in this study. Bernstein uses the term 'grammar' to analyse the ways in which 'texts' or segments are recognised in relation to the recontextualising principles. These principles are the field's grammar. If principles are not referenced in tacit communication, in other words if the distal is not present and a 'thin' form of tacit knowledge is drawn upon, then principles become hard to access and can consequently be rendered inert.   If principles are not symbolised in some form they cannot recognised. As was examined in the literature review, tacit knowledge was made up of two elements, the proximal and the distal and both are co-present in tacit knowledge. Both therefore also need to be co-present in a *Vertical discourse*, the proximal representing the visible context and the distal representing the principle. *Vertical discourses* draw on both forms. Dilemmas occur if one is focussed on at the expense of the other.

 Where grammar is strong, the rules of connection and coherence are explicit. Principles are named and clear. The distal as well as the proximal are referenced. One does not replace the other. Grammar is used to name the principle so that the logic of the relationship can be evaluated. The distal is given an external language of description.

Such grammar (specialist vocabulary) references the purposing principles that individual practises dwell in. It is the field's grammar that enables access to verticality. If there is no grammar there is no access to verticality. *Horizontal discourses* lack grammar. *Vertical discourses* have grammar.

In the *Hierarchical Knowledge Structures of Vertical discourses* grammar is essential and overt. In *Horizontal Knowledge Structures* grammar can be weak or strong. The strength of grammar represents different forms of relationship between the proximal or distal, conceptual or contextual, mundane or sacred. In *Vertical discourses* the type of relationship is significant. In *Vertical discourses* of a *Hierarchical Knowledge Structural type*, the distal dominates. It is the distal that integrates the proximate. In *Vertical discourses* of a *Horizontal Knowledge Structure type*, the relationship between the proximal and distal can vary. In a *Vertical discourse* of a *Horizontal Knowledge Structure type* with a weak grammar, the proximal segments are more to the fore, and so the distal is weakly present, consequently the verticality is weak. Coherence and connection are muted by a weak grammar. Whilst Bernstein described the two types of *Vertical discourse*, and recognised that different structures were consequently enabled, his ideas have been developed by scholars to suggest that within *Vertical discourses* grammar and verticality can vary. The notion of a 'sliding scale' between weaker and stronger grammars (Maton, 2009; Muller, 2009) suggests that change is possible within a field, and so a field is not 'stuck' as having a weak or strong grammar. Bernstein states that what 'is actually esoteric in one period can become mundane in another' (Bernstein 2000: 29).

Recognition that fields can change helps to 'shed light on disciplinary development' (Maton and Muller 2007: 28). The concept of grammar also helps to explain why some recontextualising fields are 'more capable of sustained intellectual progress than others' (Maton and Muller 2007: 26). This could account for example for contrast with medical professions and ITE in terms of professional practice.

The concept of changing the strength of grammar within a field also becomes significant for this thesis. A field's grammar can be weakened if there are a plethora of external languages of description. Bernstein stated that 'The number of languages internal to any *Horizontal Knowledge Structure* may be fewer in the case of strong grammar than the number internal to a *Horizontal Knowledge Structure* with a weak grammar' (Bernstein 1999: 166). Too many different terms negate opportunities for coherence and connection. If a field becomes too atomised, too particular, then opportunities for connection and accumulation of understandings are minimised. The Teachers' Standards (DfE, 2011) arguably offer a set of atomised statements that lack a reference to cohering concepts such as pedagogy. The lack of explicit reference to concepts weakens a field. A field therefore needs to benefit from a coherent relationship between the empirical and conceptual, the external and internal languages of description. It is important 'to relate the external conditions of the context of a field / arena to the internal conditions of the discourse' (Bernstein, 1999: 166).

Concern has been expressed about the lack of external language in initial teacher education. The work of Teacher Educators in particular has been limited by the lack of

grammar. The lack of access to principles has led to the predominance of description, limiting the development of the field. Description of performed actions is only one element of the entangled knowledge required in a know-how ability. Description prioritises the proximal at the expense of the distal. An issue can occur when a *Horizontal discourse* and a *Vertical discourse* of a *Horizontal Knowledge Structure* type with a weak grammar are confused. In a *Horizontal discourse* there is no grammar and no verticality. The action serves the purpose of the action. It is a flat line discourse. There is no purpose beyond the performed moment. It is not a pedagogic act. A *Horizontal discourse* has a different time and space dimension and so cannot be inserted legitimately into a *Vertical discourse*. If it is inserted then there has been a separation of the field from the form of discourse. This is because the specialising principles of the field cannot be accessed via a *Horizontal discourse*. Grammar cannot be accessed or developed, verticality cannot be enabled. Bernstein recognised that the 'separation of field from discourse may well distort analysis' (Bernstein, 1999: 166). Without a robust external language of description a field is deprived of a crucial resource. When teaching has been recognised as lacking such a language of description, Bernstein's theoretical framework offers an explanation as to why this could be the case. When a *Horizontal discourse* is inserted into a *Vertical discourse*, the connection with supervening purposes is lost, and this can be the result of the form that the pedagogic transmission takes.

3.7 Forms of pedagogic transmission.

When Durkheim (1912/2008) recognised that the professions access sacred knowledge, he recognised that such accessibility specialised that which might otherwise appear profane. In a similar vein Ryle (1949/2000) recognised the significance conceptual ability

within know-how, and that this involved access to the collective 'inner' knowledge. It is this knowledge that forms the distal in tacit knowledge and the grammar in *Vertical discourses*. It is not present in a *Horizontal discourse*. It is present to varied extents in *Vertical discourses*. The weakest from is the *Vertical discourse* of a *Horizontal Knowledge Structure* with a weak grammar. The weaker the grammar the nearer such a discourse is to a Horizontal discourse and this proximity can be problematic. The proximity is particularly problematic when a *Horizontal discourse* is presented as being a *Vertical discourse* or when a *Vertical discourse* is presented as a *Horizontal discourse*.

A *Vertical discourse* can become a *Horizontal discourse* when something is modelled, but the purpose not explained. If the *Horizontal* form is then presented as if it is a *Vertical* form, a lack of legitimacy results. The form of communication is therefore significant in relation to differentiating between *Vertical and Horizontal discourses*. Bernstein differentiates between 'three basic forms of pedagogic relation...explicit, implicit and tacit' (Bernstein, 2000: 199).

3.7.1 Tacit, implicit and explicit forms of pedagogic transmission

For Bernstein, a tacit pedagogic relation is one 'where initiation, modification, development or change of knowledge, conduct or practice occurs, where neither of the members *may* be aware of it. Here the meanings are non-linguistic, condensed and context dependent' (Bernstein, 2000: 200, my emphasis). The use of the term 'may' is significant. A tacit pedagogic relation is therefore one the occurs when either or both the transmitter and acquirer lack the means to access any meaning beyond the context *or* where the means are non-linguistic and condensed and so therefore the dependency on other forms of communication within the context is increased. An appreciation of

this difference is significant for this study. Bernstein recognised that an example of a

form of the tacit pedagogic relation would be that of 'modelling'. Interestingly Bernstein

further differentiates between two forms of modelling, that of primary and secondary

modelling (Bernstein 2000: 200). He describes 'primary modelling' as occurring when

'both the transmitter and acquirer are unaware of the pedagogic relation' (Bernstein

2000, 200). As was noted in the literature review, there are some acts which are

unthinking acts, and so fully consumed through their realisation. These are

communicated within *Horizontal discourses*. This form of pedagogic communication is

the 'primary pedagogic mode: primary in the sense of time and primary in the sense of

durability' (Bernstein, 2000: 200).

Bernstein states that 'it is necessary to distinguish between pedagogic consequences

and a pedagogic relation. All experiences carry pedagogic potential, but all experiences

are not pedagogically generated' (Bernstein, 2000: 199). In primary modelling an

experience is used up in the time and space of its realisation. Its relational potential was

not released. It was not used in a generative sense. It is consistent with the time and

space characteristics of a *Horizontal discourse*. Bernstein differentiated primary

modelling from secondary modelling. He states that primary modelling 'must be

distinguished from secondary modelling which is a deliberate and purposive relation

only for the acquirer' (Bernstein 2000: 200). Bernstein uses the example of information

giving and receiving and describes how in primary modelling information is given

regardless of the acquirer's needs, in secondary modelling the transmitter adapts the

information for the acquirer's needs. Therefore the transmitter has used a principle to

adapt the 'way' that they communicate, but have not informed the acquirer. Bernstein states that 'where the informer adapts the information according to perceived need...there is an element of recontextualisation which may have complex backing...I suggest that such a shaped response occurs in what I call horizontal discourse and is a *segmented pedagogic act* often exhausted at the point of its consumption' (Bernstein 2000: 200, original emphasis). For Bernstein if there is not connection beyond the segment then it is a *Horizontal discourse.* As tacit pedagogies do not connect segments, there is no verticality present moving forwards. This is tricky territory and with recourse to the work of Polanyi, secondary modelling is a *Horizontal discourse* for the acquirer, but potentially a form of *Vertical discourse* for the transmitter as the transmitter must be aware of a recontextualising principles in order to adapt the information. If it is a *Horizontal discourse* for the acquirer then over time this will become *Horizontal* for the field, moving the field to a generic structure ultimately as the recontextualising principle will be rendered inert over time (Muller, 2007b). If there is no connection between segments the principle becomes inert as it is not transmitted. This does not deny that 'In the case of segmental pedagogic acts there is always present an intention to initiate or modify or develop or change knowledge or conduct or practice or all three, although the acquisition of the criteria or information may not always be subject to transmission on the part of the transmitter, nor may the acquirer make him/herself available for evaluation' (Bernstein 2000: 200).

Bernstein contrasts the term tacit with the terms explicit and implicit. He states that: 'Explicit and implicit refer to a progressive in time pedagogic relation where there is

purposeful intention to initiate, modify, develop or change knowledge conduct or practice by someone or something which already possesses, or has access to, the necessary resources *and* means of evaluating the acquisition' (Bernstein 2000: 199/200, original emphasis). The term 'progressive in time' is significant. It is worth a reminder that a strong professional identity is a prospective one. 'Prospective identities are formed by recontextualising *selected* features from the past to stabilise the future through *engaging with contemporary change'* (Bernstein 2000: 68, original emphasis). In this way a professional develops the pedagogic means to intentionally select from the collective (previously thought) 'means' or 'resources' that characterise the distinctive nature of a field to specialise, organise and cohere their current practices. Bernstein references that such means or resources can be both human and non-human, through his use of the phrase 'someone or something'. In the empirical element of this research study, the 'someone' references the TE, as the transmitter and BT as the acquirer within explicit and implicit forms of pedagogic relation. The 'something' refers to materials from the ORF in the form of the Teachers' Standards (DfE, 2011) and Core Content Framework (DfE, 2019), as well as the SCITT's own documentation in connection with the Weekly Development Meetings (WDMS).

Explicit and implicit forms of pedagogic communication both carry a' visibility of the transmitter's intention as to what is to be acquired from the point of view of the acquirer' (Bernstein 2000: 200). In the explicit and implicit forms of pedagogic transmission, the TE, therefore needs to be specific and intentional about how and why they are modifying, developing or changing the conduct or practice of the BT and which

resources and means they are drawing on to affect this. The TE also needs to be conscious about the 'means for evaluation'. Bernstein deliberately emphasises the '*and*' in his statement concerning explicit and implicit pedagogic relations. An evaluative capability is an essential element of such pedagogic communications that shape practice. The evaluative capability is dependent on a grammar that enables verticality.

A conundrum them results in terms of craft knowledge in Bernstein's theory. Figure 3.4 clearly shows that Bernstein places crafts and their tacit transmission as a *Vertical discourse* not as a *Horizontal discourse*.

Figure 3.4 Vertical and Horizontal Discourse (Bernstein, 1999: 168)

D.R. = Distributive Rules
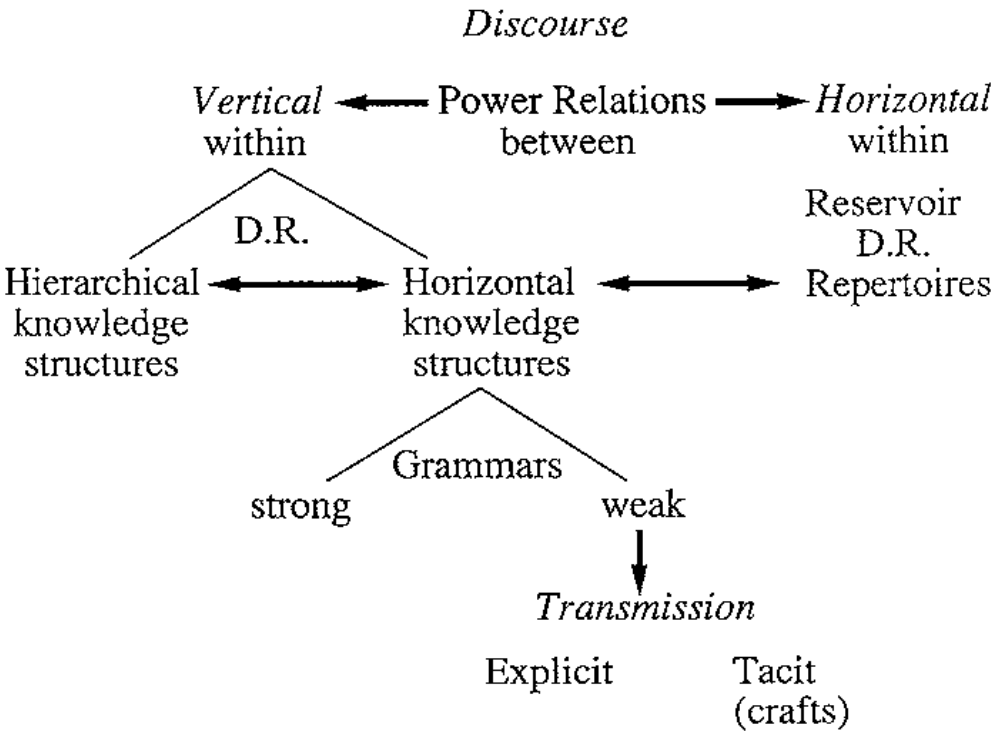
Bernstein describes craft knowledge thus: 'a 'tacit' transmission is one where showing or modelling precedes 'doing'. This is likely to occur with the transmission of crafts. From

this point of view, a craft is a modality of *Vertical discourse* and is characterised as a

Horizontal Knowledge Structure with a weak grammar, tacit transmission. This

knowledge structure is the nearest to *Horizontal discourse* emerging as a specialised

practice to satisfy the material requirements of its segments' (Bernstein, 1999: 168). In a

Horizontal discourse, the discourse is used up in the moment of its realisation and so

tacit transmission in this sense will be 'non-linguistic, condensed and context-

dependent; a pure restricted code relay' (Bernstein 2000: 200). This contrasts with tacit

transmission in a *Vertical discourse*, which is not condensed in the same way. In its

expanded form both the proximal and the distal are accommodated. In its condensed

from the proximal is emphasised and the distal is not transmitted symbolically. What all

forms of *Vertical discourse* share and so what craft knowledge 'shares with other kinds

of principled knowledge is that its procedures can only be understood if "interpreted"

through a principle. Procedures on their own turn into algorithms' (Gamble 2003: 86).

For this study, it is important to recognise that despite 'its apparent context dependence

craft knowledge lies inside *Vertical discourse* because the particulars or 'bits' must hang

together…There is always a relation to something outside of the material context'

(Gamble, 2001: 197). There is recognition that in craft knowledge the communication of

the connection to the 'something outside' of the material context may not be linguistic

but it must be symbolic. Gamble in her study of cabinet makers recognised the

importance of diagrammatic representations which signified 'that which is present but

not visible' (Gamble, 2001: 198). The use of diagrams to enhance the expanded nature

of tacit knowledge is a feature in the empirical element of this research study too. The

graphical profiles created using Legitimation Code Theory (Maton, 2014) are a form of visualisation that recognise the presence of both the particular and the systematic. 'Visualisation thus compensates for the lack of a clear syntax' (Muller 2007c: 242). If that which is present but not visible is minimally referenced then in such cases the craft knowledge, 'barely hops over the border between *Horizontal* and *Vertical discourse'*…in order to move further into *Vertical discourse* [it] needs explicit pedagogy' (Gamble, 2014a: 64). The recognition that craft knowledge barely hops over the border is significant. It has to 'hop' it can't slide. There is a barrier. The barrier is accessibility to meaning. In order to be a *Vertical discourse*, access to principles must be enabled. In a *Horizontal discourse* the 'way' itself is embedded in the unity latent in the contextual segmentation of this discourse' (Bernstein, 1999: 165). The term unity recognises that the meaning and the context are one in the same thing. They are self-referential, action references action.

Importantly Bernstein then goes on to differentiate between 'a way' of doing and developing 'a gaze'. A gaze involves accessing a grammar in a conscious manner and it is the difference between a way and a gaze that is significant in appreciating the difference between a *Horizontal* and a *Vertical discourse*. In a *Vertical discourse of a Hierarchical Knowledge* type, 'in the end, it is the theory that counts' (Bernstein, 1999: 165). In a *Vertical discourse of a Horizontal Knowledge type*, 'what counts in the end is its specialised language, its position, its perspective, the acquirers "gaze"' (Bernstein, 1999: 165). Bernstein acknowledges that there is a 'resemblance, at a fairly abstract level between horizontal knowledge structures, particularly and especially of the weak

grammar modality and the horizontal discourse' (Bernstein, 1999: 165). The difference

relates to the difference between 'a way' and 'a gaze'. The way is more a form of kinetic

communication, primary modelling. It is a form of pedagogic transmission that is used up

in the time and space of its realisation and so is context specific rather than systematic.

In order for systematic knowledge to develop access must be given to symbolic

meanings. In professions such as teaching such meanings are communicated

linguistically as well as kinetically. A reliance on modelling is therefore insufficient as

whilst this may communicate 'a way' it does not communicate the intellectual means

needed for intelligent know-how or a *Vertical discourse* and the associated development

of a navigational gaze.

3.8 The significance of the navigational gaze

In order to secure a *Vertical discourse* with a *Horizontal Knowledge Structure* type a

'gaze' has to be acquired. The significance of a gaze is, that it enables the acquirer (the

BT) to recognise how what they are doing is a legitimate part of the professional field.

For the transmitter (TEs), they need to be conscious of the gaze that they are drawing

upon, as a gaze is 'a particular mode of recognising and realising what counts as an

'authentic' sociological reality' (Bernstein 1999: 165-note 8). A gaze is not therefore an

individual perspective or story, but involves accessing the specialising language

associated with a field. In this sense a gaze is a consequence of 'the recontextualising

principle constructing and positioning the set of languages of a particular *Horizontal*

Knowledge Structure or privileging a particular language in the set' (Bernstein 1999: 170,

original emphasis)**.** Bernstein termed this the 'navigational gaze' as the TE navigates the

field and makes selections from it. In this study the term navigational gaze is applied to analysing the selections made by both the TE (PRF) and official documentation (ORF) to explore their relationship. The analysis of this relationship is realised through investigating the forms of discourse evident in the weekly development meetings (WDMs).

The WDMs represent practice segments. The CCF (DfE, 2019) and Teachers' Standards (DfE, 2011) represent the official specialised language or grammar for the field.   In developing a navigational gaze, Bernstein warns of the dangers of volatility. If there are too many segments or too many specialised languages in a field then coherence and connection is limited and the field becomes weakened, such that it may be hard to differentiate it from a *Horizontal discourse*. If the field is weakened to the extent that it becomes fragmented rather than segmented, this is when a *Horizontal* rather than a *Vertical discourse* results. The difference between segments and fragments is substantive for Bernstein's framework. A segment is a part of something, a fragment is a part that has become separated. A gaze can only be developed if there are segments that are to benefit from a form of connection and coherence. Too many segments or too many specialised languages 'fragment the experience of the acquirer and shatters any sense of an underlying unity' (Bernstein, 1999: 170).

The TE therefore needs to access a gaze that is informed by an array of specialising languages (grammar) that is not too diverse. It is by accessing conceptual terms that the discourse is 'lightened' from its context. Too many terms confound such a property. By

accessing and applying conceptual terms in an evaluative discourse of realised actions,

the TE is giving the BT access to the collective or inner purposes of the professional field

within which they dwell. It has been argued that the Teachers' Standards (DfE 2011)

represent a fragmented articulation of the profession. If TEs draw on the Teachers'

Standards alone then fragmentation rather than segmentation is likely to occur. This is

because the Teachers' Standards are based on a reductive form of know-how that limits

the development of conceptual abilities as a legitimate element of professional practice

knowledge. The Teachers' Standards focus on the individual and so is open to

interpretation rather than strongly regulated by systematic knowledge. Bernstein noted

that 'The more open the discourse to the inquirer, the greater the contextual support

necessary to ensure a vertical orientation or navigation' (Bernstein, 2001b: 374).   In

order to cohere and to enable recognition and realisation of the field's distinctiveness, a

'specialised forms of consciousness' (Maton and Muller: 2006: 28) needs to be accessed

as without 'the constraints provided by a disciplined conception of knowledge

development, the prospects of a more coherent, and therefore more powerful form of

educational knowledge are constrained' (Hordern, 2018b: 798). Consequently for initial

teacher education, a 'weakness of our knowledge base may give rise to ambivalent

professional identities' (Shay, 2012: 314). Ambivalent in the sense that there is a lack of

cohesion and so individual contexts can dominate. Bernstein recognises that 'where

theories and methods are weak, intellectual shifts are likely to arise out of conflict

between *approaches* rather than a conflict between explanations, for, by definition,

most explanations will be weak and often non-comparable, because they are approach

specific' (Bernstein, 1977/ 2003: 167-8; original emphasis). Such an approach is

specialised by the *knower* rather than providing an identity *for* a knower' (Bernstein,

1997 / 2003: 106-110 original emphasis). If individual knowers or individual contexts are prioritised then 'the dominant perspective within any transmission may be a function of the power relations among the teachers, or of pressure from groups of acquirers, or, particularly today, a function of indirect and direct external pressures of the market or state itself' (Bernstein 2000: 164). Arguably when teaching is classified as a semi-profession, it is as a consequence of such state and market pressure and pressure from a fragmented system. The Teachers' Standards (DfE, 2011) and CCF (DfE, 2019) articulate the profession as a series of individual and individualised actions rather than referencing shared meanings. The argument for such an articulation is based on relevance. Just over a decade ago the scene was set to 'reform teacher training to shift teachers out of college and into the classroom…so that more heads can train teachers in their own schools' (Gove, 2010). This resulted in an increase in the number of providers and an increased variation in the format of teacher education. The relevance argument was seductive to a sector in which academy freedoms had been promoted 'giving professionals more scope to drive improvement' (Gove, 2010). However without recourse to the specialising purposes of the profession such seductive freedoms based on the argument of relevance could unwittingly (or wittingly?) de-stabilise the profession. A focus on contexts (time and space specific) at the expense of systematic knowledge is in danger of confusing *Horizontal and Vertical discourse* properties. Whilst calls to make the field relevant are appealing, social realists recognise dilemmas associated with such a move. It has been stated that 'calls to change education to be more like everyday knowledge fail to understand the difference between Horizontal and Vertical discourses, in effect they call to the end to education – they want to make the sacred profane' (Maton 2007b: 242).

3.9 Relevance and Meaning

Bernstein counsels caution in regard to the seduction of relevance. Rather he urges a field to consider 'how to combine relevance and meaningfulness…and to put these two together' (Bernstein 2000: 164). If attention is paid to both then 'you cannot design a pedagogy without making explicit the regulative discourse which generates it' (Bernstein, 2000: 380). It is therefore incumbent on a professional field to make explicit the regulation principles that inform it. If such regulation principles are solely based on contextual relevance then principled meanings are not accessed. Yet again Bernstein is prioritising a relational pedagogy. A focus on relevance alone emphasises 'only context dependent practical mastery rather than context independent symbolic mastery' (Maton 2007b: 242) It relates to the reductive articulations of know-how, tacit knowledge and craft knowledge. Such a privileging focuses on training rather than education, competence rather than performance.

Professional practice knowledge structures for Bernstein therefore need to articulate the entangled relationship of meaning and relevance. Such fields cannot be dependent on one or the other. It is in appreciating the relationship between relevance and meaning that 'the guarantee of the legitimacy, integrity, worthwhileness and value of the knowledge and the special status of the knower' (Bernstein, 2000: 46) can be found. Such a relational knowledge involves recognising 'both the limiting power of forms of regulation and their possibilities, so that we are better able to choose the forms we

create rather than the forms created for us' (Bernstein 2000: 210). In order to recognise forms of regulation Bernstein returned to the concepts of classification and framing.

3.10 Power and Control in the Pedagogic Discourses of ITE in England.

Bernstein drew on the concepts of classification and framing to free himself 'from the imperfections of socio-linguistic theorising' (Bernstein 2001b: 371) so that he could make explicit the logic of pedagogic discourses through code modalities, such codes represent the relative strength of classification and framing. The concepts of classification (power over knowledge structures) and framing (control over forms of pedagogic structures) enables researchers to show how pedagogic discourses 'shape consciousness differentially' (Bernstein 2000: 4) through an epistemic rather than linguistic means. Crucially for this research project the concepts reveal connections at different scales and create the means for the 'possibilities of change' (Bernstein 2000: 4) through revealing 'the interactional consequences of the relation between institutional and segmental pedagogies' (Bernstein 2000: 79).

An emphasis on 'interactional consequences' puts under the spotlight how the relationship between official (institutional) and practice (segments) are legitimately put together (communicated). Bernstein stated that 'classification refers always to relations between contexts, or between agents, or between discourses, or between practices' (Bernstein, 2000: 17). He went on to note that 'The classificatory principle provides the key to the distinguishing feature of the context and so orientates the speaker to what is expected, what is *legitimate* to that' (Bernstein, 2000: 17, my emphasis). Significantly

for my research project, 'Classification holds together in one concept, horizontal

relations and vertical or hierarchical relations. Further, the concept, as we will see can

relate macro-structural and micro-interactional levels of analysis' (Bernstein, 2000: 100).

The concept of classification can therefore be used to analyse the consequential impact

of the forms of knowledge structure evident at different scales. Importantly too,

classification has a relationship with framing. Framing refers to the locus of control

within a category or context. Bernstein notes that 'Where framing is strong, the

transmitter has explicit control over selection, sequence, pacing, criteria and the social

base' (Bernstein 2000: 13). Bernstein noted, that at 'the micro level it is made explicit,

although sometimes missed by some commentators, that *'message' can change 'voice'*.

In other words, *the outcome of framing* has the potential to *change classification*

(Bernstein, 2000: 125, my emphasis). The concept of change involves agency. For

Bernstein agency achieved through a recognition of 'both the limiting power of forms of

regulation and their possibilities, so that we are better able to choose the forms we

create rather than the forms created for us' (Bernstein 2000: 210).

Framing = <u>instructional discourse</u>   <u>ID</u>

            regulative discourse   RD

The rules of social order (specialisation) the regulative discourse and the rules of

discursive order (selection sequencing pacing and criteria of knowledge) instructional

discourse are in a form of pedagogic relation. Instructional discourse is always

embedded in the regulative discourse. 'Pedagogic discourse is the rule which leads to

the embedding of one discourse in another, to create one text, to create one discourse'

(Bernstein, 2000: 32). According to Bernstein often people make a distinction between 'the transmission of skills and the transmission of values. These are always kept apart as if there were a conspiracy to disguise the fact that there is only one discourse' (Bernstein, 2000: 32). So the discourse of instruction is dependent on regulation. If the field or an aspect of a field is regulated (classified) as a *Horizontal discourse* then the form of instruction is context bound, it is contextually relevant. If the field is regulated as a *Vertical discourse with a Horizontal Knowledge Structure* then there should be access to both relevance and meaning. The strength of the relationship will be dependent on the strength of the grammar which will determine the verticality.

Currently within the English context, it could be argued that the regulation of the discourse is *Horizontal* or very weakly *Vertical*, resulting in a competency articulation of professional practice knowledge. A competence is a practical accomplishment, time and space bound and lacking pedagogic potential, as shown in the literature review. A competence model is dependent on 'the present tense as the temporality modality' and 'clearly bounded' spaces' (Bernstein 2000: 46). Bernstein contrasts a competence with a performance model. In a performance model, time and space are accessed differently. The focus is not solely on the present. In performance models, 'Space, time and discourse do give rise to explicit structures and classification and, although these may become sites of contention, they do both constitute and relay order' (Bernstein 2000: 47). The collective concepts established for the profession are accessed to give meaning to relevant practices. In performance models 'the future is made visible, but that which has constructed this future is a past invisible to the acquirer' (Bernstein 2000: 48) Therefore it is the responsibility of transmitter to access that past, the reservoir of inner

knowledge of the professional field, often through accessing its grammar or form of meta-language. Through a meta-language or visualisation of meanings, access is given to the immaterial so that it can be made material through recontextualisation. If a field is regulated by *Horizontal discourses* such knowledge cannot be accessed. If it is of a very weak *Vertical* form, then such knowledge is not evenly distributed. Some may have access, and others not. Even those who can access such meanings, these are likely to be in a very restricted form and so would be 'typical of someone in a relatively unspecialised context…and predisposes that person to context specific meanings' (Maton and Muller, 2007: 16). A field with a stronger grammar is likely to recognise that they are working in 'a more specialised context and with a more mediated relation to the social base' and so the grammar will give that person access to 'universalistic, non-local, context independent meanings' (Maton and Muller, 2007: 16). It is access to context-independent meanings that was recognised in the literature review as being a distinguishing feature of what makes for a profession. The professions therefore benefit from accessing a form of discourse that recognises the significance of the relationship between the everyday (mundane / profane) and conceptual (esoteric/ sacred), so that the two forms of knowledge are brought into a productive relationship with each other and not separated or dislocated. Such a form 'is able to realise more combinatorial possibilities than a restricted coding orientation (Maton and Muller, 2007: 16). In order to access a range of possible combinations rather than seeking a singular reproductive solution, TEs and BTs need to participate in the space of the discursive gap. This is where access is given to both contextual and systematic knowledge in a relational manner.

3.11 The significance of the discursive gap

Following in the Durkheimian tradition, Bernstein's framework was dependent on the relationship between two forms of knowledge, sometimes referred to as the mundane (every-day) and esoteric (systematic). Importantly Bernstein recognised that 'the line between these two classes of knowledge is relative in any given period. What is actually esoteric in one period can become mundane in another. In other words, the content of these classes varies historically and culturally' (Bernstein 2000: 29). Bernstein was acknowledging here how knowledge structures can change over time. In order for change to occur there needs to be 'an indirect relation between meanings and a specific material base' (Bernstein 2000: 30). If there is a direct relation, 'a meaning is wholly consumed by its content' (Bernstein 2000: 30). The meaning is context bound and so lacks 'a power of relation outside the context' (Bernstein, 2000: 30). Therefore meanings which 'create and unite two worlds' must 'create a gap or a space' (Bernstein 2000: 30). Importantly this gap is 'not a dislocation of meaning, it is a gap' (Bernstein 2000: 30). Bernstein uses the term '*potential discursive gap*' (2000: 30, original emphasis) to describe such a space. As it is a potential for 'alternative possibilities, for alternative realisations between the material and the immaterial. The gap itself can change the relation between the material and immaterial' (Bernstein 2000: 30). So if the gap is framed by a strong grammar, a different discourse results to that framed by a weak grammar. The gap can only be present in a *Vertical discourse*. In a *Horizontal discourse* these is no gap as the action self-referencing. It is important to note that when a gap is present in a *Vertical discourse*, it does not represent a dislocation, rather it represents the space for reasons and reasoning. The space may be expansive in the case of a strong grammar, or limited in a weak grammar. The space is limited by the proximity to context.

It is important to note that Bernstein acknowledges that such a discursive gap 'can clearly be both beneficial and dangerous at the same time. This gap is the meeting point of order and disorder of coherence and incoherence' (Bernstein 2000: 30). In this study the WDMs are analysed to reveal the extent of their discursive gap, so as to explore the relationship between the materials of practice and the meanings associated with such materialisations. Appreciating the gaze of the TE is fundamental to such an analysis. The gaze of the TE is an example of power and control exercised within the discursive gap. The extent to which they can reach out to a specialised language for the profession is part of such power and control. However as was acknowledged earlier in this chapter, whilst a TE may be operating within the PRF, they are also operating in the ORF, and the ORF also exercises power and control through the materials of practice.

3.12 Conclusion: The challenges remaining.

Bernstein's conceptual framework recognises the significance of pedagogic discourses as a form of apparatus that have a material effect on and materialise knowledge structures. The professions are acknowledged as having a regional structure, as the draw on both contextual and systematic knowledge. The ways in which these two forms of knowledge are brought into a relationship matters. If there is no relationship, and contexts dominate a *Horizontal discourse* results. If there is a weak relationship between systematic and contextual knowledge, with contexts still dominating then a weak *Vertical discourse* results with a limited discursive gap resulting in a weak regional field or even a new region. A *Vertical discourse of a Horizontal Knowledge type* can be strengthened when increased access is given to systematic knowledge, such that this form of knowledge is used relationally to specialise the contextually based knowledge.

The relationship involves iterative movements between the two forms of knowledge. Bernstein likens such iterative movements to waves. The size and shape of the wave determines its properties, but in turn its properties are determined by factors that have formed the wave. Bernstein states 'Think of a carrier wave. What is carried depends on the fundamental property of the wave', Bernstein then uses analogy of a hi-fi system 'When the tuner is activated, what is heard is a function of the system carrying the signal.' He goes on to discuss pedagogic communication 'We know what it carries, but what is the structure that allows, enables it to be carried? This is very similar to the distinction between language and speech. It is as if when we study pedagogic communication we study only the surface features, only its message, not the structure that makes the message possible' (Bernstein 1990, IV: 169 quoted in Moore, 2013a: 102). Bernstein is encouraging an investigation of the structure of pedagogic discourses, not just the words that are uttered, but rather the meanings that the words carry and the effects that these meanings have on the structuring of knowledge.

Despite the detail of his insights, Bernsteinian scholars (Martin, 2007, McPhail, 2016) continue to grapple with clarifying the differentiation underpinning types of *Vertical discourse*, and with carefully discerning between a *Horizontal discourse* and a weak form of *Vertical discourse of a Horizontal Knowledge Structure* type. For example, the term 'horizontal discourses of a specialised kind' (Martin, 2007) has been applied to music education (McPhail, 2016) as a way of managing the puzzlement as to why Bernstein places fields with 'weak grammars and tacit transmission' (Martin, 2007) in a vertical discourse. I argue that this is an unnecessary complication, to add yet another type of discourse to Bernstein's framework, rather a more sensitive examination of *Vertical*

discourses of a horizontal type, building on the work of Gamble (2006, 2014a, 2018) enables a realisation as to why Bernstein considered discourses of a weak grammar and tacit transmission to be vertical. The differentiation between *Horizontal discourses* and *Vertical discourses of a Horizontal Knowledge Structure* type remains a 'very important educational issue' (Martin, 2007: 241) as 'constructivist interpretations…subsume the nature of knowledge transmitted and the form of its transmission into the notion of shared or situated practice' (Muller, 2007c: 241). The concepts of *Vertical and Horizontal discourses* remain an area of concern for Bernsteinian scholars in the field of education (Hordern, 2021) as it has been recognised that 'Bernstein was aware that the subject was by no means fully explored by the time he died. A great deal more work remains to be done in refining what is meant by the notion of *Vertical discourse*, and in particular in refining the nature of *Horizontal* and *Hierarchical Knowledge Structures*' (Christie 2007: 258 original emphasis). In particular scholars have recognised that what 'Bernstein did not do is to say further how specialists develop concepts within each new horizontally evolved theoretical stem' (Young and Muller 2014: 8). This is particularly pertinent in relation to professional practice knowledge. There are inherent dangers if *Vertical discourse of a Horizontal Knowledge Structure* is seen as a lesser form of a *Vertical discourse of a Hierarchical knowledge structure type*, otherwise why did Bernstein differentiate between the two types of Vertical discourse?' (Muller, 2007c). The next chapter shares a response to this challenge and so claims to make a theoretical contribution to the field as it has been acknowledged that 'though Bernstein was aware of differences in his typologies [of horizontal and vertical discourse] to enact that awareness in research requires concepts that capture those differences' (Maton, 2014: 109).

Chapter 4: Extending the theoretical framework

4.1 Introduction

In relation to pedagogic practices, Bernstein drew on the concept of classification to signify the 'form of consciousness', the form of control which 'regulates and legitimises communication in pedagogic relations, the nature of talk and the kinds of spaces constructed' (Bernstein, 2000: 12). The term framing was used to 'analyse the different forms of legitimate communication realised' (Bernstein 2000: 12). Framing can be applied to 'any pedagogic relation' (Bernstein 2000: 12). In this study framing is applied to the analysis of the WDMs to explore the 'controls on communication in local, interactional pedagogic relations' (Bernstein 2000: 12). Framing therefore is 'about who controls what' (Bernstein, 2000: 12). It is about control over who determines the form of communication, the sequencing and pacing of the communication and the criteria used to justify these decisions. If framing is strong, the transmitter has explicit control. Framing can vary in different elements of the discourse. In order for TEs as transmitters to have control, they need to be aware of both the professional identity that they are communicating and the ways that the form of communication can have impact. TEs currently are aware of the Teachers' Standards and the CCF as material forms of the profession. The form that the communication takes is often presented to TEs as a style of mentoring or coaching (Mena et al, 2016), and so often this is analysed in relation to the development of human relations rather than with regard to epistemic relations. Chapter Three established that the form the discourse takes (Vertical or Horizontal) and the type of Vertical discourse enacted has an impact on professional identity. Bernstein was clear that framing can change classification. He stated that 'framing relations could

challenge the power relations imposing or enabling the classification' (Bernstein 2000: 204). In Chapters Two and Three concerns have been shared about the nature of control on the profession in England by the ORF. If the form of discourse can change what knowledge is prioritised, then there is much to be gained by enabling professionals to be conscious of the power of the form that the communication takes. In order to raise such awareness within the PRF, there needs to be greater clarity about these different forms and their impact. Chapter Three ended with the recognition that Bernstein did not say how framing can change classification in Vertical discourses of a Horizontal Knowledge Structure type, just that it has this potential. In order for this potential to be realised the concepts of Vertical and Horizontal discourse need to be developed further.

I argue that the prioritisation of observation and modelling which has given undue prominence to the individual, both the particularities of the individual context and person, limits or even denies access to the cohering concepts of the profession of teaching. This occurs when professional practice knowledge is 'delocated' (Wheelahan, 2006: 15) from Vertical discourses of a horizontal type and relocated in either Vertical discourses of a hierarchical type or Horizontal discourses, changing the nature of knowledge and the processes through which it is acquired. When located in Horizontal discourses, practice knowledge is particularised, existing as particles of knowledge. When located as a Vertical discourse of a hierarchical type, the significance of the site of practice is denied as integration is prioritised, sites are seen as exemplification rather than as active elements in recontextualisations. There is therefore the need to cleavage the space between the Vertical discourses of a hierarchical and horizontal type in order

that the structure of professional practice knowledge can be better understood, so that boundaries between different forms and types of knowledge can only be crossed knowingly as 'boundaries are the condition both for the constitution of sense and for the transcendence of boundaries' (Muller, 2000: 76).

Previously discourses in ITE have been analysed for their coaching or mentoring style rather than their epistemic form (Cohen, Hox and Kaplan, 2013; Ellis, Alonzon and Nguyen, 2020; Mena et al, 2016, Perry et al, 2019). Such analysis prioritises the observable or surface elements of a discourse. The 'apparatus' of the discourse is seen as being inert in relation to knowledge construction. Bernstein's recognised that discourse as an apparatus is an active element in knowledge structuring. The apparatus of a Vertical discourse of a Horizontal Knowledge Structure type is a particularly complex form of apparatus. The complexity lies in the different relationships that can be manifest within it between contextual and systematic knowledges (Martin, 2007; Muller 2007c). In order for systematic knowledge to play a part in a Vertical discourse of a Horizontal Knowledge type, a discourse needs to be recognised as carrying such a form of knowledge, and not simply consisting of the surface level interactions that can be observed in the immediacy of a context. It is a focus on the immediacy of contexts that has led to an 'othering' of theory and practice. Such 'othering' occurs if a dialogue that takes place in practice is only seen to carry the practical. In order to dig beneath the surface of such dialogues, Bernstein presented the concepts of Vertical and Horizontal discourse in a form of fractals (figure 3.4). Fractals offer a spatial structure that is only partially visible at the surface, a little like a wave. Revealing what lies beneath the surface of a discourse is important if, as Bernstein was eager to do, the 'distorting

simplicities of a two-column fractionating dichotomy' (Moore and Muller, 2002: 632) are to be avoided. It has been recognised that Bernstein's concepts of Vertical and Horizontal discourse have been misinterpreted as a 'fractioning dichotomy' (Moore and Muller, 2002: 632).

When a Vertical discourse is seen to represent 'knowledge-that' and a Horizontal discourse is associated with 'knowledge-how', professional practice knowledge is associated with a Horizontal discourse and in a Horizontal discourse, conceptual abilities are not present. Such an association denies 'intelligent know-how', when a professional practice has co-present has both an intention (motive / purpose) and a realised objective entangled or interacting within it. These are two elements within an entity. The entity is the activity. In order to realise the transmission of a professional activity in this way a Vertical discourse needs to be accessed. It is in a Vertical discourse that systematic knowledge is accessed. In order to justify the articulation of intelligent know-how as a form of Vertical discourse, there is the need to move away from Cartesian dualisms. Bifurcations have rendered invisible the significance of the structuring that lies beneath the surface of the two forms of discourse. In particular the discernment between Vertical discourses of a Horizontal Knowledge Structure type and Vertical discourses of a Hierarchical knowledge type have not been more fulsomely explored when the term 'Vertical discourse' alone is used. There is much to be gained by exploring this differentiation further in relation to the development of professional practice knowledge. In order to facilitate this Barad's (2007) application of quantum theory to the social sciences is drawn upon.

By using quantum rather than classical theories a detailed analysis of the significance of time and space can be facilitated. Contextual and systematic knowledge can be recognised as co-mingling (Guile, 2018; Guile and Unwin, 2019) so as to specialise each other. To re-cap Durkheim recognised that when the two forms of knowledge are co-present they change each other. It is through such relational connections that new knowledge is created. In this way context specific interactions contribute over time to systematic knowledges. The flow is two way in regions that 'face both ways. In order for there to be flow, systematic knowledge needs to be recognised as being co-present in professional practice. Acknowledging the co-presence of systematic knowledge involves drawing on the collective specialising knowledge for the profession. As such knowledge is weak or absent in the Teachers' Standards, enabling such forms of discourse is particularly challenging within ITE currently in England. However Bernstein was eager that his framework should be one of interruption. I argue that by focusing intensively on how time and space are entangled in types of Vertical discourse, new understandings in relation to Bernstein's framework can be developed. These new understandings in relation to knowledge structuring can then be drawn upon to justify and facilitate change. In order to create these novel insights, Barad's (2007) social materialist framework is used to enrich and extend Bernstein's conception of Vertical discourse of a Horizontal Knowledge Structure type.   This is because whilst Bernstein focuses both on 'the ways in which the structures of knowledge differentiate access to socially powerful knowledge and on the ways in which the structures themselves have causal properties that further contribute to the structuring of knowledge…he does not provide a basis for

judging the epistemic claims of theories' (Wheelahan, 2006: 8). It is how these causal

properties are manifested and justified in both dialogues and documentation (materials)

in initial teacher education that becomes the key focus for this research project, as the

differentiation between the hierarchical and horizontal types of Vertical discourse has

puzzled Bernsteinian scholars (Gamble, 2003, 2018; Wheelahan, 2006; Martin 2007;

Muller, 2007; McPhail, 2013). This study aims to contribute an original theoretical insight

in this regard by foregrounding the nature of Vertical discourses of a horizontal type that

access the conceptual mechanisms that specialise professional knowledge without

'glossing over the constitutive role of work in the development of professional expertise'

(Guile, 2018: 187).

Social and critical realists acknowledge that society, including the professions, gain

insights into the social world because agents 'are not external to the facts described but

make up part at least of the reality of those facts' (Outhwaite, 1998: 283). Barad (2007)

refers to agential cuts as being specific intra-actions which 'enact what matters and what

is excluded from mattering' (Barad 2007: 148). Agential cuts are therefore about both

matter and meaning within a realisation. The observation of the materialised is

insufficient to access meaning and so Barad refers to the 'material-discursive' in which

'discourse and matter are understood to be mutually constituted in the production of

knowing in a flow of continuous differentiation' (Lenz-Taguchi, 2014: 268). Such an

insight has resonance with challenges highlighted in the literature review for example

Ryle's claim that when an agent is doing something intelligently that they are doing one

thing and not two (Ryle, 1949/2000: 32) Polanyi's search for the means to explain how

tacit knowledge is an internalised connection between two forms of knowledge without doing damage to this relation by separating the distal from the proximal (Polanyi, 1966/2009: 34) . Barad's insights offer the theoretical means to recognise that 'discourse and matter are understood to be mutually constituted in the production of knowing in a flow of continuous differentiation' (Lenz-Taguchi, 2014: 268). Objectivity is achieved through accountability to the 'specific materialisations of which we are part' (Barad, 2007: 91). Such insights are consistent with social realism's recognition that knowledge is objective (but still fallible) if it is caused by its object and 'not by some feature of its subject other than that subjects opened to the effects of the object' (Collier 2003: 135).

4.2 Sustaining a focus on realism

In articulating the agency of matter, Barad's theories enrich Bernstein's framework by offering the means to consider how conceptual knowledge materialises in Vertical discourses of a Horizontal Knowledge Structure type. A Baradian social materialist perspective enables a reading of Bernstein's pedagogic device such that researchers can 'take much more seriously the implicit, invisible and affective aspects of the pedagogic device' (Ivinson and Singh, 2018: 467). Importantly for this thesis, such an approach 'widens the terrain of the pedagogic device to get a better grasp on quantum time-space configurations' (Ivinson and Singh 2018: 467). I argue that quantum rather than Cartesian conceptions of time and space offer the means for widening the cleavage between Vertical and Horizontal discourses in relation to structuring professional practice knowledge and for differentiating between Vertical discourses of a Horizontal and Hierarchical type. The theoretical contribution of this research study is the

application of Barad's insights to those of Bernstein, so as to develop the conceptual means to expose the logic of the relationship and the co-presence of both contextual and conceptual knowledge in navigational gazes.

Whilst Barad's theoretical framework increasingly used in educational contexts (Bozalek and Zembylas, 2017; Murris and Bozalek, 2019; Murris and Hayes, 2020; Murris and Kohan, 2020), I have not been able to find examples of its application to initial teacher education or to empirical data. Rather it has been used to underpin diffractive readings (Jackson and Mazzei, 2012; Mazzei, 2014) and interviews (Lenz Taguchi, 2012). A diffractive reading is different from critique as 'approaches are respectively read through each other in a relational way, looking for creative and unexpected provocations, strengthening these, rather than using atomistic binary logic to compare one with the other' (Murris and Bozalek, 2019: 873) .

Barad drew on physicist Niels Bohr's Copenhagen Interpretation of phenomena at the quantum level and his recognition of the Complementarity principle in which electrons can behave both as particles and as a wave, acknowledging the significance of the apparatus used to measure the observations (Barad 2007: 102). Drawing on Bohr, Barad foregrounds the significance of entanglements in which the apparatus is accorded agency and extends these findings to social research. Barad's transposition of Bohr's insights has been subject to criticism on three main counts, firstly the primacy of Bohr's account and secondly calling into question whether the quantum scale can legitimately

be applied to social phenomena and thirdly the extent to which Barad's (2007) concept of agential realisms is realist or relativist.

 In relation to the first concern, Barad has been criticised for 'failing to acknowledge that other explanations have been offered' (Fox and Alldred, 2021: 6) in relation to quantum phenomena. It has been suggested that Barad has over-used Bohr's theory of quantum entanglement without recognising that in itself this is one 'agential cut' or diffraction amongst others (Hollin et al, 2017). This may have been true of her early work, but subsequently Barad acknowledged that 'there are multiple interpretations of quantum physics' (Barad 2014a: 30-footnote 5). Sociomaterialist researchers have therefore been encouraged to develop a more critical analysis of the physics underpinning Barad's (2007) claims (Hollin et al, 2017, Faye and Jaksland, 2021, Everth and Gurney, 2022). In order to address such unease, I refreshed my appreciation of physics in general and quantum theory in particular by accessing a range of texts (Al-Khalili, 2007; Brooks, 2016; Rae, 2015; Rovelli, 2016). I have been careful in my application of diffraction and agential realism, reading these concepts in relation to social realist insights, so that each expands and enriches the other in a rigorous and accountable manner. The use of Barad's (2007) concepts are always justified in relation to the challenges and opportunities made explicit in the literature review.

 Secondly concerns have been expressed in relation to Barad's (2007) work and the challenges of transposing ideas from one field (physics) into another (social sciences) (Fox and Alldred, 2021). I recognise that disquiet has been expressed in relation to

Barad's extrapolation of insights gained from quantum physics at the microscopic scale to the social scale (Everth and Gurney, 2022). Hence my use of both Bernstein and Barad's frameworks, as Bernstein's work recognises the significance of the inter-play of different scales, and I have applied Barad at the micro-scale. I have also triangulated Barad's insights with other sociomaterialist scholars (Edwards and Fenwick, 2015).

Thirdly, in terms of the criticisms that a diffractive methodology is overly 'researcher centric and context-dependent' (Fox and Alldred, 2021:6). In this study I have addressed these concerns by sustaining the critical realist emphasis on the underpinning mechanisms of knowledge structuring that inform the objectivity of knowledge. I have problematised Cartesian dualities and in particular the first-person perspective justified by the conception of the mind matter dualism (Descartes, 1641). I have used these insights both to re-asses the significance of reflection and reflexivity as highlighted in the literature review and to analyse my own researcher positionality (see Chapter Five). Consequently I am able to draw on Barad's insights in relation to quantum entanglements so as to further an appreciation of Bernstein's concepts of Vertical and Horizontal knowledge-structuring within professional practice discourses.

In order to realise such a theoretical contribution, first Barad's application of quantum physics to conceptions of time and space in and for the social sciences is explored. Secondly the active role that material 'apparatus' has in discourses is analysed by drawing on Barad's application of the work of Niels Bohr to the social sciences. Thirdly the concept of diffraction is considered so as to recognise the significant differences

between individualised reflections and diffractive forms of knowledge that draw on enduring concepts. In conclusion the significance of the concept of the navigational gaze is revisited, through Barad's lens of agential realism. This chapter contributes informed connections between the conceptual, methodological and empirical elements of this research study.

4.3 Quantum appreciation of time and space

Cartesian epistemology is built on classical physics which 'assumes a Cartesian cut, and absolute a priori distinction, between subject and object. Bohr understood that this cut did not precede measurement interactions, but was rather produced by them' (Barad 2012b: 19/20). The notion of a 'cut' between subject and object has proven to be problematic in discussions of professional practice knowledge. Previous studies of practice knowledge within ITE have depended on Cartesian dualisms, 'othering' practice and theory, know-how and know-that, schools and HEIs, individual contexts and collective endeavours. In separating rather than differentiating between knowledge types, relationships between them are destroyed, resulting in altered knowledge structures and structuring. I argue that a different epistemology that of quantum entanglements, is needed, if the logic of the relationship between different forms of knowledge is to be better appreciated: one which recognises co-presence.

In order to respond to this need, Barad recognised that there was a demand for 'a radical reworking of the classical worldview, including a new quantum epistemology that does not take the Cartesian subject-object dualism for granted' (Barad, 2014b: 173). As a

consequence she draws on quantum understandings rather than Cartesian dualisms. Classically, time is assumed to have a constancy, independent of the observer and so is conceived of as 'an external parameter' (Barad 2007: 179). As such when observing a practice, what is seen, is a moment of isolated practice, a moment of realised activity, a skill or a technique evidenced momentarily. There is a focus on the individual or the particular. As such the practice is self-referential, and reproductive.

A classical interpretation of space, assumes a Euclidian understanding, the geometry of physical space or 'space as a container' (Barad, 2007: 179). In this way the location of practice has often been seen to be 'containing' a practice, limiting that practice or 'what matters' to that specific space. This contrasts with a quantum perspective that acknowledges the entangled simultaneity of difference within a phenomenon. Barad draws in particular of the work of Niels Bohr (1885-1962) and the Copenhagen interpretation of quantum mechanics. In quantum theory, unlike classical physics, there is a difference between what we see and what actually exists, acknowledging that the act of observation affects the observation itself. This view of quantum mechanics offers a different insight to the pedagogies of modelling and observation, as it recognises that how we observe and how we model affects what is modelled and what is observed. A quantum perspective acknowledges that within the physical time and space of the observation, also present are conceptual understandings created at different times and in different spaces which inform and influence current actions and choices. These are carried by both human and non-human materials, and need to be acknowledged if practice is to be appreciated in an expansive sense. Practice cannot be limited to the

time and space of its realisation. To do this denies the presence of the collective. In order to appreciate how understandings from the physical work can be used in the social world, Barad draws on Bohr's interpretation of Thomas Young's (1773-1829) two slit diffraction experiment from physics.

4.4 The material effects of different forms of apparatus

The two slit diffraction experiment demonstrated that under certain conditions light behaves as a particle and under certain other conditions it behaves like a wave. Barad explains that central to Bohr's interpretation of the experiment is that the notion of wave and particle is not naturally inherent but rather something that is created by the measurement of it, due to the particular apparatus used. Barad draws our attention to Bohr's recognition of the significance of the role of both apparatus and measurement in this experiment before making a linguistic connection.

Figure 4.1: The role of apparatus in the two-slit experiment
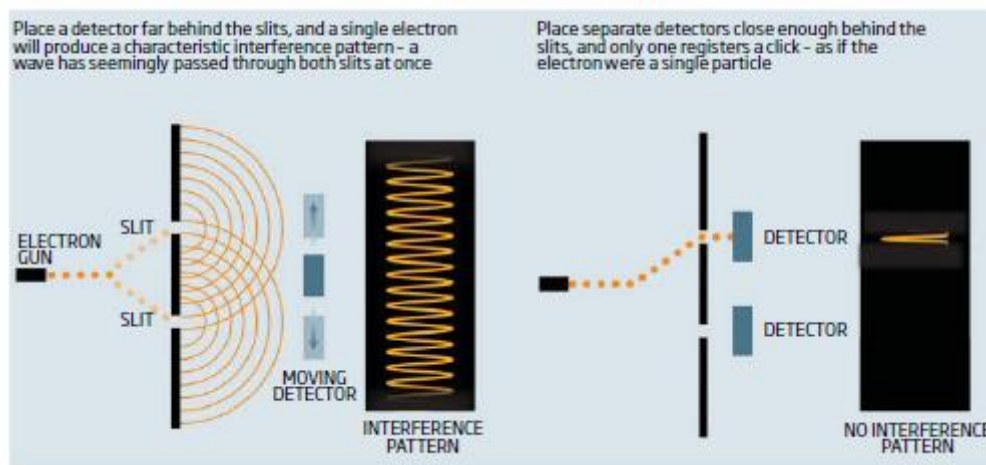
Source: New Scientist: The Quantum World (Brooks 2016: 8)

Barad states that for Bohr, the apparatus is not inert, but rather it helps to determine what is seen. Barad argues 'What we usually call a 'measurement' is a correlation or

entanglement between component parts of a phenomenon, between the 'measured object' and the 'measuring device' (Barad 2007: 337). What is seen is not a singular truth, but rather a version of different possibilities. These possibilities are not limitless as 'knowledge relies on constraints, i.e. that the meaning of any one concept is determined by its connection with other concepts' (Derry 2017b: 84). Barad acknowledges that when Bohr tried to make sense of wave/particle duality that he made 'one of the strangest moves in the history of physics: he turns his attention to the question of...language! (A respectable move for a scholar in the humanities but what on earth is a physicist doing examining the nature of concept use and meaning making?!)' (Barad, 2010: 252). Barad goes on to state that 'Bohr's unique contribution is this: he proposes that we understand concepts to be specific material arrangements of experimental apparatus…. Concepts are indeterminate outside the appropriate material conditions needed to make them intelligible…. Every concept is haunted by its mutually excluded other. This is what Bohr means by *Complementarity*' (Barad 2010: 253, original emphasis). How practice is conceived has a material effect on how it is realised. If it is regarded as a Horizontal discourse, time and space dependent, then the 'apparatus' of Horizontal discourse will 'measure' practice in a particularised way. Horizontal discourses particularise practice. Practice in this sense has properties associated with particles. Barad contrasts the properties of waves and particles.

Barad recognises that unlike waves, particles 'are localised entities that take up space; they can be here or there but not in two places at once' (Barad 2018: 65). In a Horizontal discourse a practice is time and space bound. However a particle, measured using a different apparatus, can produce a wave or diffraction pattern. 'According to quantum

physics this is because a given particle can be in a state of *superposition*' (Barad, 2018: 71, original emphasis). Superposition is the ability of a quantum system to be in multiple states at the same time until it is measured. So it is possible for a particle to be observed as both a particle and a wave, it is not inherently one thing or another until it is measured. If a list of atomised competencies forms the apparatus to view a practice, then that is what will be looked at (particles), alternatively if an apparatus is used that can bring into view that a particle of practice can be seen in relation to a collective concept, the relationship between the proximal particle and distal concept can be observed as a relational wave. The logic of the relationship, the diffraction pattern, the relational wave, can be observed and then examined or evaluated. The size and shape of the wave observed makes a difference (see Bernstein's wave analogy at the end of Chapter Three). The relationship is present (the proximal and the distal) but a form of apparatus is needed that brings both the proximal and the distal into view. Vertical discourse of a Horizontal Knowledge Structure is such a form of apparatus. Horizontal discourse is not. The strength of the grammar in a Vertical discourse of a Horizontal type determines the type of diffraction pattern that can be seen. In order for the wave pattern to be brought into view the arrangement of the apparatus needs to be different from that used for the particle observation. The particle observation is proximate, close to. The wave observation involves a (discursive) gap between the two forms of knowledge (slits) and both forms need to be activated.

In recognising that how something is measured determines the form that it takes, rather than the phenomena being innately one thing or the other. Barad establishes the material significance of apparatus within phenomena, for the social sciences. Bernstein

acknowledged that pedagogic discourses were forms of apparatus. Barad notes that for 'Bohr apparatus are particular physical arrangements that give meaning to certain concepts to the exclusion of others; they are the local physical conditions that enable and constrain knowledge practices such as conceptualising and measuring; they are productive of (and part of) the phenomena produced; they enact a local cut that produces "objects" of particular knowledge practices within the particular phenomena produced' (Barad 2003: 819). Barad recognises "concepts" as being 'actual physical arrangements (Barad, 2003: 819) 'In other words materiality is discursive (i.e. material phenomena are inseparable from the apparatuses of bodily production' (Barad 2003: 822) As such apparatuses are the material-discursive practices that determine what matters, 'apparatuses are the material conditions of possibility and impossibility of mattering; they enact what matters and what is excluded from mattering' (Barad 2007: 148). It is the form of discourse that affects how practice is seen, whether it is particularised or 'measured' relationally. This can be represented diagrammatically. In order to create these representations I used the Bio Render software (https://biorender.com).

Figure 4.2: Representation of Horizontal Discourse Knowledge Structuring

Knowledge Structure: Fragmented and isolated particles of particles or practice

Horizontal Discourse

Weekly Development Meeting

Concept   Context

Observation Apparatus

Practice

Classroom

In a Horizontal discourse, the particular is particularised. Practice is seen as being time and space bound. Practices are reproduced in a context for a context. A Horizontal discourse results in individual stories, fragments of practice. There is no discursive gap or space for difference. The discourse is a flat line, context specific description. In official documentation, professional practice would be represented as an atomised set of techniques. Competencies would be demonstrated. Evaluation would depend on description of personal priorities. A generic knowledge structure – particles of practice – dependent on 'the way'.

Figure 4.3: Representation of a Vertical Discourse of a Horizontal Knowledge Structure

Type with a weak grammar

Knowledge Structure: A series of triangle with a narrow base and small apex.

Weak Grammar Vertical Discourse

Weekly Development Meeting

Concept

Context

Observation Apparatus

Practice

Classroom

The wave is shallow and weak, as contextual (proximal) knowledge dominates. A weak grammar is used. Principles are implicitly rather than explicitly referenced. The navigational gaze of the transmitter (TE) does not always make the acquirer aware of the principles. The transmitter is aware of principles and uses these to weakly organise and systematise practices for the acquirer through some reference to the collective knowledge of the profession. Typical of a semi-profession or new region, where practice contexts dominate. So whilst the region looks both ways, it is looking more towards the proximal context than it is to the distal (collective). Knowledge is thinly tacit. There are segments of practice weakly connected. Official documents will consist mainly of specifications of practice demonstrations with some reference to cohering concepts, dependent on a weak gaze

Figure 4.4: Representation of a Vertical discourse of a Horizontal Knowledge Structure type with a stronger grammar	
Knowledge Structure: Fewer wider based with a higher apex wider-based triangle	A steeper wave results. There is increased verticality enabled through more explicit reference to principles through a meta- language or visualisation. Both the acquirer and transmitter are explicitly aware of the recontextualising principles. There is a strong meta-language. This is typical of a strong regional knowledge, a profession such as medicine that is informed by reasoning. There is the space for reasons in the dialogue represented by the larger range in verticality. Official documentation will specify a range of concepts with examples of appropriate contexts. Knowledge is more thickly tacit – there is reference to both the proximal and the distal. Dependent on a stronger navigational gaze.

Figure 4.5 Representation of a Vertical discourse of a Hierarchical Knowledge Structure type	
	If the concept or theory dominates then a Vertical discourse of a hierarchical type results. The concept or theory dominates and integrates a range of segments. Official documentation specifies a few concepts. It does not differentiate contextual information. Explicit connections are made.
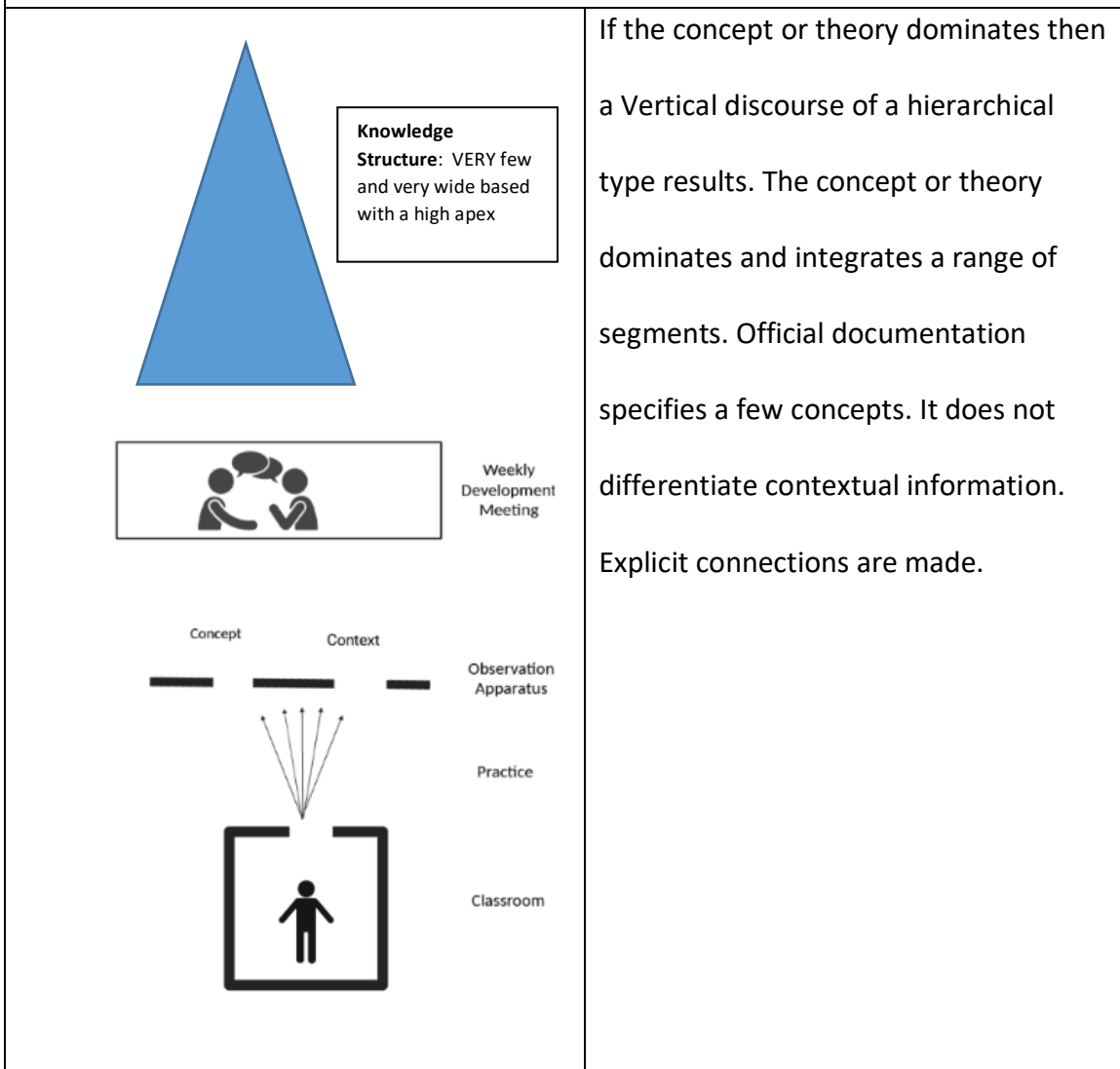
The diagrams recognise that form that the discourse takes has a material effect on the structure of knowledge. If the discourse is time and space bound (Horizontal) it has a different effect to a weak or strong Vertical discourse of a Horizontal knowledge type that is different again to a Vertical discourse of a Hierarchical type. Each form of discourse is a form of measurement. Bernstein states that 'measurement is the result of

something prior to measurement. And a component of that something is a developed sense of the potential of a phenomenon arising out of practice' (Bernstein, 1999: 165). If practice is measured a Horizontal discourse then it is measured in a way that limits its potential to the time and space of its context. How we measure practice limits its potential. If practice is measured as a Vertical discourse then practice is afforded the capacity of realising context-independent meanings through an iterative relationship between contextual and systematic knowledge in the discursive gap. The form that such a gap takes is different in weak and strong Vertical discourses of a Horizontal Knowledge Structure type which is different again to a Vertical discourse of a Hierarchical type. The latter is when few principles are used to integrate segments and is a type of discourse appropriate to singular disciplines. The field of ITE is a sub-field of the social science field of Education, and so is recognised as having a regional structure and so Vertical discourses of a Horizontal Knowledge Structure type are identified as being the most appropriate. The diagrams included in figures 4.2 – 4.4 are now plotted in relation to Bernstein's fractal representation. Figure 4.5 illustrates the significance of the form of discourse. It also illustrates the proximity of a weak Vertical discourse of a Horizontal Knowledge Structure type to a Horizontal discourse. This proximity is both significant and problematic. A Horizontal discourse does not carry systematic knowledge, and so if Horizontal discourses are used in professional practice knowledge, access to systematic knowledge is denied. Vertical discourses of a Horizontal Knowledge Structure type bring systematic and contextual knowledge into a relationship. It is the discursive relationship, the discursive gap that releases the power of systematic knowledge. When systematic knowledge is in a pedagogic relation with contextual knowledge each changes the other, creating new individual understandings and potentially over time new collective

understandings. The cleavage between Horizontal discourses and Vertical discourses of

a Horizontal Knowledge Structure therefore need to be clarified (figure 4.6).

Figure 4.6: Expanding Bernstein's conception of Vertical and Horizontal Discourse.
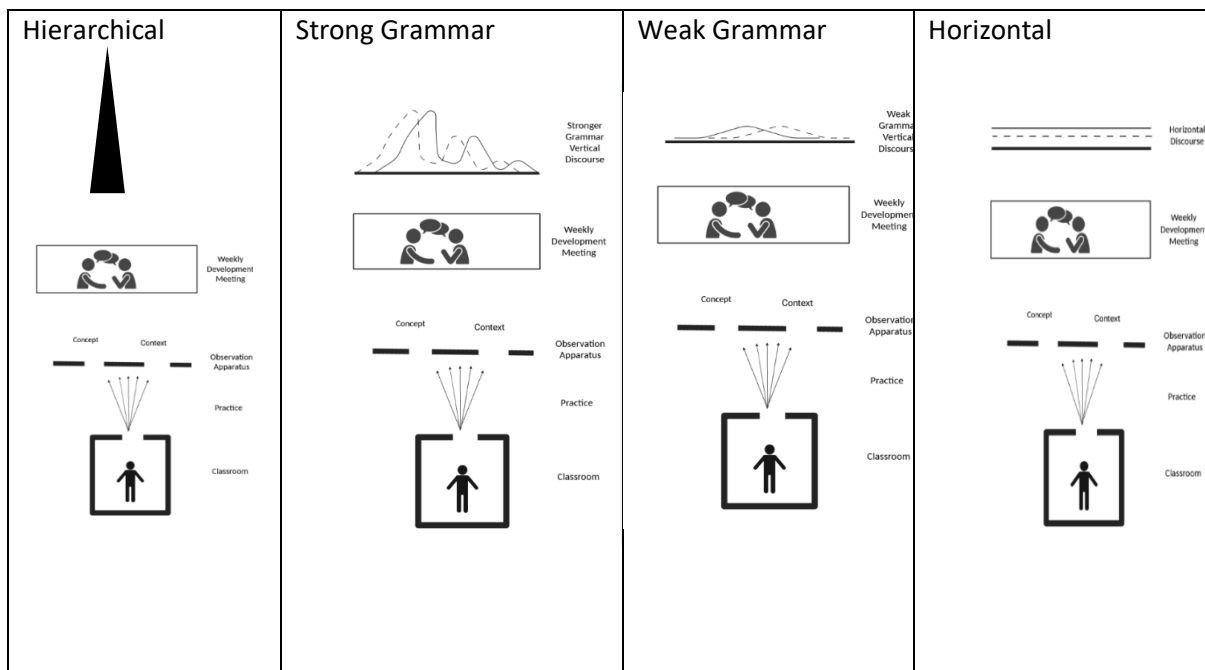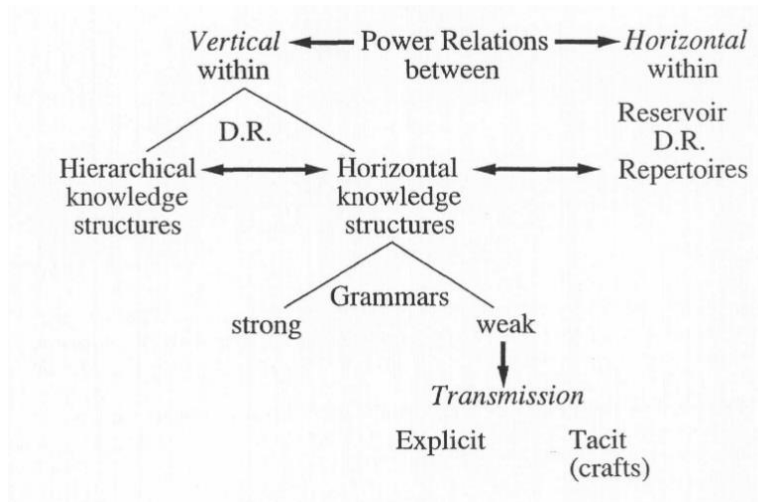
Clarifying the cleavage between Horizontal and Vertical discourses is tricky in ITE in England currently. The trickiness relates to the materials of the ORF that are of a very weak Vertical discourse of a Horizontal Knowledge Structure type. The weakness of the grammar in these documents leads to weak verticality, shallow waves. If the waves are to strengthen then TEs need to develop a consciousness of both the weak epistemic nature of official documents and the ways in which they can strengthen discourses so as to strengthen relations locally. If relations are strengthened locally then over time and space, pedagogic relations can be strengthened for the profession, if there is the means to connect segments. Currently teaching in England exists in a fragmented framework, fragmented by a myriad of organisations, in terms of both providers and school academy trusts. Cohering organisations such as the Chartered College of Teaching are beginning to offer a means for professional connections.

What was significant for Bernstein was that the discourse and field should be related, and so if the form that the discourse takes, was inappropriate for the structure of the field, significant dilemmas resulted. A professional practice field was a regional field, referencing both the inner specialising knowledge for the profession and being relevant to contextual sensitivities. To re-cap it should face (and contribute) both ways, towards more conceptual knowledge and towards contextual sensitivities. This simultaneity has proven to be particularly difficult to capture when Cartesian dualisms are used. Classical frameworks have often promoted a one-way approach, practice as the realisation of the collective and no flow back, or practice as being self-contained and not having the space for the collective means. Both are 'stuck' positions. Each render 'the other' form of

knowledge inert in practice, limiting practice and being inconsistent with a field that

depends on 'intelligent know-how'. The co-presence of different forms of knowledge in

a relational professional practice is evident in Ryle's articulation of intelligent know-how,

Polanyi's articulation of tacit knowledge, Winch's expansive notion of professionals as

professional technicians and Bernstein's conception of the discursive gap. Each of these

theories, including Bernstein's have been subjected to 'crude over simplification,

miscomprehension, as well as of political and ideological misuse' (Bernstein 2000: 197)

.Consequently professional practice knowledge has often been pigeon-holed into being

either a 'know-that' or a 'know-how' knowledge, 'othering', theory and practice rather

than appreciating that professional practice knowledge requires an appreciation of

principled practices, a form of knowledge that relates contexts and concepts in a variety

of ways.

If practice knowledge is not discerned relationally, then it can be recognised reductively.

It can be reduced to individual contexts or individual perceptions; it can be reduced to

the personalities, ideologies, or sensory perceptions of individuals, or the particularities

of a context. Alternatively it can be reduced to a theoretical understanding that lack a

sensitivity to the materiality of context. Such separations deny the significance of the

entangled relations that exist in practice between contexts and concepts. Mechanisms

for appreciating such entangled relationships need to be activated, so that

differentiating can be recognised as 'agential separability' rather than 'radical

exteriority' (Barad, 2007: 392). Social realists are concerned that knowledge should not

be reduced to knower perspectives and social materialists are concerned that the form

or matter of a discourse is given 'it's due as an active participant' (Barad 2003: 803) in other words that consequences of the material form that discourses as a measuring apparatus takes should be acknowledged. Barad states that 'differences are formed through intra-activity, in the making of "this" and "that" within the phenomenon that is constituted in their inseparability (entanglement)' (Barad, 2014b: 175). TEs therefore need to be aware of the different forms that discourses can take and their material effects, so that they can make informed choices.

4.5 Agential Realism and intra-action

The form that is materialised by a TE should not be an individual arbitrary choice. As Barad notes 'Bohr develops his epistemological framework without giving in to the despair of *nihilism* or the sticky web of relativism' (Barad, 2003: 813). In social materialist perspectives 'agency is not an individual property' (Barad 2003: 827). Which form of discourse is materialised is not simply a personal choice, but a consequence of previous interactions, or in Barad's terminology 'intra-actions'. The term intra-action is used to signify that 'knowing is a matter of part of the world making itself intelligible to another part of the world' (Barad, 2007: 185) and so agency is 'not an attribute, but the ongoing reconfiguring of the world (Barad 2003: 818). Any discourse emerges 'from a field of possibilities' (Barad 2003: 819). The possibilities are not boundless but are accountable to what is included and excluded by the field – the collective concepts. There is an ethical element to such choices. In terms of ITE the ethical element will relate to the values that specialise the profession. It is acknowledged that

'particular possibilities for (intra-) acting exist at every moment, and these changing possibilities entail an ethical obligation to intra-act responsibly in the world's becoming, to contest and rework what matters and what is excluded from mattering' (Barad 2007: 178). Ethical considerations are encapsulated in the profession's cohering concepts and so are employed in professional activities. In this sense they are lived rather than thought. Professional concepts are 'human made enactments that include and exclude and for which we are accountable' (Murris and Bozalek, 2019: 876). Accountability is generated through the dynamism of the concept – context relationship. Contexts are viewed as active spaces by social materialists. They are spaces that are both 'the results of intra-actions and have a material effect on subsequent intra-actions' (Fenwick 2016. 16). This perspective helps expand Bernstein's own reflections. Bernstein stated that 'the orientation of the grammar of Vertical discourse is towards the future on the basis of an invisible past, and the invisible past is a whole recontextualising apparatus…so there is a vast invisibility behind any sentence in Vertical discourse, a vast invisibility' (Bernstein, Cape Town, 1997 quoted in Shalem and Allias, 2022). As such a Vertical discourse is an assemblage or a 'complex emergent outcomes of intra-actions of people material, systems and ideas' (Fenwick, 2016: 16) As such Vertical discourses 'are reproduced across multiple chains' (Fenwick, 2016: 16). In this sense TEs and BTs when engaged in discourses are not simply engaged in mere talk, rather they are participating in *'dynamic (re) configurings <u>of</u> the world, specific agential practices / intra-actions / performances through which specific exclusionary boundaries are enacted'* (Barad 2003: 816, original emphasis). Therefore the pedagogic decisions they make will, 'influence the extent to which aspiring professionals are positioned to grasp the relationship between theory and practice or to perceive it as a divide they oscillate between' (Guile, 2014: 85).

If a TE draws on dualisms, then dualisms will persist. If they draw on relational knowledge, then a different form of professional practice knowledge will result. Bernstein recognised that 'the pedagogic discourse to be acquired is constructed by the recontextualising process of the transmitter (s) which creates a specific modality of the specialised knowledge to be transmitted and acquired' (Bernstein 1999: 172 Note 8). The concept of agential realism enriches the significance of Bernstein's concept of the navigational gaze. There is therefore much to be gained by making TEs aware of their role as epistemic agents so that they are conscious of the choices that they make and their responsibilities in enacting such cuts. It is important that these effects are paid attention to so that agential intra-actions can be recognised as causal enactments, as it is 'through specific intra-actions that a differential sense of being is enacted through the on-going ebb and flow of agency' (Barad 2003: 817).

4.6 Agency and materials

Agency, as was established in Chapter Two, for this study, includes non-human forms, and so includes materials such as the Teachers' Standards and the SCITT's materials. The 'acknowledgement of non-human agency does not lessen human accountability; on the contrary it means that accountability requires that much more attentiveness is paid to existing power asymmetries' (Barad 2007: 116-7). Considering how materials are used to inform and structure the knowledge transmitted in discourses is also significant. These materials are also a form of apparatus. They are not passive, they influence the discourse. The resultant discourse in turn 'constrains and enables what can be said, discursive practices define what counts as meaningful statements' (Barad 2003: 819).

Previously in Chapters Two and Three it was acknowledged that the materials of the Teachers' Standards (DfE, 2011) and CCF (DfE, 2019) offered a reductive view of professionalism. By drawing on social materialism the effects of these materials within discourses can be made visible. In order to achieve this the concept of diffraction is drawn upon. Diffraction enables an analysis of the 'heterogeneous and multiple history of a phenomena' (Cedar, 2015: 3). The concept of diffraction is therefore relevant to this study as it helps us to unpick how materials created prior to the discourse specialise the moment of the discourse itself.

4.7 Diffraction, Reflection and the Discursive gap

Diffraction is the physical phenomenon that occurs as waves emerge. Diffraction as a concept is significantly different to reflection. Reflection invites mirroring or reproduction. The literature review shared some challenges that related to the profession's dependence on reflective practices, particularly when reflection emphasised individual experiences or individualised contexts. In contrast, diffraction accommodates the processes of ongoing differences. Barad draws on the analogy of a sea wave (Barad 2007). A sea-wave is changed by the weather in a location several miles away to the moment that the wave is observed, as well as in the location itself. The form that the bedrock takes, invisible to the observer, also influences the shape of sea- wave. Diffraction pays attention to the impact of these 'invisible' but present differences. Diffraction 'is a mapping of interference, not of replication, reflection or reproduction. A diffraction pattern does not map where differences appear, but rather maps where the *effects* of difference appear' (Haraway, 1992: 300, original emphasis). In this research

study, the concept of diffraction is drawn upon in order to recognise the ways that

navigational gazes can have both a reductive and an expansive effect on the structuring

of professional practice knowledge, and how in turn each navigational gaze has been

influenced by prior materialisations. From this view point, 'diffraction is not constituted

as an inner mental activity inside a separated human being; rather it is an inter-

connected activity that entangles the human and the non-human' (Hultman and Lenz

Taguchi, 2010: 539). Importantly diffraction 'views difference as a relational ontology'

(Bozalek and Zembylas, 2017: 118). A relational ontology recognises the 'effect of

connections and relations within and between different bodies, affecting other bodies

and being affected by them' (Bozalek and Zembylas, 2017: 118). The concept of a

relational ontology is significant if professional practice knowledge is to be analysed as a

relational practice. A diffractive analysis offers a 'reframing of [the] systems of

knowledge and representation' (Grosz, 2017: 257), by being more fully cognisant of and

accountable for 'the concepts, affects and sensations they produce' (Grosz, 2017: 257).

In this case it matters whether practice is represented as a Horizontal or a Vertical

discourse and it matters whether there is a weak or strong grammar. It matters that TEs

are aware of the different manifestations of practice knowledge and practice discourses

and their relationship. Diffraction requires us to 'read insights through one another in

attending to and responding to the details and specifications of relations of difference

and how they matter' (Barad 2007: 71). In other word, we need to pay attention to what

is being carried in the discourse. It is acknowledged that 'diffraction is not a singular

event that happens in space and time, rather it is a dynamism that is integral to

spacetimemattering' (Barad, 2014b: 169). What happens 'in the moment' is dependent

on prior 'entanglements'. To interpret a discourse diffractively, what is being said is not

seen to be representative of the person or the moment but rather part of a 'wave-like

motion that takes account that thinking, seeing and knowing are never done in isolation

but are always affected by different material and human forces coming together'

(Palmer 2011: 8). In this sense 'the original wave remains within the new wave after its

transformation into the new one' (Barad 2007: 71-83)

4.8 Conclusion: The significance of waves.

Interestingly both Barad and Bernstein use the analogy of waves, and it is waves that are

profiled in Vertical discourses of a Horizontal Knowledge Structure type using LCT and

analysed in Chapters Six and Seven. Barad writes that 'diffraction has to do with the way

waves combine when they overlap, and the apparent bending and spreading of waves

that occurs when waves encounter obstruction' (Barad, 2007: 74). It is this movement of

overlapping, which signifies diffraction. Diffraction effects are the 'effects of

interferences, where the original wave partly remains within the new after its

transformation' (Barad, 2007: 71-83). In this study 'interference' is revealed as a variety

of scales. The WDM dialogues are coded and profiled in such a way so as to reveal the

intra-actions between the TE and BT in relation to knowledge-structuring. The form of

the TE's knowledge structuring is significant. The extent to which the TE has been

influenced by the SCITT's materials and the Teachers' Standards is significant. By plotting

the profiles diffractively the presence of these forms can be found in the visible

discourse. The form that the profiles take then enables further analysis, as the ways in

which the materials from the Teachers' Standards remain in the discourse can be made

visible. This study therefore uses diffraction as both a philosophy and methodology that

offers a 'way to figure difference differently' (Barad, 2014b: 170). Reading insights

through one another diffractively is about 'reading insights through one another for

patterns of constructive and deconstructive interference' (Barad 2012b: 12). It is this

'opening up' of relationality that is enabled through the empirical element of this thesis.

Barad (2007) offers researchers the following challenge: 'What if we were to recognise

that differentiating is a material act that is not about radical separation but on the

contrary about making connections and commitments' (Barad 2007:184). The next

chapter explains the methods used to justify a diffractive use of Legitimation Code

Theory so that this research study responds to Barad's challenge and opens the way for

greater sensitivity in relation to the structuring of professional practice knowledge

within ITE and the consequential impacts that such knowledge-making processes have

on the profession's identity.

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Chapter 5: Methodology

5.1 Introduction

Bernstein's pedagogic device 'valuably highlighted how intellectual fields developed over time but did not provide the means to engage with empirical research about these issues (Martin, Maton and Doran, 2020: 16). Diffraction 'opens the possibility of seeing how something different comes to matter, not only in the world that we observe, but also in our research practice' (Davies, 2014: 734). Legitimation Code Theory (LCT) offers an empirical coding and profiling framework that builds on ideas from Bernstein and that can be employed diffractively so as to reveal knowledge structuring processes. Bernstein referred to 'transmitters' and 'acquirers' in relation to forms of pedagogic communication. In relation to the concept of the 'navigational gaze', transmitters and acquirers are both 'knowers'. LCT is a tool that enables an analysis of the pedagogic practices of knowers (the apparatus of their discourse) in relation to knowledge. In this way Maton's (2014) development of LCT can be considered to be an elaboration of Bernstein's concepts of classification and framing adding an epistemic dimension in order that the knower and the form of their discourse is brought into view more explicitly.

LCT is applied 'diffractively' by first coding and plotting separately each participant's contribution to the discourse and then over-laying these. Social realism is concerned with discernment rather than separation, and so this methodological approach is consistent with the conceptual framing of the research study. The diffractive LCT profiles created are recognised as being an alternative form of apparatus for 'measuring'

professional practice knowledge-structuring, consistent with social material perspectives. Additionally the significance of the profiles being graphical visualisations of previously invisible knowledge-structuring processes is also acknowledged in the research methodology.

The empirical element of this thesis focuses on analysing dialogues that occur between teacher educators (TEs) and beginning teachers (BTs) so as to reveal their knowledge-structuring properties. Eight pairs of TEs and BTs volunteered to participate in the study, and it is their knowledge-structuring dialogues, realised through their weekly development meetings (WDMs) that are coded and profiled diffractively using Maton's Legitimation Code Theory (LCT). The WDM profiles are then further investigated in order to reveal the structural form of discourse. The graphical representations of the discourse make visible the extent to which the discourse relates to context sensitive (time and space bound) and/or draws upon systematic knowledge and are presented as cases.

5.2 Justifying the case-study methodology

There has been debate as to whether a case study is a methodology, a process that guides research, or a method – a tool to answer research questions. In this study it is used as a methodology 'to develop an in-depth, holistic understanding of a specific phenomenon within a specified context' (Sibbald et al, 2021: 291/2). The phenomenon being that of knowledge structuring in professional practice and the context being the SCITT. Each of the eight pairs are presented as a case. A case study methodology is

appropriate for this research as it can 'track and examine complex relationships, contexts and systems as they evolve' (Sibbald et al, 2021: 291). Whilst a case-study approach has been drawn upon in the social sciences over the last forty- years (Harrison et al, 2017: 1), it has continuously evolved. Indeed, this constant transformation has meant that this methodological approach has been 'frequently criticised due to its inflexible approach and inconsistent application' (Sibbald et al, 2021: 291). It is therefore important to clarify how this research study has drawn upon the case study methodology.

Given the study's foregrounding of the significance of the concepts of time space and matter in relation to professional formation, a post-positivist approach to case-study methodology (Yin, 2018) is focused upon. In this way the critical realist and sociomaterialist framing of the research is sustained. Each of the eight pairs' dialogues are not presented representationally but rather drawing on social materialist perspectives are analysed such that 'reality is viewed as a continual process of flux or differentiation' (Martin and Kamberelis, 2013: 670). The professional practice knowledge structuring of the eight pairs of TEs and BTs are therefore examined for both their current practices, but also the ways in which past and future practices are entangled. Rather than using representations of research findings that 'portray reality as straightforward, linear, cause and effect relations and ignore other forces at work' (Martin and Kamberlelis, 2013: 671), this study seeks to analyse 'the various ways reality might be produced and how different ways of producing reality have different social, economic and political effects' (Martin and Kamberelis, 2013: 672/3). This approach

contrasts with the bounded system of 'the case' presented by constructivists (Stake, 1995, Merriam, 1998). The analysis therefore seeks to make visible the otherwise invisible structures at work within a discourse, using the analytical tool of LCT framed by the theoretical insights from both Bernstein and Barad. In this way each set of case-study data is read as being but one realisation of networked intra-actions rather than being presented as a discrete case. Such an approach aspires to be 'generative rather than representational' (Martin and Kamberelis, 2013: 677) and ambitious to offer new and more desirable interactions by making visible the previously hidden knowledge structuring processes present in each discourse. Consequently an explanatory and exploratory rather than descriptive position is taken, emphasising the empirical nature of the study whilst also recognising the importance of context to the cases.

The analysis presented in Chapters Three and Four recognised that confusion and conflation can occur between *Horizontal discourses* and *Vertical discourses* of a *Horizontal Knowledge Structure* type. It was also established that *Vertical* and *Horizontal* discourses have different time and space characteristics. *Horizontal discourses* being context dependent, time and space bound. *Vertical discourses*, even in their weakest form involve accessing systemising principles in some way, as well as being sensitive to contextual constraints. The co-presence of both forms of knowledge within one phenomenon creates a discursive gap. It is in this gap that 'intelligent know how' is created. Professional practice knowledge was recognised as being particularly susceptible to being misrecognised as a *Horizontal* rather than as a *Vertical* discourse. The concepts of *Vertical* and *Horizontal* discourse are therefore fundamental to this

study and so need to be researched empirically as well as theoretically. The conundrum that I needed to solve was that whilst Bernstein's 'description of vertical and horizontal discourses is illustrative…the difficulty arises when we try to assign empirical instances to locations in the networks' (Dowling, 2009: 17). A solution was found in LCT.

5.3 Legitimation Code Theory (LCT)

LCT is an evolving sociologically based framework for researching, understanding and shaping knowledge practices. It aims to build 'knowledge about knowledge building' (Maton, 2014: 3). It forms a core part of social realism's 'broad coalition' of approaches that are predicated on revealing that knowledge is both socially produced and real in the sense of having effects, (Maton and Moore, 2009). LCT offers a framework which, through the processes of coding and profiling knowledge structuring, renders visible 'the practices and beliefs of actors as embodying competing claims to legitimacy' (Maton 2009: 45). These 'claims to legitimacy' can then be analysed in terms of their underlying structuring principles or 'legitimation codes' (Maton, 2009: 45). Such codes are the 'organising principles of dispositions, practices and fields' (Maton, 2014: 17). In making visible what the 'rules of the game are' (Maton 2014) in knowledge structuring processes, LCT enables researchers to 'find what lies beneath' (Georgiou 2020: 2), so that the previously unseen principles can be made visible, shared and if necessary altered. Alterations would be justified on the basis that the profiles revealed practices that were inconsistent with the recontextualising principles of the field, and so limiting progress either within the field or in relation to accessing the field. The social justice dimension of the LCT framework is significant. In making the 'rules of the game' (Maton,

2014) explicit, LCT enables the 'possibility of designing pedagogic interventions' (Szenes, Tilakaranthna and Maton, 2015: 589).

LCT is drawn upon in this thesis both to reveal the knowledge structuring evident in the existing dialogues between TEs and BTs and to suggest a different approach. The analyses of current practices are profiled in Chapter Six and reveal some challenges consistent with concerns raised in Chapters Two, Three and Four. In Chapter Seven an alternative means of structuring professional practice knowledge is discussed, one that is made evident through the empirical analysis of the data. The data is generated from a diffractive LCT analysis of a selection of weekly development meetings (WDMs) that occurred between the TEs and BTs within the SCITT. WDMs were selected as the object of study as these are the mechanisms used to describe, evaluate and develop professional practice knowledges during the school-based element of the SCITT's programme. They are a form of pedagogic discourse. As such they were investigated to ascertain whether the WDMs exhibit properties associated with Horizontal or Vertical discourses, and if they took the Vertical form, what type of verticality was evident (horizontal or hierarchical). The consequences of such knowledge-structuring forms and types were then examined in relation to professional identities. As knowledge-structuring has an impact on knowledge structures as well as vice versa, to complete the thesis, insights were then offered as to how different structuring underpins different professional identities with each identity in turn impacting on professional knowledge structures, such as the Teachers' Standards (DfE, 2011), differently. These alternatives are made visible in Chapter Seven and drawn to a conclusion in Chapter Eight. The

alternatives posited relate to contrasting forms of discourse stimulated by response to the LCT profiles rather than using LCT to seek a particular form of profiled outcome.

A criticism levied at some researchers is that they have used LCT as a categorising framework. In such circumstances the visualisations created using LCT can have a 'conservative and even deadening effect on pedagogic innovation and practice' (Tyler 2014: 1) as all that would be mapped are the 'surface distributions of semantic properties onto non-discursive social categories' (Tyler 2014: 1). In order to avoid such criticisms I was mindful that the LCT profiles that were created as part of this thesis should be used as a tool for examining the form and type of knowledge structuring rather than as an end point in themselves. I have therefore been conscious that the profiles in this study make visible 'the flow of ideas within and between these factions, and the ways that these shift over time in struggles for power and control over what constitutes valid knowledge' (Singh 2015b: 493). In order to make the different flows of ideas visible, the semantic profiles have been plotted diffractively.

Usually LCT profiles are plotted as a single line (see figure 5.1). In this study I have coded separately each participant's contribution and created superimposed profiles for each of the participants on one graph. An illustrative example is shared in figure 5.2. The profiles are therefore not presented as a 'type' but rather as a realisation of the intra-actions present in the discourse. The profiles make visible the invisible presence of knowledge-structuring. I then use the profiles as a form of apparatus diffractively, by taking the physical profiles back to the TEs and BTs so as to explore alternative knowledge

structuring opportunities. To plot each WDM section as a single line would have denied such differences and the material effects of such differences would have remained invisible and unexamined. I was concerned that in order to respond to the research questions that I needed to ensure that the focus on epistemological concerns was sustained. I therefore needed to analyse the dialogues semantically rather than socially or linguistically. Semantics focuses on the meanings of words in relation to their know-structuring potential rather than with the social aspects of language.

Three types of discourse were analysed semantically, those of the weekly development meetings (WDMs), an initial response (IR) conversation during which my influence as the researcher is made explicit, and a final review (R) dialogue that seeks to analyse the realised impacts of making knowledge structuring visible within professional practice. The Semantic dimension is one of one of the four active dimensions of LCT the others being, Specialisation, Temporality and Autonomy. Semantics is further divided into the concepts of semantic gravity and semantic density.

5.4 The Semantic Dimension of LCT

Maton first published his thinking in relation to semantic gravity following a Bernsteinian conference in 2007. Maton justified the need to build on Bernstein's concepts of Horizontal and Vertical discourse by stating that: 'Though touched by Bernstein's framework, the understanding of context dependency and complexity remain at best tacit, entangled and wholly descriptive. Theoretical development was thus needed' (Maton, 2020: 65). LCT's Semantic dimension consists of two concepts, one that analyses

the extent of context dependence of meanings (semantic gravity) and the other, the level of condensation of meanings (semantic density) in educational knowledge and fields of practice. An increasing number of studies utilise the Semantic dimension to explore how both context dependent and abstract meanings are evident within a variety of educational contexts. These include empirical studies in relation to chemistry (Blackie, 2014), nursing (Brooke, 2019) academic literacy (Kirk, 2017), literature essays (Christie, 2015), engineering (Wolff and Luckett, 2013), history (Martin et al, 2010), physics (Georgiou, 2016) and in research (Shay and Steyn, 2016, Hood 2016).

In this thesis, only semantic gravity (SG) is used to create the profiles. The concept of semantic density relates to complexity. This study did not investigate the BT's and TE's condensation of meaning of the concepts and criteria used, but rather focused on context dependency (SG). Context dependency is explored so as to reveal the extent to which knowledge-structuring is restricted to the particularities of the context, or related to symbolic meanings, which lift the material out of the context and relate it to professionally cohering concepts. It is therefore the concept of semantic gravity that is of most relevance to this study, due to its focus on the cline of context dependency. Semantic gravity is concerned with making visible the degree of context-dependence evident in knowledge structuring, through the creation of graphical profiles. These profiles give physical shape to the 'underlying principles that generate different forms of knowledge practices', (legitimationcodetheory.com). Through the creation of the profiles, the otherwise hidden 'legitimation codes' become a shared resource. Without

these visualisations, the forms that the knowledge structuring processes take would remain invisible and inert.

The profiles make explicit the knowledge structure and become a pedagogic means, or form of apparatus to inform future pedagogic choices. In this sense the profiles become part of the material-discursive intra-action of this study. The profiles reveal the navigational gaze of the TE and BT and therefore the criteria that are being used to structure professional formation. The profiles can be used to reveal the extent to which the gaze is focused on the local school context and the extent to which the reservoir of collective professional knowledge is referenced within the context. Stronger sematic gravity recognises elements of the dialogue that focus on the time and space bound specifics of the observed lesson. Semantic gravity is weakened when the discussion draws on some of the professions organising and specialising concepts. Waves are created when relational, or iterative movements occur between context dependent meanings and context independent substantive knowledges. The resultant profile represents the form of the navigation between the two knowledge forms. It reveals the pedagogic relationship that occurs within the dialogue. A relationship that would remain invisible without some form of materialisation. The profiles materialise the form that the dialogue.

Maton states that 'semantic profiling can be as simple or as sophisticated as the problem demands' (Maton, 2020: 67). A typified illustrative model is offered by Maton (2013) and shared in figure 5.1. This profile includes both semantic gravity and semantic

density, but as has been previously acknowledged, it is also possible to use each concept

independently (Maton, 2014, 2020).
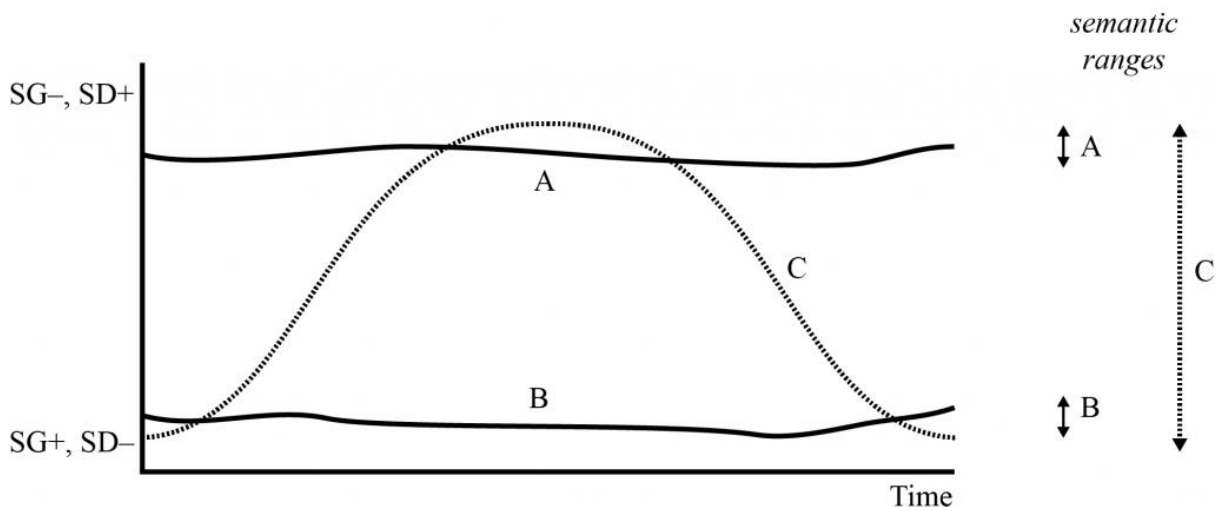
Figure 5.1 Three semantic profiles: Maton, K. (2013) Making semantic waves: A key to

cumulative knowledge-building, *Linguistics and Education, 24*: 18–22, page 13.

A high semantic flatline (A) represents context-independent meanings, the low semantic

flatline (B) represents context bound meanings. The semantic wave (C) represents a

semantic range, the relationship that occurs when different forms of knowledge with

different context dependencies and complexities are accessed in relation to the other

within a knowledge-structuring phenomenon.

 Taken on its own, the concept of semantic gravity (SG) 'refers to the degree to which

meaning relates to its context and may be stronger (+) or weaker (-) along a continuum

of strengths. The stronger the semantic gravity (SG+), the more meaning is dependent

on its context; the weaker the semantic gravity (SG-), the less meaning is dependent on

its context' in other words, the meaning is more abstract and context-independent

(Maton, 2020: 63). The allocation of the codes is determined by the translation device created for and unique to each research project. The translation device foregrounds the relationship between the analytic concepts that underpin the study and the coding system created for the empirical element of the study (Maton and Chen, 2016).

5.5 The Translation Device

The power of the translation device is that it enables 'others to see the basis of one's analysis' (Maton and Cheng, 2016: 47). In this way, the device opens up the researcher's work to critical discussion and 'allows the possibility of expanding the sphere of debate and extend the community' (Maton and Cheng, 2016: 47). Translation devices take on different forms, with the term 'external language of enactment' (Maton and Cheng 2016: 43) being used to determine a translation device that connects the theoretical and conceptual elements of the study and empirical data. In order to construct a meaningful translation device, I, as the researcher, needed to immerse myself in both the data and the theoretical frameworks. It is 'by plugging the theory and data into one another (Jackson and Mazzei note that 2012: viii) iteratively, and zig-zagging with both elements that the 'lightning bolt spark of creation and the cross-cutting path from one conceptual flow to another' (Jackson and Mazzei, 2012: viii).

The translation device that I created for this study, makes visible the specific codes used to categorise the relative strength of semantic gravity (see figure 5.3) present in the WDM dialogues analysed. The translation device makes explicit the descriptors that I

created, ensuring that the coding process is transparent and the study replicable. Each code description is allocated a numerical value that is subsequently used for the plotting of the semantic profiles. The development of the translation device is an iterative process, and one that demanded a considerable investment of time. Consequently the data was revisited repeatedly enabling the study to proffer deep theoretical, methodological and empirical contributions.

In order to construct this device, not only were the data sets and theoretical perspectives continually drawn upon, but also, I referred to previous studies that had used translation devices in relation to the Semantic dimension of LCT. These studies were analysed so as to justify the choices that I needed to make. They are shared in Appendix A. I recognise that each translation device is specific to each study. Each is not transferable to a new study in relation to its content, but only in terms of appreciating the conceptual principles that inform the construction of a robust translation device (Pountney and McPhail 2017). Whilst a translation device 'always refers to relations between knowledge practices and actors, these relations take different empirical forms with each problem situation' (Maton and Cheng 2016: 33). In constructing the translation device I needed to establish a defensible and justifiable connection between the theoretical frameworks and empirical coding.

The earliest example of a translation device that I accessed was included in Maton's (2009) paper which analysed two contrasting examples of curriculum (see Appendix A). Whilst Maton's device used six categories, the number of categories is not set, but

rather should be justified as appropriate for each study. In my pilot study I used a six-part device but this proved to be unnecessarily complex (See Appendix B). For the current study, I settled on a four-part translation device, consistent with the approach taken by Dorfling Wolff and Akdogan (2019: 50), (see Appendix A) in their study of chemical engineering students.

Numerical values between 0 and 4.5 were assigned to each of the four coding descriptors in order that words or phrases used by the TE and BT could be profiled for their degree of context dependency. The values were determined through an iterative process of applying the translation device to the transcripts that I had created for each dialogue (see figure 5.2 for an example). The translation device went through several versions during this process of refinement before I settled on the final values. An example of an extract from the transcription of a WDM discussion and profile is shown in figure 5.2

Figure 5.2 Indicative diffractive profile

4.32	BT	And then with the support staff,(3.5) not necessarily deploying the support staff (3), but I have worked with Jackie (4) this week
4.37	TE	Yep (3)
4.38	BT	In the performances (4), getting the props together and helping backstage with her

It should be noted that the higher the value the closer the plot is to the base of the y-axis; weaker semantic density/weaker abstraction. This is consistent with the profiling protocols for LCT but differs from usual mathematical conventions. Logically in terms of the concept of gravity, but illogically mathematically, the stronger semantic gravity is represented towards the base of the Y axis. The higher the number, the higher the degree of context dependency. It is worth drawing attention to this arrangement as otherwise misconceptions could result. Such misunderstandings could include a claim that because a knowledge is represented towards the base of the graph, that it is a 'lesser' knowledge. This is not the case. The profiling of a low line (SG++) is simply recognising that the practice is structured in a context dependent way and so is a different form of knowledge with different knowledge structuring characteristics and affordances to either the high flat line or wave. Equally a more context independent measure is not a 'better' knowledge form, it is simply a different type of knowledge.

These resultant profiles, I have termed 'diffractive semantic gravity profiles' as they plot the different context dependency of both the TE and BT so as to reveal the intra-active knowledge structuring within each dialogue. The TE's profile is represented by a solid line and square point symbol and any dialogue used as annotation is contained within a square styled comment box, whilst the BT profile is represented by a dashed line with a rounded dot point symbol and a rounded styled comment box. Additionally, when a profile includes my input as the researcher is represented by a dotted line with a diamond point.

The same translation device is used for the analysis of all three data sets (weekly development meetings (WDM), initial response (IR) and the revisit (R.) dialogues. This approach enabled consistency in relation to both data presentation and data analysis, Consequently, I could 'construct a coherent and interesting narrative, bound by themes and patterns understood to emerge from the data' (Lenz Taguchi, 2012: 269).

5.6 Applying Semantic Gravity Diffractively

I drew on Barad's (2007) concept of diffraction to plot the semantic profiles in a diffractive manner. To recap Barad's concept of diffraction emphasises intra-actions so that a researcher can pay attentions to the effects of difference rather than simply classify differences. The diffractive profiles enabled me to be sensitive to the effects of difference in two main ways. These were firstly the differences between the ways in which the TE and BT structured knowledge and the impact that these differences had on each other. Secondly, but no less significantly I was able to pay close the differences effected by references made to materials such as the Teachers' Standards and the SCITT's own pro-formas. These materials also carried messages in relation to context-dependency. I will now explore both these elements of a diffractive plotting in a little more detail.

Figure 5.3: Semantic Gravity Translation Device

Scale	Semantic Gravity	Semantic Gravity Descriptor	Social Realist Perspective	Bernstein's Pedagogic Device (Classification and Framing) and Pedagogic Discourse	Karl Maton's Language of description (adapted) (2009)	Concept / Context relationship	Discursive Gap	Relation to BT and TE Context
Range 0-1.4 Point Values 0 0.5 1	Weaker	SG- - Participants knowingly select concepts from a range of professional knowledge principles. They confidently refer to theoretical perspectives associated with such concepts. Propositions and articulations demonstrate an awareness of the unifying and integrative nature of such concepts.	Knowledges that endure over time and contexts and so have a unifying property. This relates back to a theoretical perspective. Strongly informed by reference to the reservoir of professional knowledge.	Strongly framed by disciplinary knowledges Concepts are highly integrative either through hierarchical or horizontal chains of connections.	Abstraction: Presents a general principle that moves beyond the case Generalise: (Including *but beyond the case*) Judgement: Offers a value judgement or claim	Context independent concepts pertinent to professional knowledge. Such concepts have an informed relationship to a theoretical base.	High degree of verticality. Discursive gap of potential	Professional understanding that relates to a theoretical base, the participant makes a discerning commitment to the concept. Concepts are used inferentially. Participants are aware that this is one of an ecology of concepts.
Range 1.5-2.4 Point Values 1.5 2		SG- Propositions relate to ideas that are informed by context independent concepts, and are applied to the specific context. There is some recognition that the concept can serve a purpose beyond the specific classroom context.	Enduring knowledges that relate to professional contexts. Knowledge is applicable in a wide range of contexts. There is some reference to the reservoir of professional knowledge.	Relatively strongly framed. Concepts are used in a way that recognises a degree of accumulation and coherence. There is an awareness of their integrative potential, but the knowledge is presented more strongly in relation to the specific context.	Interpretation: Seeks to explain a statement by interpreting information from the case, may include use of other literature or personal experience	Relatively context independent Meanings of terms but can be applied to a variety of contexts, although may be solely applied to the specific case.		Applied concepts pertinent to transferable professional understanding. There is a direct rather than inferential use of the concept. Professional understanding that is informed by a school philosophy encapsulated in a shared policy or approach, there may be a lack of appreciation that this can enjoy a wider applicability.
Range 2.5-3.4 Point Values 2.5 3		SG+ Participants draw solely on classroom contexts to articulate understanding and appreciation of activities, there is some reference to professional purposes. The meanings articulated are strongly embedded in the specific context and reference is not made to unifying or integrative principles.	Knowledges that are prioritised within the context, with little or no reference to the reservoir of professional knowledge.	Less strongly framed. Little evidence of integrative use of concepts.	Summarising: Descriptive responses that summarise or reproduce information from the case.	Relatively context dependent, simpler meanings associated with terms, knowledge that is replicable with some meaning beyond context		Professional practice that is tied to an understanding of a specific class or group of children Language used may include professional terms but these are applied in a way that is highly specific to the school context.
Range 3.5 – 4.5 Point Values 3.5 4 4.5	Stronger	SG+ + Participants recall specific events through description of actions. These have meaning within the context, but are unlikely to inform different contexts. Articulations are expressed using common everyday terms.	Context specific, everyday knowledge that is related and tied to its context and is not replicable elsewhere	Weakly framed A segmented context specific practice.	Reproduction: Reproduces without elaboration	Context dependent knowledge with simple meanings associated with terms used. Knowledge that is simply relevant to a specific context	Highly horizontal (Limited or no gap)	Articulations and propositions that are highly specific to the context and may not have meaning in a different context. Everyday language is used to express these.

5.6.1 Diffractions between TEs and BTs

The concept of the navigational gaze (Bernstein, 2000) is particularly significant for this study. The navigational gaze of the TE will determine the extent to which the substantive knowledge is brought into view, however the role of the BT is also acknowledged in this regard. The navigational gaze is represented on the profile via the extent of the semantic range of the TE and BT profiles. This range signifies the extent to which context (SG++ / SG+) is brought into a relationship with context independent knowledge (SG-/SG--). A profile with a large semantic range and significant semantic variation is indicative of a TE who is accessing recontextualising principles in a Vertical discourse. The verticality is represented in both the upward and downward elements of any wave. A deeper wave suggests a stronger connection. The more waves that are evident, more connections are made. By plotting the TE and BT separately, the impact of the navigational gaze of the TE on the BT can be analysed. It is also important to acknowledge that the BT is not a blank slate, and so their profiles will also be analysed in relation to the degrees of verticality (waves). Figure 5.4 shares the key used in the diffractive plotting.

Figure 5.4 Key for profiles

Beginning Teacher

Teacher Educator

Researcher
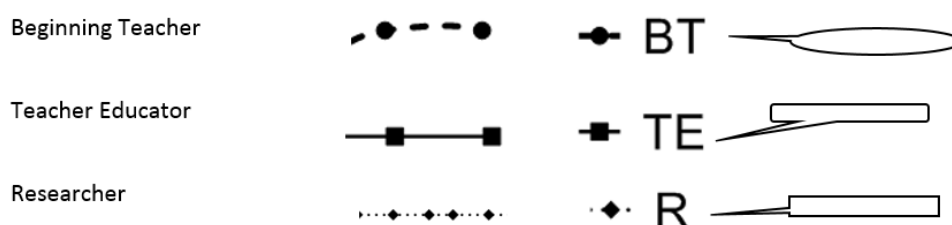
5.6.2 Diffractions between time and space

The diffractive semantic profiles also make visible the extent to which any dialogue is context bound (SG++). A profile that is strongly SG ++ / SG+ suggests that practice is being described in relation to its context. The principles are not being brought into view. These are principles that are co-present but not visible through embodiment, but visible through apparatus that is either verbal, written or drawn. The profiles themselves become a form of apparatus as they make previously invisible knowledge structures visible. The apparatus of the profiles changes the dialogue. They make co-presence visible to both the transmitter and acquirer. Without a visualisation tool, the transmitter and acquirer may remain innocent of the co-presence of knowledge with a different time/space character to that which is visible. The diffractive semantic profiles become a tool that helps participants to access a quantum entanglement rather than a Cartesian dualism. I valued the profiles as a pedagogic tool that had the potential to dynamise the relationship between different knowledge structures. As I developed a fuller appreciation of the flows evident or restricted in the knowledge structures, the significance of professional pedagogic agency became more prominent and this features in the analysis offered in Chapters Six and Seven.

5.7 Sequencing the coding

Three sets of meetings were coded and profiled, these were; the weekly development meetings (WDMs), the initial response visit (IR) when the hand-drawn profiles were shared with the TE and BT. Thirdly a review (R.) visit was made to see how the TEs and BTs responded to the profiles.

The initial coding and profiling of the WDM dialogues took place in June 2018. At first the profiles were hand-drawn and rough values allocated (see figure 5.5). These hand drawn profiles were shared with both the TE and BT. The participants and profiles are numbered rather than named. A numbering rather than naming convention is used so as to sustain the focus on knowledge structures and structuring rather than on individual personalities. Table 5.3 shares the background experiences and contexts to each of the schools and participants, so that this information can be accessed for analytical purposes.

Figure 5.5 Example of a hand-drawn profile
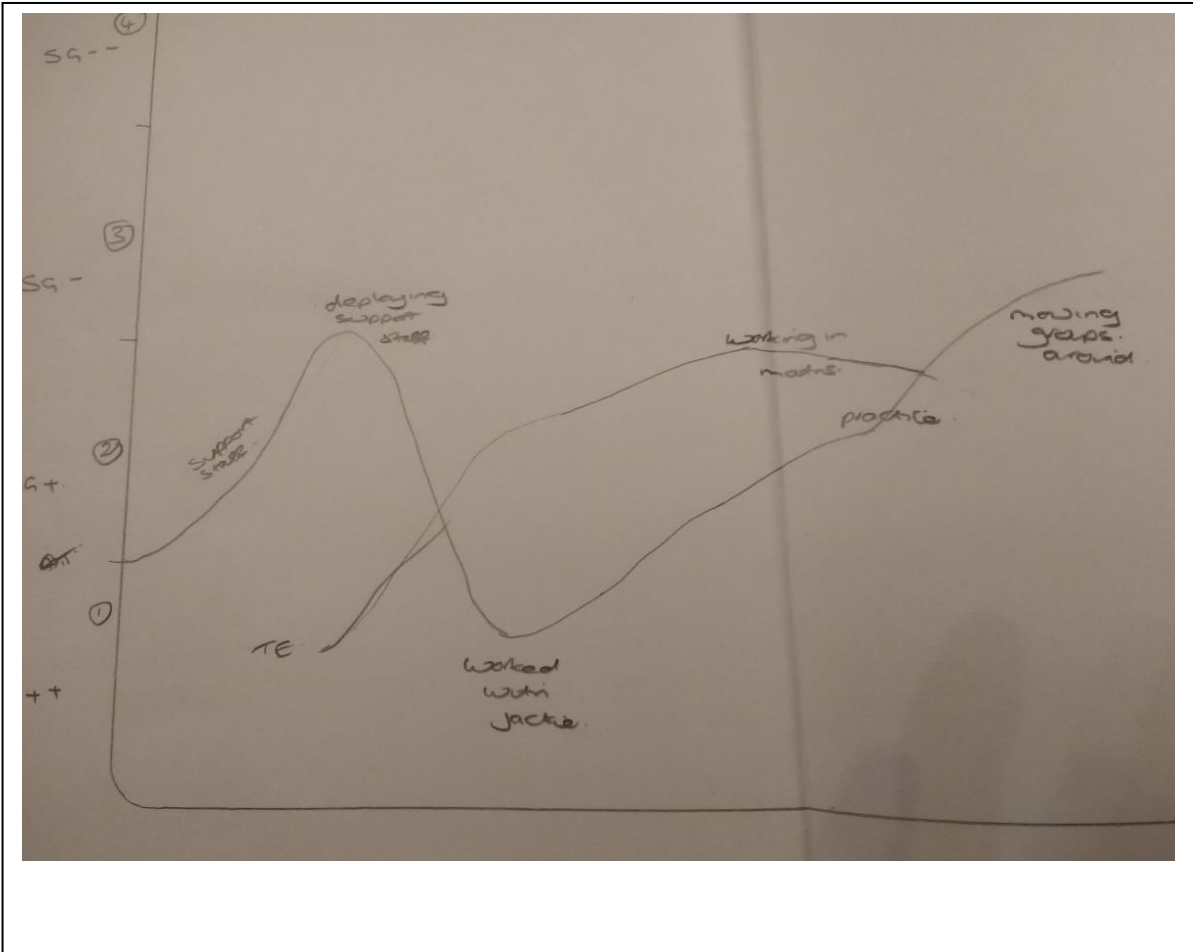
The hand drawn semantic profiles created from the annotated WDM transcripts were shared with the BT and TE. This was done when I visited each school. The purpose of this visit was two-fold, firstly to ensure that the BT and TE were content with the representation and secondly so that the profiles themselves then became material for the BT and TE to respond to and think with. Methodologically the IR visits were significant in avoiding 'representational trap of trying to figure out what the interviewee really means' (Lenz Taguchi 2012: 269). The IR visits enabled the TE and BT themselves to intra-actively react and respond to the profiles. This ensured that the research included their analysis rather than being dependent on my (mis)interpretations. Appendix D shares the full process of analysis for School 1 as an example of the approach that was taken for all profiles.

The conscious involvement of the TE and BT within the analysis of the profiles is part of a social-material methodology, one that is 'response-able' to 'the cultivation of collective knowing, desiring, being and making-with, so that we render each other capable' (Murris and Bozalek 2019: 882). Such an approach is consistent with the ambition to make the pedagogic consequences of pedagogic choices visible within practices so as to gift agency to participants. Hence the importance of profiling the initial response dialogues (IR). These took place when I shared the hand-drawn WDM profiles. It was during the IR visit that the research methodology was explained to participants, so that they too could engage with the choices that I had made.

The hand-drawn profiles were deliberately 'rough'. It should be noted that there is a difference between the profile created immediately after viewing the video and the version generated using a graphing program (see figures 5.2 and 5.5 for comparison). These differences result because more time was invested subsequently in refining the development of the translation device, consistent with the iterative nature of the development of such devices. The substance did not alter. The hand drawn version was sufficient to support the initial review dialogues which investigated whether or not the TE and BT recognised and felt comfortable with the profiled representation of their discourse. In terms of my methodology, I also did not want to present a graph that looked finished and so may have been more challenging to critique. In relation to methodological choices, it was also important that during this initial response (IR) stage, my necessary influence was made visible. The final IR profiles were not shared with the research participants as they related to the methodological integrity of the research approach rather than the participants' knowledge structuring.

I made the decision not to transcribe the process of explanation (generally around 15-20 minutes of each video recording) which formed the first element of each IR discourse. This was when I explained the method used to create the profiles to the participants. Whilst this aspect of the dialogue helped to inform the TEs and BTs about my transcription and coding decisions, it did not relate to the specifics of each dialogue. The aspects of each IR dialogue that were transcribed related to establishing the accuracy and authenticity of the specifics within each of the profiles. The length of time of the analysed segments of video varied from 5 minutes and 44 (school 5, pair 5b) seconds to 1 minute and 18 seconds (school 6, pair 6b) (see table 5.1). In total ten profiles were

created from eight meetings. It is acknowledged that 'transcription should not be seen as an objective process (Meredith 2016: 665) but rather is appreciated as being 'very complex, involving a series of interpretative judgements and decisions' (Müller and Damico, 2002: 300).

The creation of the IR and R profiles occurred in 2019, once I had been able to conduct a more in-depth analysis of the WDM profiles. By this time I had also revisited the literature and was developing a stronger conceptual understanding in relation to the data. I inputted the WDM, R, and IR coding into a software package during 2020 before the final analysis was conducted in 2021. At each and every stage the empirical data and theoretical frameworks were continually referenced and developed in relation to each other.

The software package used was GraphPad Prism 9. This is a statistical tool purpose-built for research scientists (https://www.graphpad.com/). Spline graphs were created. Originally the profiles were created using a lowess curve. Whilst such curves follow the trend of the data the profiles formed were found to be a little jagged in their trajectory. Subsequently the Akima splines curve plotting tool from GraphPad 9 was used resulting in smoother profiles.

The long gestation of the profiles is consistent with a diffractive methodology that encourages the researcher to engage in 'reading and becoming with the data, rather than reading it from a distance and as separate or apart from it' (Lenz Taguchi, 2012:

272). This approach also recognises that 'the data is itself understood as a co-constructive force, working with and upon the researcher, as the researcher is working with the data' (Lenz Taguchi, 2012: 272). This certainly resonates with my experience. Each time I considered the data, I reconsidered the conceptual framing of the thesis.

The final empirical element entailed a further review (R.) visit to explore any further insights that the TEs and BTs wished to share with me. The transcripts of these review meetings were coded and profiled using the same translation device. The R visit had been introduced following my reflections on my pilot study. A chance comment from the TE and BT involved in the pilot study revealed that following the initial review of the graphs, they had referred to some of the profession's concepts more in their WDM dialogues as a consequence of engaging with the profiles. I was able to investigate the impact of the profiles on subsequent dialogues through the analysis of the R profiles. I was eager to explore whether this impact was unique to the pilot study participants or whether the sharing of the profiles had the potential to change the nature of the discourse. This element of the methodology connected with Bernstein's recognition of the relationship between framing and classification. To recap, he suggested that the framing of a discourse had the potential to inform and influence the way in which a field is classified. In order to explore whether or not this conception could hold, I needed to gather the data to research this. It was the R profiles that provided such data. As I was involved in both the IR and R profiles. I recognised that I needed to make explicit my role, as researcher in the creation of the profiles. I also needed to make visible my role, as Director in the creation of the SCITT materials that framed the WDM dialogues. I was

a member of the team that designed the materials, and so my input into these materials needs to form part of the empirical analysis. In my analysis it was therefore methodologically significant to carefully consider my own role and the impact of this within the research.

5.8 Research Positionality

My position will be analysed both in relation to formal research ethics and also in relation to the diffractive methodological stance taken. The latter is the focus for this section and the former is discussed in depth in the next.

The influence of my epistemological stance is evident both within the SCITT materials and within the methodological choices that I have made. To legitimate any claims that I subsequently make, the 'material – discursive' impact of these influences needed to be made explicit to the research participants. Equally my role in the initial review and revisit profiles needed to be made explicit if the empirical analysis was to be authentic in relation to the underpinning theoretical frameworks. It therefore was important to me as a researcher that I also acknowledged the knowledge-structuring impact of my methodological choices, and justified a diffractive rather than reflective or reflexive stance.

Coding and plotting my inputs into the dialogues became a way of making my influence explicit so that they could then form part of the social material approach to the study. In this way the methodology is also true to the claims that are being made about the formation of professional knowledge, one in which the effects of visibility and

explicitness are key to appreciating the significance of knowledge-structuring, consistent with the social realist paradigm that frames the study.

In this study I am both a knowledge-producing and knowledge-receiving agent, ethically responsible for my intra-actions with the material and participants. This responsibility needs to be made visible so that its impact can be analysed as an integral entangled part of the study and not viewed as being distant or separate to the core of the thesis. My involvement becomes part of the diffractive analysis, underpinned by ethical considerations.

5.9 Ethics

Analysing my position as both the researcher and SCITT Director, is one of a number of ethical dilemmas that needed to be carefully considered in order to underpin the integrity of this research project. Others include the nature of participation, the recording and storage of data, and the sharing of the research findings. Ethical approval for the study was sought and granted by Keele University (Appendix C). Approval was also gained from the SCITT's Strategic Board, as the researcher has a leadership role within the organisation.

The volunteer participants were sought via an email invitation (Appendix C). The invitation was sent by the SCITT's office manager rather than by myself so as to minimise my direct influence. The ethical approval made explicit how the participants would not be adversely affected by participating in the study. Whilst I hold overall responsibility for

the SCITT, I do not have any direct involvement in assessing the work of individual TEs and BTs. I was seeking a minimum of six pairs (TE and BT) to volunteer. This number had been decided on by reviewing a range of previous LCT studies accessible via the database on the LCT website (https://legitimationcodetheory.com/). Reference was made to LCT studies as this was the main methodological tool being employed in the research. In fact, eight pairs of TEs and BTs volunteered to participate, four pairs were located in different school sites, whilst in an additional two schools, two pairs each volunteered. Given that I had capacity to work with all eight pairs, the decision was taken to include all who had volunteered to participate in the study. As a consequence, I was also able to examine whether the ethos of the school impacted on the structuring of professional knowledge. In order to do this I compared the data sets of the pairs of TEs and BTs located in the same schools.   It should be noted that each TE and BT volunteered independently of each other so that there was no form of coercion or obligation. It is also worth noting that the study benefitted from participants who were curious enough about their own professional learning to want to actively participate in the study, and so may not be typical of the cohort in terms of professional motivation.

Table 5.1 summarises the totality of the data sets. It includes a brief description of each school's characteristics together with outline information in relation to the experience of each TE and BT. To maintain anonymity the pairs are described as being from Schools 1, 2, 3, or 4. In the case of the two settings with two pairings in each, these are described as School 5 with the pairs being represented as 5a and 5b, and similarly with School 6 and pairs 6a and 6b.

Table 5.1 Overview of WDM Data Sets.

School	1	2	3	4	5a	5b	6a	6b
School Information	Staffordshire 420 pupils 9% FSM Ofsted (Good) Academy Chain	Staffordshire 263 pupils 16.3% FSM Ofsted (RI) LA School	Staffordshire 140 pupils 5.7% FSM Outstanding Own small MAT	Staffordshire 363 pupils 11.6% FSM Ofsted (Good) Own small MAT	Staffordshire 362 pupils 19.7% FSM Outstanding Own small MAT		Stoke on Trent 263 pupils 23.7% FSM Outstanding Catholic Collegiate	
TE Characteristics	Completed ITE with SCITT, completed Tier 2 training	Experienced teacher and experienced mentor, completed Tier 1	Experienced teacher but a new mentor – completed Tier `1	Experienced teacher and mentor completed Tier 2	Senior teacher and experienced mentor	Experienced teacher and mentor completed Tier 2	Experienced teacher and new mentor, completed Tier 1	Experienced teacher and experienced mentor, completed Tier 1
BT Characteristics	Mature entrant I/v grade =1 AP3=2 Final=1	Mature entrant I/v grade=1 AP3= 2 Final=1	Recent graduate I/v grade 2 AP3=2 Final=1	Mature entrant I/v grade 2 AP3=3, Final=1	Mature entrant I/v grade 2 AP3=2, Final=1	Mature entrant I/v grade 2 AP3=2, Final=1	Recent graduate I/v grade 2 AP3-1, Final-1	Recent graduate I/v grade 1 AP3-1, Final-1
WDM Video	3 (F33) Total Length: 7:47	2 Total Length: 17:10	3 Total Length: 9:25	1 Total Length: 8:05	3 Total Length: 14:50	3 Total Length: 20:05	3 Total Length: 12:08	2 Total Length: 13:59
WDM Length	2 mins 24 secs 44%	7 mins 22 secs 43%	6 mins 16 Secs 66%	4 mins 52secs 60%	2 mins 49 secs 19%	3 mins 18 Secs 16%	3 mins 25%	3 mins 20 secs 24%
WDM Segments	4	3	2	2	1	1	1	1
WDM Focus	LOP analysis	LOP analysis	Activity analysis	Description of focus	Description of LOP	Target setting	Target setting	Science Focus
WDM Ranges	BT: 2-4 (2) TE: 2-4 (2)	BT:2-4 (2) TE: 2.5-4 (1.5)	BT: 2-3 (1) TE: 2-4 (2)	BT: 2.5-3.5 (1) TE: 2.5-3.5 (1)	BT: 2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (1.5) TE: 2.5-3 (1.5)	BT: 2-3 (1) TE:2.5-3 (0.5)
Profiles Figure Numbers	6.1, 6.2, 6.10, 6.11 6a and 6c	6.3, 6.4, 6.12 6a and 6c	6.5, 6.14 6a and 6d	6.6, 6.15 6b and 6d	6.7 6b	6.8 6b	6.9 6b	6.1, 6.2, 6.10, 6.11 6a and 6c

Methodologically numbers rather than names have been used, as I am not seeking to

represent individual cases but rather focus on the epistemic structures evident in the

dialogues.

Whilst a representative sample was not being sought, table 5.2 illustrates that the

demographic of the volunteers is in fact consistent with that of the full cohort.

Table 5.2 Demographics of participants compared with full cohort									
	Total	% Female	% aged over 25	% start with 2:1	Entry Grade		Final Grade		
Characteristics					Grade 1	Grade 2	Grade 1	Grade 2	Grade 3
Full Cohort	77	81%	52%	55%	26%	74%	32%	62%	6%
Research Sample 1=12.5%	8 (10% Sample)	88%	63%	100%	25%	75%	25%	100%	0%

Participants were informed that they could opt out of the study at any point and the

implications of this in terms of the use of their data and quotes. All chose to remain as

participants in the study for the full duration.

Each pair of participants were provided with a research information sheet in advance of

their choice to participate in the project (Appendix C). This included an outline piece

about LCT and information in relation to the sequencing of the research. The purpose of

sharing the LCT outline was so that the TE and BT were aware of how their dialogue

could potentially be analysed. The piece shared the set of already published profile

typologies (see figure 5.1). These non- specific profiles were deliberately chosen so as to

minimise any potential for bias. No pair referred to this document in any of their

subsequent discussions, and so there is no evidence that this piece had influenced their discussions in any way.

Each pair were asked to video record and upload three weekly development meetings to the University's secure Google Drive and to confirm with the researcher when these had been completed via an email communication. The researcher then selected one video at random to analyse. The reason for randomly selecting the videos was so as to reduce bias. I was ambitious that the video recordings were of meetings that were as authentic as possible. It was felt that it would be hard to sustain an atypical performance across all three meetings. The reason that only one of three videos was analysed from each pair was because the focus is on revealing knowledge structuring rather than seeking comparative data. The analysis was not intended to reveal any progression or to differentiate between the dialogues in order to produce a typology.

Keele University's Google Drive system was initially used as the secure system for the uploading of three videos from three consecutive weekly development meetings for each of the pairs. Subsequently Keele moved to using the One Drive system and so in September 2021, during the final stages of analysis the videos were securely migrated to this system.   All videos of the professional dialogues were recorded on camera equipment provided by the researcher, and the final recording of the IR and R meetings between the researcher, BT and TE were also captured on the same equipment. In this case of the IR and R meetings the video uploaded by the researcher rather than the participants.

Table 5.3 School Characteristics Summary

School	1	2	3	4	5a	5b	6a	6b
School Information	Staffordshire 420 pupils 9% FSM Ofsted (Good) Academy Chain	Staffordshire 263 pupils 16.3% FSM Ofsted (RI) LA School	Staffordshire 140 pupils 5.7% FSM Outstanding Own small MAT	Staffordshire 363 pupils 11.6% FSM Ofsted (Good) Own small MAT	Staffordshire 362 pupils 19.7% FSM Outstanding Own small MAT		Stoke on Trent 263 pupils 23.7% FSM Outstanding Catholic Collegiate	
TE Characteristics	Completed ITE with SCITT, completed Tier 2 training	Experienced teacher and experienced mentor, completed Tier 1	Experienced teacher but a new mentor – completed Tier `1	Experienced teacher and mentor completed Tier 2	Senior teacher and experienced mentor	Experienced teacher and mentor completed Tier 2	Experienced teacher and new mentor, completed Tier 1	Experienced teacher and experienced mentor, completed Tier 1
BT Characteristics	Mature entrant I/v grade =1 AP3=2 Final=1	Mature entrant I/v grade=1 AP3= 2 Final=1	Recent graduate I/v grade 2 AP3=2 Final=1	Mature entrant I/v grade 2 AP3=3, Final=1	Mature entrant I/v grade 2 AP3=2, Final=1	Mature entrant I/v grade 2 AP3=2, Final=1	Recent graduate I/v grade 2 AP3-1, Final-1	Recent graduate I/v grade 1 AP3-1, Final-1
WDM Video	3 (F33) Total Length: 7:47	2 Total Length: 17:10	3 Total Length: 9:25	1 Total Length: 8:05	3 Total Length: 14:50	3 Total Length: 20:05	3 Total Length: 12:08	2 Total Length: 13:59
WDM Length	2 mins 24 Secs 44%	7 mins 22 secs 43%	6 mins 16 Secs 66%	4 minutes 52secs 60%	2 mins 49 secs 19%	3 mins 18 Secs 16%	3 minutes 25%	3 mins 20 secs 24%
WDM Segments	4	3	2	2	1	1	1	1
WDM Focus	LOP analysis	LOP analysis	Activity analysis	Description of focus	Description of LOP	Target setting	Target setting	Science Focus
WDM Ranges	BT: 2-4 (2) TE: 2-4 (2)	BT:2-4 (2) TE: 2.5-4 (1.5)	BT: 2-3 (1) TE: 2-4 (2)	BT: 2.5-3.5 (1) TE: 2.5-3.5 (1)	BT: 2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (1.5) TE: 2.5-3 (1.5)	BT: 2-3 (1) TE:2.5-3 (0.5)
Profiles Figure Numbers	6.1, 6.2, 6.10, 6.11 6a and 6c	6.3, 6.4, 6.12 6a and 6c	6.5, 6.14 6a and 6d	6.6, 6.15 6b and 6d	6.7 6b	6.8 6b	6.9 6b	6.13 6d

Key: FSM = Free School Meals; RI – Requires Improvement; LA = Local Authority; MAT=Multi Academy Trust; Tier 1 and 2 = SCITT based CPD for TEs I/v = interview; AP3 = Assessment Point 3 (held in March); LOP= Lesson Observation Profile

The cameras used were low budget and compact. This was so that their size minimised any intrusion on the normal conduct of the meeting. They were easy to set up, and as high-quality video recordings were not required for this research, ease of use was prioritised. No participants reported any dilemmas with using the equipment.

The participation form made it clear that the research was being used for this EdD thesis and that it may also be used to inform the development of the SCITT processes and procedures. In addition, participants were advised that extracts from the thesis may be included in other publications. This was particularly significant as the SCITT involves TEs and BTs in the development of the programme. Some of the TEs were experienced colleagues, and in one case had been a BT within the partnership. A number of the participants were likely to continue their work with the SCITT beyond the duration of this research project. It was therefore important that participants were informed of the possibility that the research findings may be shared within the partnership, albeit anonymously so, as they may recognise their work being drawn upon to develop SCITT processes and procedures.

Video recordings of meetings were selected as the initial data capture means rather than an interviewing process for a number of reasons. These included; reducing my influence, increasing the agency of the participants, facilitating a focus on knowledge structuring rather than social interactions or linguistics. The analysis of video recordings also enabled any referencing of materials to be both seen and heard. In addition, transcriptions from the recordings are recognised as having a different form to that of

transcriptions based on interviews. Digital recording can be replayed and so the 'recordings permitted the analyst to attend to smaller and smaller units of talk,' (Jones 2011: 12). When I transcribed the video recordings I was ambitious to ensure that each transcription was as near verbatim as possible. I was as rigorous as I could be, checking each transcription three times, but it is important for me to acknowledge that 'even the most proficient transcriber misses a word or two or transcribes some phrases that are slightly different from what was actually said' (McLellan, MacQueen and Neidig, 2003: 73).

5.10 Methods for transcription.

It has been recognised that 'the kind of listening that is required in transcription is different from that which we do during the course of our ordinary interactions' (Hammersley, 2010: 560). I needed to watch and listen for moments within the dialogue when knowledge structuring was evident. As a consequence each video was viewed three times in relation to the translation device. Each time the translation device was developed, the video was viewed again as 'what we search for in our transcripts is not "truth" but rather "analytical utility"' (Jones, 2011: 20). As the transcriptions were to serve a semantic rather than linguistic analysis, the transcription does not pay close attention to gaps and pauses, nor does it pay attention to body language or eye contact. This is because the 'data collection and transcription are affected by the theoretical interests of the analyst which inevitably determine which aspects of an interaction will be attended to and how they will be represented' (Jones 2011: 9).

In order to code the transcriptions, I referred to papers and publications that had used the semantic aspect of LCT to analyse practice. These included Jackson's (2016) research in relation to the teaching of English in South Africa, Clarence's (2016a, 2016b, 2016c) work in relation to an undergraduate Political Science programmes, Gibbons' (2017) investigations in relation to law programmes, Kelly-Laubscher and Luckett's (2016) work in relation to school and university biology texts , McNaught et al's (2013) enquiries in relation to the teaching of biology and the implications for ITE and Myer's (2016, 2017) work in relation to undergraduate Financial Accounting. I also referred to the semantics area on the LCT website (http://www.legitimationcodetheory.com/).

In reviewing the videos and transcriptions multiple times, I began to pay attention to which segments from the transcriptions would be most appropriate to code and profile. It is these segments that formed the IR profiles that were checked with the participants. Bernstein recognised that in fields where there is too much segmentation, coherence is difficult to structure. I was therefore conscious that I needed to consider carefully how I segmented the profiles, as this would have a bearing on the analysis. I heeded mindfully when there was a change in theme used to frame the discourse. Each segment therefore relates to a difference in conceptual framing. This connects with the concept of grammar as articulated in Chapter Three and has a bearing on any conclusions that I make in relation to the navigational gazes of both the TEs and BTs. The videos were therefore broken into 'units of meaning', Maton defines these as being 'passages conveying a single coherent meaning' (Maton 2009: 48). This explains why for some WDMS there is more than one segment, so for example School 1's WDM is presented in 4 segments,

School 2's in 3, and School 3 and 4's in two segments. The remainder are each contained in one segment.

I was eager to always minimise my impact and influence on the agency of the TEs and BTs. For this reason, the TEs and BTs were responsible for recording and uploading the three videos. They could determine when and where the recordings took place and the length of time dedicated to the activity. The fact that the meetings were being videoed inevitably would have altered the social dynamic in some way, however my physically presence would have had a greater impact. The BTs and TEs were asked to complete the recordings during a six-week period. This time-frame occurred towards the end of their second placement on a nine-month initial teacher education programme. As the BTs were familiar with the usual format and expectations of a WDM, their familiarity with the meeting's conventions would have minimised any disruption to the usual flow of the dialogue.

The length of the WDM videos varied from 20 minutes and 5 seconds to 7 minutes and 47 seconds. Whilst the SCITT suggests 45 minutes for a WDM, often the demands of school life mean that the WDM occurs during shorter moments during the week, so that in total during a week, the TE and BT meet for the equivalent of 45 minutes. Substantive sections related to the operational aspects of the course. The TE and BT were checking in with each other that course requirements had been met, i.e. the submission of attendance information etc. This is a requirement of the WDM process (see Appendix E). These sections were not analysed as they were deemed not to be purposeful in

relation to the focus of the study. In this way I was conscious that my decisions about what 'to include should always be driven by the research question' (McLellan, MacQueen and Neidig, 2003: 67).

5.11 Conclusion

This chapter has outlined and justified the selected research methods in relation to ethical and conceptual concerns. The diffractive use of LCT will enable a visualisation of the knowledge-structuring practices of school-based teacher educations. This data can then be analysed in order to respond to the first research question. The profiles demonstrate the degree of context dependency both in relation to the specific descriptions of practice but also in relation to the materials used to inform the practice-based discourses. In this way the influence of knowledge-structuring evident in the Teachers' Standards (DfE, 2011) can also be analysed. The Teachers' Standards are drawn upon as an example of policy conceptions of professional knowledge. The profiles can therefore also be used to generate a response to research question 2. The third research question invites consideration of ways in which knowledge structuring can take more account of both professional and policy constraints. In order to respond to this question an analysis of the IR and R profiles is undertaken. Chapter Six shares the WDM profiles and responses to the first two research questions, whilst Chapter Seven builds on this analysis and extends the research so as to generate further insights in relation to research question 2 and a response to research question 3 before the conclusions atr offered in Chapter Eight.

Chapter 6: Analysing Professional Practice Knowledge Structuring

6.1 Introduction

This chapter is the first of two chapters that present the empirical findings of the research. The chapter directly addresses the first two research questions:

- How do school-based teacher educators structure professional practice knowledge for beginning teachers?

- In what ways do these forms of knowledge structuring reflect or deviate from policy conceptions of teachers' professional knowledge in England?

The findings are presented in five sections, arranged according to the key challenges drawn from the literature review and expanded upon in the discussion of the theoretical frameworks. The weekly development meetings (WDMs) from the eight pairs of teacher educators (TEs) and beginning teachers (BTs) were first analysed to reveal the extent to which they could be categorised as Horizontal or Vertical discourses. A Horizontal discourse enables the development of a time and space bound competency. A Vertical discourse being one that involved reference to principles of practice and the type that enabled the development of professional reasoning capabilities. Secondly the discourses were further examined for the extent to which policy conceptions were materialised in local dialogues. They were also examined for the extent to which TE's drew on any form of meta-language or visualisation to reference the collective knowledge of the profession. The form and impact of the TEs' and BTs' navigational gazes were also examined. Analysing the extent to which the dialogues were segmented was significant,

as the development of coherent connections rather than fragmentation is a feature of

professional knowledge (Bernstein, 2000). Too many segments can cause fragmentation.

I argue that fragmentation can cause a focus on the particular rather than also

referencing the collective. Throughout the analysis BTs' contributions are examined as

active participants in the dialogue. They are not seen simply as passive receivers of

knowledge-structuring forms. In conclusion the different knowledge structures evident

in the WDMs are compared and contrasted before the second stage of the empirical

element of this research study is shared in Chapter Seven.

6.2 Horizontal or Vertical discourses?

Each profiled segment of the WDM dialogue makes visible the knowledge structuring

processes evident within the discourse. Segments were selected for the different

themes evident. The most segments identified in a WDM was four (School 1), the

majority were analysed in one segment (4 pairs), additionally School 2's WDM was

analysed in three and Schools 3 and 4 in two segments. Table 6.1 shows the number of

segments analysed for each WDM dialogue.

Table 6.1 Summary of WDM Profiles								
School	1	2	3	4	5a	5b	6a	6b
WDM Length	2 mins 24 secs 44%	7 mins 22 secs 43%	6 mins 16 secs 66%	4 mins 52 secs 60%	2 mins 49 secs 19%	3 mins 18 secs 16%	3 mins 25%	3 mins 20 secs 24%
WDM Segments	4	3	2	2	1	1	1	1
WDM Focus	LOP analysis	LOP analysis	Activity analysis	Description of focus	Description of LOP	Target setting	Target setting	Science Focus
WDM Ranges	BT: 2-4 (2) TE: 2-4 (2)	BT:2-4 (2) TE: 2.5-4 (1.5)	BT: 2-3 (1) TE: 2-4 (2)	BT: 2.5-3.5 (1) TE: 2.5-3.5 (1)	BT: 2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (0.5) TE:2-3 (1)	BT:2.5-3 (1.5) TE: 2.5-3 (1.5)	BT: 2-3 (1) TE:2.5-3 (0.5)
Profiles Figure Numbers	Profiles Figure Numbers	6.1, 6.2, 6.10, 6.11 6a and 6c	6.3, 6.4, 6.12 6a and 6c	6.5, 6.14 6a and 6d	6.6, 6.15 6b and 6d	6.7 6b	6.8 6b	6.9 6b

The analysis evidenced that the longer the segment, the more likely that a principle would be drawn upon in the discourse and not just a description of the context related observation. The WDM meetings should be dedicated periods of time for professional development, the analysis of the profiles demonstrates the importance of this time, as it was evident that the longer sections enabled the prioritisation of key aspects of professional knowledge. These were not evident to the same extent in the shorter sections, which tended to be more context specific.

Significantly the profiles reveal the morphology of the knowledge-structuring process. By focusing on the shape of the profile, attention is focused on the form that professional practice knowledge takes, and the consequences of this for the formation of professional identities. The literature review highlighted that professional knowledge required the capacity to draw on systematic knowledge (SG -/ SG --) as part of intelligent know-how. In professional practice knowledge that involves judgement and reasoning systematic knowledge is brought into a relationship with the context. Such practice knowledge will be profiled as a wave. Such knowledge was contrasted with time and context bound techniques (SG+ / SG ++) represented by a very low flat line (Horizontal discourse) or a low-level shallow wave representing a very weak form of Vertical knowledge of a Horizontal Knowledge Structure type.

A wave profile is one in which there is an iterative movement between context and concept, both elements being drawn upon relationally to develop professional practice
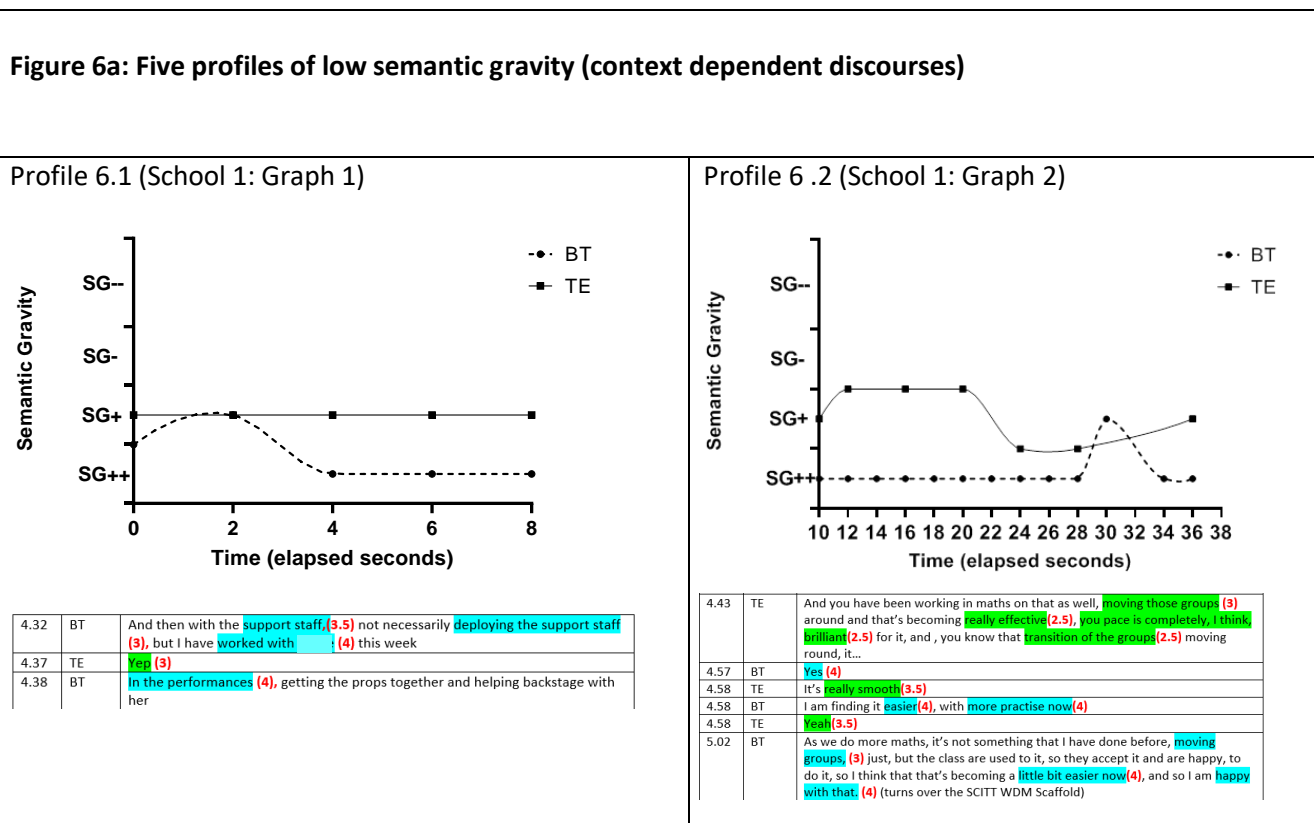
knowledge. The proximity of the context (SG+ / SG++) is brought into a relationship with the distal, or distilling principles (SG- / SG--) that offer an evaluative and elaborative mechanisms which inculcate the BT into the profession. The shape of the wave is significant, a shallow wave indicates limited reference to principles, a slight discursive gap, tending towards replication of practice with limited variation. A more substantive wave, indicates a stronger discursive gap, stronger in the sense of enabling a greater space for reasoning, indicated by the semantic range and the form of the semantic variations. It should be re-iterated that each profile represents a form of knowledge structuring, one form is not de facto better or worse than the other. They are differently appropriate. It will be valid on occasions to train a BT in a technique, this would profile as a low flat line. It will be apt on occasions to practise or secure an ability, this again is likely to be represented as a Horizontal and relatively flat line, or one with a shallow wave if there is some reference back to principled knowledge. The challenge to be addressed is the extent of such horizontality. If teaching as a profession is continually represented as a Vertical discourse of a Horizontal Knowledge type with a weak grammar, i.e. low shallow waves, then the progress of the profession is limited. It is limited as it becomes a practice that is transmitted through replication rather than through reasoning. Replicability denies difference, including the differences that manifest themselves when professionals are sensitive to contexts and differences in the ways in which professionals draw on and interpret the specialising and organising concepts. Pedagogic structures therefore play a role in creating the conditions for professional formation. As Director of our 'scholarly' SCITT, I was eager to explore the extent of horizontality and verticality in the WDM profiles. To recap, our value statement encapsulates our ambition to 'develop a community of teachers who work

together collaboratively, critically, creatively and carefully to understand and improve the positive impact that they have on pupil well-being and achievement' (KNSTE, 2021). The SCITT ethos emphasised the belief that school-based colleagues have the capacity to develop reasoning abilities both for themselves and their BTs. Our work has been informed by the recognition that 'if an ITE curriculum offers practice-focussed study only, students are denied access to principled grounds for reasoned judgement' (Rusznyak and Bertram, 2021: 47). I was therefore expecting to see some low-level horizontal elements in the profiles, particularly since official documents characterise the profession in that way. I was also hopeful that there would be evidence of verticality through wave type profiles indicating that 'education entails moving both up and down the *semantic range* in such a way as to enable students to build on concepts as well as apply these to strongly bound contextual practices' (Dorling, Wolff and Akdogan, 2019: 46/7 original emphasis). In order to analyse the profiles, first they are grouped with others that exhibited a similar morphology, and then each is explored in more detail.

6.3 Segmentation and Fragmentation.

Bernstein contrasted the notion of segments and fragments when analysing the significance of the navigational gaze. The navigational gaze is the means to offer coherence and connection in relation to segments by relating segments to conceptual knowledge. A gaze is contrasted with 'a way'. The way of doing is more likely to be communicated in a kinetic form. In a navigational gaze, the transmitter (TE) uses their knowledge to select the means for pedagogic transmission. In a regional knowledge this means should include reference to the 'inner dedications' of the profession, its systematic knowledge which is then brought into a relationship with the contextual

knowledge so that new understandings can be developed. If the means is simply the knowledge of a technique then 'a way' rather than 'a gaze' is used. Often 'the way' is a horizontal form of discourse, with no discursive gap. If there is no gap, practices become bound to their contexts, rather than related to a professional community, and so are fragmented rather than connected. Significantly the first set of profiles analysed are those that exhibited the greatest context-dependency and are indicative of discourses that could lead to fragmentation as they focus on the particular. Figure 6a shares the five profiles that form this first group to be analysed. The profile and extract from the WDM discourse are shared. A full data set for School 1 is included in Appendix D. This full set is indicative of the data for all eight pairings.

Figure 6a: Five profiles of low semantic gravity (context dependent discourses)

Profile 6.1 (School 1: Graph 1)	Profile 6 .2 (School 1: Graph 2)

Profile 6.1 (School 1: Graph 1)

4.32	BT	And then with the support staff, (3.5) not necessarily deploying the support staff (3), but I have worked with : (4) this week
4.37	TE	Yep (3)
4.38	BT	In the performances (4), getting the props together and helping backstage with her

Profile 6 .2 (School 1: Graph 2)

4.43	TE	And you have been working in maths on that as well, moving those groups (3) around and that's becoming really effective(2.5), you pace is completely, I think, brilliant(2.5) for it, and , you know that transition of the groups(2.5) moving round, it…
4.57	BT	Yes (4)
4.58	TE	It's really smooth(3.5)
4.58	BT	I am finding it easier(4), with more practise now(4)
4.58	TE	Yeah(3.5)
5.02	BT	As we do more maths, it's not something that I have done before, moving groups, (3) just, but the class are used to it, so they accept it and are happy, to do it, so I think that that's becoming a little bit easier now(4), and so I am happy with that. (4) (turns over the SCITT WDM Scaffold)

Profile 6.3 (School 2: Graph 2)

Semantic Gravity graph: x-axis "Time (elapsed seconds)" (200–260), legend BT (dashed) and TE (solid), y-axis SG--, SG-, SG+, SG++

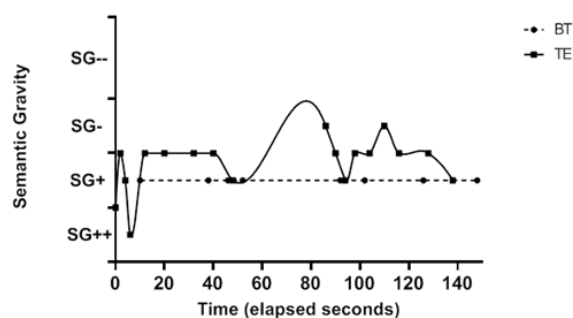| 5.50	BT	Eh (laughs) Eh…I said the..imp… the impact on pupil progress (2), I said that I think that they gained practical experience(3.5), rounding the number, they got given the number lines. Made them actually see what they were doing as opposed to just thinking about it which helped some of them, and then we discussed the multiples and things with the words on the board
6.06	TE	Yep(4)
6.08	BT	Um… Most…all pupils had a go at the task. Most pupils felt confident at the end when I asked them, most said that they were confident. Differently, I said, again with the modelling(3.5), finding the value, the 10 squares mean 100, I assumed that they would know that and they didn't. I would put that more clearly that the 10 squares means 100 If its 10 squares then its 100, I think that everyone could have done with that at the beginning…umm…I said for the higher that even though I know that they can do it, I didn't have much time with them on their own.
6.42	TE	Ummh(4)
6.44	BT	Like I set these off (4) and I came back to them and I said do you know what you are doing and they did,,,but there wasn't much modelling that was specifically for them(3.5).
6.50	TE	Yep
6.53	BT	Umm…improve on…I said practising the white board so that they could think about the number lines that I could get instead of which Abacus one and subject knowledge as always, and as we were going along and thinking about more challenge for higher pupils(3)
7.04	TE	You are very good at self-reflection(3), that's pretty much what I put, you stole my thunder!

Profile 6.4 (School 2: Graph 3)

Semantic Gravity graph: x-axis "Time (elapsed seconds)" (280–360), legend BT (dashed) and TE (solid), y-axis SG--, SG-, SG+, SG++

7.12	TE	So what's this..high expectations(2.5), I thought that it was getting much better. They were all pretty much listening to you, they were all pretty much engaged in the activity, actively engaged….um…most of them were getting on with it on their own(4) ….Um…I put quite a few bits in the behaviour thing(3) …about what good things you did with that…um, you got…you are starting to get some in the proficient and effective box which is pretty nice to see as this is where we want you to be…umm..
7.46	BT	Especially at maths(3), that's a benefit!
7.50	TE	Good progress, (2.5) you reminded them of the rounding that they were doing yesterday(3) as well, so you were getting them to do as well as the number line, to go over things that that they had done before. That was obviously reminding them so that they could do a good job…I liked your use of…this is subject knowledge(2.5) …so I liked your use of mathematical words(3) …in the warm up, so you were getting them to think about evens, odds, rounding numbers, half way, multiples, all these sort of things,
8.22	BT	Yep(3)
8.24	TE	You used those confidently and correctly. Then at the end, the discussion, which were good questions(3) to try and find the number quickly so that was talking about the reasoning skills, that was very good. And Phoebe asked about her, to explain her reasons, why do you think that you think that…
8.40	BT	Yep, I think, I think I feel that changed. (3) If I say a word, I stop and ask them… What does that word mean? Explain that to me. Whereas before I would have assumed that they knew what I was talking about. I can tell that is different.
8.53	TE	So I put efficient there, so I thought that you had mastered, your vocabulary was very good(3)

Profile 6.5 (School 3: Graph 1)

Semantic Gravity graph: x-axis "Time (elapsed seconds)" (0–140), legend BT (dashed) and TE (solid), y-axis SG--, SG-, SG+, SG++

| 4.54	BT	Yeah, (3)
4.56	TE	As soon as you can. That was the same for the intervention work. (2) So you weren't like, oh is doesn't matter, you really checked that they had understood it(2.5)
5.02	BT	Yeah, (3)
5.04	TE	And obviously, when they are not doing it in books for example, when they are doing it on a whiteboard(3.5) you are still marking it to a degree(2.5)
5.12	BT	Yeah, (3)
5.14	TE	So you are saying yeah that's right and so you are giving, moving the learning along(2.5)
5.18	BT	Yeah, (3)
5.20	TE	With another question with a more trickier question, more like in the moment marking, (2) than sitting down with the books and going through them.
5.24	BT	Yeah
5.26	TE	But you are still doing it, you are still marking, and you are still driving next steps, extending their learning so that they have got something, so that you are not just like they've got that you are moving them on to the next steps, (2.5) so
5.36	BT	Yeah, (3)
5.38	TE	To cement their understanding, (2.5) umm and obviously this was appropriate evidence for the children's understanding (3) as well, so the tasks demonstrated progress, if they weren't sure on, umm fractions of amounts, then you have addressed that and perhaps we've given them a problem to solve.

6.3 The Material of the Teachers' Standards

In this section the material impact of the Teachers' Standards (DfE, 2011) on the WDM discourses is analysed in relation to the five profiles shared in figure 6a. In addition to the Teachers' Standards, the material impact of the SCITT's own paperwork is also investigated in relation to this set of profiles. The social materialist framework that underpins this research study, recognises that non-human materials carry knowledge structuring properties in addition to human participants. Drawing on Barad (2007), I argue that due attention needs to be paid to the real effects of such materials if professional practice knowledge structuring is to be more fully appreciated. The Teachers' Standards have been recognised as carrying a weak form of professional knowledge, one that is technique and competency driven rather than one that references concepts such as pedagogy. Analysing the extent to which the structure evident in the Teachers' Standards regulates the local structuring of professional practice knowledge ensures that an empirical contribution to the second research question can be offered.

In Schools 1 and 2 the TEs were experienced teacher colleagues and experienced mentors. In School 3 the teacher colleague was a new mentor. The text for School 1 profile 6.1 related to the deployment of support staff in a highly context specific way. School 1 profile 6.2 relates to the management of context specific transitions for groups of learners. School 2 profile 6.3 described context specific modelling in a maths lesson and profile 6.4 describes how pupil progress was enabled through the retelling of a specific example. Profile 6.5 from School 3 describes the process of marking conducted by the BT. In all five cases the dialogues can be classified as containing context-specific

descriptions. Retellings of the observed lessons, with limited or restricted access to principles. The short exert in profile 6.1 is highly context specific and descriptive. The profile in figure 6.1 is of a section of dialogue that comes at the start of an intense two minutes and 24 second section discussion.

Figure 6.1 WDM Profile 6.1: School 1 Graph 1
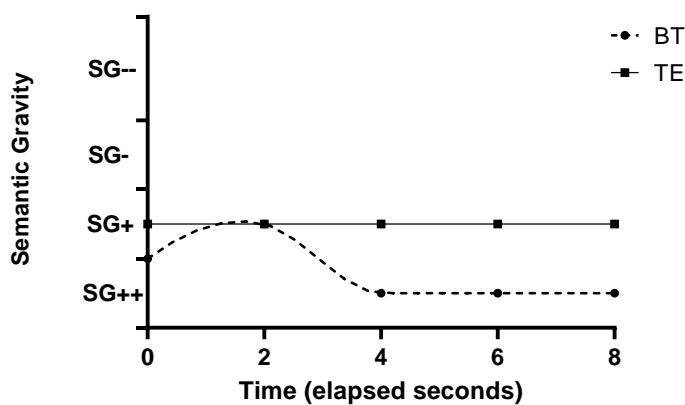
School 1: Contextual Information

School Information	420 pupils 9% FSM Ofsted (Good) Academy Chain
TE Characteristics	Completed ITE with SCITT, completed Tier 2 training
BT Characteristics	Mature entrant Interview grade =1 Final grade =1

This very short segment (8 seconds) and occurs four and a half minutes into a WDM recording that lasts seven minutes and 47 seconds in total. The transcript of the full dialogue is available in Appendix D. The extract is included below:

4.32	BT	And then with the support staff,(3.5) not necessarily deploying the support staff (3), but I have worked with (4) this week
4.37	TE	Yep (3)
4.38	BT	In the performances (4), getting the props together and helping backstage with her

The blue shading indicates key words coded from the BT and green from the TE. The red numbers indicate their SG coding. The dialogue in this case relates to a highly specific school-based context (preparing for a class performance) and the BT used the phrase 'deploying the support staff' in their description. The SCITT's weekly development meetings were structured so that the TE and BT can focus on 'evidence' in relation to

Teachers' Standard 8 (see figure 1.1 for a full list of the Teachers' Standards). In this instance the BT is recalling a time when they felt that they demonstrated a Standard and so starts of by using language of the Teachers' Standards in her statement. Bullet point 3 of Teachers Standard 8 states that teachers should 'deploy support staff effectively' (DfE, 2011).

 The BT opens up this section by stating: 'And then with the support staff, not necessarily deploying support staff, but I have worked with [name of Teaching Assistant (TA)] this week'. The BT is relating their experience to the Teachers' Standards. In this sense, the Standard is being used as a regulating criterion. It is, however a restrictive criterion as it particularises an element of professionalism and so it limits the response to one of a description of events rather than facilitating any analysis in relation to principles or concepts. The BT therefore simply describes what they have done 'getting the props together and helping backstage'. The TE receives this information in relation to their own knowledge of that aspect of the Teachers' Standard, but, on this occasion, does not develop it in relation to any principles or conceptual understanding and so this is represented by a horizontal flat-line. There is no evidence of accountability in relation to a professional practice principle, only in relation to the action described in the Teachers' Standard. The experience is not put to work conceptually; there is no reference to the professional purposes that might be associated with working with support staff colleagues. It is a context specific dialogue. In this sense the discourse is restricted by the material of the Teachers' Standard. The BT's knowledge is represented by a shallow wave that increases in context dependency. The restriction has occurred because of the way that both the SCITT's WDM pro-forma and the Teachers' Standards represent

professional knowledge. Consequently the TE has not made a connection for the BT between a performed action and the principles associated with the concept of professional collaboration. The BT solely references that which is specified within the Teachers' Standards.

The analysis of this very brief section of discourse has already revealed that the SCITT's WDM template references a reductive form of professional knowledge. The template does not reference pedagogic principles. The SCITT's pro-forma was compliant with the Ofsted requirements prevalent at the time of the data collection. Subsequently Ofsted expectations have changed and the Teachers' Standards are to be used summatively rather than formatively. It is the CCF that is now used as a framework for curriculum design. The extract below (table 6.2) illustrates the CCF's reference to support staff.

Table 6.2 Extract from the CCF (DfE, 2019: 29)

Professional Behaviours (Standard 8 – 'Fulfil wider professional responsibilities')	
Learn that…	Learn how to…
5. Teaching assistants (TAs) can support pupils more effectively when they are prepared for lessons by teachers, and when TAs supplement rather than replace support from teachers.	**Build effective working relationships, by:** • *Discussing and analysing with expert colleagues how experienced colleagues seek ways to support individual colleagues and working as part of a team.*

I argue that this reference would have been similarly restrictive as the material is in the Teachers' Standards. Rather the analysis of the profile has led me to consider that the SCITT's own pro-formas should be more explicit in guiding TEs and BTs to some of the profession's 'bigger' concepts so as to enable BTs and TEs to lift their discourses towards
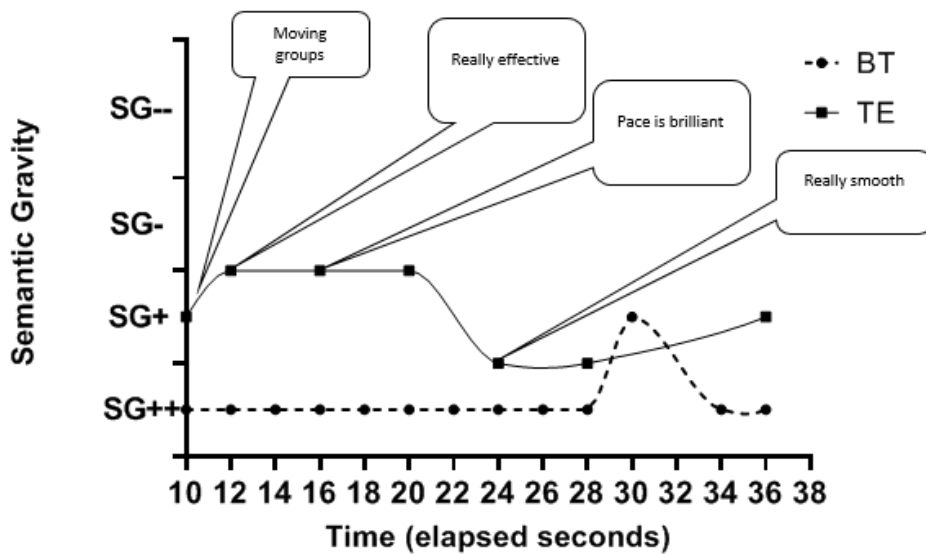
analysing the relationship between concepts and contexts rather than remaining too context specific. The WDM template could perhaps have referenced the 'bigger' concept of 'professional collaboration'. This is 'bigger' in the sense that it encompasses a more expansive time and space dimension. The description of the BT's 'work with [name of TA]' could have been 'put to work' in relation to this more enduring concept, and evaluated and elaborated upon in relation to this. Instead the moment was described as evidencing a competence in relation to a Teachers' Standard, rather than opening up a non-arbitrary dialogic space. In the case of this profile for School 1, the 'apparatus' of the Teachers' Standard and the SCITT's pro-forma was restricting the knowledge-structuring. These documents did not proffer the means to enable a dialogic space, a space for reasoning and evaluating the judgements that the BT made.

6.4 Context dependent profiles

The five profiles summarised in figure 6a indicated that elements of the discourse featured the context heavy, SG++ coding in relation to inputs from either the TE, BT, or both. It is acknowledged that 'situated knowledge is essential for getting anything done' (Barnett, 2006: 16) therefore, it is important that a low horizontal line is not interpreted as being a poor or inadequate knowledge form. These five profiles were segments from three pairs, with profiles 6.1 and 6.2 both relating to School 1, profiles 6.3 and 6.4 both relating to School 2 and profile 6.5 relating to School 3. School 1's WDM was profiled in 4 segments (see also figure 6b-profiles 6.6 and 6.7), with the other two segments demonstrating a greater semantic range. School 2's WDM was in three segments (see also figure 6b – profile 6.8) and whilst this third profile demonstrated a greater range, there was limited semantic variation. School 3's WDM was profiled in two segments,

figure 6d-profile 6.14 shares the second segment that illustrates a different semantic gravity. Whilst all the profiles in 6a contain a low-level horizontal element, this structure does not represent the entirety of the WDM dialogue. Profile 6.2 shows some 'lifting' or abstraction from the context initially by the TE and then subsequently by the BT in school 1. Indeed none of the profiles, in this group are of a pure Horizontal discourse form. They all indicate a weak Vertical discourse of a Horizontal Knowledge Structure. The weak grammar in Profile 6.2 relates to the concept of 'transitions'. I argue that this is being used as a form of meta-language by the TE.

Figure 6.2 WDM Profile 6.2: School 1 Graph 2

4.43	TE	And you have been working in maths on that as well, moving those groups (3) around and that's becoming really effective(2.5), you pace is completely, I think, brilliant(2.5) for it, and , you know that transition of the groups(2.5) moving round, it…
4.57	BT	Yes (4)
4.58	TE	It's really smooth(3.5)
4.58	BT	I am finding it easier(4), with more practise now(4)
4.58	TE	Yeah(3.5)
5.02	BT	As we do more maths, it's not something that I have done before, moving groups, (3) just, but the class are used to it, so they accept it and are happy, to do it, so I think that that's becoming a little bit easier now(4), and so I am happy with that. (4) (turns over the SCITT WDM Scaffold)

The term 'transitions' is not referenced by the BT, who instead discusses 'moving groups'. The rational for the movement of groups is descriptive rather than indicative of reasoning in the case of the BT. The TE here is using their knowledge to select and prioritise, however their knowledge is remaining implicit. They have selected an element of the BT's practice and used in in relation to the concept of transitions. However they do not share this process of selection and reasoning with the BT. The TE does not develop the BT's understanding, hence the BT's profile remaining context dependent. The BT has not accessed the concept as the TE did not expand on the concept. In this case the TE has used their navigational gaze to structure knowledge implicitly rather than explicitly for the BT. A more explicit reference to the supervening concept would have helped the BT to lift their understanding. The plotting of the profiles diffractively has illustrated how the gaze of the TE impacts on the BT. This is also the case in School 2. Profile 6.3 is highly context specific.

Figure 6.3 **WDM Profile 6.3: School 2 Graph 2**
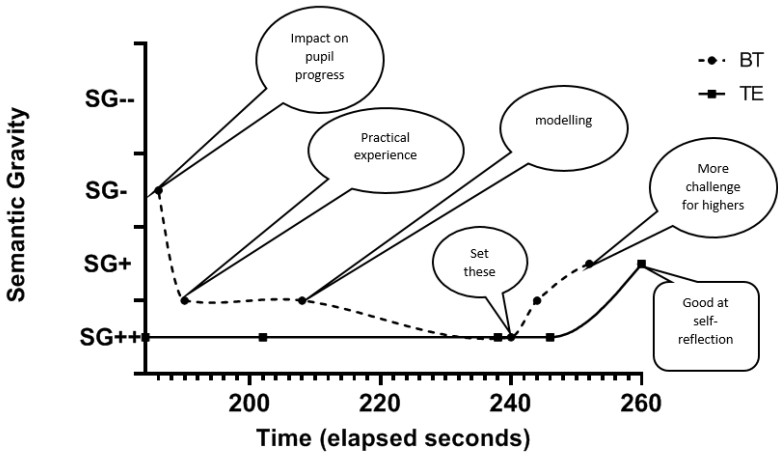
School 2: Contextual Information

| School Information	263 pupils 16.3% FSM Ofsted (RI) Local Authority School
TE Characteristics	Experienced teacher and experienced mentor, completed Tier 1
BT Characteristics	Mature entrant Interview grade =1 Final grade =1

5.50	BT	Eh (laughs) Eh...I said the..imp... the impact on pupil progress (2), I said that I think that they gained practical experience(3.5), rounding the number, they got given the number lines. Made them actually see what they were doing as opposed to just thinking about it which helped some of them, and then we discussed the multiples and things with the words on the board
6.06	TE	Yep(4)
6.08	BT	Um... Most ..all pupils had a go at the task. Most pupils felt confident at the end when I asked them, most said that they were confident. Differently, I said, again with the modelling(3.5), finding the value, the 10 squares mean 100, I assumed that they would know that and they didn't. I would put that more clearly that the 10 squares means 100 If its 10 squares then its 100, I think that everyone could have done with that at the beginning...umm...I said for the higher that even though I know that they can do it, I didn't have much time with them on their own.
6.42	TE	Ummh(4)
6.44	BT	Like I set these off (4) and I came back to them and I said do you know what you are doing and they did,...but there wasn't much modelling that was specifically for them(3.5).
6.50	TE	Yep
6.53	BT	Umm...improve on...I said practising the white board so that they could think about the number lines that I could get instead of which Abacus one and subject knowledge as always, and as we were going along and thinking about more challenge for higher pupils(3)
7.04	TE	You are very good at self-reflection(3), that's pretty much what I put, you stole my thunder!

The BT in this case, is simply reads from a written lesson evaluation rather than analysing the lesson in relation to principles of practice. The TE does not interrupt, extend or elaborate on the description until reference is made to the concepts of 'challenge' by the BT and this is interpreted as 'self-reflection' by the TE.   Consequently as the navigational gaze of the TE is not evident, there is very limited interference, the profile remains very context dependent. The context dependency continues in profile 6.4, the TE does not use their navigational gaze to lift the BT's gaze from that of description of a context specific action. In this case, any professional purposes remain latent as they are not referenced by the TE. The language of the TE is descriptive rather than analytical. If the profile had been plotted as a single line, this could have masked the fact that the BT's knowledge had not been developed by the TE. I argue that misconceptions could arise if this profile has been plotted as a single line. As a single profile some waving would have been evident, whereas in fact the BT's knowledge as

not developed beyond the context. This draws attention to one of the key challenges in appreciating the structure of professional practice knowledge. Empirical data can mask complexity, and when it does misconceptions about the nature of professional practice knowledge can result.

Figure 6.4 WDM Profile 6.4: School 2 Graph 3
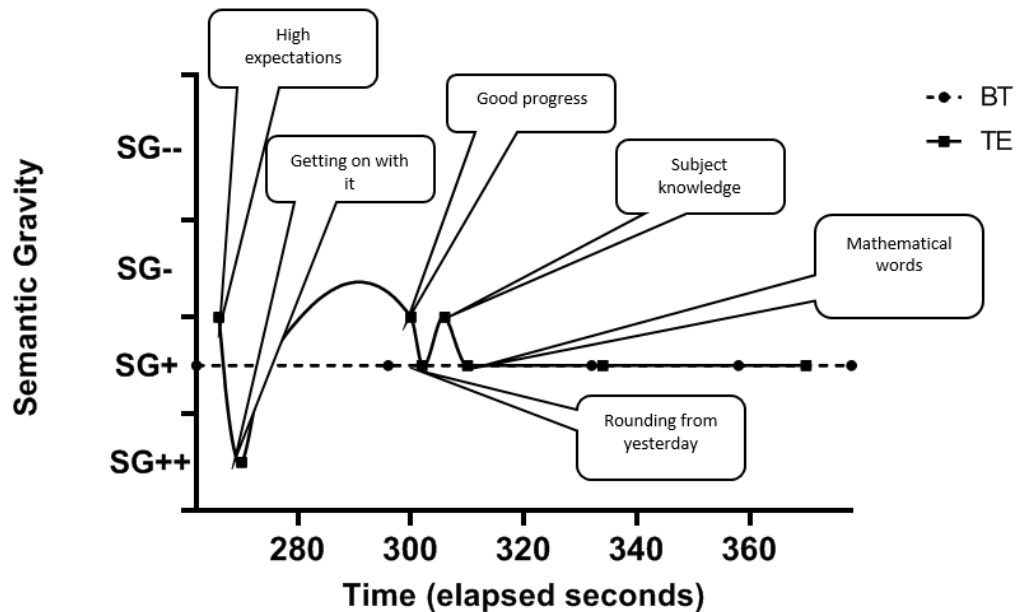
Similarly profile 6.5 from School 3 plotted as a single line would have also masked the knowledge-structuring taking place. In this case the TE is using their navigational gaze to try to lift the BT's understanding. However the language from the BT does not indicate whether any internal transformation has taken place for the BT. The profile for the BT remains in the SG+ zone, despite the TE uses their knowledge in attempt to interrupt the BT's context dependency. The TE describes the marking activities that the BT has been involved in and then attempts some abstraction. The TE is sharing that the BT's marking is serving a principled purpose through their marking, and that purpose is the

identification of appropriate interventions when misconceptions are revealed. The BT

does not respond in any way other than to acknowledge the TE's analysis.

Figure 6.5 WDM Profile 6.5: School 3 Graph 1

4.54	BT	Yeah, (3)
4.56	TE	As soon as you can. That was the same for the intervention work. (2) So you weren't like, oh is doesn't matter, you really checked that they had understood it (2.5)
5.02	BT	Yeah, (3)
5.04	TE	And obviously, when they are not doing it in books for example, when they are doing it on a whiteboard (3.5) you are still marking it to a degree (2.5)
5.12	BT	Yeah, (3)
5.14	TE	So you are saying yeah that's right and so you are giving, moving the learning along (2.5)
5.18	BT	Yeah, (3)
5.20	TE	With another question with a more trickier question, more like in the moment marking, (2) than sitting down with the books and going through them.
5.24	BT	Yeah
5.26	TE	But you are still doing it, you are still marking, and you are still driving next steps, extending their learning so that they have got something, so that you are not just like they've got that, you are moving them on to the next steps, (2.5) so
5.36	BT	Yeah, (3)
5.38	TE	To cement their understanding, (2.5) umm and obviously this was appropriate evidence for the children's understanding (3) as well, so the tasks demonstrated progress, if they weren't sure on, umm fractions of amounts, then you have addressed that and perhaps we've given them a problem to solve.

There is no indication from the script that the BT has internalised the TE's reference to

the distilling purpose that lies within the marking activity. In this case it appears as if the

TE is working harder than the BT. The TE is using their navigational gaze to relate the

observed action to the supervening principle. The TE is drawing on the concepts of 'intervention' and misconceptions', attempting to make them explicit as part of the action of marking. In a single plot, the profile could have been seen to suggest that both the BT and TE had recognised the specialising purpose as part of the activity, however the diffractive profile indicates that the BT was aware that they were engaged in the action of marking rather than in the activity of identifying misconceptions. I argue that in a single plot profile, the complexity of the different elements of professional practice knowledge structuring would have been under appreciated. A single plot enables reflection rather than diffraction. As such a 'diffractive analysis constitutes an alternative methodology to critical reflection' (Lenz Taguchi, 2012: 268). The significance of the TE's 'navigational gaze' can be better understood through diffractive profiling. The co-presence of different forms of knowledge can be made visible, as can their 'interference patterns'. The effects of the apparatus of human and non-human materials on knowledge-structuring are being made visible. The consequences of these effects can then be further analysed for their effect on professional formation.

When describing the significance of the navigational gaze in relation to discourses with a weak grammar, Bernstein noted that the transmitter needed to ensure that the discourse was not too 'open' but rather constrained by the apparatus of systematising concepts. In this profile the TE has attempted to specialise the concept of marking by holding the activities of marking to account in relation to the concepts of intervention and misconception. The TE has selected two systematising ideas for the profession here. Interestingly neither term appears in the Teachers' Standards (DfE, 2011).
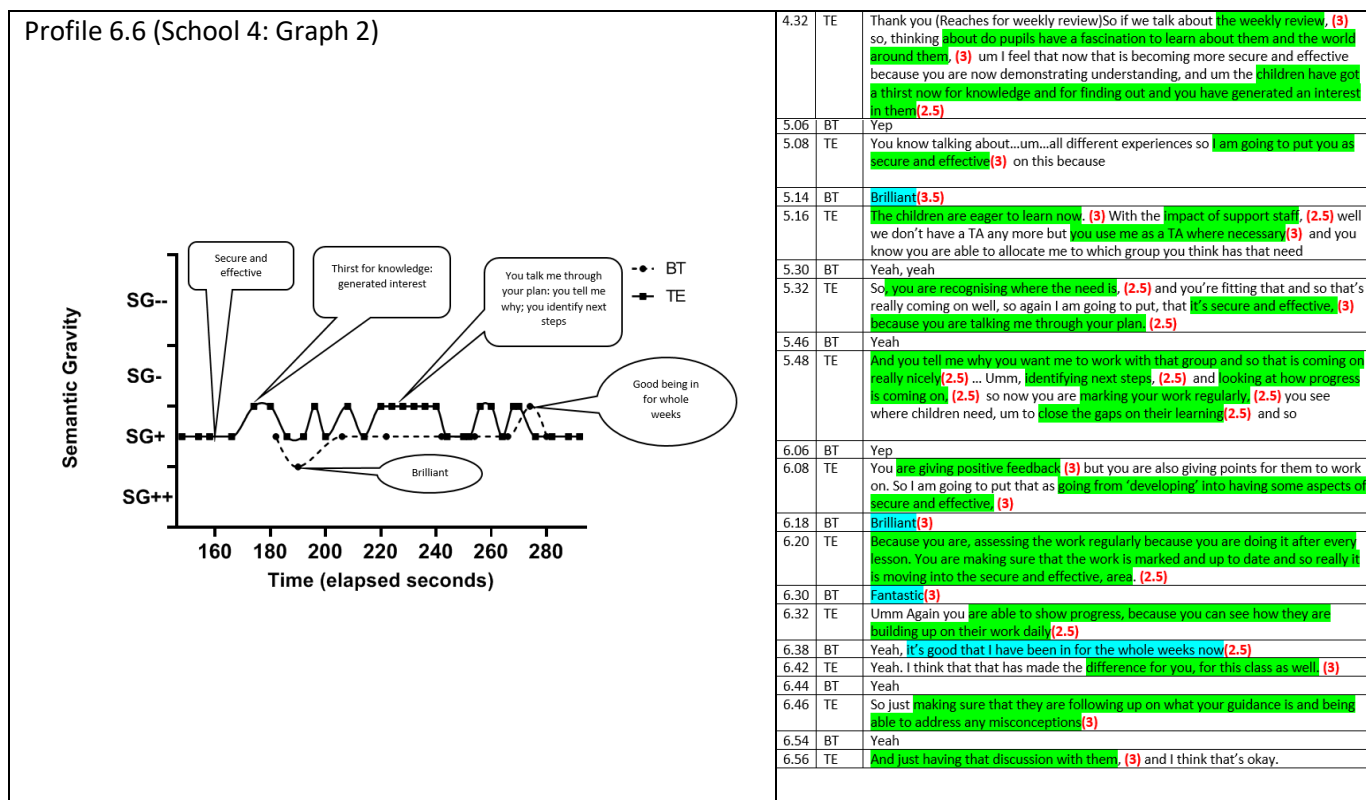
Whilst the five profiles in figure 6a have been grouped together as they all exhibit high levels of context dependency. I argue, however that they are all examples of a Vertical discourse of a Horizontal Knowledge type with a very weak grammar. There is evidence of some conceptual grammar, for example; 'interventions' 'misconceptions' 'challenge', 'transitions', 'high expectations', and 'progress'. However the reference to these pedagogic principles is fleeting rather than substantive. In these discourses more time is spent describing contextually relevant actions rather than evaluating professional activities. Bernstein (2000) recognised the seduction of relevance in discourses but also articulated his concerns. If meanings are missing from professional activities, professional identities are replaced by generic practices. Bernstein contrasted a regional knowledge with that of a new region. A new region was characterised as having greater context specificity than a traditional region. These profiles are indicative of teaching being articulated as a 'new region' due to a focus on contexts, a focus on the proximal element of knowledge. The focus on contexts is also a theme in the second set of profiles (figure 6b).

6.5 Investigating the SCITT's pro-formas diffractively

The four profiles shared in figure 6b, all illustrate a combination of shallow waves or horizontal lines at a slightly lighter level of gravity than those analysed in 6a. They are predominately within the SG+ / SG- coding categories and so slightly less context-dependent in nature that those analysed in figure 6a. The profiles in 6b share a form of knowledge structuring that demonstrates some reference to professional purposes. There is more iteration evident in the shallow waves suggesting some to-ing and fro-ing

between concepts and contexts. These profiles are therefore all indicative of a weak regional knowledge structure as they remain context focussed. When I then re-visited the transcripts that underpinned these profiles, I realised that in all cases there was a strong reference to the SCITT's paperwork. All of the discourses analysed in 6b were framed by the SCITT's weekly development meeting pro-forma (see Appendix E).

Figure 6b: Four profiles restricted by the material of the SCITT's pro-formas

Profile 6.6 (School 4: Graph 2)

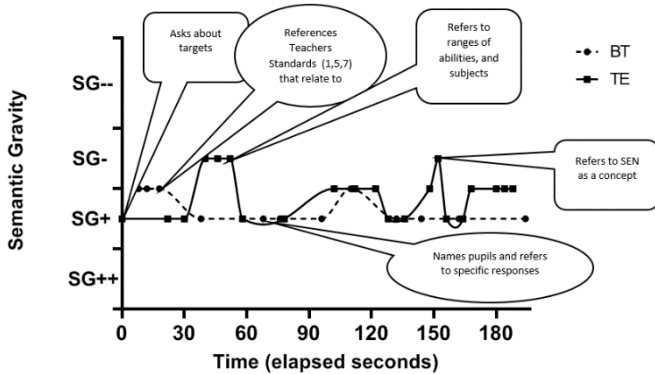| Time	Speaker	Text
4.32	TE	Thank you (Reaches for weekly review)So if we talk about the weekly review, (3) so, thinking about do pupils have a fascination to learn about them and the world around them, (3) um I feel that now that is becoming more secure and effective because you are now demonstrating understanding, and um the children have got a thirst now for knowledge and for finding out and you have generated an interest in them(2.5)
5.06	BT	Yep
5.08	TE	You know talking about...um...all different experiences so I am going to put you as secure and effective(3) on this because
5.14	BT	Brilliant(3.5)
5.16	TE	The children are eager to learn now. (3) With the impact of support staff, (2.5) well we don't have a TA any more but you use me as a TA where necessary(3) and you know you are able to allocate me to which group you think has that need
5.30	BT	Yeah, yeah
5.32	TE	So, you are recognising where the need is, (2.5) and you're fitting that and so that's really coming on well, so again I am going to put, that it's secure and effective, (3) because you are talking me through your plan. (2.5)
5.46	BT	Yeah
5.48	TE	And you tell me why you want me to work with that group and so that is coming on really nicely(2.5) … Umm, identifying next steps, (2.5) and looking at how progress is coming on. (2.5) so now you are marking your work regularly, (2.5) you see where children need, um to close the gaps on their learning(2.5) and so
6.06	BT	Yep
6.08	TE	You are giving positive feedback (3) but you are also giving points for them to work on. So I am going to put that as going from 'developing' into having some aspects of secure and effective. (3)
6.18	BT	Brilliant(3)
6.20	TE	Because you are, assessing the work regularly because you are doing it after every lesson. You are making sure that the work is marked and up to date and so really it is moving into the secure and effective, area. (2.5)
6.30	BT	Fantastic(3)
6.32	TE	Umm Again you are able to show progress, because you can see how they are building up on their work daily(2.5)
6.38	BT	Yeah, it's good that I have been in for the whole weeks now(2.5)
6.42	TE	Yeah. I think that that has made the difference for you, for this class as well. (3)
6.44	BT	Yeah
6.46	TE	So just making sure that they are following up on what your guidance is and being able to address any misconceptions(3)
6.54	BT	Yeah
6.56	TE	And just having that discussion with them, (3) and I think that's okay.

Profile 6.7 (School 5a: Graph 1)
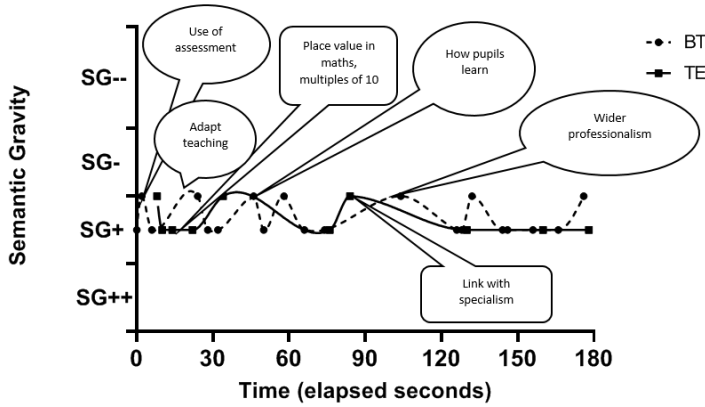

Time	Speaker	Text
8.05	TE	I know that (name of HLTA) observed you this week, I think that that's really important if she was feeding back to you. She was feeding back to you wasn't she. I know that she has made some notes. Was there anything in particular that you were pleased about that (name of HLTA) spotted, (2.5)
8.22	BT	Yeah, I like how she's put down that I rewrote the answers, in line with the success criteria, (2.5)
8.28	TE	Oh so you went back to them
8.30	BT	So, yeah and also I modelled, how they should write it on the board, (2.5) you know, using their capital letters and full stops, (3)because I think that that's another thing, that I have picked up, that children, are forgetting.
8.38	TE	Yeah
8.40	BT	You know when they are answering,
8.42	TE	They should speak in full sentences(3)
8.44	BT	Make sure that I picked out, umm, who was it, that had actually, umm, met the success criteria, (2.5) I think that it was (name of pupil),
8.52	TE	Ummmh
8.54	BT	And maybe (name of pupil) as well. I just said, you know, like they had remembered their capital letters and if you haven't get your purple pens out
9.00	TE	And edit it
9.00	BT	And edit it
9.02	TE	Yeah
9.02	BT	Yeah and so they did that
9.04	TE	Which was good
9.06	BT	And yeah, so she picked up on that and that I was modelling(2.5)
9.08	TE	Yeah
9.08	BT	Yeah
9.10	TE	And as soon as your standards slip, you know if you don't expect that, then they will just get into that habit of just, you know, not putting full stops in(2.5) and if you can re-iterate that, that was good. And going back to the success criteria. That's really good practice. Yeah, so well done for that ....: Umm so we'll go on to is that that next one. Keeping everything in order. So marking, have you done any marking this week? (2.5)
9.30	BT	Yes
9.32	TE	You have done the Sand Bear, haven't you?
9.34	BT	Yeah I have done the Sand Bear and I have done the science yesterday as well. So when they had to do the life cycle of the plant, (3)
9.38	TE	Yeah, yeah
9.40	BT	Um although you know I had done the teach and they were all like oh yes we know, but when they actually came to sticking in the pictures in that order
9.48	TE	The sequencing(2.5)
9.50	BT	Yeah the sequencing(2.5), Ah they put the flower at the end, So you know I explained that when it's a vegetable or a fruit, that the flower then becomes the
10.00	TE	Yeah it develops

Profile 6.8 (School 5b: Graph 1)

Time	Speaker	Text
0.02	TE	Okay so targets for over the next week then, which we talked earlier, before(3)
0.10	BT	We've got TS1, challenging and probing for appropriate answers, TS5 Being aware of particular groups of children, and TS 7, applying rules consistently (2.5) and clearly
0.24	TE	Yeah, and I know that you have already started doing that. (3) I have seen that with certain children, who can push it and they have responded well, I think. And also with (pupil name), you have been firm and consistent with him, and he's been okay hasn't he.
0.40	BT	Yeah
0.42	TE	And so the TS1, one, challenging and probing for appropriate answers, that could be any lesson (2), maths, English or science, and it doesn't necessarily have to be the upper ability. It can be the lower ability too, (2)
0.58	BT	Yeah
1.00	TE	Just trying to get them to explain their thinking at their own level. But I know that you do try to do that. So when we are talking about text, the video text today, which they loved didn't they? (3)
1.10	BT	Yeah, they really got into it. (3) Especially (name of pupil)
1.12	TE	I couldn't believe (name of pupil's) enthusiasm
1.14	BT	Mmmmh
1.16	TE	He has never volunteered so many answers
1.18	BT	I was really worried about the boys, whether they would like it or not, but they did, didn't they? (3)
1.20	TE	I meant to say earlier, and I had to rush off didn't I. I was wowed by(3) (names 3 male pupils) . They were like (raises arm to answer a question enthusiastically!) pick me, pick me... And (pupil's name) is normally asleep in literacy.
1.38	BT	His answers were brilliant as well, (3) weren't they?
1.40	TE	He's quite clever isn't he. Umm, yeah, so that's the nice one I think
1.42	BT	Umhuh
1.44	TE	Just thinking about how you can draw out of them, well why do you think that(2.5)
1.52	BT	Go deeper(2.5)
1.54	TE	Yeah, or make connections with other things. That will be quite a nice one to do. Because I think that they are at a point now where they are ready to be challenged more in their thinking and today proved that. (2.5)
2.08	BT	Yeah
2.10	TE	I mean they were, volunteering the ideas that I hadn't even thought of(3)
2.14	BT	Yeah and they could explain why as well couldn't they(3)
2.16	TE	Yeah
2.16	BT	Yeah
2.18	TE	And then you get (name of pupil), (3)who despite the fact that everyone else had twigged that the dress was part of the cog mechanism
2.26	BT	She just wanted to go against everyone, didn't she...?(3)
2.30	TE	Yeah. And then the being aware of particular groups of children. (2.5) Obviously we've got the SEN. (2) And then you've got the children who aren't actually SEN, (2) like (name of pupil) (3)

Profile 6.9 (School 6a: Graph 1)

2.30	BT	(Reading from WDM) What have been your key successes? (3) I have put TS 6; Use of accurate assessment through all the phonics planning from using the mock results. (2.5)
2.38	TE	And TS6 with your use of assessment in the maths, (2.5) because when we did the place value(3)
2.42	BT	Yeah
2.44	TE	You realised that the multiples of 10(3) (AT: Notes this down – making a connection) and the teens, that they were getting mixed up,…(time for the AT to write)…so then Friday, this lesson, you are going to do that and then just move the lesson on, (3)
2.54	BT	Yeah, and then I've put, about TS5 adapt teaching(2.5) because I stopped playing my maths game, because, I just thought that there was no point in carrying on(3)
3.04	TE	And that links into that one (points to TS6) (2.5) as well, both really, because before they move on they need to know about place value. They need to know the difference between teen and T(3)
3.16	TE	Reading from WDM – So what would you like to develop next? So I have put continue to make the use of accurate assessment (addressing) misconceptions(2.5) in the big write, that children are writing through the big write and to(3) TS2 to demonstrate knowledge and understanding of how pupils learn(2.5) and how this can impact on teaching, so obviously next week we have to label parts of the plant(3), so I was thinking, about actually getting a plant that has got a root and stuff, because I feel like when we are doing the tables, and when we work with the Jellyfish that that would really really help them with
3.42	TE	Yeah
3.44	BT	that practical knowledge(3), so I thought hopefully I can show that
3.46	TE	And that can come, through when we have planted the seeds, they will see the roots won't they, when they come through(3)
3.52	BT	Yeah for themselves
3.54	TE	You know, umm, TS6 through misconceptions in your big write, that will link in with your specialism (time for AT to make notes) (2.5)
4.15	BT	Then I put proficient and effective for TS8, Fulfilling wider professional responsibilities. (2.5) I put…yesterday, (name of pupil) noticed that when they were lining up, when they were in a line, even if they go up, so I was like, what's that like, what work is it like and she said, tally charts and then I said, no think about it, and she said bar charts and I thought that was so… And then (using WDM) And then again yesterday with (name of pupil) I was really able to push her in that maths compared to the others crabs with the place value(3)
4.40	TE	Yeah
4.42	BT	So, deploy support staff so as to impact effectively, (2.5) but then I'm still not having to evaluate the impact just because I don't have a need to do it
4.50	TE	Yep and turns pages of WDM
4.54	BT	Urmmh so, echh, how well does marking identify, so obviously it is assessed regularly and I always put next steps, (3)
5.04	TE	Yeah

The WDM pro-forma states in its preamble that it creates an 'ongoing log of your [the BT's] progress'. The first two boxes are predicated on an audit type response to ensure compliance. The next two prompts relate to the identification of 'key successes' and 'key areas that you would like to develop next'. Significantly, both of these statements are supplemented by a request to 'relate these to the Teachers' Standards, where you can'. The TE and BT are then asked to highlight and annotate a grid that specifically relates to Teachers' Standard 8 'Fulfilling wider professional responsibilities' before completing a second grid in relation to Teachers' Standard 6, which relates to assessment. The final section supports the BT and TE in looking ahead to the planned developments for the following week in relation to the lesson observations and programme requirements. There are two types of lesson observation format used by the SCITT, the Lesson Observation Profile (LOP) (Appendix F) and the Focus Lesson (Appendix G). The Focus

Lesson is in two parts, one that centres on description and the second that prioritises evaluation. Both observation formats reference the Teachers' Standards.

The continual reference to the Teachers' Standards enabled Ofsted to recognise that the SCITT's 'Assessment of the trainees against the teachers' standards is rigorous, thorough and accurate' (Ofsted 2017: 9). The inspection report stated that the SCITT was an 'outstanding provider' and a subsequent pilot inspection in February 2020 confirmed this grading. The Ofsted report contained recognition of the official position in relation to the Teachers' Standards being the framework for the assessment of the award of QTS. The analysis of the WDM profiles revealed that whilst the SCITT's assessment of the trainees may be 'rigorous, thorough and accurate', it is also pedagogically restrictive because of the ways in which its materials demonstrate a high dependence on the ORF (Teachers' Standards) rather than the PRF (Systematic knowledge). The SCITT's material regulated the discourses such that the TE's local instruction focused on evidencing demonstrable competencies.

The TE/BT pair from School 4 (profile 6.6 in figure 6b) used the Focus Lesson format within their WDM discussion and the TE/BT pairs from Schools 5a (profile 6.7 in figure 6b), 5b (profile 6.8 in figure 6b) and 6a (profile 6.9 in figure 6b) all referenced the target setting element from the WDM. In each case the apparatus of the material restricted the pedagogic potential of the discourse. The material (the WDM, and Focus Lesson pro-formas) focussed on gathering context-based evidence in relation to the Teachers' Standards rather than foregrounding a discourse in relation to professional principles. It

is not that the principles are not present, it is that their presence remains under-

appreciated due to the material configuration of the SCITT's paperwork. In the case of

School 4, the restriction was also the result of how the paperwork was used.

Figure 6.6 WDM Profile 6.6: School 4 Graph 2
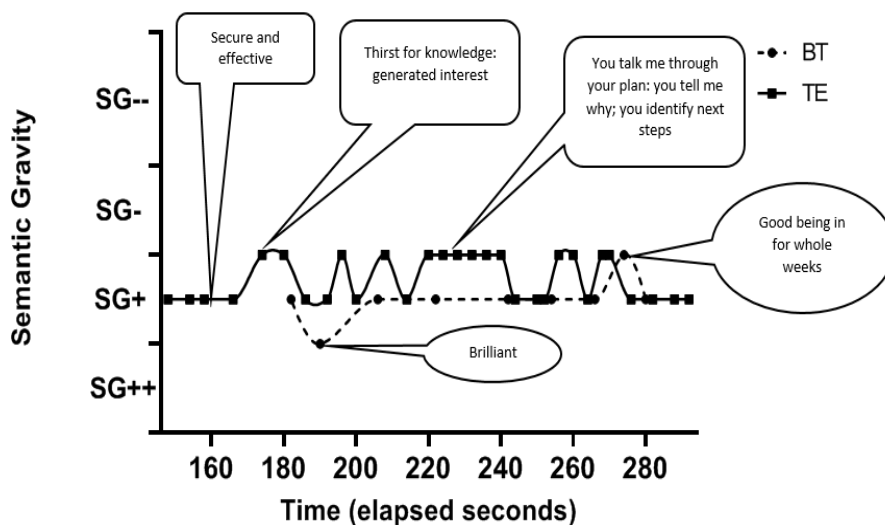
School 4: Contextual Information

School Information	363 pupils 11.6 % FSM Ofsted (Good) Own small MAT
TE Characteristics	Experienced teacher and mentor, completed Tier 2
BT Characteristics	Mature entrant Interview grade =2 Final grade =1

The SCITT's ambition is that it is the evaluative part of the Focus Lesson that is discussed

within the WDM, rather than the descriptive element. The video and transcript from this

WDM revealed that the TE simply read the description to the BT. The TE told the BT that

they were 'secure and effective' in terms of their practice. The term 'secure and

effective' is a grade descriptor used by the SCITT. The TE explained that the reason that

they had given the BT this grading was because the children 'have got a thirst now for

knowledge and for finding out, and you have generated an interest in them'. The TE did

not explain to the BT how they had generated these capabilities but simply described

the outcome, the proximal or the visible element, that which could be observed in

'clock' time and space. The description was then supplemented with examples, but

these examples also referenced actions, describing what the BT did rather than explaining why these were productive actions or how they were principled examples. For example the BT is told that they 'use me [the TE] as a TA when necessary', and that they 'talk me [the TE] through your plan', and that they 'mark work regularly'. At one point a connection is made with how marking can enable pupil progress. In this sense progress is being used as a relational apparatus, but for the majority of the time the discourse is restricted by the reference to the SCITT's pro-forma. If the purpose remains implicit to the BT then it cannot be accessed. All that can be accessed is that which is made explicit. This relationship between implicit and explicit forms of pedagogic communication and professional knowledge formation is also a feature of the discourse for the pair from School 5a (figure 6.7).

Figure 6.7 WDM Profile 6.7: School 5a Graph 1   **School 5a: Contextual Information**
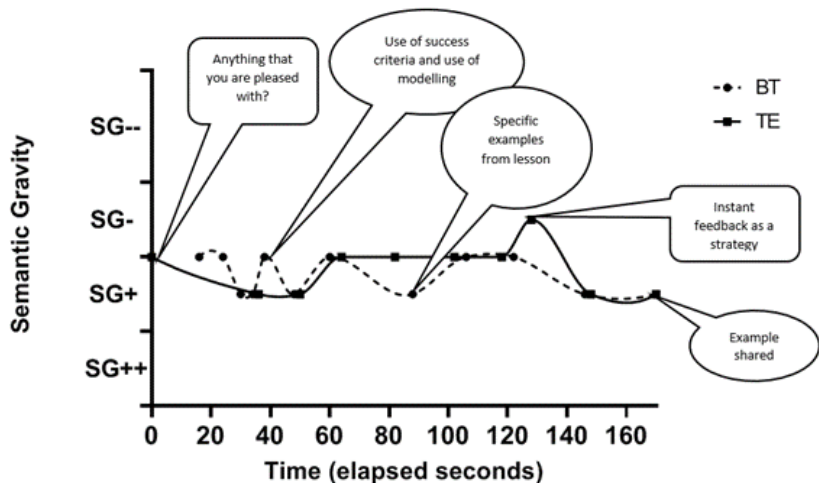
School Information	362 pupils 19.7 % FSM Ofsted (Outstanding) Own small MAT
TE Characteristics	Experienced senior teacher and mentor.
BT Characteristics	Mature entrant Interview grade =2 Final grade =1

In the WDM segment profiled in figure 6.7, the TE invites the BT to share elements of their practice that they are pleased with. The BT responds by describing rather than evaluating their actions. The BT retells the lesson. The TE does not use this as an
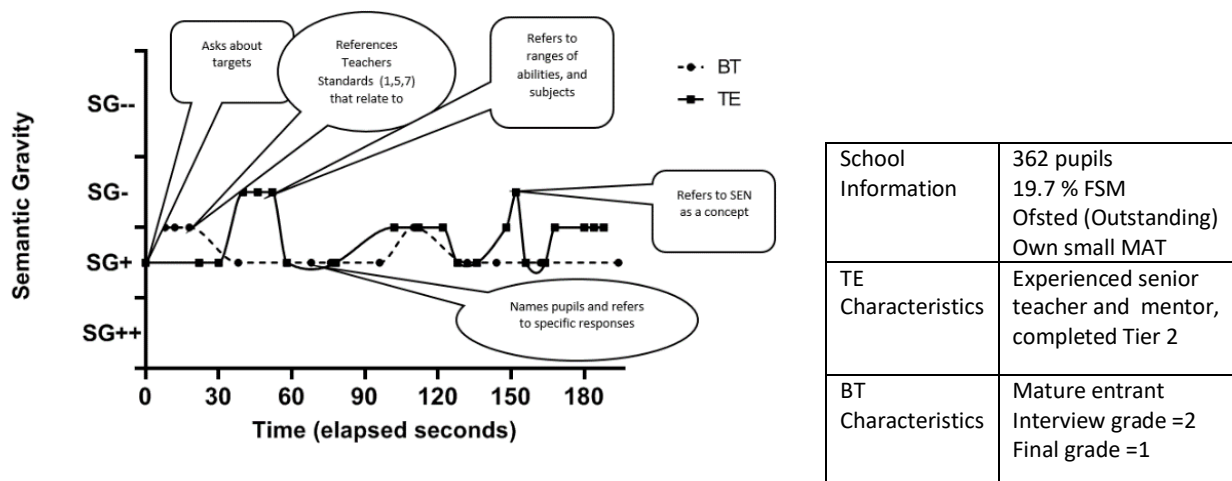
opportunity to lift these descriptions out of their context, and so the TE's profile is below that of the BT during the early part of this dialogue. Opportunities are missed as again descriptive criteria are used as prioritised by the apparatus of the pro-forma. Towards the end of this segment, a connection is made with the concept of feedback and 'instant feedback'. Rather than the lesson being seen as an exemplification of this conceptual principle, and reference being made iteratively between principle and exemplification, the specifics of the lesson are returned to.

In analysing the profiles in this way, I am revealing significant issues for the work of the SCITT and for our professional support for our TEs. We like to think of ourselves as a 'scholarly' SCITT and one that foregrounds a theory/practice relationship. The analysis of the profiles is revealing that the nature of our paperwork is at odds with this ambition and is actually limiting or restricting the gaze of the TEs and BTs towards contexts rather than enabling the discursive gap. It is in fact 'othering' theory and practice rather than developing the relational structures required for reasoning. The second pair of TE and BT from School 5 also evidence the restriction unwittingly present in the SCITT's documentation. The SCITT's pro-formas in turn are carrying the restrictions of the Teachers' Standards. These restrictions are then evidenced in local discourses through the diffractive profiling. In relation to analysing profile 6.8 from pair 5b, it is worth noting that the TE is very experienced and benefits from regular SCITT professional development sessions. The fact that the two pairs from School 5 are both in this grouping is perhaps worthy of comment. One of the opportunities created by Schools 5 and 6 was the fact that in both schools two pairs volunteered to participate in the research. In the case of School 5 here, both TEs were complying with the SCITT's

requirements. They both benefitted from SCITT training and the school is very

supportive of the SCITT. They fidelity to the SCITT's expectations is evident, revealing to

me the significance of the SCITT's proformas. A diffractive analysis recognises that

'knowing is a matter of differential responsiveness…to what matters' (Barad, 2007: 149).

The analysis of the profiles has facilitated a different view of the SCITT's protocols. The

forms carry a form of knowledge-structuring and so are active in pedagogic discourses

and so have an impact on pedagogic relations. Prior to engaging in this research such

materials were thought to be passive elements. Further analysis reveals their

significance. In the case of pair 5a (figure 6.8) the TE and BT are discussing the aspect of

the WDM pro-forma that focuses on targets in relation to the Teachers' Standards. The

TE dialogue exemplifies their use of co-analysis. Co-analysis is an approach foregrounded

by the SCITT to enable an empowering dialogic process that continually references

criteria in relation to context so as to avoid description and prioritise analysis. The SCITT

states that: 'Where co-analysis works well, there is recognition that both the in the

moment experience of co-analysis and the subsequent reflection on the new

understandings, and knowledges created are both cognitive and social. There is

recognition that teaching is a practical profession underpinned by an informed

philosophy' (KNSTE, 2021). Whilst the TE is exhibiting these characteristics in that they

are asking probing questions; the dialogue remains in the SG+ coding because of the

restrictions evident in the paperwork.

Figure 6.8 WDM Profile 6.8: School 5b Graph 1　　　　**School 5a: Contextual Information**

School Information	362 pupils 19.7 % FSM Ofsted (Outstanding) Own small MAT
TE Characteristics	Experienced senior teacher and mentor, completed Tier 2
BT Characteristics	Mature entrant Interview grade =2 Final grade =1

The materialisation of the profession in the paperwork in fact constricts the realisation of the SCITT's ethos. The SCITT's paperwork is reproducing the restrictions evident in the Teachers' Standards and the TE remains conscientious in relation to remaining faithful to the SCITT's requirements. The SCITT has set up an unproductive tension here. The material of the paperwork is at odds with the articulated ambition of the SCITT. A diffractive analysis is revealing that there is much work for myself as the SCITT Director to do, alongside colleagues. The analysis has clearly demonstrated the material effects of the materials.

The diffractive semantic profiling has exposed the significance of the role of the paperwork as a material manifestation of a practice epistemology. The pro-formas prioritise descriptions of actions and so prioritise the individual and the particular. The focus is on the external rather than on the collective inner dedications of the profession or the ways in which BTs and TEs 'dwell in' the profession. Consequently, the SCITT's

procedures are foregrounding discourses in relation to externally performed competencies rather than enabling the internal transformation of BTs' associated with becoming a teacher. The apparatus of SCITT's paperwork has limited the verticality. This analysis indicates that the SCITT should pay more attention to the form of apparatus that is draws upon to enables its TEs and BTs to develop a navigational gaze. If TEs and BTs are unsupported in recognising the significance of the relationship with substantive knowledge in professional practice, then they are likely to 'flounder in an experiential space rather than one enhanced by the presence of conceptual knowledge' (McPhail, 2016: 1157). The profiles in figure 6c demonstrate how, despite the restrictions of the SCITT's documents, some TEs and BTs demonstrate the ability to lift their discourses beyond contextual descriptions. I was therefore curious to analyse these profiles further to reveal how their navigational gazes might differ from those profiled in figures 6a and 6b.

6.6 The significance of the TE's Navigational Gaze

Previously, the first two segments of the WDM dialogue from School 1 had not evidenced much context independence, neither had that from School 2. Interestingly the three profiles in figure 6c all come from School 1 (profiles 6.10 and 6.11) and School 2 (profile 6.12) and occur during the later stages of the WDM discourse. The significant of this timing is important. It suggests that it is after the initial descriptions that a more in-depth dialogue is facilitated. The way in which the TE and BT structure their dialogue within the fixed time of a WDM discourse is therefore important, and something that the SCITT should be mindful of when supporting TEs.

Figure 6c: Three profiles with a stronger Vertical Discourse of a Horizontal Knowledge Structure Type.

Profile 6.10 (School 1: Graph 3)

Profile 6.11 (School 1: Graph 4)

Profile 6.12 (School 2: Graph 1)
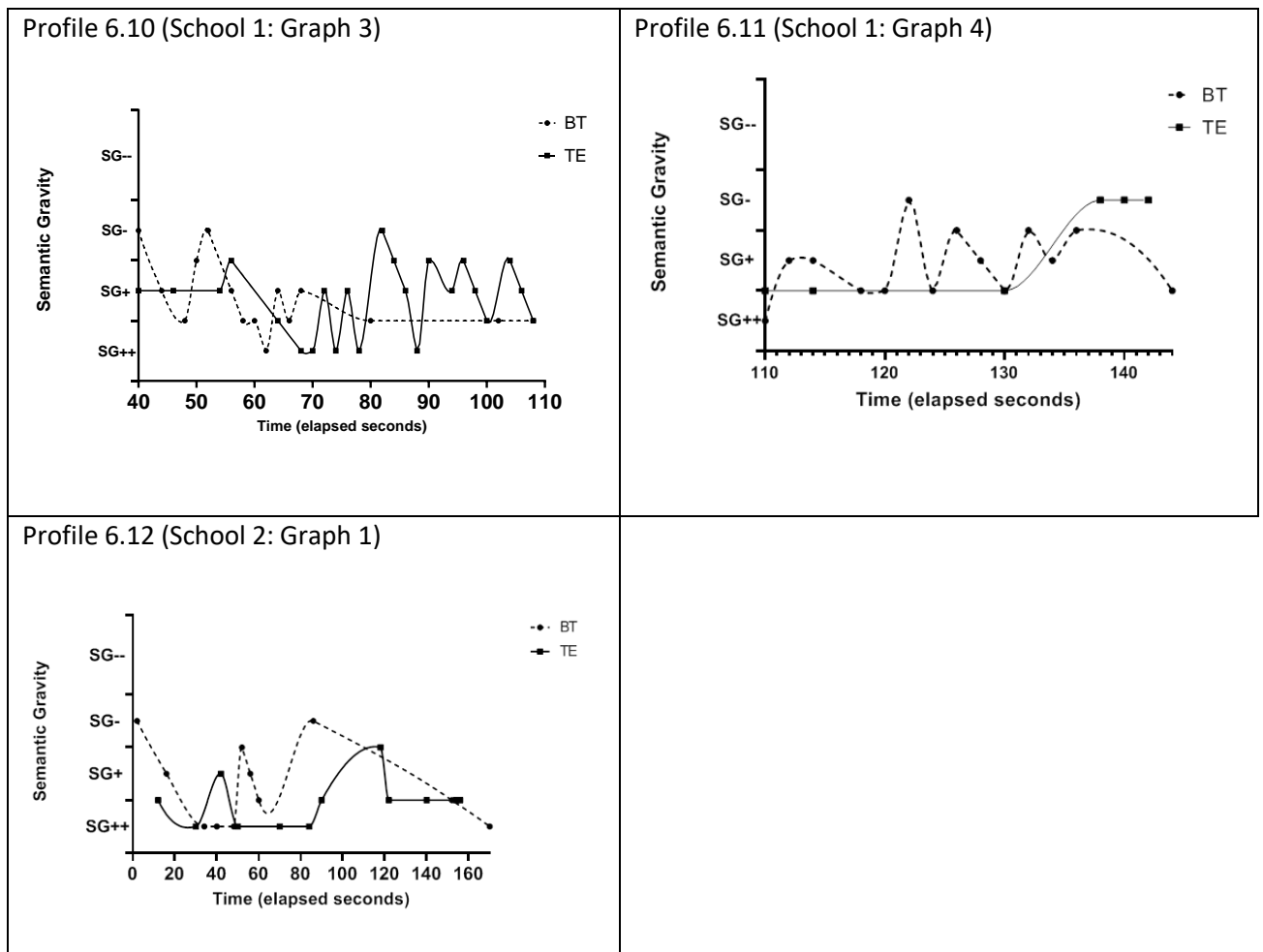
Profile 6.10 from School 1, analyses a dialogue during which the support from the TE enables the BT to enter into the space of reasoning, the discursive gap. The increased verticality and the iterative nature of the TE wave indicates this. The BT's profile exemplifies both some waving and some moments of horizontality. In this segment, the TE draws on the concepts of 'assessment' and 'intervention' to connect particular moments observed in a maths lesson with their professional purpose (see Appendix D for the full transcript for School 1).

**Figure 6.9 WDM Profile 6.10: School 1 Graph 3**
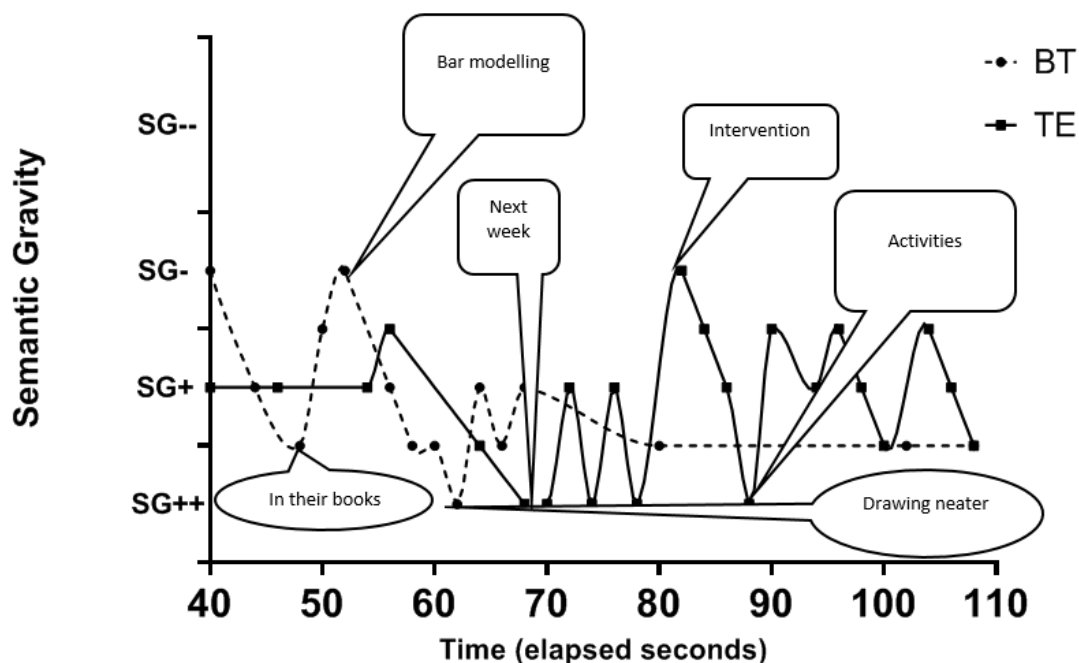
The TE makes explicit to the BT why the identifications of misconceptions are important in relation to planning for purposeful interventions through meaningful assessments. The TE selects from their own networked appreciation of professional concepts to regulate the dialogue in an elaborated rather than restrictive manner. In this sense the criteria of the apparatus have been changed from one of compliance with demonstrable techniques to that of engagement with a principled reasoning. In this case, it appears that the navigational gaze is dependent on a different form of expertise, rather than informed by mere familiarity with the statements contained within the Teachers' Standards, or with individualised context specific experiences. The expertise required of a TE in this case is one that enables a TE to access 'an extensive and highly integrated body of knowledge related to their disciplinary area (Patel, Arocha and Kaufman, 1999: 92). This is coupled with the ability to 'recognise patterns within complex sets of

information and to use this to identify quick and accurate responses' (Kinchin, 2019: 73).

Such a form of expertise is also evident in the wave profile for School 2. However, in this

case, the BT's waves pre-empt those of the TE and are also more iterative than those of

the TE.

Figure 6.10 WDM Profile 6.12: School 2 Graph 3
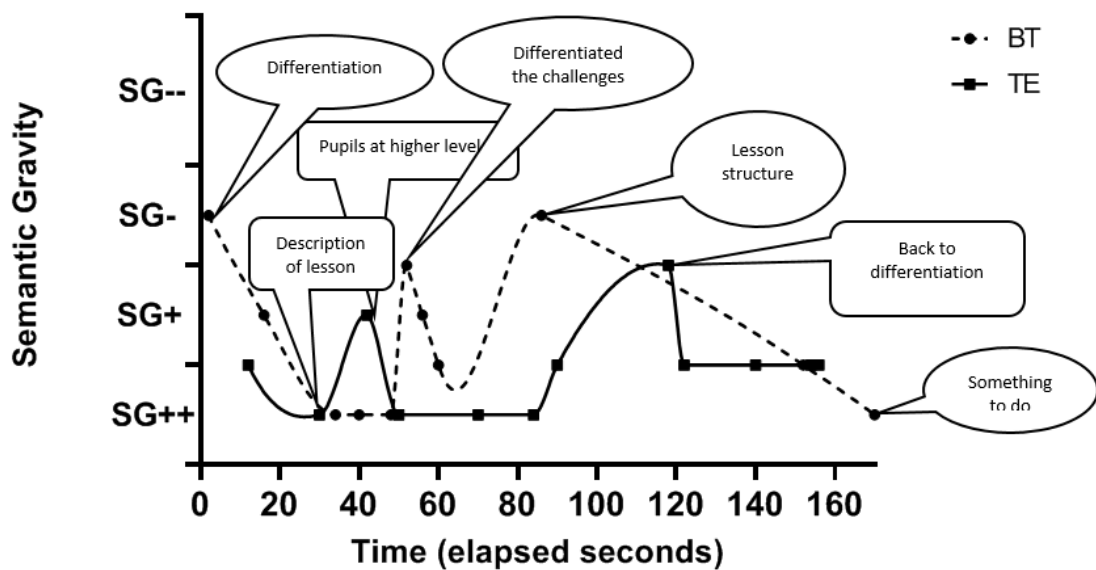
The diffractive profile represented in figure 6.10 recognises that BT also has a

navigational gaze. In this case the BT drew on their own pre-existing knowledge

structuring capabilities and so they were able to reference some principles without the

support of the TE. Therefore it is important that I acknowledge the significance of the

navigation gaze of BT's as well as the intra-actions between the BT and TE. In analysing

professional practice knowledge structuring it is important not only to include the

materials, the expertise of the TE but also the BT. In the case of School 2, the BT

identifies the concept of 'differentiation' and uses this professional knowledge to

unpack, evaluate, and elaborate their performed actions in the lesson.

2.40	BT	For the different, differentiating differentiation (2), I can't even say it, Okay right
2.50	TE	So you've gone through that (3.5)
2.54	BT	Yep I've put what you've put. I've put that I differentiated and that I could have done more for the highers (3) and the activities wise, if I had set them off and kept these , instead of setting these off and keeping them, it would have made more sense
3.08	TE	Yeah, so you thought that they were probably alright to get on (4)
3.12	BT	Because I set the, I said if you want to start now, (4) next bit , the start, it would have been easier to do the harder one first and then set them off, and then keep these ones for longer
3.20	TE	Yeah and then, because they were, obviously they are at a higher level (3) aren't they and so they don't need to sit through
3.26	BT	Stuff that they already know (4)
3.28	TE	stuff that they could probably already do anyway (4), Yep
3.30	BT	Ummm, I differentiated the challenges (2.5), I differentiated the activities, but, overall a lot of the lowers decided to do the higher work (3), so I gave them the choice(3.5), key points again – I would have rearranged the structure if I did it..., so that they had more chance to set off, um again filling the lines, number line. for the activity ..did I.. What I write for this experience, is differentiate at all times, activities and questions, and give them the choice maybe, and because, I felt like some pupils could do it, when I didn't think that they could
4.04	TE	Mmmh (4)
4.06	BT	Um so yeah, it was fine apart from... , the structure(2)
4.10	TE	Yeah that is basically what I came up with wasn't it. It was good that you were giving them the choice(3.5) of the activities that they do, so sometimes it's a nice idea, especially when it's a new thing, or something, if they have done it a while and
4.26	BT	Yeah, let them give it a go
4.28	TE	Um hah...Right...
4.29	BT	Today?
4.30	TE	Right on today (refers to a LOP) um, there's lots of good things today ..um
4.36	BT	You don't have to sound quite so surprised!
4.38	TE	No I'm not! Going back to, going back to differentiation, (2.5) because that's the good thing that you are working on at the moment isn't it. So umm.... You have a sheet there to support them at all times and a sheet on the board (3.5) which is good, so ...you suggested that the LAPs had the numbers on to help them, but maybe you could have done that for them already? But...eh...and then when they started, you straight away came over here, just to check that they were okay ... that was nice(4)
5.14	BT	Yep
5.16	TE	I thought that was nice, the HAPs were given bigger numbers to work with(3.5) ..eh...but again maybe during the class thing, , when you are doing that on the board,

The BT subsequently recognises that they could improve the way that they structured

the differentiated tasks to improve pupil progress. This represents a form of dynamic

flow in profession practice knowledge structuring. The knowledge is found in the

relationship between context and concept, is consistent with that encapsulated in Ryle's articulation of 'intelligent know how' and Polanyi's fuller articulation of tacit knowledge, as well as with the 'thicker' forms of craft and practice knowledge. Thick in the sense that there is space for reasoning (verticality) rather than thin in that the space for reasoning is condensed and restricted.

The profiles in figure 6c exhibit a greater semantic range than those in figures 6a and 6b. The profiles in 6c also indicated greater semantic variation. There is more to-ing and fro-ing between context and systematic knowledge as new understandings develop. The use of professional vocabulary brings into the discourse the inner dedications of the profession. The profiles indicated the relational movement evident within professional practice knowledge structuring, typical of 'intelligent know-how'.

I therefore argue that professional knowledge development is found in these relational spaces and not in the stuck spaces of 'know-how' and 'know-that'. These are stuck spaces because they are separated. Once separated, flow cannot be enabled. Social realists are concerned with recognising the importance of the different forms of knowledge rather than with knowledge separation. The diffractive profiles are illustrating how in productive professional knowledge structuring both forms of knowledge are bought into a relationship. Professional practice knowledge is therefore a relational knowledge. Relational knowledge is a third space that lies between know-how and know-that, drawing on both relationally. It is not relativist space but a realist one

because of the inclusion of systematic knowledge to specialise discourses rather than being reliant on individual experiences.

If professional practice knowledge is a relational knowledge then there is a flow present within it, the flow is represented by the waves. The form that the waves take indicate the type of flow. A shallow flow indicates a weak profession, there is weak verticality and weak use of systematic knowledge. A wave with a bigger semantic range suggests a greater space for reasoning. There is more of a discursive gap, indicated both by the depth of the wave and the number of iterative movements.

Profiles 6.10, 6.11, and 6.12 illustrate that when the navigational gaze includes the capacity to draw on systematising concepts in relation to contextual particulars, professional reasoning capabilities are developed. These capacities are a form of 'intelligent know-how' and different to the capacities required for highly practical forms of know-how or highly theoretical forms of knowledge. Intelligent know-how involves a relational flow, and the navigational gaze is fundamental in enabling such flow. Bernstein recognised that developing appropriate navigational gazes in Vertical discourses of a Horizontal Knowledge Structure type was particularly problematic. Firstly because of the proximity of this form of Vertical discourse to Horizontal discourses (see figure 6a), but also because of the need to not have too many segments. Too much segmentation could lead to fragmentation. In fragmentation, the supervening purpose remains latent as it is not activated and so verticality is not enabled. In such cases the pedagogic potential is latent. It is not absent. To claim that it is not present is reliant on a

Cartesian perspective of time and space rather than a quantum one. In such cases that which is observed is used as a proxy for what is thought. If what is observed is used as a proxy for what is thought then practice is seen as a Horizontal discourse, for example the observation of giving the pupils' choice, may or may not be a form of differentiation. It is only through discourse that the purpose of choice is materialised in relation to the concept of differentiation. In order to realise the relational there needs to be a flow between concepts and contexts.

6.7 Waves of interference and interruption

The concept of flow is important not only at the micro-scale of the discourses (the navigational gazes of the TEs and BTs) but also at the meso scale of the SCITT's pro-formas and protocols and at the national level of the ORF and PRF. What is also worthy of further investigation is enabling the flow between these different scales. In order to facilitate this analysis of flow between the different scales first deeper understandings of the flow evident in the WDMs needs to be further developed. In order to do this, a final set of profiles are analysed. These are shared in figure 6d and are drawn upon to analyse the different ways in which the TE and BT waves intersect, interfere and interrupt each other. Again such analysis would not be possible if the profiles had not been plotted diffractively.

Figure 6d: Three waves of interference and intersection

Profile 6.13 (School 6b: Graph 1)

Profile 6.14 (School 3: Graph 2)

Profile 6.15 (School 4: Graph 1)
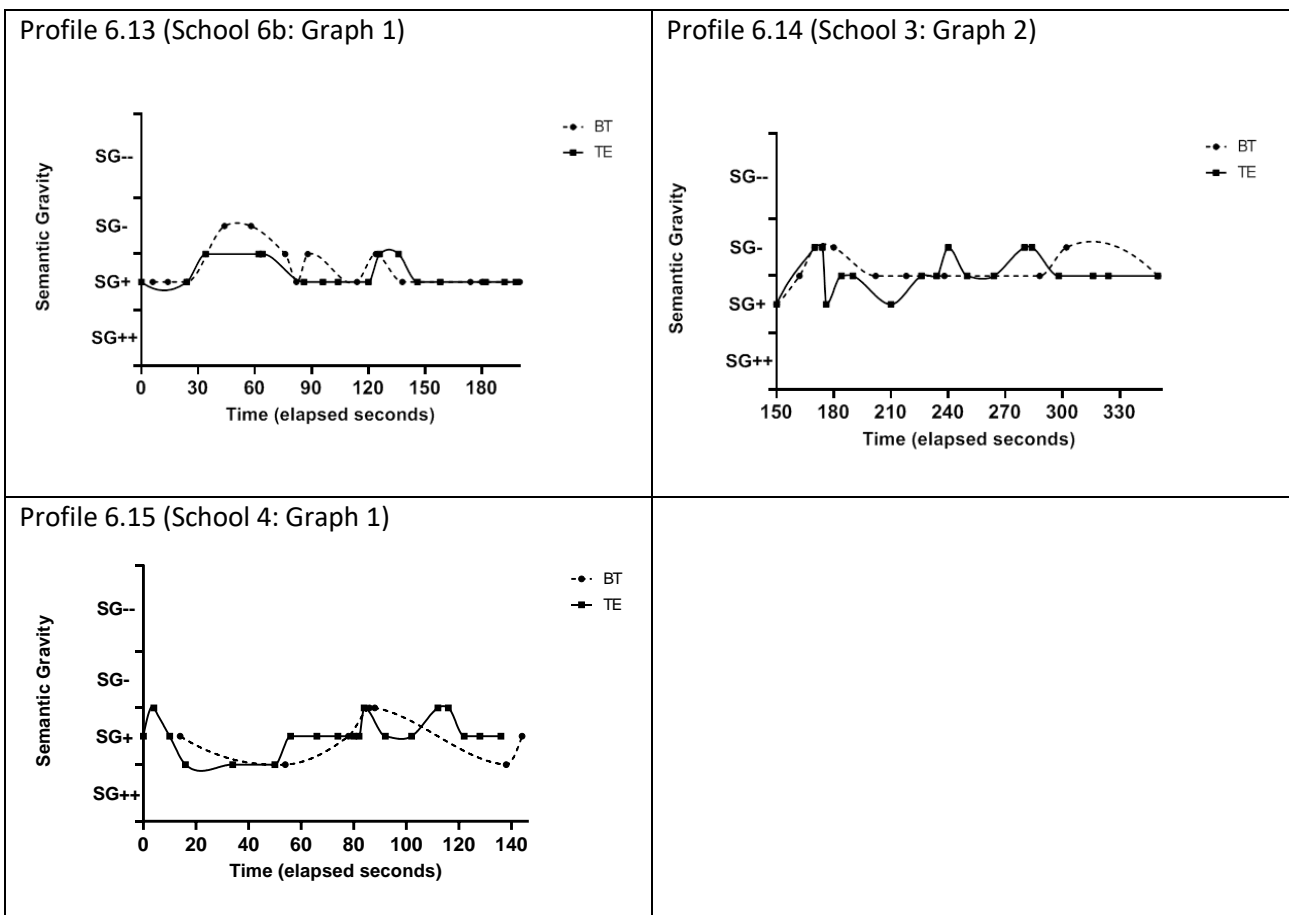
In each of these three cases there is evidence that the TE and BT's knowledge-structuring have impacted on each other. However the waves of the BT and TE interfere with each other differently. It is important to acknowledge this difference as it is important for this study that the profiles are not seen to be creating a preferred typology. In profiles 6.13 and 6.14 the TE lifts the BT's analysis from being highly context specific to being a little more abstract. The TE and BT lines continue to demonstrate interaction and intersection as knowledge is built. In the case of profile 6.15 the TE reduces their semantic gravity so as to connect with the BT to lift their knowledge beyond the context. In each case there is a difference. What is significant is that the TE is conscious of how and why they are using their navigational gaze differently in each circumstance. It might not always be the case that the TE should make a reinforcing

move. The profiles therefore offer an apparatus for analysis rather than a tool for conformity. What the profiles do offer is a different means for revealing knowledge-structuring. They offer a visualisation that can stimulate further discussions. Such diffractive visualisations are a form of symbolisation. Diffractive profiles are able to represent the interplay or entanglement of different forms of knowledge-structuring in a way that prevaricates again the conflation of the empirical with the theoretical. In each case a single plot would have done a disservice to the complexity of the knowledge-structuring evident when a diffractive methodology is used. Importantly diffractive plotting enables a visualisation of relational entanglements. Such profiles underpin a very different form of analysis than that previously enabled through classical worldviews. Without a diffractive profile the influence of the presence or absence of the 'other' would not be as evident as the profile would have been merged to form a single representation of the dialogue. In this case what has been found present 'within' the discourse is a restriction, the restriction of the Standard, and what has been found to be 'absent' is the pedagogical potential of the conceptual. Barad notes that 'the question of absence is as political as that of presence' (Barad 2017a: 113).

6.8 Developing the profession's access to systematic knowledge

A 'diffractive reading must therefore entail close respectful responsive and response-able (enabling response) attention to the details of a text, that is, it is important to try *to do justice* to a text' (Barad, 2014b: 173, emphasis in the original). In attempting to do justice to the profiles, they were analysed not only for their semantic gravity but also to ascertain whether any consistency could be found across the different school settings in relation to the terms used to access the profession's collective knowledge. I revisited all

the profiles to explore if any concepts had been referenced as a form of meta-language. In order to facilitate this analysis I used the following four dimensions to identify significant professional concepts: 'common', 'contestable', 'central' and 'connected' (Splitter, 2014: 103). Concepts are common in the sense of being 'familiar and in common usage…such that we can think about them together'. (Splitter, 2014: 13). This is potential a challenge in a profession that does not have easy access to systematic knowledge. Contestable in the sense that their meaning is not fixed and central in the sense that 'their meanings matter to those who use them' and connected to our experiences. Concepts have a specialising and organising potential, but are not 'stuck'. It 'is the social reality of unobservable concepts (whether scientific or religious) that gives them power (and claim to objectivity and truth) relative to our common-sense concepts and enables them to transcend the specific instances and circumstances of everyday life' (Young 2008: 43). Table 6.3 contains a list of such concepts that I found present in the analysed discourses.

Table 6.3: Concepts identified from the WDM profiles

School 1: Intervention, assessment, progress
School 2: Differentiation, structure, impact, progress
School 3: Marking, curriculum, interventions
School 4: (none)
School 5a: Feedback
School 5b: Challenge, special needs
School 6a: (none)
School 6b: Subject and curriculum knowledge

Concepts have time and space properties that are different to those of an individual instance and so cannot be reduced to a moment, although moments can connect with a concept or principle. Table 6.3 represents a set of concepts that TEs and BTs in the SCITT

connected with their individual contexts. There is therefore an 'irreducible difference' (Young and Muller, 2010: 15) between concepts and contexts that needs to be respected if relationships are to be legitimated. Without such difference conflations occur. When differences are respected connections occur. Bernstein has recognised that it is via a navigational gaze that coherence between seemingly disparate contexts can be enabled and that this form of segmental pedagogy is a way of holding 'wholes and parts together' (Gamble 2018: 259). In order for this very special form of pedagogy to be realised, the concepts available to a profession need to be made explicit.

In listing the concepts, I needed to consider carefully how and why I had articulated these. In a diffractive methodology, 'Attentiveness and responsiveness to material differences and material cuts and how they matter makes conjoined engagements within the world not a mere academic curiosity or luxury' (Barad, 2011: 9) but an opportunity to affect change. The diffractive semantic profiles evidenced knowledge structuring that was specialised both in relation to the ORF (Teachers' Standards) and the PRF (professional concepts). However the ORF technical criteria dominated and, in many instances, occluded concepts from within the PRF. It is only by paying close attention to the data that the conceptual regulation could be made explicit. In order to investigate the effect of the use of systematic concepts on knowledge structuring further, these concepts were shared with the project participants during the initial review visits with the aim of 'helping to open up our ideas and ourselves to each other and to new possibilities, which with any luck will have the potential to help us see our way through to a world that is more liveable, not for some, but for the entangles wellbeing of all' (Barad 2011: 8).

6.9 Conclusions

Bernstein recognised that a change in the relationship between the ORF and PRF can be generated through a change in the local 'framing' of knowledge. Currently the profession is strongly classified by the ORF's view of professional knowledge as a form of thin craft knowledge and the pedagogies of modelling and observation. Such pedagogies condense or reduce the relationship between contexts and concepts. Consequently rendering invisible conceptual principles in favour of prioritising observed context specific competencies. Such invisibility can lead to knowledge-structuring based one the 'appearance of x without the substance of x. This is potentially harmful as we can create illusions' (Winch 2013a: 140). I argue that the use of diffractive profiles can prevaricate against such illusions being prevalent in professional practice. The analysis of the profiles has indicated that if the apparatus for framing the discourses is changed from that of competencies to concepts, the space for a relational and dynamic flow between different forms of knowledge is opened up. Such a space is the space for reasoning, or the discursive gap. In order to investigate this finding further, the concepts that have been found to be present within the profiled discourses, together with the profiles, were shared with the TE and BT participants to effect the next stage of empirical investigation for this study with the aim of 'helping to open up our ideas and ourselves to each other and to new possibilities' (Barad 2011: 8).

Chapter 7: Re-framing professional practice knowledge-structuring

7.1 Introduction

This is the second empirical chapter of this thesis and builds on the first. The chapter directly addresses the second and third research questions:

- In what ways do these forms of knowledge [school-based teacher educators' professional practice] structuring reflect or deviate from policy conceptions of teachers' professional knowledge in England?

- How can teachers' knowledge structuring take more account of both professional and policy constraints?

In this chapter, I examine the consequential impacts that sharing the WDM profiles had on both TEs and BTs and also on myself as the researcher. The concepts drawn out of the WDM coding (table 6.3) and the structuring profiles are now used as the 'apparatus' for the next stage of this research study. The graphical knowledge structures (profiles), rather than the transcripts, become the prime resource. This approach is consistent with the study's focus on the semantic dimension of knowledge-structuring rather than social linguistics. Once the profiles had been created, they were then shared with the TEs and BTs in their schools to check for accuracy and authenticity. These initial response (IR) formed the second stage of the empirical process. The third stage occurred when a final review (R) took place to review with the TEs and BTs any further comments or insights that they had to offer in relation to the profiles. The nature of my influence on both the participants and the material apparatus that framed the IR and R discussions needs to be made explicit so that my input is clear.

7.2 Developing Researcher Positionality

The methodological justification for minimising my involvement in the first stage of the empirical analysis, the creation and scrutiny of the WDM profiles, no longer holds as during the IR and R visits, the profiles that I created are discussed. I made decisions in relation to the selected elements to be transcribed and coded and profiled. These choices have a material impact on the data. My 'cuts' of the data needed to be checked for their authenticity by participants. The decisions that I made in relation to the creation of the diffractive profiles were shared with the participants during the IR visits and also analysed through the R discussions. The profiling of the IR and R dialogues were not checked by the participants, instead my influence is made visible through an additional plot, that of myself as the researcher so that the resultant profiles include my contributions. There are two exceptions to this approach, profiles 7.1(R) and 7.2(R). In the case of profile 7.1, the TE was absent due to health issues and in relation to 7.2, I could not attend the discussion due to a last-minute rearrangement of the meeting by the school.
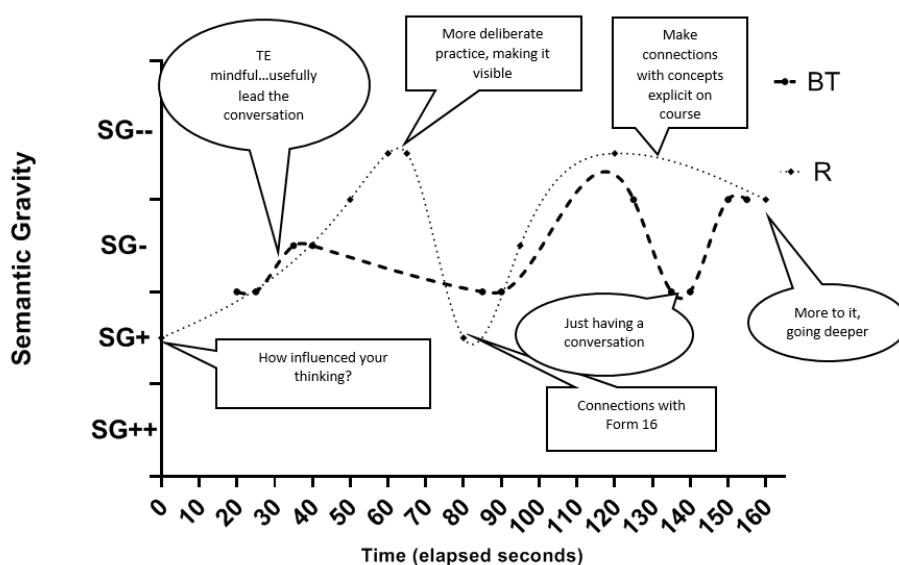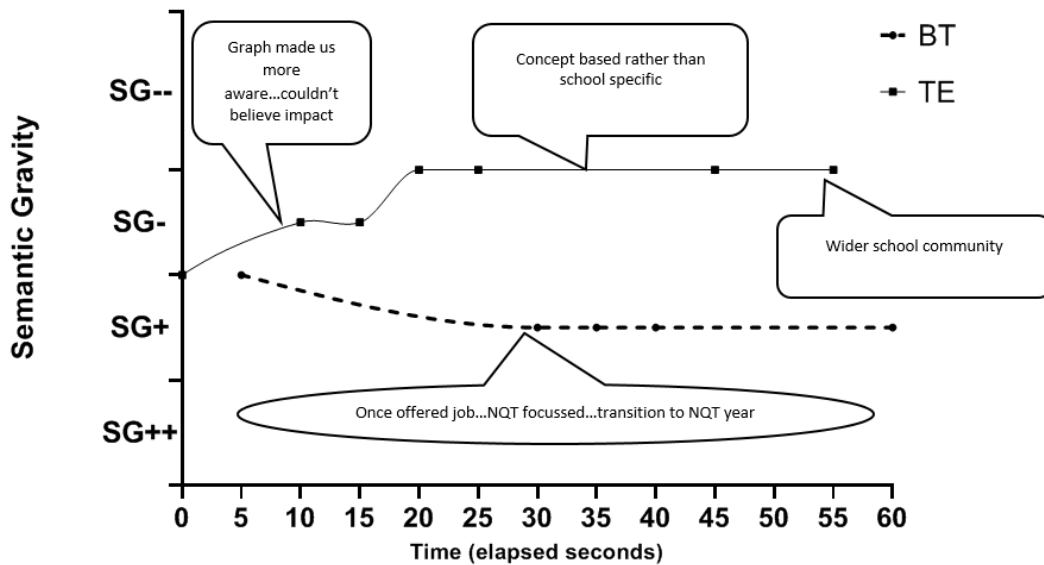
Figure 7.1: School 5b's R profile

Figure 7.2 School 6a's R Profile

Figures 7.1 and 7.2 show the review (R.) profiles created in both these cases. The same

translation device (figure 5.3) was used and the same diffractive plotting methodology.

What is immediately apparent is that these R profiles are more context independent,

exhibiting profiles in SG-/SG--, and in the case of figure 7.1 there is a greater semantic

range and stronger waving than was evident in the majority of the WDM profiles. The

change in the nature of the profiles was in part enabled by the change in the apparatus.

In the cases of the IR and R profiles, participants are responding to the WDM profiles

and the list of concepts shared in table 6.3. In the WDM profiles they were responding to

observed classroom practices in relation to the Teachers' Standards. The literature

review established that intelligent know-how contained both thoughts and actions

simultaneously, but that different forms of evaluation may take place. These different

forms of evaluation also contained both thoughts and actions, and that the relationship

between thoughts and actions may change as a result of evaluation. The R profiles

demonstrate the changing relationships between thoughts and actions achieved through

evaluative means. The evaluative means are the profiles and the concepts. Evaluation is a form of knowledge-structuring practice, and can itself be manifest in different forms. In this thesis evaluation is presented as a form of intelligent know-how. In evaluation it is the logic of the relationship between thought and action that is examined. In order for the logic to be examined a relationship must be present. The WDM profiles made visible the relationship between thought and action. These relationships varied in their context dependency. The more context dependent the discourse the more condensed the relationship. When the relationship is condensed, analysis of the empirical dominates. When the empirical dominates in practice, the opportunity to evaluate supervening principles is reduced. Figures 7.1 and 7.2 suggest that in these cases by using the profiles and concepts as a form of evaluative apparatus, evaluative opportunities are expanded rather than condensed. This expansion is demonstrated by the increased semantic range and increased iterative movements evident in the knowledge-structuring profiles. It is argued that the use of the profiles and concepts enables a more fulsome evaluation of the logic of the relationship between the conceptual, empirical and normative elements of professional practice, and in so doing, professionalism and professional identities are strengthened. Both the profiles shared in figures 7.1 and 7.2 will be returned to for further analysis later in this chapter, along with the 16 other profiles that were generated from the IR and R visits. In all other cases, when I visited each pair of participants in their school setting, I discussed the profile with them and left them with copies of their profile, together with the attendant concepts that I had distilled. The profiles made visible the knowledge structuring that I had coded from the transcripts and the concepts were those that I had interpreted as being implicit or

explicit within the dialogues as a form of systematising knowledge. All participants had access to all concepts, not just those that related to their profiles.

The majority of the dialogue in each of the IR visits related to my explanation of the research methodology, with a particular emphasis on the semantic dimension of LCT. The length of the video recordings of the IR visits ranged from 37 minutes and 30 seconds to 23 minutes and 20 seconds. I did not code the standard explanatory presentation of the research process. The segments that were profiled related to between 8% and 23% of the videoed dialogue. The variation in the percentage related to how long the TE and BT discussed their own profiles for. Table 7.1 summarises the IR visits profiles.

Table 7.1: Overview of the Initial Response Profiles								
School	1	2	3	4	5a	5b	6a	6b
IR Video	37 mins 30 secs	25 mins 5 secs	29 mins 45 secs	23 mins 25 secs	25 mins 03 secs	25 mins 06 secs	27 mins 01 secs	29 mins 03 secs
IR Length and percentage of dialogue profiled	5 mins 37 secs 15%	1 min 58 Secs 8%	2 mins 30 Secs 2 segments 8%	4 mins 19 secs 18%	4 mins 32 secs 18%	5 mins 44 secs 23%	1 min 54 sec 2 segments 7%	1 min 18 secs 5%
IR Ranges	BT: 1-2.5 (1.5) TE: 1-2.5 (1.5) R: 0.5 – 3 (2.5)	BT: 1.5-3 (1.5) TE: 1.5-3.5 (2) R: 1-3 (2)	BT: 2.5-3 (0.5) TE: 2.5-3 (0.5) R: 1.5-3 (1.5)	BT: 2-3 (1) TE: 0 (all on 3) R:1-3 (2)	BT:1.5-3 (1.5) TE: 1.5-2 (0.5) R:1-3 (2)	BT: 2.5-3 (0.5) TE: 1-3 (2) R: 1-3 (2)	BT:1.5 (0) TE:1.5 – 3 (1.5) R: 1-3 (2)	BT:1.5-2.5 (1) TE: 1.5-2.5 (1) R: 1-2 (1)
Profile Numbers	7.18	7.13	7.6 & 7.10	7.3	7.7	7.9	7.14	7.16

The review visit (R) profiles also make visible my participation. The purpose of the

review visit was to explore with the TE and BT any further observations that they wished

to make me aware of as a result of being able to consider the profiles and concepts

subsequent to the IR discussion. Table 7.2 summarises the review visit profiles.

Table 7.2 Overview of R Profiles								
School	1	2	3	4	5a	5b	6a	6b
R Video Length	6 mins 11 secs	4 mins 47 secs	4 mins 48 secs	5 mins 26 secs	5 mins 01 sec	5 mins 07 secs	1 min 06 secs	11 mins 09 secs
R Length and percentage of video profiled	5 mins 50 secs 94%	3 mins 34 Secs 75%	4 mins 6 secs 85%	4 mins 11 secs 77%	4 mins 16 secs 85%	2 mins 46 secs 54%	58 seconds 88%	3 mins 12 secs 2 segments 29%
R Ranges	BT: 1-3 (2) TE: 0.5 – 3 (2.5) R: 0.5-3 (2.5)	BT: 1-3 (2) TE: 2- 2.5).5) R: 1-3 (2)	BT: 1.5-3 (1.5) TE: 1-3 (2) R: 2.5-3 (0.5)	BT: 2-3 TE: 2.5-3 R: 1-3	BT: 1-2.5 TE: 1-2.5 R; 0 (all 1)	BT: 1.5-2.5 TE: abs R: 1-3	BT: 2.5-3 TE:1.5-2.5 R: abs	BT: 1-3 (2) TE: 1-3 (2) R: 1-3 (2)
Profile Numbers	7.12	7.5	7.11	7.4	7.8	7.1	7.2	7.15 & 7.17

Rather than sequentially analysing the IR and then the R profiles, both data sets are

drawn upon to investigate how different forms of pedagogic communication impact on

knowledge structuring, including the relationship between policy and professional

constraints. The term constraint is used to signify both accountability and responsibility.

Policy constraints are articulated through legislation. Professional constraints are

evident in the 'the conceptual structure' that a field 'might impose on pedagogically

coherent schemata' (Winch 2013a: 135). A professional field should have access to

systematising concepts that enable individuals to recognise themselves as part of that

profession when they perform individual activities. A professional activity is made up of

both thought and action. My activities as SCITT Director should therefore be constrained by both policy and pedagogical accountability. I, together with the participant TEs and BTs am accountable to the SCITT partnership who in turn is responsible to the ORF through the requirements of the ITT compliance criteria (DfE 2022) and the Ofsted inspection framework (Ofsted 2022). The SCITT partnership also represents the PRF, being an organisation of over 120 schools and a regional affiliate of the Chartered College of Teaching. The Chartered College of Teaching recognises that teaching is a complex profession.

Learning to teach is complex and unnatural work (Ball, 2003; Cochrane-Smith et al, 2016; Cochrane-Smith et al, 2020; Darling-Hammonds, 2017) and so requires a deliberate educative element that makes explicit the conceptual or principled knowledge that can be drawn upon to inform professional reasoning and professional judgements. An analysis of the Teachers' Standards reveals that words such as 'reason', 'reasoning', 'judgement', 'discuss', do not appear at all. The word 'evaluate' appears once in relation to Teachers' Standard 5, when referencing the evaluation of approaches to teaching children with identified special educational needs and disabilities (DfE, 2011). In contrast the word 'demonstrate' appears nine times, and 'have' appears ten times, in the sense of having or possessing a competency. The articulation of the professional practice in the Teachers' Standards therefore depends on command words, with for example the term 'understanding' being preceded by the term 'demonstrate' five times. The majority of the profiles in Chapter Six demonstrated that the SCITT in being accountable and responsible to the professional practice structures encapsulated in the Teachers'

Standards reduced the space for reasoning, a key feature of established professions. However the profiles shared in figure 6d suggested that a re-framing of professional knowledge structuring could be facilitated at the local level.

7.3   Reviewing the diffractive WDM Profiles

Bernstein (2000) stated that a change in the framing of knowledge-structuring at the local level could have impact on classification. Currently the Teachers' Standards (DfE, 2011) classify the profession of teaching as a weak region, or perhaps even as a new region, where context dominates. One of the key dilemmas identified for practice knowledge has been the bifurcation of professional practice as being either an empirical or conceptual form of knowledge. The Teachers' Standards are based on a thin articulation of practice as a thin version of craft knowledge based on the pedagogies of observation and modelling. Officially it has been stated that 'The most successful education systems in the world are characterised by high levels of lesson observation. Teachers benefit from observing one another's practice in the classroom. Teachers learn best from other professionals. Observing teaching and being observed, and having the opportunity to plan, prepare, reflect and teach with other teachers can help to improve the quality of teaching' (DfE, 2014, online).

When practice is seen empirically, through the lens of observation and modelling, the conceptual can be rendered inert. It is inert rather than absent, as it is not measured by the apparatus used. The profiles shared in Chapter Six demonstrated this insight. The profiles of described actions (see figure 6a) demonstrated knowledge-structuring of a

very weak vertical discourse of a horizontal knowledge type. In these cases, reference was made predominately to the contextual (SG+ / SG++) and knowledge-structuring was profiled as a shallow low-level wave. The conceptual was minimally evident within the discourse. The conceptual references the collective professional understandings, the reservoir of professional knowledge for the profession. The contextual references individuals and can lead to fragmentation rather than segmentation. The profiles in 6a demonstrated reductive navigational gazes, ones that had the potential to reduce the profession to a set of skills or techniques. The Teachers' Standards, encapsulate a more attenuated (thin) form of professional practice. Concern has been expressed in relation to such knowledge structuring, recognising that 'the *I* of experience is replaced by the *it* of possession' (Fromm, 2020: 19 original emphasis). It has been argued that an over focus on the external (visible) goods of education ' threatens the reliable achievement of its internal goods' (MacIntryre and Dunne, 2002: 7) External often relate to qualification or 'accrue from accomplishment' and as such there is a danger that 'practice can be made instrumental' (Dunne, 2005: 369) Therefore it is important to establish what makes for an educative practice in ITE so as to offer conceptual constraints in relation to the substance (substantive knowledge) of professional practice knowledge.   The profiles shared in figure 6d indicate that some TEs were able to reach out to educative practices rather than an instrumental characterisation of the profession. What the profiles in figure 6d demonstrated was that the conceptual is present in professional-practice knowledge. Just because the apparatus of the Teachers' Standards does not 'measure' the conceptual in the same way as they measure the contextual does not mean that the conceptual is not present in professional practice. Ryle (1949/2000) through his conception of intelligent know-how and Polanyi's (1966/2009) conception of tacit

knowledge are dependent on the relationship between the conceptual and the empirical. Established professions are based on this co-presence, however in teaching access to such a knowledge base has been limited. In England, most recently this limitation has been exacerbated by the Teachers' Standards, which in turn have been limited by a focus on the empirical, generated through an over-emphasis on individual reflections, which prioritise individual stories or particular contextual constraints. Such forms of reflection are time and space bound and so confusions can occur between practice as a horizontal discourse and practice as a vertical discourse. Practice as a horizontal discourse does not give access to the 'inner goods' of a profession. If the profession of teaching remains as a very weak region, one lacking access to supervening purposes, then the profession is in danger of becoming defined by a list of instrumental techniques. The profiles in figure 6c offered a counter-narrative. The TEs in these cases drew on navigational gazes that were able to foreground conceptual understandings so as to specialise and organise knowledge-structuring for their beginning teachers. The concepts that they referenced were summarised in table 6.3. The profiles in figure 6d demonstrated that it was the 'social reality of unobservable concepts (whether scientific or religious) that gives them power (and claim to objectivity and truth) relative to our common-sense concepts and enables them to transcend the specific instances and circumstances of everyday life' (Young 2008: 43). The use of concepts recognised that the profession of teaching is complex rather than common-sense work.

If previously the profession has suffered from issues that arise when 'conceptual, normative and empirical claims are often difficult to disentangle' (Winch 2013a: 155)

because of the need to 'other' theory and practice, a diffractive approach offers the means to become more sensitive to the relationship between conceptual, normative and empirical claims. The Teachers' Standards (DfE 2011) and CCF (DfE, 2019) foreground the normative and empirical claiming that they represent the conceptual. In so doing they condense the relationship between the empirical and conceptual. In condensing the relationship, the space for reasoning is also condensed. The profiles in 6c began to demonstrate that if the space between the empirical and conceptual is opened up through increased verticality, then there is the space for teaching to become a reasoning profession, one based on pedagogy rather than just the actions of teaching. The WDM profiles showed that increased verticality was accessed through a meta-language which included concepts. Plotting the profiles diffractively offers a different form of apparatus to a classical worldview. A diffractive analysis enabled the co-presence and influence of the conceptual and contextual to be recognised, it does not other the other. In recognising the co-presence of each form of knowledge, the collective means are brought into the present. These are the specialising means that endure across time and space and empower the participants to belong to a community that exists beyond the present, but whose influence is now recognised as being present.

The profiles analysed in Chapter Six suggested that the current SCITT paperwork is restrictive. Its allegiance to the Teachers' Standards has rendered the contextual dominant. In contrast in the case of the TEs who accessed principles, there was a gap between the context and the concept that made space for an examination of the logic of the relationship between the conceptual and contextual. Such evaluative abilities are

indicative of a stronger profession and a strengthening vertical discourse of a horizontal

knowledge structure type. In strengthening the discourse, the gap between a horizontal

discourse and a vertical discourse is clearer and so conflation is less likely to occur. If

more TEs were able to draw on a meta-language for the profession, could this form of

accountability be challenging the current policy zeitgeist? I was therefore eager to

examine this question further, hence the second (initial response) and third (review)

stages of the research.

7.4 Considering the exceptions

Of the eight pairs, seven felt that engagement with the profiles and their attendant

concepts had indeed re-framed the way that they structured their subsequent WDMs.

The pair from School 6b stated that their conversations had not changed, but then went

on to describe the differences that had resulted in their pedagogic choices as a

consequence of being made aware of the profiles. The TE and BT from School 4 (figure

7.3) remained focused throughout on their classroom teaching in relation to pupil

progress rather than relating their knowledge to pedagogic choices for teacher

education. Their WDM (see figure 6.6) discourse referred to a Focus lesson format to

analyse a Philosophy for Children (P4C) session. P4C is a pedagogy that foregrounds the

development of conceptual understanding dialogically for pupils. Despite my

interventions, during both the R and IR visits, the TE and BT remained focused on

describing their classroom activities rather than drawing on these to exemplify

professional knowledge structuring. Figure 7.3 shows that the TE remains context

dependent. Their navigational gaze remains focused on describing particular elements of

practice rather than analysing practices in relation to conceptual understandings. In the WDMs, the IR and R profiles the TE exhibits a very narrow semantic range, 1, 0, 0.5 respectively. The TE's responses are gravity heavy, so highly context dependent, not rising above 2.5 (SG+) (some TEs read 0.5 (SG--). This raises an equity issue. If some TEs are able to draw on conceptual understanding and others not, this has implications for the professional formation of BTs. Currently there are no formal requirements for TEs to undergo any form of professional learning in relation to their role. From 2024, all mentors will be required to undertake a minimum of twenty hours training, whilst at the time of writing the specifics of this training are still under construction, the diffractive profiling shared in this research study suggests that access to the profession's inner workings rather than an over focus on techniques could be significant in strengthening the work of TEs and the profession.

Figure 7.3 School 4's IR Profile
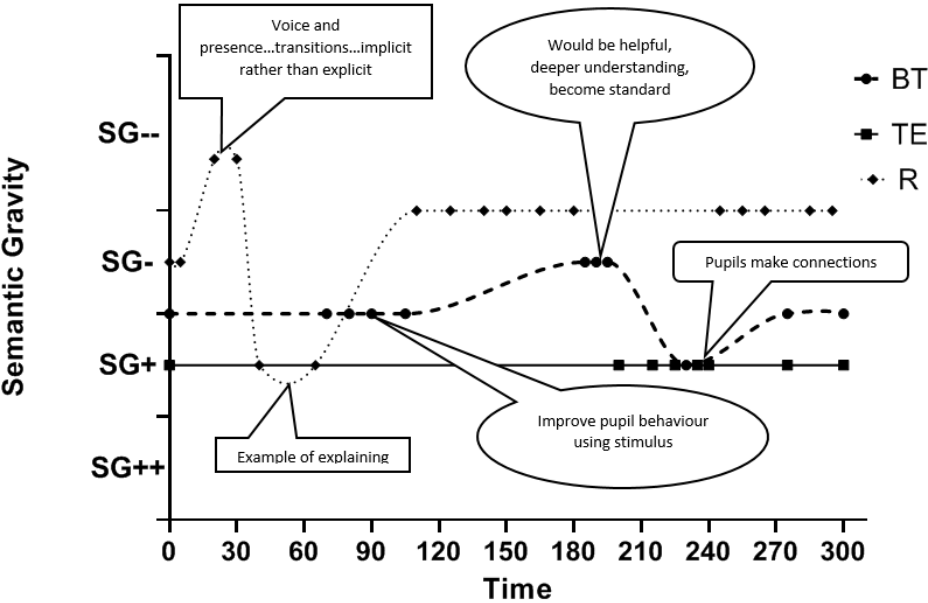
The TE's range restricts the development of the BT as the dialogues remain focused on

classroom descriptions in relation to classroom practices, substantive concepts appear

to be absent from their gaze. Such absence is unsurprising given the focus of the SCITT's

pro-formas and their strong accountability to the Teachers' Standards. However the BT's

profile in figure 7.4 recognises that they can see the benefits of 'deeper understanding'

in relation to some of the concepts that I referenced such as 'presence and transitions'.

The TE remains context dependent and does not develop this opportunity either in the

IR or R profile shown in figure 7.4.

Figure 7.4 School 4's R Profile
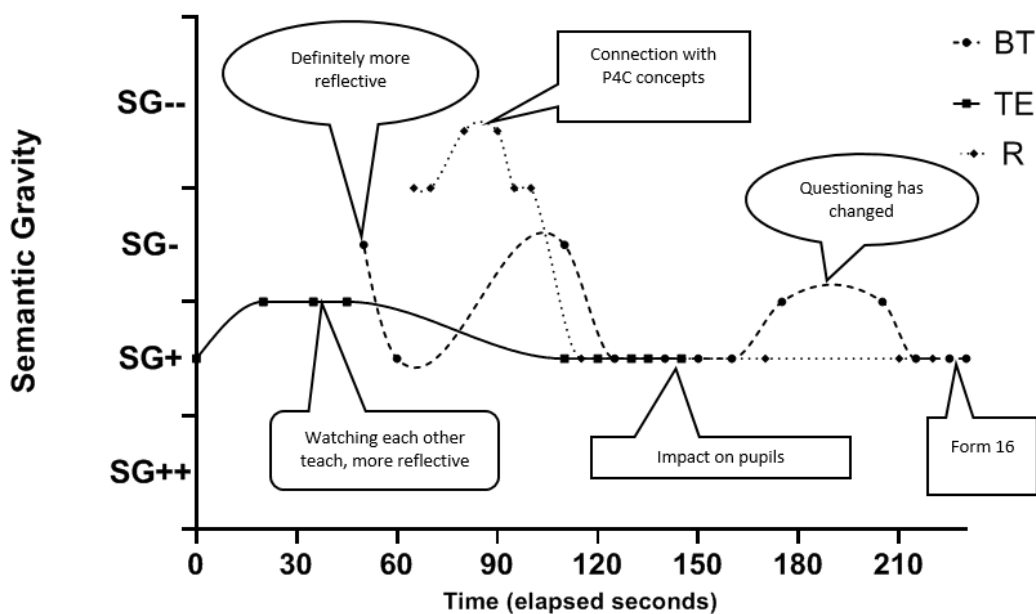
 I did my best to 'lift' the discourse by referencing the way that P4C uses concepts to

expand pupil learning and related this to the potential use of concepts in professional

learning. My reference to concepts in the R discussion was misinterpreted as relating to

P4C rather than professional knowledge and so the profile for myself, the BT and TE became more context dependent at that point as the TE drew us back to pupils and the classroom and the empirical (watching each other teach). The use of the term 'reflective' by the TE is worthy of note. The literature review raised concerns that when reflection is context specific, it is rooted in personal preference or experiences rather than being 'based on professionally justified knowledge and on the moral imperatives of the role' (Lowenberg, Ball and Forzani, 2009: 500). Figure 7.4 illustrates that an over emphasis on context specificity reduces the navigational gaze. The BT's reference to 'Form 16' reinforces this reduction. Form 16 (see Appendix H) is the SCITT's form for summarising evidence in relation to the Teachers' Standards as a form of end point assessment prior to the award of QTS. Form 16 is referenced in the R and IR dialogues by other BTs as well. This is not surprising as at the time of data gathering for the research study, the course requirements meant that the BTs were engaged in preparing for their final tutorials. So whilst the BT had begun to consider that examining the WDM profile had begun to enable them to evaluate how and why they used particular forms of questioning, opening up a discursive gap, this gap was closed by a reference back to the more instrumental aspects of professional-knowledge structuring.

The analysis of figures 7.3 and 7.4 again illustrates the importance of diffractive profiling. If the discourse had been plotted in a single line, it could have been claimed that the dialogue had generated a shared understanding between the TE, BT, and myself, and that the logic of the relationship between concepts and contexts had been examined. This was not the case. The TE remained context focused. If the R and IR discourses had

been plotted as a single line, the data could have been used to suggest that systematising conceptual knowledge had been accessed. In fact it had only been accessed by the researcher, and to a limited extent by the BT. To claim that the logic of the relationship between contexts and concepts had been would have been an errant contention. I share this potential error as exemplification of the need in professional practice to differentiate and discern carefully between the empirical, conceptual and normative when examining the structure and structuring of professional practice knowledge. I argue that some previous conceptions of professional practice knowledge have not been able to do this as they have been dependent on a classical rather than quantum world-view. In a classical analysis practice-knowledge structuring would be seen to be either a conceptual or an empirical activity. The discourses evidenced by the pair from school 4 could be used to confirm the contextual nature of professional practice. This would be reductive. The diffractive plotting enables recognition of the entanglements of different forms of knowledge within the discourse, their interplay and their trajectories.

The TE's navigational gaze from School 4 was not altered in any way through the apparatus of the WDM profile and table of concepts. Whilst this was the case for just one pair in a small sample set, it is important to acknowledge that this could be more of a concern in the wider teacher-educator population. Whilst School 4 represented an exception in this study, it is recognised that as all participants volunteered to participate in the research, they may have been particularly curious about professional learning and so School 4 could be less exceptional than initially thought. It is also worth noting that

the nature of the formation of the SCITT was unique and remains unique and will have had impact on the ethos of the SCITT, embracing the scholarship of practice. This circumstance could also mean that the data examined may not be typical of school-based initial teacher education programmes. It has been stated that 'the "immersive School Direct teacher education model can lead to teaching experiences outside the host school being afforded little value, and this may be exacerbated by recent reforms that place greater power in the hands of chains of schools' (Hordern, 2015b: 439). In the case of School 4, the TE did indeed find it challenging to draw on professional knowledge beyond their own setting, however this was not the case for any of the other participants. The other TEs were also school-based and involved in the SCITT's School Direct programme. A focus on knowledge-structuring offers a form of analysis that focuses on the profession rather than the type of institution that a colleague belongs to. I argue that by focusing on knowledge-structuring the means could be created to challenge the context bound nature of some forms of professional knowledge.

There has been concern that within initial teacher education that 'a focus on relevance has enabled instrumental discourses' (Wheelahan, 2018: 235). This concern is evident in the WDM profiles that visualise weak vertical discourses and contrasts with those that share a stronger vertical discourse. Those profiles with a greater semantic range, a more expansive discursive gap develop the 'capacity to enable the actor to project himself / herself *meaningfully* rather than relevantly or instrumentally into this future.' (Bernstein, 2001b: 380, original emphasis). A productive professional identity is a

prospective one, one is which a professional can draw on the reservoir of knowledge through conceptual principles to evaluate reasoning and judgement such that new experiences can be related to previous ones. In professions such as teaching such projections can be developed through the use of concepts as an evaluative apparatus. In this sense 'concept formation is shown through the ability to employ those concepts, mainly if not exclusively through the use of appropriate linguistic expressions' (Winch 2013a, 132). Durkheim's (1912/2000) recognised that language was both an instrument of thought and the means of communication. As an instrument of thought, concepts materialise meaning for the profession. The IR and R profiles created the opportunity to investigate the premise that the ORF was reductive in nature and that the use of a meta-language could facilitate a different form of constraint or accountability. The accountability in the case came from the discourses themselves, evidencing how knowledge constructed in Vertical discourses of a Horizontal knowledge Structure type.

7.5 Considering both the relevance and meaningfulness of practice knowledge

A debate about both the relevance and meaningfulness or practice knowledge is evident between the TE and BT from school 2 (figure 7.5). Of particular note is the increased semantic range of the BT's profile and the amount of sematic variations (iterative movements signifying to-ing and fro-ing) also evident in the BT's profile.

Figure 7.5 School 2's R Profile
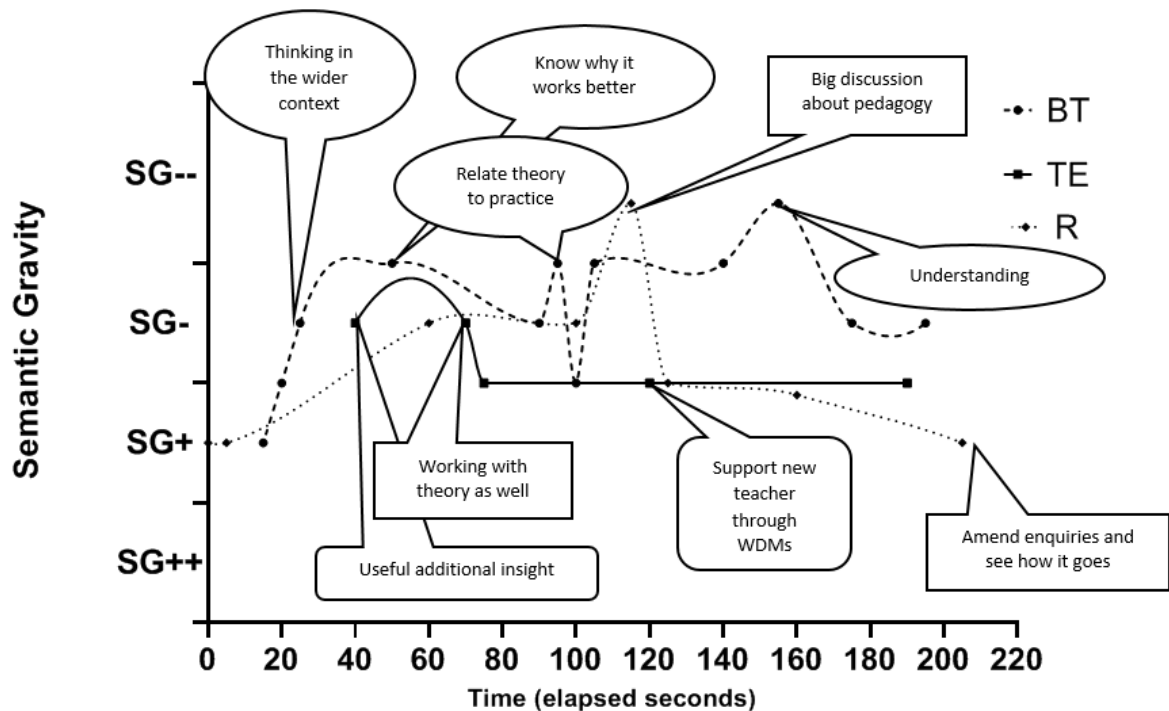
This visualisation clearly indicates how professional practice knowledge for the BT is a relational knowledge, with the variation evidencing the different form that the relationship between context and concept can take. In this case for the BT, there is a change in the relationship from one that was previously more context dependent (see figures 6.3 and 6.4 for School 2's WDM profiles) to one that is more iterative in nature. The change has been generated by a change in the apparatus, a move away from the WDM pro-forma that was dominated by a restrictive articulation of professional practice knowledge to the use of the profile and table of concepts. The TE from School 2 comments that the profiles offer 'some ideas as to how you [the TE] could support…this… new teacher'. This TE was not the only one to suggest that the profiles themselves may be a useful tool for the development of TE's navigational gaze. The profiles as visualisations were illustrating for both TEs and BTs the knowledge-structuring that they were engaged in and that was previously invisible to them. One of

the drivers for this research project was to consider how to increase agency. Sharing the methodology of profiling could offer the means to increase professional agency. This would need to be carefully enabled as there is a danger that TE's might seek to conform to a type of profile rather than use the profile as a different form of stimulus (apparatus) to inform a discourse.

A further insight evident in the profile from School 2's BT and TE related to the professional enquiries that the SCITT requires BTs to complete. Previously the BT has seen the enquiries as instrumental and separate to practice-knowledge development. Through engaging with the profiles, the pairing could see that linking the enquiries through the WDMs 'would have more effect, because we would have more to talk about in relation to theory and practice, whereas now I have done my enquiries pretty much independently of [name of TE], and so we just talk about teaching. But if we had them both together then we could talk about the theories and teaching together'.

Previously the restrictive apparatus of the WDM pro-forma had led to a separation in the BT's mind between the enquiries required by the SCITT and professional practice knowledge. The tasks have simply been seen as generating external evidence of competency in relation to the Standards rather than a resource to further develop the BT's professional inner understanding. The BT was suggesting that the relational pedagogy promoted through the profiles and concepts led to a greater coherence and professional satisfaction. This was also evident in the dialogues from the BT/TE pairs in School 6a (see figure 7. 2). The TE from school 6a stated that 'I think that this is great,

that we could then relate things to the enquiries and use this towards your understanding rather than just photocopying work to include in your enquiries'.

Interestingly there is another moment from the pair in School 6a which illustrates Bernstein's pedagogic schizoid position. For Bernstein, this schizoid position occurs when there is a tension between the projected identity and the inner identity of the profession. The tension occurs if principled meanings are detached from performative actions. In valuing performance the profession can be reduced to a set of observable activities that individuals can be trained to perform, such that the individual is only appreciated for their possession of skills and not for their ways of being. If they are valued for possession then as individuals they are easily replaceable. The characteristics of being a professional are not valued.

The TE in 6a had begun to recognise their role in knowledge structuring, they stated 'the graph made us more aware' (see figure 7.2). I was not present, but the TE was reflecting that the profiles had enabled the dialogues to be more 'concept based instead of being very school specific'. The BT was then quick to point out 'but obviously once I got the job here, it did become like an NQT…getting ready'. The BT had been offered a Newly Qualified Teacher (NQT, now known as an ECT, Early Career Teacher (DfE, 2021) post in the school where they were undertaking their final placement. In their eagerness for the job role the BT saw their identity as an NQT, as one who was compliant with being an employee focused on the observed behaviours within the school and saw this as being different and separate to a professional who engaged in dialogues. They prioritised relevance over meaningfulness, rather than relating with both. The TE used their gaze to

try and lift the BT beyond the specific context of their employing school stating that they made sure to also relate their discussions to 'the wider school [professional] community'. The gap between the TE's and BT's profiles in figure 7.2 recognises the difference in the TEs and BTs perspectives. A similar situation occurred between the TE and BT in School 3 (see figure 7.6). In this case the BT was yet to secure employment and so 'my career' was inevitably was playing on their mind. The TE had previously welcomed the way that the profiles made their structuring explicit, the BT however remained focused on how the knowledge was instrumentally valuable to them in relation to securing a job rather than valuing the knowledge intrinsically.

Figure 7.6 School 3's IR profile
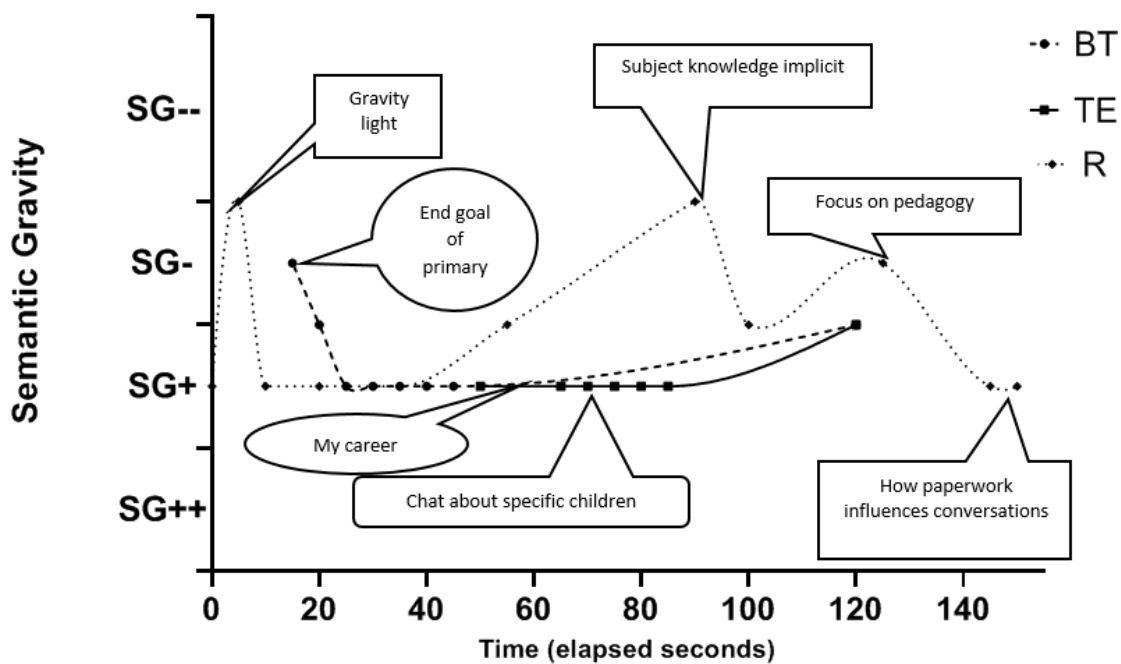
The relationship between the TE and BT is key here, not only socially and affectively, but cognitively and epistemologically, the latter being aspects of the TE's work that had previously been under researched. The significance of the TE's navigational gaze is being

revealed in the diffractive profiling, as is the significance of the material effect of non-human materials that carry forms of knowledge-structuring. Both the navigational gaze and the non-human materials are forms of apparatus that interfere with the ways in which professional practice is articulated. The profiles analysed so far indicate that the WDM pro-forma's dependence on the Teachers' Standards have led to a reductive professionalism. This reduction occurs when meaning and relevance are detached obscuring professional practice knowledge as a relation form of knowledge that occurs through recontextualisation. The IR and R visit profiles demonstrated that a change in apparatus can change the discourse and a change in discourse can change the way in which a profession's knowledge structure is articulated. The profiles offered a different form of apparatus to the WDM pro-formas and so enabled different forms of discourse.

7.6 Materialising the matter of discourses.

A number of the BTs and TEs during the IR and R visits became fascinated by the ways in which the profiles made explicit the knowledge -structuring during the WDM discussions in a visual format. The profile in figure 7.1 shared that the BT and her TE had looked at the profile and 'talked about it, because you don't realise it when you are actually in the moment do you'. The 'it' being knowledge-structuring. The BT acknowledged that both she and her TE hadn't previously considered that they were structuring knowledge 'in the moment' of the WDM. They thought that they were just having 'a conversation [during which] you don't necessarily think about what you are saying... [there is] more to it than what you initially think'. This insight revealed that the WDM had previously been viewed 'instrumentally' rather than 'substantively' in relation to professional formation. The WDM discourse was seen as 'mere talk' and as such it's pedagogic potential was

restricted. This restriction related to contextual specificity. An instrumental WDM enabled the ticking off of required tasks rather than creating opportunities to evaluate the quality of reasoning and judgement involved in the development of professional practices. If the WDMs are restricted in nature, so is the local involvement in SCITT level or national change. In order for BTs and TEs to contribute to knowledge development then they need to be able to access substantive concepts as well as local contexts. An under-appreciation of the significance of the WDM dialogue was also evident in profile 7.2, another discourse that took place without me being present. The TE recognised that following the sharing of the profiles that their 'weekly development meetings were [now] concept based instead of being very school specific'. It is important that the set of shared concepts do not become a new form of list to be ticked off, rather that they are seen as a framework to inform reasoning and meaning making by activating the concepts in relation to contextual concerns.

7.7 Developing a meta-language in practice

The profiles themselves were proving not only to be of value to TEs and BTs in helping them to (re)frame knowledge-structuring in and for professional practice, but also for the way in which the analysis of the profiles had generated a research focus the significance of a meta-language. Meta-language is viewed as a form of language that carries symbolic meanings. Such language symbolises the specialising substantive knowledge of a profession. Its use helps to organise and cohere different segments of practice that could otherwise be context bound. In the case of this research study, the shared concepts arose out of the analysis of the profiles. They offered a different form of apparatus to the Teachers' Standards. This difference is in the degree to which they

enable verticality through a discursive gap. The Teachers' Standards foreground actions, when and action is made sense of in relation to the action itself, there is no space for reasoning, difference is not valued. Reproduction is required. When an action is made sense of in relation to its intended purpose, thought and action are together part of professional activities. What is being evaluated is the quality of the relationship between the two. Reasoning and judgement are required. The TE and BT from School 5a (figure 7.7) enjoyed engaging with the profiles and were enthused by the different way that their knowledge was materialised in the profiles.

Figure 7.7 School 5a's IR Profile
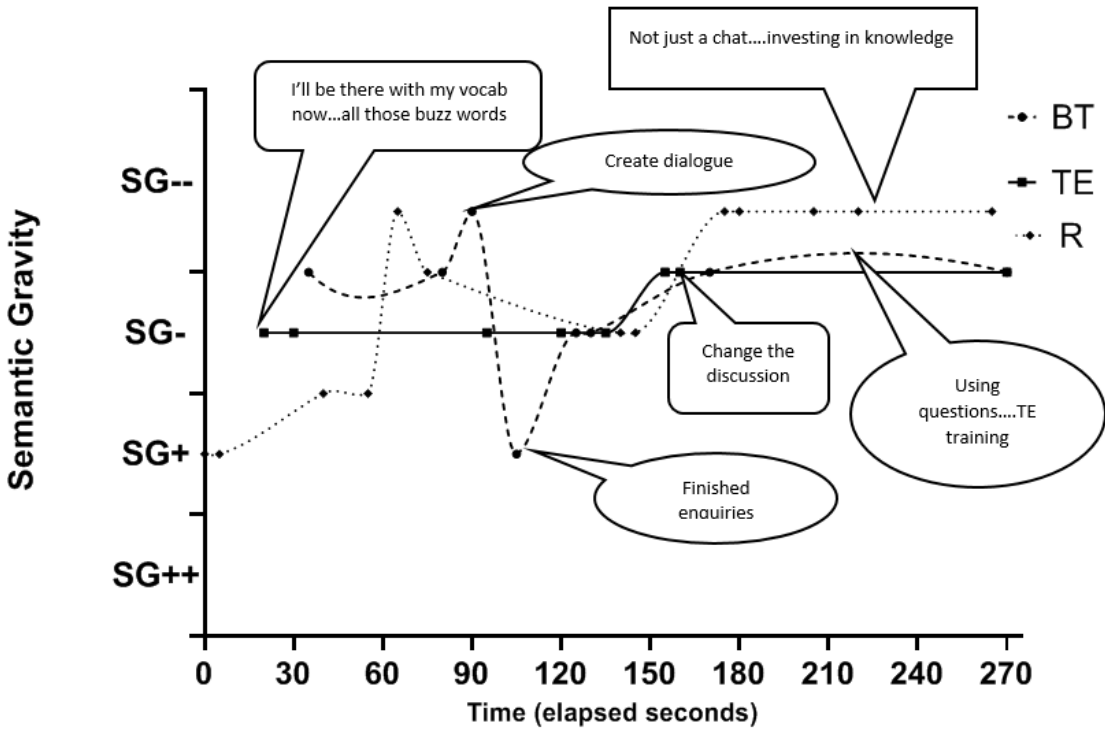
The TE and BT discussed 'vocab(ulary) lists. In their school, there had been a recent emphasis on the significance of vocabulary carrying meaning in different subjects for pupils. The immediate association that was made was that concepts could be seen as a

'buzz list' and the suggestion was made by the TE that these appear on the WDM forms for the SCITT. Whilst the TE recognised that these could be used to frame questions, they did suggest that the concepts could be used as a tick list. The profile of the TE is relatively horizontal in the SG- code as they had recognised the significance of concepts that have the potential to cohere experiences, but they had potentially represented them in a dislocated way, externalising them to the classroom practice, seeing the concepts as items to be referenced rather than offering the potential to cohere and dynamise professional practice knowledge. I, as the researcher in this discourse, have a semantic range (2) than either the BT (1.5) or TE (0.5) as I worked hard to disrupt the challenge the perceived use of concepts as a tick list to be covered rather than as the means to facilitate reasoning. Figure 7.8 which relates to the review visit for the same school pairing.

Figure 7.8 School 5a's R Profile
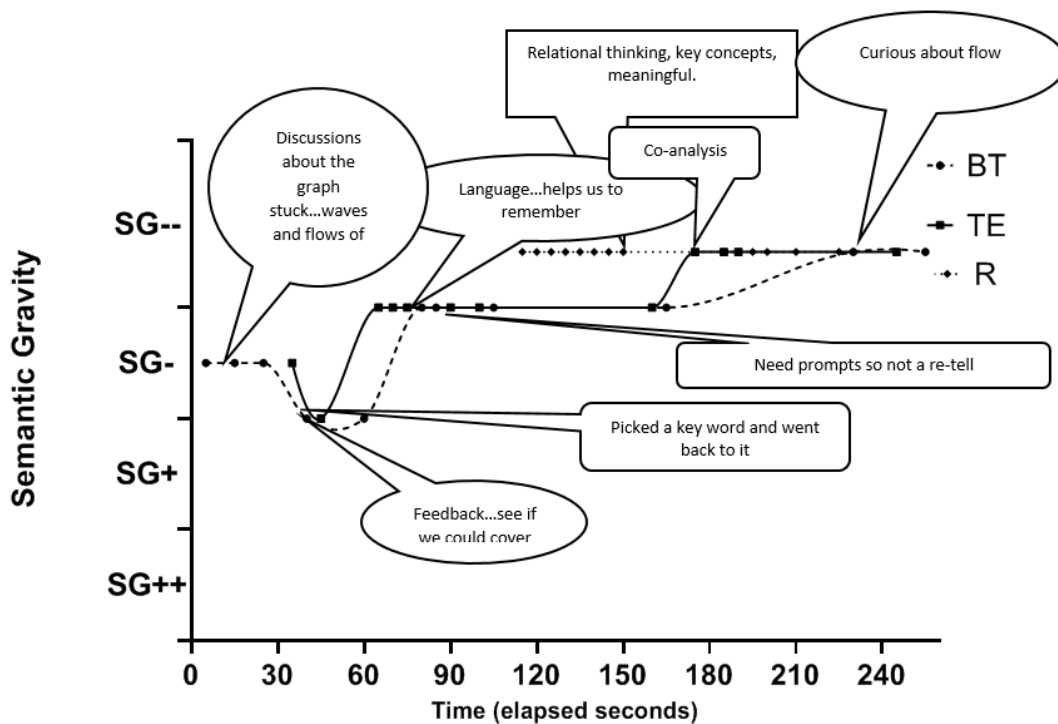
The profile in figure 7.8 suggests that the discourse from the R visit had had some impact as both the TE and BT exhibited an increased semantic range to 1.5. This suggests that they are beginning to recognise the benefits of an iterative movement (flows) between concepts and contexts.

Interestingly this pair compared their profiles to that of the other TE and BT in the same school that were also participating in the research. I had not anticipated that such a comparison would take place, but it led to some interesting insights. School 5 was, at the time of the research designated as a Teaching School. As such there was a focus in the school on professional learning and staff were experienced in a culture of collaborative learning. Both TEs were highly experienced both as teachers and as teacher educators and so had a confidence in relation to the SCITT materials and expectations. The BT from pair 5a was 'curious' to 'compare the flows' between themselves and pair 5b. Retrospectively I have found myself considering the term 'flow'. Colloquially we talk about being 'in the flow', in order for flow to happen, there must be the co-presence of difference so that something can flow. The graphical profiles show the flow of professional practice knowledge. The visualisations share flow through the waves or stuck places through the horizontal. Stuck in concept or stuck in thought, in order for the potential to be released flow needs to be enabled. The TE and BT found that by comparing their profiles, and seeing the different forms of flow 'got us thinking'. The BT and TE from School 5b were grappling with wanting to 'make it [the dialogue] better'

and so began by using the concepts that I had provided as prompts so that their WDM was not just a 'retell of the lesson'.

Figure 7.9 School 5b's IR Profile
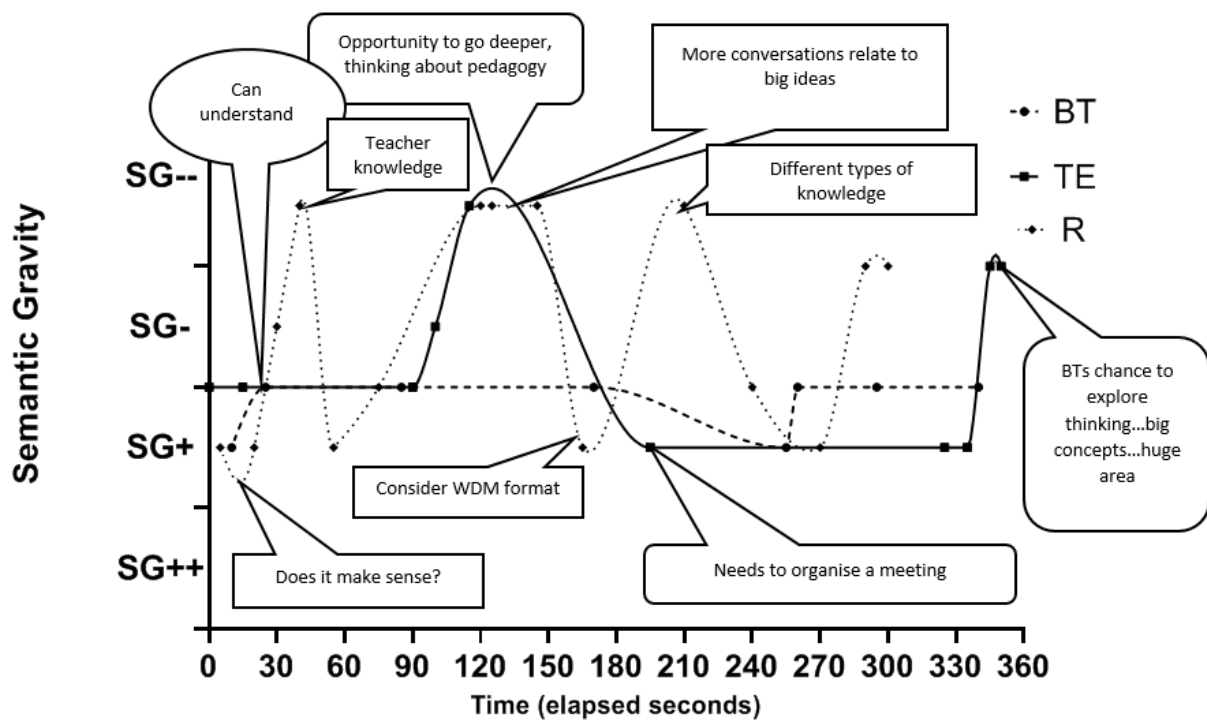
It is important to note that the TE from School 5b is a very experienced TE and engages with all SCITT training and works within the setting that was formerly designated as a Teaching School. As such this was an environment that valued research engagement. During the discussion of their WDM profile, the TE commented to the BT that 'As it is [target setting], all based around the Standards…you do not have as much opportunity as you could have to go deeper into these big ideas, those universal concepts'. Here the TE recognised that a focus on targets and evidence solely in relation to the Teachers' Standards limited engagement with the cohering concepts of the profession.

A WDM discussion that solely focused on target setting in relation to the Teachers'
Standards, limited the potential of the discursive gap, by restricting the time and space
dimension of professional understanding to the observed action. Such discourses
prioritised externality of evidence rather than transforming the BT's understanding. The
criteria in the Teachers' Standards are expressed as nouns rather than verbs,
foregrounding the possession of competencies rather than developing a coherent and
ethically informed professional way of being.

This pairing recognised that the retelling or description of a lesson was a 'stuck place',
seeing concepts as a 'tick list' was another stuck place. Using the concepts together with
observed actions enabled a flow of reasoning, framed by the profession's big ideas
rather than framed by individual or contextual idiosyncrasies. Interestingly in School 3
the TE had in fact attempted to enable such a flow for their BT. The BT had originally
thought that they had simply been engaged in the action of marking. The TE had related
the observed actions of marking to the purposes of identifying misconceptions and the
formation of intervention groups. The IR and R profiles revealed two further significant
insights in relation to this particular WDM discussion. The TE and BT from School 3 were
working with a Year 6 class, preparing them for their end of Key Stage, Standard
Assessment Tests (SATs). Their diffractive profile (see figure 6.5) showed the TE making
connections between performed actions and their purposes.

Figure 7.10 School 3's IR Profile (2)
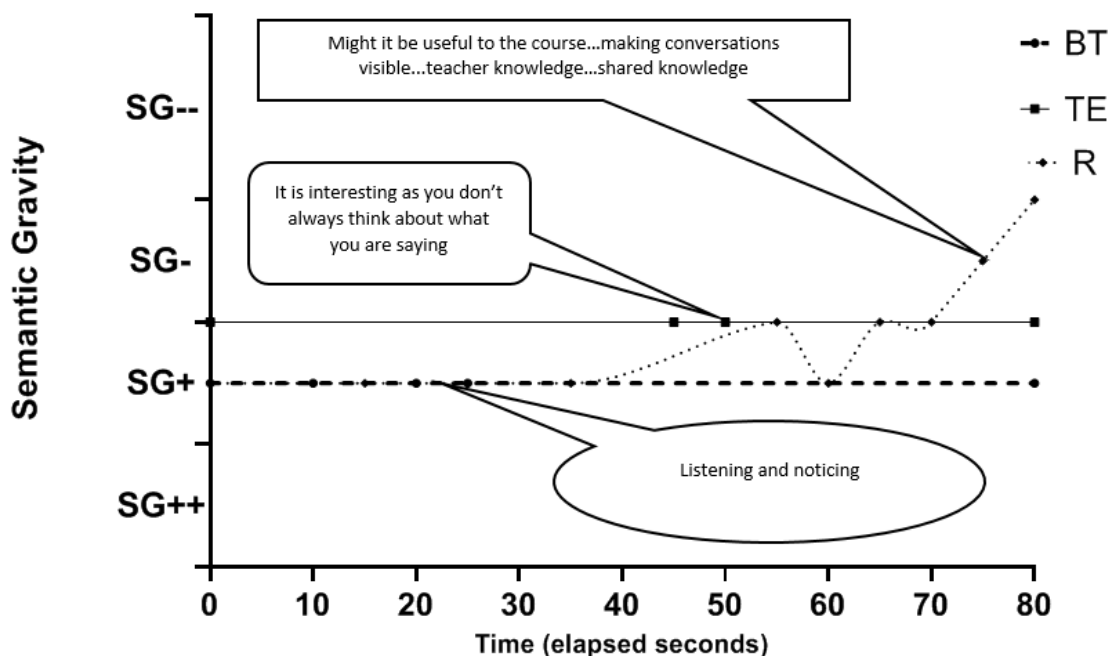
The TE's discourse was indicated by the wave type profile whereas the BT's knowledge structuring was horizontal, suggesting limited impact of the TE's input. The IR visit revealed that the BT was in fact internally responding to what the TE was noticing, they simply did not offer a language that recorded this inner (tacit) knowledge-structuring. This insight reinforced the importance of taking the profiles back to the participants. It would have been easy to misinterpret the lack of dialogue from the BT as a lack of understanding whereas in fact the BT was taking time to process the TE's input. It is also an important insight as to why the profiles should not form a typology but rather are themselves a form of apparatus to stimulate further reasoning, judgements and meaning making.

What the IR and R profiles also revealed was that whilst the TE had made these connections for the BT, the TE, themselves was not conscious of how they were structuring this knowledge until they saw the profiles. The TE stated that 'it's interesting to look at, because when you are talking, you don't always think about what you are saying'. Such a statement was resonant with other TEs and raises dilemmas associated with TE agency and knowledge literacy. If discourses are seen as mere conversation, lacking in knowledge structuring potential, and seen to serve a separate purpose to that of classroom practice, then 'othering' occurs and relational knowledge structures are not enabled. If discourse is seen as 'mere conversation', its specialising and organising potentials are diminished. Bernstein was concerned to reveal the significance of discourse in knowledge-structuring and hence his work in relation to horizontal and vertical discourses. There is continuing concern that 'a lack of recognition of oracy as a vehicle for learning, negotiating and thinking critically may have unintended consequences on attainment' (Heron at al., 2021: 3). Currently TEs are not supported in appreciating discourse as a knowledge-structuring apparatus and the consequential impact that different forms of discourse have on professional identities. Nor are they conscious of how their own navigational gazes have been formed, and how their gazes (rather than their ways) can impact on the BTs. As a consequence TE's lack agency. Sharing the process of semantic profiling with TEs could be an important and significant part of the professional learning of TEs. Profiling could help TEs be more cognisant of the different forms of know-how knowledge and the different relationships between knowledge-how and knowledge-that. Profiling could also help TEs be more intentional in the use and development of their own navigational gazes, and their responsibility and accountability to the wider profession.

In School 3 the TE is lacking in awareness of the potential power of their discourse in relation to the professional formation of the BT, but they do have explicit knowledge to share. The diffractive semantic profiles in this instance is a tool that aids the TE in developing an appreciation of the significance of the way that they represent knowledge. The TE has this knowledge, but they are unaware of its pedagogic potential, as a consequence prior to the profiles, the pedagogic potential of such TE knowledge remained latent. The profiles helped to release the pedagogic potential by making knowledge-structuring processes explicit. It is significant that the profiles are a graphical visualisation as, 'If colleagues are unable to verbalise their actions, it may simply be that they lack the appropriate tools to uncover what it is that they are doing, and/or the vocabulary or self-awareness to articulate it' (Kinchin and Cabot, 2010: 156). The profiles together with the concepts are enabling relational knowledge-structuring consistent with the field's regional knowledge-structure. In this sense the sharing of the semantic diffractive profiles gives both TEs and BTs agency by making the knowledge structuring within their pedagogic discourses explicit.

7.8 (Re) developing professional agency

Developing a sense of agency is significant in appreciating the relationship between the official recontextualising field (ORF) and pedagogic recontextualising field (PRF). The increased and increasing role of official materials in structuring initial teacher education has been acknowledged (table 1.1). Currently the ORF is dominated by a reductive view of professional knowledge which prioritises performance criteria within the Teachers' Standards. In sharing the profiles, the ways in which the apparatus of the Teachers'

Standards closed down the pedagogic potential of some of the WDM dialogues became visible to some of the TEs, BTs and to myself as the researcher. The TE from School 3, (figure 7.11) acknowledges that 'since looking at the graphs we try to look at a different part of the bigger picture so that it's not just what [name of BT] is doing in my classroom, we are linking bigger ideas…. like differentiation'. The BT responds by saying 'I think that it has helped me to develop more…. like personally…whereas Form 16…I was looking for physical evidence of it'. The significant difference between the externality of evidence, 'having' evidence, and the inner transformation of becoming a teacher is being recognised by the BT, because of the change in the TE's navigational gaze, facilitated by the apparatus of the profiles and table of concepts.

Figure 7.11 School 3's R Profile
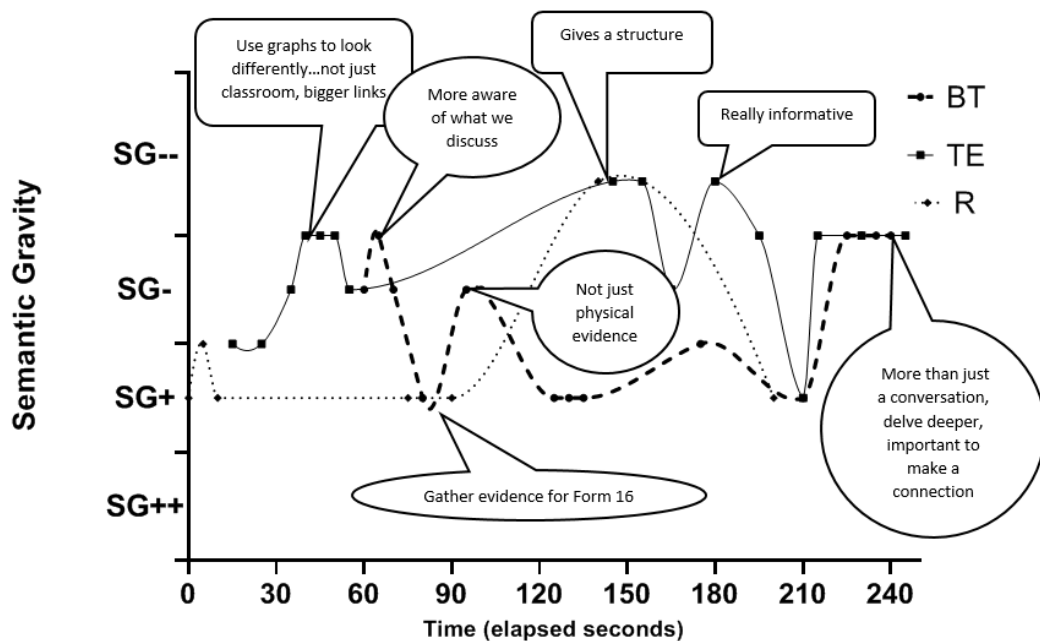
Here the BT is recognising that in gathering evidence for 'Form 16' – the SCITT's pro-forma (see Appendix H) for analysing evidence in relation to the Teachers' Standards, is

an instrumental rather than meaningful activity. This is because the SCITT's pro-forma related to the Teachers' Standards which values a list of performed capabilities, rather than valuing pedagogy as also including the 'attendant discourses' of the profession within professional practice. This notion of 'within' is appreciated by the BT when they recognise that by referencing the professional concepts, that they developed 'personally'. There was an inner connection for them with the profession that had not been enabled by simply collecting 'physical' materials. The time and space of a carefully structured discourse had, in this case, increased the professional agency for both the BT and TE. The TE was now more conscious of structuring the dialogue as a consequence of seeing the profiles and the IR discussion. The BT was more aware of their sense of belonging to a professional community that would hold them to account in relation to its substantive ideas. This is consistent with Polanyi's (1966/2009) full articulation of tacit knowledge-structuring. It is also evidencing that such knowledge is dependent on a knowledge-structure that foregrounds concepts.

It is interesting to note that the profiling of this graph includes a significant flow of waves for myself, the TE, and BT, with both the TE and BT being coded in the SG- - criteria. The semantic range for the TE was 2 and the BT 1.5. It is clear that understanding is being developed in relation to professional practice knowledge structuring and that the profiles together with the concepts are facilitating this. The profiles and concepts are increasing the time and space for the discursive gap and in so doing are illustrating the potential for local discourses to challenge the restrictions of the ORF. The form of pedagogic communication was having a material impact on the

knowledge produced and professional identities formed. As a consequence there is the potential that a change in the apparatus from Teachers' Standards to concepts could alter the PRF/ORF relationship and ultimately the classification of the profession.

Currently the profession is edging towards being classified as a 'new region' or even as having a generic structure rather than the regional structure valued by reasoning giving professions. The role of school-based TEs in knowledge-structuring for the profession is fundamental to the well-being of the profession. The empirical analysis is revealing the need to develop professional learning opportunities for school-based TEs so as to increase professional agency. The lack of such agency had been highlighted in Chapter One as to one of the reasons given for colleagues leaving the profession. One of the key motivations for the research study was to consider how to improve the retention of teachers, particularly in areas of high social deprivation. All schools in the study were located in either a designated social mobility area or an achieving excellence area (DfE 2017a) at the time of the data gathering period. It is important to note that in addition to School 3, four other TE/BT pairs recognised how the semantic diffractive profiles and concepts had altered their subsequent structuring of pedagogic communication. These have been summarised in figures 7.12, 7.13, 7.14 and 7.15. All the profiles in this group exhibit iterative wave profiles, indicating that intra-actions are occurring and understanding is developing. School 2's profile in figure 7.13 illustrates an 'up escalator' movement, during which a specific case relates to a more conceptual way of thinking.
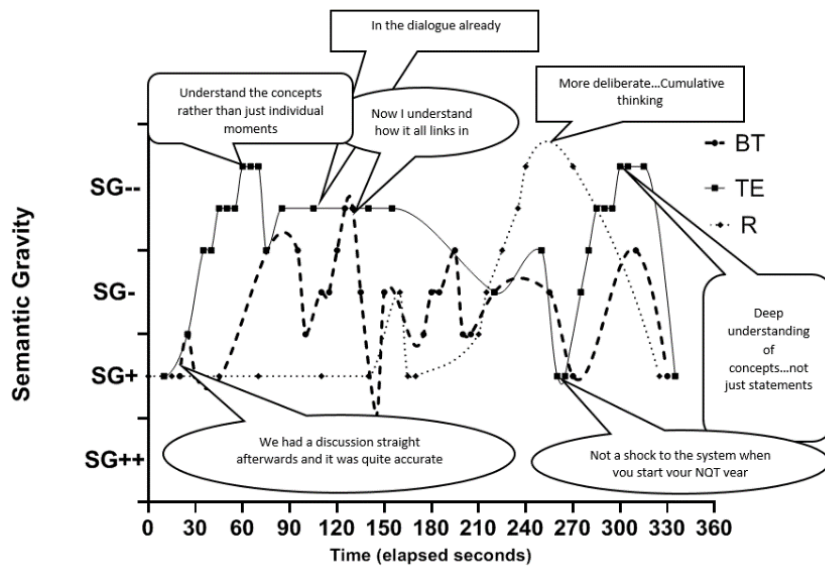
Figure 7.12 School 1 R Profile

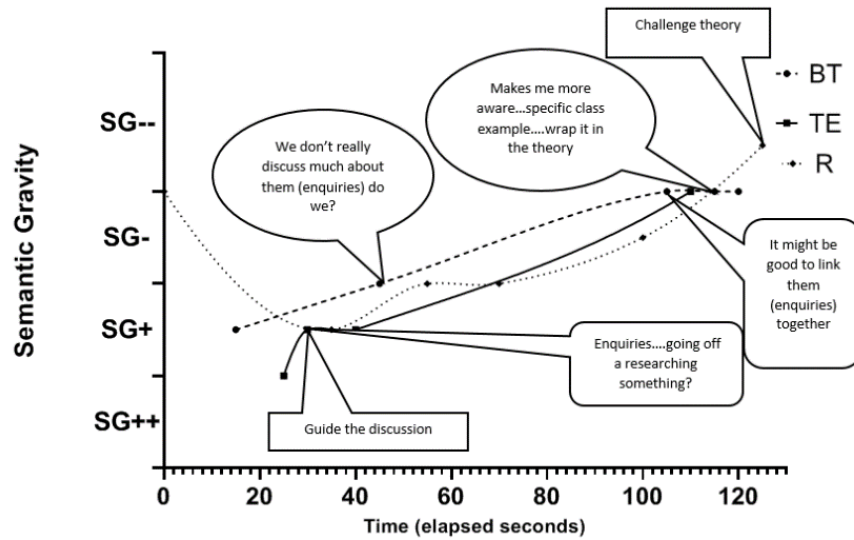**Figure 7.13 School 2 IR Profile**

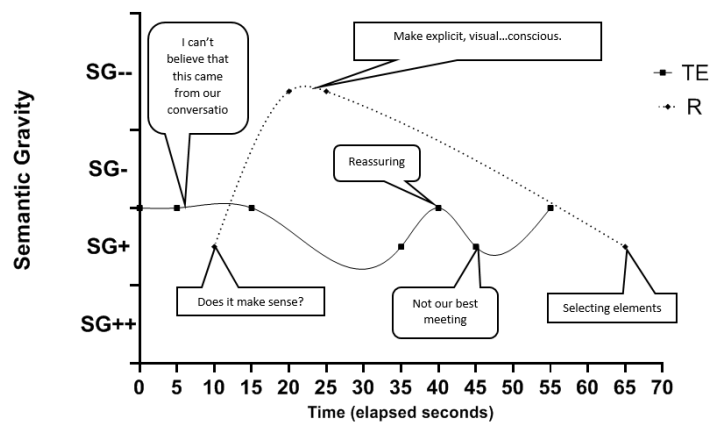
Figure 7.14 School 6a IR Profile

Figure 7.15 School 6b R profile (1)
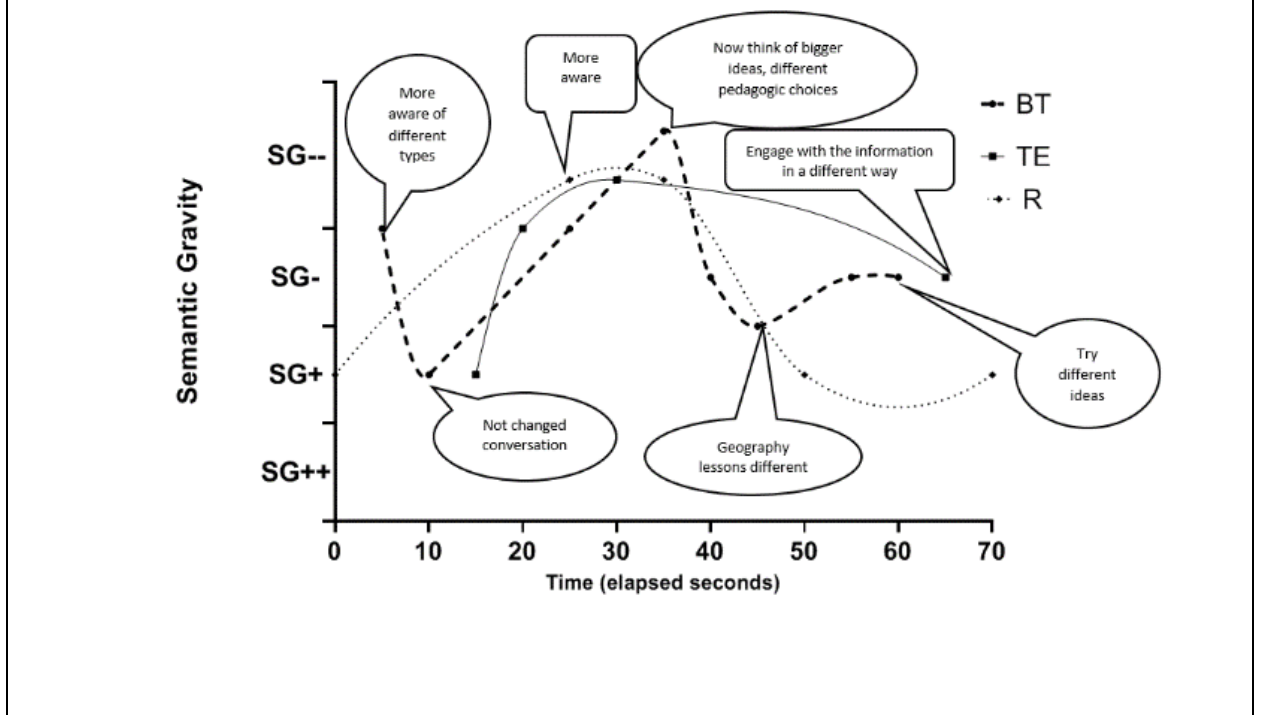
Similar to the BT from School 2, the BT from School 6b (figure 7.15) recognised that the profiles and concepts had made them 'more aware of the different types of thinking and how they relate to each other'.

This emphasis on the relational rather than the separation of the forms of knowledge is significant. The BT valued this approach, acknowledging that the use of concepts as a form of apparatus to frame the dialogue rather than the apparatus of the Teachers' Standards altered their knowledge-structuring. They stated that referencing concepts enabled them to be 'more aware, to think about the different pedagogical choices, and that's made me think, look at each of my lessons and think about what choices am I going to make in this lesson, like geography has been quite different'.

This was also the case for the TE/BT pair from School 1 (see figure 7.12). Additionally the TE appreciated the explicit nature of the profiles, stating that 'I think it makes us realise that it's in the dialogue already, but it's more sort of what impact it has'. Here the TE is touching on the latent pedagogic potential of conceptual thinking. If it is not accessed, it cannot be used, but it is present. By making the form that the knowledge-structuring takes, explicit via the diffractive profiles, the pedagogic potential of conceptual thinking is released and given agency. The pedagogic potential is not restricted as in the previous focus on evidence gathering. The TE/BT pair from School 2 (figure 7.13) also valued the explicitness of the profiles and concepts. The BT stated that 'I suppose looking at this now, [the profile] makes me more aware of what we were talking about…and then we can talk about anything that is a specific example from class and then put it in…wrap it with the theory behind it'.

In these cases, the change of apparatus clearly has the potential to change the ORF/PRF relationship. The TE from School 6a (see figure 7.14) shared that the profiles are potentially enabling, 'Obviously I want to support [name of TE] as much as possible, but the references [concepts and profiles] that you are giving me reassures me that I actually can'. The desire of TEs to support BTs is often a key motivator as to why school-based colleagues take on this demanding role. If professional practice knowledge is to be viewed as a principled relational knowledge, then TEs benefit from developing navigational gazes informed by an appreciation of the different forms that knowledge structuring can take and the different consequences that each form has for professional identities. It is therefore significant that TEs see themselves as knowledge-structurers,

not simply as knowledge-carriers. The profiles in figures 7.12-7.15 suggested that school-based TEs would be excited by such epistemic endeavours, but in order to enable such work, school-based TEs would need a gaze that did not 'other' theory and practice.

7.9 Developing Navigational Gazes

Such 'othering' was initially evident in the TE from School 6b's discourse. To begin with the TE separated the work of 'the university' or SCITT from that of the school. They felt that the SCITT had inculcated the BT in theoretical perspectives. As a consequence, they saw the BT as embodying theory (know-that) and themselves as embodying classroom knowledge (know-how). The two forms knowledge were viewed as being separate by the TE. They interpreted the profile through the lens of relevance (see figure 7.16), as they saw this as their role to prioritise the practical elements of professional knowledge.

Figure 7.16 School 6b's IR Profile
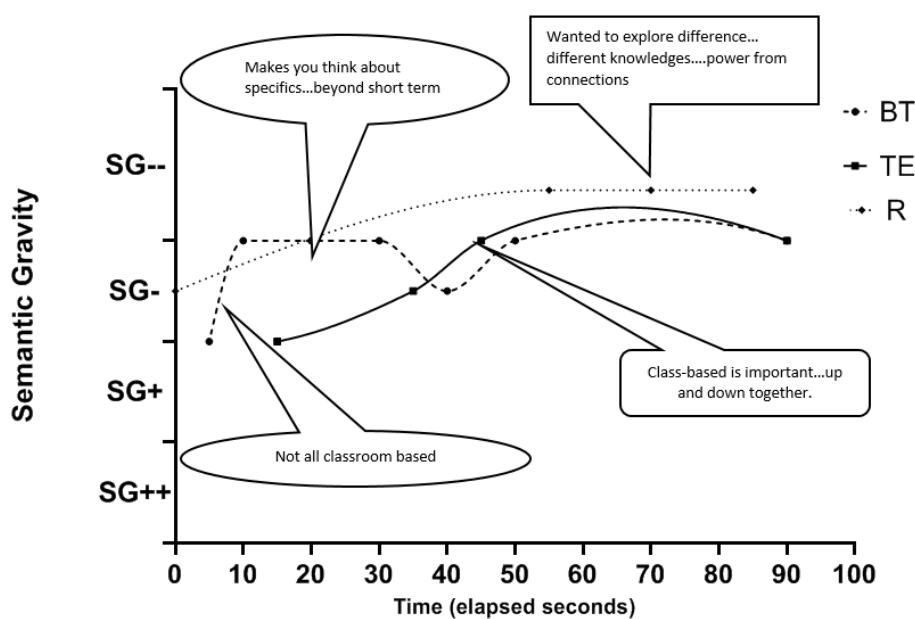
The TE states that 'I like the way that it comes down to [the] class [room], that's important'. The TE sees their role in relation to pedagogy as being the one to offer practical ideas. They contrast this with the ideas 'from a university base'. They state then when 'you are with me, then what I do, is that, I use my I use my practice base, and then you kind of balance….so we kind of balance it out, so that we have an idea here and I have an idea and it goes up and down…'. The TE sees a relationship, but they also feel that they have a tightly defined role in that relationship, one that foregrounds context. In contrast the BT states that 'I can see why it matters that our conversation is not all classroom based'. The TE and BT recognise that 'It's nice to see the way we cross over'. This statement is made as the two individuals are seen to be contributing and embodying separate knowledges. Subsequently as they discussed the profiles more, their appreciation of the co-mingling of both forms of knowledge within each other and within the profession became more significant for both of them. The profile as a visualisation of knowledge structuring has interrupted the TE's conception of the purpose of their role. As a school-based colleague, they were beginning to recognise that their role was more than simply evidencing the practical, it was also about drawing out how classroom practice was dependent on a knowledge relationship. Their interpretation of the profile, shared in figure 7.17 is that 'your [the BT's] knowledge is up here and my knowledge, which is the bottom bit, and then we way that we come back together'.

Figure 7.17 School 6b's R Profile (2)
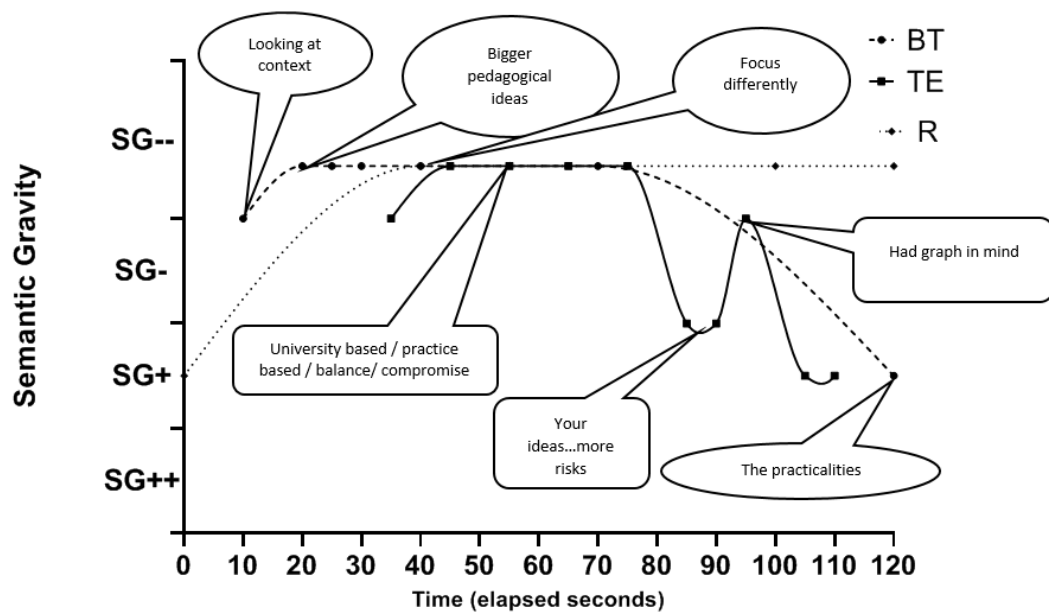
As I was present I was able to help the pair avoid the misconception that context dependent knowledge is not a lesser knowledge because it is 'down there' on the profile, but rather that it is simply a different form of knowledge. The profile is an up escalator suggesting a development in a more context light understanding by all participants. The R profile (figure 7.17) shows that they are now looking at both 'the context and the bigger ideas.' The BT goes on to clarify these as being 'the bigger pedagogical ideas.'

The perspective TE from School 1 (see figure 7.18), contrasts with the initial insights offered by TE from School 6b in that they felt that it was their responsibility to offer the organising concepts. The TE suggests that the BT tends 'to narrow yourself down....' By

focusing on the Teachers' Standards and that the TE is 'the sort of person who can look at the overall picture. I can sort of link those ideas a little better, I think because I have that sort of bigger overview'. In this case the TE is recognising that their role is to draw on the profession's big ideas to help cohere and develop the BT's knowledge. The BT recognises that without the TE, they think 'with the Teachers' Standards' and so whilst they feel that they have 'got this one and I've got this one', in other words whilst they can gather externalised tick-box evidence, they are missing an appreciation of '…what's the link'.

Figure 7.18 School 1's IR Profile
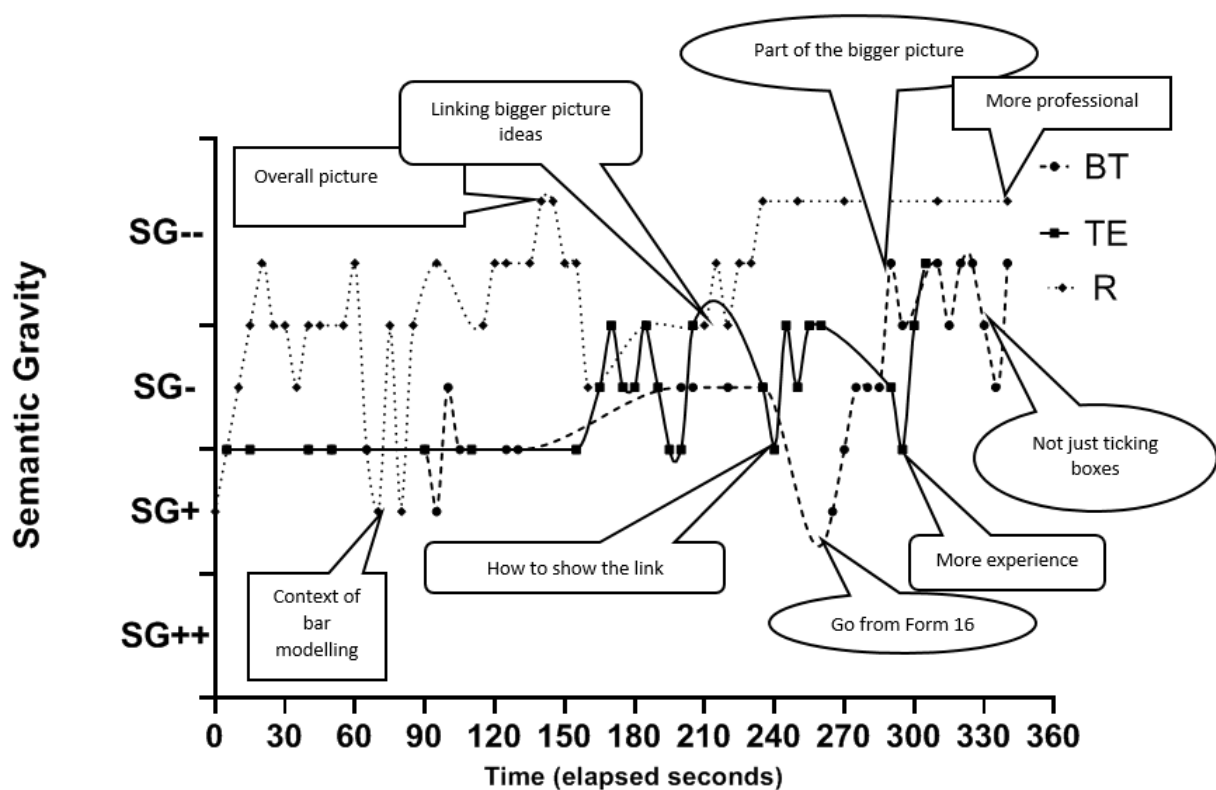
The BT states that their 'TE should know some concepts, because you guide me…. you are trying to guide me then to the overall picture…. [and]…If you didn't have that

knowledge of concepts, it would make it hard for me to also bring my knowledge up, but also just to get my general teaching experience rounded'.

In both School 1 and School 6b the essential knowledge of the TE is being recognised, but there is a significant difference in their perceptions as to the form that their navigational gaze should take. This difference matters, as the gaze has a material effect on the form that the knowledge-structuring takes and the form that the knowledge is materialised in, alters the professional identity of the beginning teacher. The gaze has the potential to open up the discursive gap (see figure 7.18) by recognising professional practice as a relational knowledge using the apparatus of concepts, or a meta-language that strengthens the vertical discourse of a horizontal knowledge type, clearly differentiating profession practice knowledge from a horizontal discourse. In order to strengthen the discourse, TEs and BTs need to be able to access the profession's systematising knowledge. In teaching this is challenging when the Teachers' Standards themselves.

7.10 Conclusions

The navigational gaze of the TE has a significant effect on the professional formation of the BT. As such the development of the TE's gaze in relation to professional practice knowledge benefits from careful thinking in relation to the form that knowledge-structuring takes. The form is influenced by the materials that are used to inform the gaze and the pedagogic practices that shape the gaze. Pedagogic practices that are dominated by the empirical develop a gaze that is proximate to 'a way' of doing

something. Demonstrating a way draws on a different form of knowledge structuring to the means needed to reason. If teaching is to secure its place as a profession then TEs will benefit from an awareness of the different forms that knowledge can take and the different ways that these forms relate in professional practice. When such awareness id developed TEs and BTs gain professional agency. They are able to draw on materialisations of systematic knowledge and use this to examine the logic of the relationship between contexts and concepts in practice. Such local discourses have the potential to re-frame professional practice knowledge at a macro scale. Currently in England professional practice knowledge is framed by the Teachers' Standards in which concepts are implicit rather than explicit. The diffractive profiles make both concepts visible and the process of reasoning visible. In order to increase the potential for teaching to be recognised as a profession informed by reasoning capabilities, the systematic knowledge of the profession needs to be made explicit, as do the effects of different pedagogical discourses. The concluding chapter of this thesis suggest some ways in which this research study could underpin such a move by sharing different ways of producing knowledge.

Chapter 8: Conclusions

8.1 Introduction

This research has explored how and why professional practice knowledge was structured in different forms and the impact that these different structures have on professional formation. The motivation for this endeavour was found in concerns surrounding the adequacy of current frameworks, given the high numbers of teachers leaving the profession. In order to explore links between these concerns and forms of knowledge structuring, the pedagogic processes evident in both the ORF and PRF were made explicit through both theoretical analysis and empirical investigations informed by a methodological design. Bernstein's framework enabled connections to be made between the limiting forms of regulation evident in the ORF relative to the possibilities of a concept informed approach that can be facilitated within the PRF. The significance of the Teachers' Standards (DfE, 2011) and CCF (DfE, 2019) as material apparatus were brought to the fore through a diffractive analysis which emphasised how 'matter comes to matter' (Barad, 2007). Quantum rather than classical articulations of time and space, made visible the ways in which such materialisations influence local discourses. Acknowledging the presence of such materials, together with the navigational gazes of the BTs and TEs in local discourses, enabled the impact of these to be analysed. Previously these apparatuses had been viewed as being either passive or absent. This research study makes a theoretical contribution by recognising professional practice knowledge as a relational knowledge through an expanded application of Bernstein's conception of vertical and horizontal discourse. It makes an empirical contribution through recognising the significance of different forms of knowledge-structuring on

professional formation, and a methodological contribution through insights afforded

through diffractive semantic profiling.

8.2 Theories of interruption

Bernstein can be viewed 'a theorist not of reproduction but of *interruption*: of the

principles and possibilities of disordering and disruption, of the structuring of *change*

(Moore, 2013a: 37, emphasis in the original). Barad acknowledges that theorising as 'a

form of experimenting, is about being in touch. What keeps theories alive and lively is

being responsible and responsive to the world's patterning and murmurings' (Barad

2012a: 104). It is through the realisation of Bernstein and Barad's insights in the

application of the Semantic dimension of the LCT framework that new insights have

been developed in relation to the structuring of professional practice knowledge. The

significance of the relational knowledge structuring has been prioritised. Dynamism

consequentially becomes a vital component in any understanding of knowledge

legitimation. It is the differential effects of the different forms that the ongoing and

iterative dynamic between systematic and contextual knowledge can take that have

been exposed by this study. The articulation of the profession in the Teachers'

Standards (DfE, 2011) is recognised as offering a thin or weak articulation of a profession

and one that has a reductive effect. The official articulation has been contrasted with a

more expansive recognition of professional practice knowledge based on insights

offered by Durkheim (1912/2008) Ryle (1949/2000) and Polanyi (1966/2009),

interpreted by Bernstein (2000) and Winch (2013a, 2013b). The empirical elements of

this research study demonstrated how by using a conceptual framework that offered

coherence and connection, knowledge-structuring more consistent with the inner

workings of the field could be facilitated. It was argued that by recognising professional practice as a vertical discourse of a horizontal knowledge structure type rather than a horizontal discourse that the profession could be strengthened. In order to strengthen the profession a meta-language or framework of symbolic meanings needs to be developed so as to cohere and otherwise fragmented field of practice. The scale of the task should not be under-estimated. Bernstein, some two decades again stated, that the state 'has now put education in a very tight box, through announcing hundreds and hundreds of targets for institutions to reach. It can basically control input and output' (Bernstein, 2001b: 382). Whilst events included in table 1.1 authenticate Bernstein's observation, he also recognised that such restrictions are not predetermined, change can come at the level of framing. This thesis argues that by reframing the PRF in relation to conceptual criteria that the ORF can be interrupted. The analysis of local dialogues revealed the latent presence of a conceptual architecture within professional discourses. It is argued that by releasing this potential, professional agency is also enabled, increasing the status of the profession. Recent analyses of the status of the profession have acknowledge that: 'A number of teachers reported that increasing respect for the profession would support retention. Although there were no suggestions as to how this could be achieved, it was clear that teachers feeling more respected and valued would have gone somewhere to retaining them in the sector' (Worth and Van den Brande, 2020: 52). This thesis contributes one way as to how respect for the profession could be achieved. If the distinctive purposes of the profession are manifest within official articulations rather than atomised and particularised actions, then professional practice knowledge can be structured more productively. It can be structured relationally rather than practice and theory being 'othered'. In a relational structure local discourses

connect with national discourses, and knowledge can be developed rather than fixed.

The current articulation has fixed schools as places of the practical, limiting the

contributions that school-based TEs can make to the structuring of professional

knowledge. Figures 8.1 and 8.2 contrast the current relationship between the

structuring of professional knowledge and policy documentation with that which could

be possible. The potential flow of knowledge structuring (figure 8.2) illustrates how

local sites of professional practice knowledge could legitimately be recognised as

evidence-making locations which contribute to policy. This possible position is

underpinned by the study's theoretical, methodological and empirical contributions.

Figure 8.1 The current flow of knowledge-structuring in ITE in England.
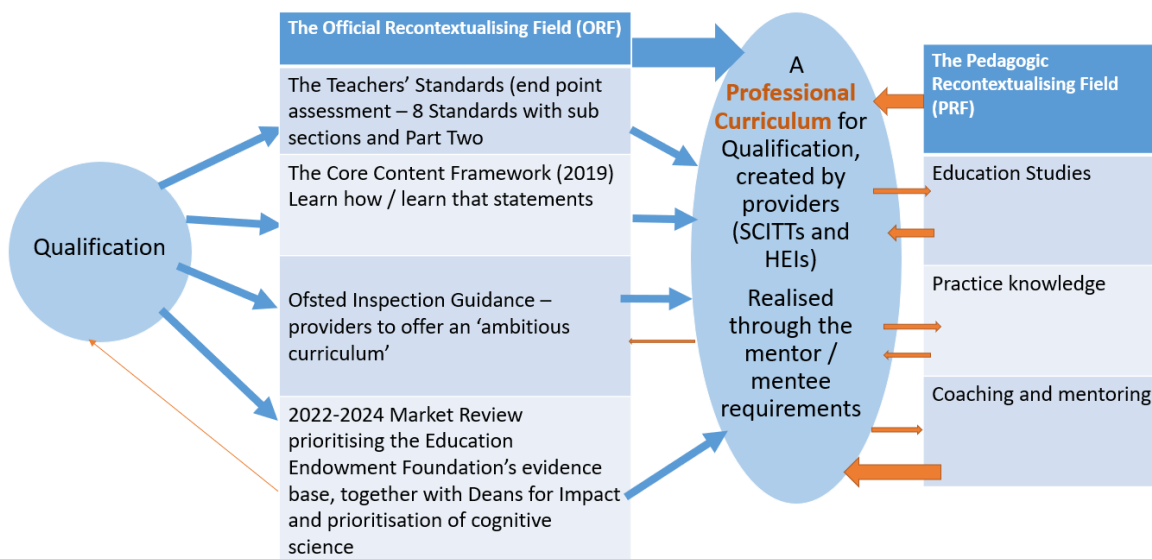
Key for both figures	
Flow to / from PRF	
Flow to / from ORF	

Figure 8.2 The potential flow of knowledge-structuring in ITE in England.
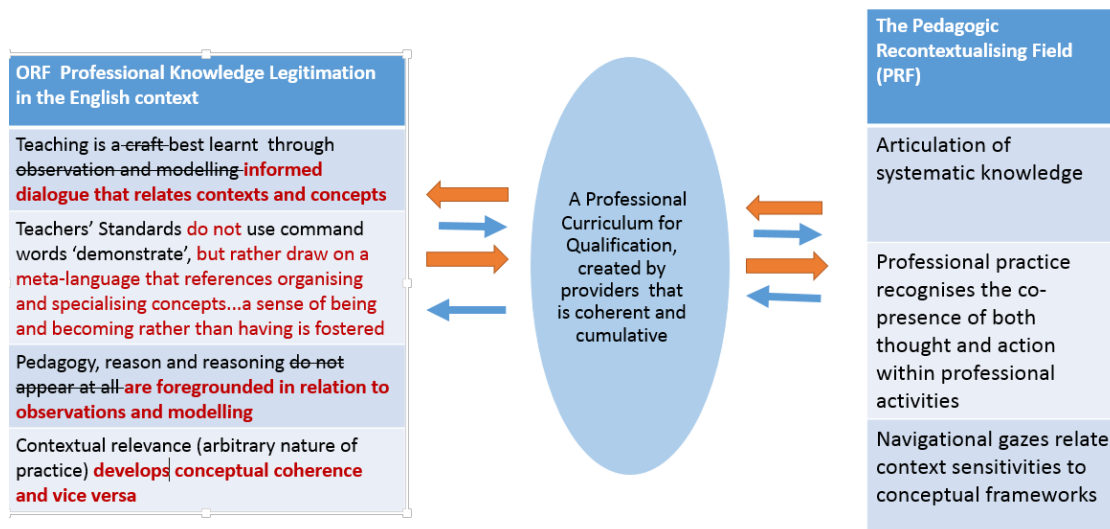
Figure 8.1 illustrates how the work of practitioners is 'othered' in policy documentation,

limiting the influence of the pedagogic recontextualising field (PRF). Currently the official

articulation of professional practice knowledge (ORF) is seen to be external to the sites

of practice. In this sense the Teachers' Standards brought into practice, they exist as

something 'other' than current practice, external to it, restricted and minimising the

input of the PRF (shown by the orange arrows). This position is dependent on Cartesian

conceptions, ones that view techniques as distant from professional purposes, evidence

as separate to policy. Professional practice is seen to consist of 'know how' knowledge

rather than 'know-how-to' knowledge and as such is characterised by atomised and

fragmented statements.

In contrast when professional knowledge structures recognise that contextual physical

manifestations of practice result from an entanglement with conceptual professional

values, evidence of what constitutes professional practice knowledge can be realised differently, more democratically. This is based on a view that professional knowledge is not dependent on a set of external factors waiting to be 'translated' or 'disseminated' into practice but rather consists of a more 'fluid and multi-directional phenomenon in which knowledge is "recreated" in different contexts by different people, again and again' (Wieringa and Greenhalgh, 2015: 6). As such professional practice knowledge structuring deliberations can more productively inform policy, evidenced in figure 8.2 by a more balanced flow or arrows. In this way professionals contribute a form of enacted evidence into policy, a form that is co-constituted. This is one that attends to the specialising and organising purposes of the profession recognising that 'the teaching of teaching is sophisticated work' (Loughran and Mentor, 2019: 216) as such should not be misrecognised or reduced to simplified actions characterised by horizontal discourses.

8.3 Theoretical contribution

Professional practice knowledge-structuring was recognised as being a vertical discourse of a horizontal knowledge structure type. One of the key findings was the significance of the ability to differentiate between horizontal discourses and weak vertical discourses of a horizontal knowledge structure type. As Bernstein stated, 'misrecognition takes a few lines, but its exposure takes many' (Bernstein, 2000:175). When professional practice knowledge is misrecognised as a horizontal knowledge, there is a misrecognition of the significance of time and space. A horizontal discourse is context bound and does not access systematic knowledge. If a horizontal discourse is represented as a vertical discourse then a claim is being made that an action is a specialising form of knowledge,

when in fact all that an action does is reproduce an action. An individual can be trained

to perform an action whereas they need to be educated into a profession. In order to be

educated into a profession access needs to be given to the meta-language or symbolised

meanings for the profession. These symbolised meanings are employed within

professional activities, they do not solely exist beyond the activities. By drawing on

Barad's (2007) application of quantum theory in relation to Bernstein's (2000)

articulation of vertical and horizontal discourse, greater insights have been offered in

relation to the differentiation between horizontal and vertical discourses and between

vertical discourses of a hierarchical and horizontal knowledge structure type. This has

been a conundrum that has occupied and continues to occupy both Bernsteinian

scholars and social realists. Table 8.1 attempts to summarise the theoretical insights

gained through this research study. The table differentiates between different forms of

knowledge-structuring and their associated knowledge structures.

On table 8.1 the row articulating horizontal discourse has a thick boundary surrounding

it. The boundary signifies the different time/space dimension to this form of discourse.

Appreciating the significance of time and space in a quantum rather than classical way

has enabled me to demonstrate greater cleavage between horizontal discourses and

very weak vertical discourses of a horizontal knowledge structure type. Previously such

differences were challenging to articulate. The challenge related to the proximity of the

empirical and conceptual in analysis of practice knowledge when viewed in a reductive

way. When the empirical or that which could be observed was taken to represent the

theoretical, misrecognition took place. This misrecognition was based on thin

interpretations of tacit, craft and practice knowledge justified on the basis of relevance.

Table 8.1 Summary of knowledge-structures and knowledge-structuring.

Individual / Collective	Scale	Form of tacit knowledge	Form of know-how knowledge	Form of discourse and profile	Form of Navigational Gaze	Professional identity	Form of professional practice knowledge	Disciplinary structure
Local practice is seen as exemplifying of collective theoretical positions	The collective dominates	The distal dominates, so a thin form, as there is a lack of sensitivity to the proximal	Know-that dominates in any know-how ability	Vertical discourse of a Hierarchical knowledge structure Profiled as a high flat-line SG--	A navigational gaze is not needed as the principles are so explicit	Theorist / ideological	Practice is used to practise (very few) theoretical principle(s)	Singular
Evaluated and elaborated practices	Abstract concepts used to specialise, organised, evaluate and elaborate local practices in relation to enduring principles	The logic of the relationship between the proximal and the distal is explicitly evaluated and examined.	Intelligent know-how, sensitive to both concepts and contexts in a relational form	Strong Vertical discourse of a Horizontal Knowledge Structure type Profiled as deep and iterative waves	An informed navigational gaze is needed to explicitly connect and cohere segments. Diffraction (discursive gap is sought)	Professional identities secured through use of collective principles that hold practices to account.	Weak segmentation	Regional Structure
Evaluated and described observed or modelled practice	Increased reference to principles that are abstracted from practice	Both the proximal and distal are used by individuals in action	Some transversal ability through protocols	Strengthening of the Vertical discourse of the Horizontal Knowledge Structure type Profiled as shallow waves	Navigational gaze is implicit rather than explicit , reflection is sought	Individual identities are recognised as loosely belonging to a profession	Segmented	New Regional Structure
Weakly evaluated and strongly described individual observed practice or modelled practice	Local scale – in the classroom, some limited or restricted reference to collective principles	Very thin tacit knowledge, dominated by the emphasis on the proximal	Skills based programmes	Very weak Vertical discourses of a Horizontal Knowledge Structure type Profiled as SG++/SG+ very shallow waves	An embryonic navigational gaze, implicit and thin tacit knowledge dominates, demonstration is sought	Limited recognition of a professional body of knowledge, local identity is much stronger	Very strongly segmented, lots of volatility, so becomes close to a Horizontal discourse	Generic Structure
Individual Observed Practice or modelled practice	Local scale – in the classroom	Absent –kinetic form is used	Techniques, communicated by training	Horizontal discourse Profiled as a low-level flat line	No navigational gaze – 'the way' is communicated kinetically, reproduction is sought	Isolated individual workers with arbitrary knowledge bases	Fragmented	Everyday common-sense knowledge

Misrecognition resulted because a limiting form of measurement had taken place using a limiting form of apparatus. Practice knowledge itself is not innately know-how or know-that knowledge, it consists of both. It is the evaluation of the relationship between the two forms that determines its nature. If know-how is prioritised then the training of techniques and skills is emphasised and the supervening purpose is rendered inert. If know-that is prioritised, contexts are rendered inert and practice is seen as the place to put know-that into practice. In each case the relationship between know-how and know-that is condensed to such an extent that one replaces the other. In such cases destructive boundaries are crossed, with one form of knowledge destroying the other as one replaces the other and the significance of the relationship between the two is broken. These thin or reductive interpretations has often justified by claiming to be inclusive. Social realists recognise that such justifications are actually exclusive. They exclude access to systematic knowledge and so exclude meaningful participation. They make the particular exclusive, excluding the relational.

The literature review contrasted the thin and condensed forms of practice, craft and tacit knowledge with the thicker, less attenuated versions that valued the relationship between know-how and know-that. Such a relationship needed to be held to account in relation to systematising knowledge or else a form of relativism rather than realism would result. It was argued that currently in the English context in ITE the relevance argument has been used to prioritise a very condensed articulation of professional practice knowledge, weakening the profession. In turn these materials further

weakened the profession through the way that they were used within ITE programmes.

8.4 Empirical contribution

The study was then able to recognise that when professional practice is materialised as a thin form of 'know-how' knowledge that theory and practice were then 'othered'. The detachment of systematic meanings from performed actions resulted in demonstrations of performances being valued in practice, rather than evaluative and reasoning capabilities. If individual and particular context dependent actions rather than professional pedagogic activities are valued, the profession is weakened. The profession is weakened as it lacks access to the systematic knowledge required in professional fields. Accessing such knowledge in a professional field is a relational activity. It is by valuing the relationship between contexts and concepts that professional practice knowledge can be structured in a way that is legitimate in relation to the field's regional structure. A regional structure is significant as it faces both ways to context and concept. When the form of the relationship between contextual and conceptual knowledge is appreciated, connections can be made between knowledge-structuring at different scales. If knowledge structures at different scales are appreciated, then the agency of school-based TEs and BTs can be given its due regard.

The legitimate agency of TEs and BTs involves reference to systematising concepts rather than individualised experiences as the organising framework for professional practice knowledge structuring. In order to enable a re-framing of professional practice knowledge, it is recommended that there is a move away from the current Teachers' Standards (DfE, 2011) to a framework that recognises that professional practice knowledge occupies a third-space. Professional practice knowledge exists in the logic of the interplay between concepts and contexts. The reasoning of such logic can only be examined through evaluative discourses that create a dialogic space. If professional practice is presented in its thin form, its horizontal form, there is no space for reasoning. If there is no space the profession becomes stuck. When it is stuck, there is a vacuum and ideological rather than pedagogical concerns fill the space. Many providers have found themselves moving from one 'stuck place' to another. They have moved from the stuck place of the theory/practice binary to a stuck space where the practical dominates. Rather than sustaining know-how and know-that binaries, this thesis drew on social realist arguments to recognise the significance of knowledge differentiation rather than knowledge separation, so that a genuine third space of interplay could be recognised. A space that contributes to the development of knowledge by acknowledging the distinctive nature of professional practice knowledge as a form of principled relational knowledge. Professional practice knowledge is made up of thought and action within one activity, and it is the interplay of both forms within the activity that distinguishes professional practice knowledge from an everyday (horizontal – time and space bound) practice and from a highly theoretical (vertical discourse of a hierarchical knowledge structure type). In order for such an interplay to be recognised it needs to be made visible so that it can be

examined. It was through a diffractive methodology that the entanglement of contextual and conceptual knowledge in professional practices was made visible within this study.

8.5 Methodological contribution

Diffraction offered the means to make visible how different forms of knowledge-structuring were carried in professional practice discourses, and how their presence had an effect on how professional practice knowledge was then materialised. Rather than focusing on professional actions, diffraction enabled a focus on professional activities. An activity includes both thought and action and what is observed is a result of the inner (tacit) interplay that in turn is informed by and informs the outer structure of professional knowledge. If the structure of professional knowledge does not recognise the significance of the logic of the relationship between the interplay, then relational knowledge will be rendered inert. The use of diffractive profiling enabled the materialisation of the interplay. Previously the effects of different knowledge structures (frameworks, curriculum, qualifications) on knowledge structuring (pedagogic approaches) have not always been fully realised. A diffractive methodology demonstrated that the apparatus of modelling and observation devoid of conceptual purposes weakened the profession. It also demonstrated how the apparatus of modelling and observation that included conceptual purpose strengthened the profession. A diffractive profiling enabled the recognition of professional practice as a co-mingling of contextual and conceptual forms of knowledge such that vertical discourses of a horizontal knowledge structure type could be valued for their

distinctiveness rather than seeking them to become either a horizontal discourse or a vertical discourse of a hierarchical knowledge structure type. A diffractive methodology enabled greater discernment between these different knowledge-structuring forms. In a regional knowledge that faces both ways a vertical discourse of a horizontal knowledge structure type recognises the dynamism of the relationship between both forms without rendering either inert. Whilst the theoretical insights offered by this thesis are complex, the methodology is accessible, and it was recognised that the process of diffractive profiling could have much to offer for the professional development of TEs. It was recognised that the navigational gaze of TEs was highly significant in relation to the knowledge structuring that took place, and this was a key finding that informed the response to the three research questions.

In addition the use of diffractive profiling extends the Legitimation Code Theory (LCT) framework. This thesis therefore makes an original methodological contribution by enriching LCT's graphical mechanisms. By profiling separately individual contributions on a single profile, the effects of entanglements are made visible. This enables a strengthening of the relationship between LCT and Bernstein's theoretical position. Semantic waves represented in this way illustrate the capacity of certain forms of knowledge structuring to carry a particular form of knowledge, thus revealing the connection between the structure of a profile and the type of knowledge that it can legitimately carry.

8.6 Revisiting the research questions

The first research question attempted to establish insights into how school-based teacher educators structure professional practice knowledge for beginning teachers. The diffractive profiling of WDM discourses revealed both the reductive nature of the SCITT's pro-formas. These were in turn dependent on the Teachers' Standards (DfE, 2011) which offered a reductive articulation of professional practice knowledge, prioritising the demonstrable over reasoning capabilities. More expansive forms of professional practice knowledge recognised the co-presence of different forms of knowledge. A response to the second research question required an investigation into ways that forms of knowledge structuring reflected or deviated from policy conceptions of teachers' professional knowledge in England. It was recognised that ITE in England has been subject to intense policy control and that this authority is increasing. The policy articulation of professional practice knowledge differed from that evidenced by the navigational gaze of some TEs. The analysis of the diffractive profiles demonstrated that where TEs framed professional practice in relation to conceptual understandings, the logic of the relationship that lies within observable actions could be materialised and its pedagogic potential released. In these cases an alternative structuring resulted in an alternative structure, one that was more resonant with stronger professional fields. The role of TEs and the formation of their navigational gazes became significant. The need for greater recognition of their role and the development of their epistemological understandings was recognised as being fundamental to professional agency. Such professional agency was enabled through a recognition of the accountability of professionals to the collective (sacred) endeavours of the profession rather than being dependent on individualised contexts.

The third research questions enabled recognition that a profession has accountability to wider society and so in relation to public professions it is appropriate that there are policy constraints. It was the nature and extent of these constraints that were analysed in the construction of the response to research question three. It was argued that policy constraints in their current form were limiting professional constraints, and that in order for the profession to develop more legitimate constraints a realist-relational rather than reductive or relativist form of professional knowledge structure needed to frame knowledge-structuring in and for practice.

The diffractive profiles revealed that when the technical regulating criteria prioritised in the Teachers' Standards (DfE, 2011) were also prioritised by the SCITT, that descriptions of observed actions formed substantive elements within professional discourses. Such discourses were perceived of as being 'mere conversations' or opportunities to externalise practices. A separation rather than connection occurred between discourse and actions. In this sense practices were particularised, individualised and isolated. Time and space were exhausted in the moment of actions. An action was referenced with reference to itself and so described rather than analysed for its meaningfulness.

These experiences were contrasted with those where principles and practices were considered relationally. In order for a relationship to be present, time and space needed to be given to enable connections to be made. This occurred when discourses

and actions were framed by concepts or principles. Enactments were no longer particularised, but could now be elaborated and evaluated. What was seen was analysed in relation to conceptual commitments. Such commitments enabled judgements to be made in relation to the legitimacy of the action in relation to the accountability offered by the concept. In this way discourse and action became part of the same conceptual phenomena and could be brought legitimately into a space of intra-action. In order to generate coherence rather than relativism in a PRF that values systematic relationships and connections, a careful navigational gaze needs to be developed. As it is through a relationship with the inner that 'the guarantee of the legitimacy, integrity, worthwhileness and value of the knowledge and the special status of the knower...' (Bernstein, 2000: 68) is enabled.

What has been made relevant in the ORF are the surface rather than the substantive (inners) features of the profession. The surface features (ways rather than means) have replaced the substantive features justifying an emphasis on the individual and the generic. Illegitimate substitutions have occurred because the legitimacy of time and space have been disrespected. They have been disrespected because previously the significance of entanglements, the entanglement of the proximal and the distal, the entanglements of epistemic and the technical, the entanglements of the principled and procedural have not been well understood or well-articulated. It is in realist-relational materialisation of professional practices that the identity of the profession is strengthened. In this way sites of practice are also sites of production. Relational knowledge structuring is a legitimate part of a recontextualisation field, one that looks

both ways, not from a site of reproduction to production or vice versa.

Recontextualisation has often been considered to be the recontextualisation of a

principle **in / to or for** a place of practice. This study has demonstrated that when

principle and procedure are brought together **within practice** through relational

pedagogies that knowledge can be structured more authentically in relation to the

PRF. As such a strengthening in the framing offered by the PRF has the potential to

change the classification currently in operation through the ORF and develop the

status and well-being of the profession and professional agency. Bernstein (2000)

articulated three pedagogic rights (enhancement, participation and inclusion) as the

'conditions for effective democracy' (Bernstein 2000: xxi).

8.7 Bernstein's pedagogic rights and recommendations

Bernstein identified three rights, the first is the right of individual enhancement, the

second relates to the right of inclusion and the third is the right to participate. Each of

these now used as a lens to examine how the findings of this research might enhance

the profession by paying attention to these. Bernstein explains that: 'Enhancement is

not simply the right to be *more* personally, *more* intellectually, *more* socially, *more*

materially, it is the right to the means of critical understanding and new possibilities

(Bernstein, 2000: xx) He explains that 'enhancement entails a discipline' (Bernstein,

2000: xx) . In order to achieve the right to professional enhancement, it is

recommended that TEs and BTs have increased access to systematic knowledge which

disciplines the profession of teaching. Such access would avoid the reliance on

individualism and particularisation. It would enable school-based TEs and BTs to

contribute to enhancing the profession by acquiring navigational gazes that enabled

them to evaluate the logic of the relationship between thought and action in their practices and within the profession. Coherence and progression in professional practice knowledge would be enabled by individuals being able to elaborate on the means and ways in which the proximal and distal intra-act in observable actions. Such a capacity id dependent on individuals being able to recognise themselves as belonging to a distinctive profession, one in which they feel included.

The second right is 'the right to be included, socially, intellectually, culturally and personally' (Bernstein, 2000: xx). Through fragmentation, TEs and BTs have been excluded. A focus on particularities does not enable inclusion. Arguably the profession of teaching has suffered from the myth that has previously suffered from 'the popular myth that there is little to know about teaching and schools, and what little there is can be easily picked up on the job' (Cochrane Smith 2005: 12). Such 'myths have led to some policies considering that unmediated on the job experiences are sufficient. Whilst experienced teachers build up a collection of 'approaches and strategies that have worked' (Biesta and Aldridge, 2021: 1447). The sufficiency of such knowledges of acquaintance for a profession that depends on rational judgements has been questioned (Orchard and Winch, 2015). What such knowledge lacks is a systematic basis for future decision making, as what worked at the time for one set of circumstances might not work for the next. The uniqueness of circumstances has been used by some researchers to suggest that teaching can never be a research-based profession (Wiliam, 2019, online) as it lacks a shared knowledge base (Young and Muller, 2014). Such perspectives have implications for the status of the profession as a

whole, as if teaching is to be seen as a profession then it needs an 'intellectual basis for practice' (Shulman, 1987: 531). The sharing of an intellectual basis for the profession through the conceptual framework and diffractive profiling included in this thesis offers a means for inclusion. Diffractive practices engage teachers in 'response-able participation as they require engagement with 'the world's patternings and murmurings' (Barad, 2010: 247). Inclusion involves a commitment to the profession's differentiating (sacred) knowledge and a responsibility to make this public so that society is informed by the distinctive contribution that the profession of teaching makes. The profession therefore is accountability to society to make its distinctiveness public so that the contribution or outcomes of the profession are materialised.

Bernstein's third right relates to participation in society. The third right 'is the right to participate…Participation is not only about discourse, about discussion, it is about practice and practice that must have outcomes' (Bernstein, 2000: xx-xxi). Currently the outcomes of the profession as articulated in the Teachers' Standards (DfE, 2011) and associated policy documents suggest to society that participation in the profession of teaching is dependent on performative actions. Such dependency has led the profession to be compared unfavourably with other public professions such as medicine. The profession therefore needs to put into practice an alternative form knowledge structuring, one that interrupts the fragmentation and atomisation of the profession that bifurcates theory and practice. Unless an alternative, more expansive epistemology of professional practice knowledge is offered then the teaching will continue to have its inner core diminished. This thesis offers such an alternative and in so doing recognised that 'injustices need not await some remedy, because "now" is already thick with possibilities disruptive of mere presence' (Barad, 2017a: 113).

8.8 Limits to the Study

The unique context of the SCITT offered both benefits and restrictions to this study. The particular relationship that the SCITT has with a university partner means that its genesis was distinctive. The extent to which the SCITT is representative of the sector therefore needs to be brought into question. The SCITT describes itself as being 'scholarly', foregrounding a theory/practice relationship. The analysis of the WDMs revealed that despite this ambition, the reductive influence of the Teachers' Standards (DfE, 2011) was evident. It would now be interesting to conduct a similar study in a SCITT that was solely school led so that comparative data could be generated.

It should also be noted that the SCITT is a partnership of primary, middle and special schools. The participant volunteers all came from the primary phase. It would be an interesting extension to this project, to take this research approach into a secondary SCITT and into an HEI-led ITE provision so as to explore any similarities and differences that might result from such research findings.

The research methodology for this study has paid very close attention to researcher positionality and the unique insights that I have been privileged to bring to the study. My role and influence have been appropriately addressed within the study. However it would also be interesting to conduct research in a partnership where the researcher's role was not so significant in order to contrast and compare the impact that I had.

In terms of Legitimation Code Theory (LCT), the focus for this project was on semantic gravity, the study could be extended so as to also include semantic density. This would enable an exploration as to how conceptual complexity could be facilitated. It should be recognised that this would be an opportunity to enrich the study, rather than being seen as a limiting factor, since 'different dimensions do not refer to different practices but rather explore different organising principles underlying practices (Maton and Chen, 2020: 37). A further development to the framework could be to acknowledge the strength of the semantic range, not only in relation to its weakest and strongest gravity, but also in terms of its accumulated range – adding together the ranges for each iteration. This could be interesting additional data to analyse in relation to the extent of the iterations and a consideration for future studies. It has the potential to enrich even further an appreciation of the significance of the navigational gaze.

Despite these limitations, this study has much to contribute. It offers the theoretical, empirical and methodological means to interrupt current articulations of professional practice knowledge in ITE in England. It is argued that such an interruption is needed as the field is being weakened through a lack of focus on epistemology.

8.9 Conclusion

Currently initial teacher education in England is being subjected to further change led by the ORF. The recent publication of both the Core Content Framework (DfE, 2019) and Early Career Framework (DfE, 2020b) which are presented as divided lists of 'learn how' and 'learn that' statements all of which ultimately connect with the Teachers

Standards (DfE, 2011) continues to atomise rather than cohere professional knowledge. The empirical investigation presented as part of this thesis indicates that there could be an alternative realisation of professional practice knowledge. Achieving this will be challenging. Bernstein acknowledged that; 'Education is a state-generated activity and any attempt to make changes in the system can only be done with the approval in the end, of the State and its various agents and agencies' (Bernstein, 2001: 382). A recommendation from this study is to re-frame policy documents such as the CCF. Such a reframing could be enabled by paying more attention to the introductory statement that claims that the CCF 'has been designed to support trainee development in 5 core areas – behaviour management, pedagogy, curriculum, assessment and professional behaviours' (DfE, 2019: 4). In referencing these five areas, arguably these could be lifted from the document and used as systematising concepts.

Offering an alternative, more expansive interpretation of the CCF through prioritising the relational nature of professional practice knowledge could be one contribution made by this research. I am ambitious to build on the recommendations of this thesis in my further work as education, 'is the point at which we decide whether we love the world enough to assume responsibility for it and by the same token save it from that ruin which, except for renewal, except for the coming of the new and young, would be inevitable' (Arendt 1961: 173/4).

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Appendix A: Examples of Translation Devices

A. 1 Maton's Translation Device (2009: 49)

Semantic gravity	Coding of response	Form taken by student response	Example quote from student answers
weaker ↑	Abstraction	Presents a general principle or procedure that moves beyond the cases to address wider or future practice.	'Legal and intellectual property issues are a major consideration when developing a product.'
	Generalisation	Presents a general observation or draws a generalising conclusion about issues and events *in* the case.	'Precious time would be wasted and deadlines not met when members did not have a full concept of the project.'
	Judgement	Goes beyond re-presenting or interpreting information to offer a value judgement or claim.	'While each metaphor provides a realistic learning environment …, I felt that the *Nardoo* metaphor assists with navigation, while the *StageStruck* metaphor was a barrier to effective navigation.'
	Interpretation	Seeks to explain a statement by interpreting information from the case or adding new information. May include use of other literature or personal experience.	'While not alluded to in the interviews, this may have caused problems for the team, as there would have been a new software to work with, and transferral of information from *Hypercard* to *MediaPlant*.'
	Summarising description	Descriptive response that summarises or synthesises information presented in the case, including re-wording and re-structuring of a number of events into one statement. Does not present new information from beyond the case.	'This involved creating the overall structure and content of the project, with design briefs and statements being forwarded to the client, with the final design statement being signed off by the client, giving a stable starting position for the project.'
↓ **stronger**	Reproductive description	Reproduces information directly from the case with no elaboration (i.e. quotations).	'The NSW Department of Land and Water Conservation (DLWC) approached the Interactive Multimedia Learning Laboratory (IMMLL) at the University of Wollongong to develop an educational multimedia package.'

A.2 Dorfling Wolff and Akdogan's Translation Device (2019: 50)

Semantic range	Levels of meaning	Activity	3rd Year Mineral Processing	4th Year Mineral Processing
Weak *semantic gravity* ⬍ Strong *semantic gravity*	Theory	Taught theory	Mineralogy and principles of liberation; Principles of comminution, flotation, and leaching;	High-temperature metallurgical thermodynamics; material science
		Applied theory	Selection of analytical techniques; Population balances and liberation distributions; Particle classification; Mass balance reconciliation; Selection of processing equipment	Analyse processes in terms of phase and reaction equilibria; material selection
	Application	Tutorials	Sizing of flotation cells, estimation of separation efficiencies, identification of suitable operating conditions based on thermodynamic / reaction kinetics data	Selection, specification and characterisation of higher temperature reactors
		Assignments / practicals	Modelling of milling / flotation processes; batch solvent extraction experiments	Design and specify a high temperature reactor
	Simulated / decontextualized practice	Practicals	Mineral identification; solid state analyses; spiral concentrator operation; milling and size classification	
	Real practice	Site visits	Appreciate mining and mineralogy and its impact on processing; observe operation of milling, flotation and leaching circuits as well as other physical separation unit operations; appreciate importance of mass balance reconciliation (metal accounting)	Observe operation of industrial scale smelters, furnaces and kilns

Appendix B: Pilot Study Translation Device

Scale on Pilot Study Graph	LCT Tool and pedagogy/ Teaching	Social Realist Perspective	Bernstein's and Social Realist Perspectives	LCT	Relation to BT and TE Context for Pilot Study
6	SG-SD+ Rhizomic	Enduring knowledges that endure over time and contexts and become powerful, disciplinary knowledges.	Far removed from site of production (strongly classified) Strongly framed by disciplinary knowledges – singulars (Know what, how and why) Knowledge produced and located in its site of production	Technical Concepts Context Independent High constellations of meanings, highly packed terms Knowledge that is transformative	Theoretical knowledge, appreciated in its own right
5	Context independent ideas values Appreciation of Pedagogy				Theoretical knowledge that can be applied to professional understanding
4	SG- SD- Rarefied	Enduring knowledges that relate to professional contexts	Relatively strongly classified Relatively strongly framed. Professional regional knowledges (Know-how and know why) Recontextualised knowledge – still strongly informed by singular disciplines but applied beyond the site of its production. It is re-located	Relatively context independent Meanings of terms still contain a high degree of constellation, but can be applied to a variety of contexts	Professional understanding that relates to a theoretical base
3	Tacit Knowledge Pedagogy knowledge and understanding of practices in relation to pedagogy				Professional understanding that is informed by a school philosophy encapsulated in a shared policy or approach
2	SG+ SD+ Worldly	Professional knowledges that relate to enduring concepts	Less strongly (Know how and what) Recontextualised knowledge – more strongly informed by applied professional practices rather than its singular site of production.	Relatively context dependent, simpler meanings associated with terms, knowledge that is replicable with some meaning beyond context	Professional practice that is tied to an understanding of a specific class or group of children
1	Practical knowledge of Teaching Practices				Professional practice that results from 'in the moment' actions
0	SG+ SD- Prosaic, Explicit Actions Context dependent knowledge with simple meanings associated with terms used	Context specific, everyday knowledge that is related and tied to its context and is not replicable elsewhere	Very Weakly classified Very Weakly framed (Know-how but not know what or why) Reproduced knowledge that is not legitimated by a site of production, but is simply a context specific practice.	Context dependent knowledge with simple meanings associated with terms used. Knowledge that is simply replicated within one context	Actions that are not specific to the context but applied from elsewhere and may not have meaning in the new context.

ETHICAL REVIEW PANEL
APPLICATION FORM (STAFF AND PGR STUDENT RESEARCH PROJECTS)

Section A - Applicant's details

A1	Project title	What makes for legitimate pedagogical knowledge in Initial Teacher Education?
A2	Name of researcher	Diane Swift
A3	Research Institute or School	School of Social Science and Public Policy
A4	Correspondence address	c/o Keele and North Staffordshire Teacher Education, Seabridge Primary School, Roe Lane, Newcastle under Lyme, Staffs, ST5 3PJ
A5	Keele E-mail address	d.swift@keele.ac.uk
A6	Work telephone number	07794891209
A7	Type of application	PGR
A8	Please give supervisor name and contact details if PGR application	Dr. Sally Findlow
A9	Project start date	9th March 2018
A10	Project end date	22nd June 2018
A11	If project is externally funded please provide details of the funder	Not externally funded

Section B – Applications considered suitable for light touch review.

ERP applications where research activities are limited to the following categories would be considered to have no material ethical issues and would be deemed suitable to be categorised for light touch ethical review. Please indicate if your research activities fit into one more of the following categories by ticking the relevant boxes.

Applications indicating that the research activities fit into one or more of the following categories will be flagged on the ERP agenda 'for light touch review' by the ERP Administrator. The application will receive minimal discussion at the ERP meeting, unless, in preparation for the meeting an ERP member(s) consider the application to be incorrectly categorised. In such circumstances the ERP member(s) must state at the beginning of the meeting that they consider the application to be incorrectly categorised and the reason(s) why and request that the application receives full discussion at the ERP meeting.

Category	Research Type	Tick
1	Research collecting or using human data[1] or human biomaterial[2] that is anonymous to the researcher *(where data/tissue is received from third parties remember to attach relevant documents from/with the third party).*	
2	Research using existing human data[1] or human biomaterial[2] already taken with consent for research (*where data/tissue is received remember to attach relevant documents describing provenance (e.g. consent, source etc).*	
3	Research using commercially obtained human biomaterial[2] *(remember to attach relevant documents describing provenance (ego consent, source etc)).*	

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[1] Includes primary data originating from human subjects (e.g. anonymous questionnaires); and the use of secondary data, which originated from or is about human subjects, which was initially provided for other purposes (e.g. other research projects or organisational datasets).

[2] Anything that originates from a human subject including:- cells; tissues; organs; bodily fluids (e.g. blood, plasma, spinal fluid); secretions and excretions (e.g. breath, urine); outgrowths (e.g. hair, nail, teeth).

4	Questionnaire research that does NOT include highly sensitive areas and/or where accidental disclosure would NOT have serious consequence.	
5	Interviews or focus groups that do not include highly sensitive areas and/or where accidental disclosure would NOT have serious consequence.	✔
6	Minimally invasive science studies involving consenting adult volunteers e.g. research activities that would not cause participants any more harm or distress (physical or psychological) than would be experienced in the course of everyday life.	
7	Other research which does not have any 'material ethical issues'.	

C1	In lay terms provide a brief summary of the project including the background and rationale for the proposed research and the hypotheses or research question(s) **(max 500 words).**
	The Department for Education have foregrounded a school-led Initial Teacher Education (ITE) model since the 2010 White Paper, 'The Importance of Teaching'.

The Department for Education have foregrounded a school-led Initial Teacher Education (ITE) model since the 2010 White Paper, 'The Importance of Teaching'.

There is a danger that a school led model could result in providing trainee teachers with a heavy emphasis on practical, context dependent tips and techniques, resulting in a fragmented curriculum, one that is driven by individual priorities rather than one informed by an enduring conceptual knowledge framework.

When school-based mentors lack easy access to an appreciation of the significance of the structure of the knowledge base, professional fragility can result. Context dependent practices can be misrepresented to trainee teachers as conceptual knowledge. Individual idiosyncrasies can be presented as transferable capabilities. This can result in a mentor drawing inappropriately on contextual practice, giving it a status that is inappropriate in relation to a trainee's development.

I will therefore examine the knowledge content of weekly development meetings held between trainee teachers and their mentors. These weekly meetings are the lynch pin of a trainee's professional development. I will analyse the types of knowledge claims made during these meetings and examine how these impact on the trainee's developing understanding of pedagogy. Alexander defines pedagogy as 'the act of teaching together with its attendant discourse. It is what one needs to know, and the skills one needs to command in order to make and justify the many different kinds of decisions of which teaching is constituted (2003: 3).

In order to do this I will draw on a methodology known as Legitimation Code Theory (LCT). This is a graphical tool that makes visible the extent to which the dialogue is concept or context dependent. I will use LCT (http://www.legitimationcodetheory.com/) to create graphed profiles of dialogues held between the mentor and trainee. These are known as semantic profiles. Sematic profiles make explicit the extent to which the dialogue is either grounded in the context within which it occurs or relates to concepts that endure beyond the context and are used more widely within the profession. The use of enduring concepts to frame a dialogue enables the trainee to relate their own context to that of others, resulting in greater accumulation of professional knowledge and offering a coherence to experience that is lacking if dialogues are solely context dependent.

The original knowledge contribution of my research is to examine whether curricular coherence for ITE can be enabled through the intentional use of enduring pedagogic concepts during these weekly development meetings. This focus has led me to the research questions of:
- How is professional knowledge structured in the semantic profiles of trainees and mentors during a weekly development meeting?

- How does an analysis of the profiles reveal the ways in which the different knowledges of trainees, mentors and the researcher influence each other?
- Does the analysis of profiles across multiple sites reveal a consistency in the pedagogic concepts used?
    - If there is consistency, to what extent and in what ways do these concepts offer coherence to an ITE curriculum?

The videoing will be set up by me, as I am now a formal part of the research, and my influence needs to be recorded and made explicitly. From this second transcription, three profiles will be created (one each for the trainee, mentor and myself). Again these will be overlaid and analysed by myself.

There will then be a follow up meeting between the three of us, sharing these overlays. This final meeting will capture the extent to which the sharing of the analysis of profiles influenced subsequent weekly meetings. From this analysis I will be able to examine whether or not the intentional use of pedagogic concepts gives coherence to an ITE curriculum

C2	In lay terms outline the type of procedure(s) and/or research methodology (e.g. observational, questionnaire, interviews, experimental) to be employed **(max 500 words).** I will use Maton's (2014) semantic profiles from Legitimation Code Theory to create a graphical visualisation of the extent to which the mentor and trainee dialogue is either context specific or references conceptual principles. My research has three distinct but inter-linked phases. First, I will profile a weekly meeting, second a recorded discussion between the trainee, mentor and myself and thirdly I will profile a follow up discussion, which again involves the three of us. I will analyse a total of seven pairs of mentor and trainee's weekly development meetings. Three pairs will be from schools where there is just one trainee in each school. In two additional schools, there will be two pairs in each setting. This is so that I can also analyse any influence that the school's ethos has on the dialogues. Each volunteer pair will be asked to video record three weekly meetings. I will select one meeting at random. I am seeking to analyse a typical dialogue and so the randomisation will limit rather than eradicate issues associated with participants behaving differently because they are being filmed. The mentor and trainee will conduct the filming using a device loaned to them by myself. The material can therefore be saved on a secure dedicated device. I will not be present during any of the recordings. This is to minimise my influence on the pairs' usual practices. The videos will be uploaded to the secure University website via Google. This was achieved successfully during the pilot stage. The reason that videoing is used rather than audio, is to enable the inclusion of non-verbal communication in the transcripts and profiles. I will then transcribe the selected video. I will analyse the transcription using the LCT tool to create the sematic profiles. Initially I will create a separate profile for the mentor and trainee. I will then overlay these profiles so that I can present these overlays to the trainee and mentor in the second dialogue. During the second dialogue, the trainee, mentor and I together will further analyse how both participants influenced each other. This is so that the trainee and mentor can share their perspectives and any conclusions are not solely dependent on my (mis)interpretation. This dialogue will again be videoed, transcribed and profiled.
C3	Describe the characteristics of the participant group, the inclusion and exclusion criteria, and information about payments to participants if appropriate. Indicate the sample size, with an explanation of how this sample size was decided/calculated. My research is concerned with a deep analysis of a small sample. The application of semantic profiling requires a very careful reviewing of segments of dialogue. Usually a weekly meeting between an AT and TE will last 45 minutes and so one pair will generate a wealth of material for the project. The sample size has been selected based on my analysis of published doctoral projects that employ semantic profiling. These can be found on the Centre for Legitimation Code Theory's website (http://www.legitimationcodetheory.com/practice-higher-education.html)

My research will take place within the Keele and North Staffordshire Teacher Education's (KNSTE) primary Post Graduate Certificate of Education (PGCE) programme. Seven volunteer pairs will be sought from a community of seventy-four pairs. There are seventy-five pairings within the KNSTE programme. One pair will be excluded from the study. This is the pair that are in the school that was used for the 2017 pilot study. This is so as to avoid contamination of the data.

All mentors and trainees on the 2018 placement two cycle of the KNSTE programme will be contacted asking them to volunteer. The KNSTE Office Manager, currently Trish Locker, regularly contacts mentors and trainees via email. The email will be sent by Trish rather than myself, so that the Office Manager can act as a gatekeeper. This is so as to reduce my influence on any volunteers as I am Executive Director of KNSTE. Trish will send a separate email to mentors and trainees, inviting participation. This is so as to ensure that both the mentors and the trainees are given the opportunity to volunteer independently of each other, reducing any feeling of compulsion to volunteer by one individual putting pressure on the other. A copy of each email is included on pages 11 and 12 of this document. No inducements will be offered, but the potential benefits of the project to the work of KNSTE and the wider Initial Teacher Education community will be outlined. Attached to the email will be the information letter and the summary information about semantic profiles.

My role will be made clear to all potential participants. As the Executive Director. I have no influence over the grading of the trainees or any judgements in relation to the performance of the mentors. However to minimise any perceived influence, volunteers will respond to the Office Manager rather than directly to myself. Trish will keep separate lists of trainees and mentors that volunteer. Once the deadline for volunteering has passed, Trish will pass the lists to myself. I will then compare both lists with the schools that the mentor and trainee are based in. When both the trainee and mentor from a school have volunteered, this pair will then be seen as a potential contributor for the research.

If more than three pairs from single schools and more than two pairs from two schools volunteer then pairs will be randomly drawn. Any pairing not originally selected for the research will be asked if they are happy to be named on a reserve list should any pairing subsequently withdraw from the research process.

Section D - Issues of risk or of an ethically sensitive or challenging nature

D1	Will the research involve deceased persons, body parts or other human elements such as blood, hair or tissue samples (including saliva and waste products)?	Yes ☐	No ☒
D2			

D3	**If yes**, please discuss this project with Dr Alan Harper, Human Tissue Officer on 01782 674472 / 734654 or e-mail a.g.s.harper@keele.ac.uk. Please cite the reference number given by Dr Harper for this research project below;- **Reference number**: **If yes**, please give details with reference to the Human Tissue Act 2004. Human Tissue Act can be accessed via https://www.hta.gov.uk/human-tissue-act-2004

D4	Will the research involve administrative or controlled data that requires permission for access to and use of the dataset(s)? Remember to attach information evidencing the provenance of and consent for the use of the dataset(s) Yes ☒ No ☐
D5	Will the research involve social media as a medium for the research (e.g. access to posts from discussion forums for research purposes) Yes ☐ No ☒
D6	Will participants or other individuals be identified in the material used or generated (e.g. visual or vocal methods producing images or sounds, or interviews with elite individuals who may be identifiable)? Yes ☒ No ☐
D7	
D8	Will the research involve raising issues of a sensitive nature where individuals are required to reveal personal information about matters such as their personal lives, illegal behaviour, sexual orientation, etc? Yes ☐ No ☒
D9	Will the research involve the administration of substances to participants or involve intrusive or potentially harmful procedures of any kind (e.g. vigorous exercise that they would not normally undertake in the course of everyday life)? Yes ☐ No ☒
D10	Are there any potential risks to participants and members of the research team that involve more than minimal levels of risk of harm or discomfort (including physical harm, psychological or emotional distress)? Yes ☐ No ☒ Will the research involve access to, collection of, and/or storage of materials that; Are covered by the Official Secrets Act or Terrorism Act? Yes ☐ No ☒ Are commissioned by the military? Yes ☐ No ☒ Are commissioned under an EU security call? Yes ☐ No ☒ Involve the acquisition of security clearances? Yes ☐ No ☒ Concern terrorist or extreme groups? Yes ☐ No ☒ If you have ticked yes to any question in C10 you are asked register your project with the University via http://www.keele.ac.uk/researchsupport/researchgovernance/securitysensitiveresearchmaterial/. The University supports its researchers in undertaking research using security sensitive material (i.e. the above categories) but takes seriously the need to protect them from the misinterpretation of intent by the authorities. Therefore, registration of research enables the University to have oversight and demonstrate to authorities that it is aware of the research being carried out.

D11	Will the research have potential safety risks for members of the research team?	Yes ☐
D12	No ☒	
	Is the research participatory action research?	Yes ☒
D13	No ☐	

For all applications, outline all potential risks to participants and members of the research team and the measures that will be taken to minimise risk; and the procedures that will be adopted in the event of an adverse event.

Risks associated with this research include the malfunction of recording equipment, but the fact that three recordings will be taken, minimises this risk.

An additional risk could be that the participants feel under pressure to 'perform' for the research. The random selection of one from three recordings will minimise this risk.

As I am Executive Director for KNSTE, there is a risk that participants could feel influenced by this relationship. This risk will be minimised by ensuring that no formal assessment of either the trainee or mentor's performance is carried out by myself. The clear information about the purpose of the project will also help to reduce this risk.

A further risk is that the participants may feel an additional work-load by participating in the research. This will be minimised by seeking volunteers and only requiring two meetings that are additional to the normal course requirements.

Should any participants become ill or wish to opt out then other volunteer pairs will be sought to replace them from the reserve list.

I will adhere to the University's lone working policy so as to minimise personal risk.

I will benefit from support from the University of Sydney's LCT Research Centre as well as supervisory support from Keele University. I will share my schedule of visits to schools with the KNSTE Office Manager so that she is aware of all dates, times and locations of school-based meetings.

The University's Lone Working Policy can be accessed via http://www.keele.ac.uk/dohs/a2z/loneworking/

D14	Will the research be undertaken overseas?	Yes ☐
D15	No ☒	
	a) **If yes,** have you consulted the foreign and commonwealth office website for guidance/travel advice and is it safe to travel there?	Yes ☐
D16	No ☐	
	b) **If yes,** have you completed and submitted a risk assessment form?	Yes ☐
	No ☐	

D17	
D18	**c)** **If yes**, are you aware of the political sensitives and issues of local practice in the region where the
	research will be carried out? Yes ☐
	No ☐
	If yes, outline the details and how these issues will be addressed:-
	<mark>Foreign and Commonwealth Office travel advice website: https://www.gov.uk/foreign-travel-advice</mark>
	<mark>Overseas Travel Policy and risk assessment form (covers both Staff and PGR students) is available from http://www.keele.ac.uk/finance/insurance/travelinsurance/travellingoverseas-policyriskassessment/</mark>

D19	Will the research involve vulnerable groups e.g. children, or people with a learning disability or cognitive impairment or those in unequal relationships (e.g. your own students)?
	Yes ☒
D20	No ☐
	If yes, explain how you will ensure that appropriate consent to participate in this study will be obtained.
	The KNSTE Office manager will be an intermediary for potential participants. Information about the project will be sent by her and replies from volunteers will be received by her. It is only once the deadline for volunteering has passed that information will then be shared with myself. As I have an executive rather than an operational role, I am not responsible for any grading or judgements in relation to any individual students on the programme. This is the responsibility of individual personal tutors. Personal tutors will not be made aware of which trainees or mentors are participating in the project. This avoids contamination of the data and reduces the risk of any individual feeling obliged to participate in the project.
D21	Will participants be deceived in any way as part of the study? Yes ☐
	No ☒
	If yes, describe the nature and extent of deception involved, including how and when this deception will be revealed and who will administer this feedback (debrief).

SECTION E - Recruitment & consent process

E1	Will the co-operation of a gate keeper be required for initial or continued access to participants such as employees recruited through their work place, adult professionals (e.g. those working with children or the elderly) or research in communities (in UK or overseas) where access to participants is not possible without the permission of another adult (e.g. parent or spouse of participant) or a community leader.
	Yes ☒
E2	No ☐
	Indicate how potential participants will be identified, approached and recruited and outline any relationship between the researcher and potential participant.
E3	All trainees and mentors will be invited to participate, with the exception of the mentor and trainee at the pilot study school. This helps to avoid contamination of data. All potential participants will be approached via an email communication from the KNSTE Office Manager. Volunteers will reply directly to the Office Manager and not to me. Only once the deadline date for

	volunteering has passed will the Office Manager pass on details about the volunteers. I have no influence on the grading or judgements of any of the participants.
	If the research is using existing dataset(s) or human biomaterial received from third parties, including commercially obtained biomaterial, please provide information describing the provenance (e.g. source and consent). <mark>Remember to attach information evidencing the provenance of and consent for the use of the dataset(s)/human biomaterial</mark> <mark>Remember to attach copies of posters, advertisements, invitation letters/e-mails to be used as part of the recruitment process with version numbers included in the footer.</mark>

E4	Describe the process that will be used to seek and obtain informed consent. Once the volunteers have been identified, an invitation letter will be sent that will include the request for informed consent. This makes clear how participants can withdraw. <mark>Remember to attach your information sheet and consent form with versions numbers & date included in the footer</mark> Templates available from http://www.keele.ac.uk/researchsupport/researchethics/

E5 E6	Will consent be sought to use the data for other research? Yes ☐ No ☒	
	Will consent be sought to contact the individual to participate in future research? Yes ☒ No ☒

E7 E8 E9 E10	Can participants withdraw from the research? Yes ☒ No ☐
	If yes, state up to what point participants are able to withdraw from the research Participants will be able to withdraw at any point prior to the final discussion meeting. It will be made clear to participants that whilst they can withdraw at this point that I will not be able to avoid drawing upon what I have learned through their participation up until that point, but that all direct quotations and references will be removed from the research. **If yes**, outline how participants will be informed of their right to withdraw, how they can do this and what will happen to their data if they withdraw. Via the invitation letter. At the research meeting, participants will be orally reminded of this option. **If no**, explain why they cannot withdraw (e.g. anonymous survey).

SECTION F - Confidentiality and anonymity

| F1 | Outline the procedures that will be used to protect, as far as possible, the anonymity of participants and/or confidentiality of data during the conduct of the research and in the release of its findings.

I will not refer to any schools or individuals by name to ensure anonymity. Meetings and discussions in relation to the project will occur in private spaces either within the participants' school or within the KNSTE premises to ensure confidentiality. I will abide by the professional and ethical frameworks published by both Keele University and BERA (https://www.bera.ac.uk/researchers-resources/publications/ethical-guidelines-for-educational-research-2011) .

If at any point, either I or the participants are aware of, or are made aware of any inappropriate practice in relation to confidentiality and anonymity then immediate reference will be made to Dr. Sally Findlow so that the appropriate procedures and actions can be taken. If participants remain unhappy about the research and/or wish to raise a complaint about any aspect of the way that they have been approached or treated during the project then they are invited to write to the University's contact for complaints regarding research. |
|---|---|

SECTION G - Storage, access to, management of, and disposal of data

| G1 | Will the research involve access to records of personal or sensitive confidential information?
Yes |
|---|---|
| G2 | ☐   No ☒ |
| G3 | Will the research involve the linking or sharing of data or confidential information beyond the initial consent given?
Yes

☐   No ☒

For all applications, describe the research data that will be stored; where it will be stored and for how long; the measures that will be put in place to ensure the security of data; who will have access to the data; long term data management plans following completion of the project; and how/when data will be disposed of.

The consent form explains how data will be stored, so that this is transparent and shared explicitly with participants.

I will scan and upload consent forms to my secure area on the University's website and these will be kept in a separate file from the password protected video storage area.

I will securely save digital recordings and transcripts on the University's website in a password protected area provided by the University.

All data will be deleted by me once the final thesis has been successfully published. |

SECTION H - Other ethical issues raised by the research

H1	Are there any other ethical issues that may be raised by the research?	Yes ☐
H2	No ☒	
	If yes, please give details:	
H3		
	Is there any aspect of the research that could potentially have a negative effect on the reputation of the University (such as receiving controversial sources of funding, engaging with issues that may cause offence to groups or individuals, or engaging in areas that might be misconstrued as endorsing illegal practices, etc)?	
H4	Yes ☐ No ☒	
	If yes, please give details:	

SECTION I - Other approvals required

I1	Does the project require researcher(s) to have a Disclosure and Barring Service (DBS) check?	Yes ☐
	No ☒	
I2		
	If yes, have you attached a confirmation of satisfactory DBS check memo?	Yes ☐
	No ☐	
I3		
	Does the project require National Offender Management Service (NOMS) approval?	Yes ☐
I4	No ☒	
I5	Does the project require Health Research Authority (HRA) Approval?	Yes ☐
	No ☒	
	Does the project require approval from another organisation?	Yes ☒
	No ☐	
	Approval will be sought from the KNSTE Strategic Board on 6th February 2018 and prior to the commencement of any research activities	

SECTION J - Checklist

J1	**Please list the documents attached to this application**		
	Document	Version number	Date
	Invitation Email to Trainees (ATs) (Associate Teachers)	3	15.01.18
	Invitation Email to Mentors (TEs) (Teacher Educators)	3	15.01.18
	Semantic Profiling Information Sheet	3	15.01.18
	Information Sheet & Consent Form	3	15.01.18

SECTION K – Declarations

K1	In preparing this application did you access the on-line Research Governance Tool Kit for information? (https://www.keele.ac.uk/researchsupport/researchtoolkit/) Yes ☒ No ☐
K2	**Declaration by researcher** I confirm that:- • The form is accurate to the best of my knowledge • I will abide by the University's ethical requirements • I will inform the panel of any changes to the project • I am aware of my responsibility to be up to date and comply with the requirements of the law and any relevant professional guidelines
	Researcher name (in capitals) DIANE SWIFT
	Researcher signature *Diane Swift*
	Date: 15th January 2018

K3	**Declaration by supervisor (PGR applications only)** I confirm that:- • The application has been appropriately peer reviewed • I have read the application and am happy for it to proceed for ethical review • The application is accurate to the best of my knowledge • The project will comply with the University's ethical requirements • The applicant will inform the panel of any changes to the project • I am aware of my responsibility to ensure that the applicant is familiar with and complies with the requirements of the law and any relevant professional guidelines
	Supervisor name (in capitals)
	Supervisor signature
	Date

Please e-mail your completed application form and supporting documentation to
research.governance@keele.ac.uk

Invitation to ATs (Trainees)

Dear ATs

Diane Swift , our Executive Director is currently undertaking an EdD (professional doctorate in education) at Keele University. Diane is now at the stage of undertaking research for her thesis and so is seeking volunteers to participate in this work.

The research project aims to explore the type of knowledge that is exchanged during weekly development meetings. Diane's research questions are:

- How is professional knowledge structured in the semantic profiles of trainees and mentors during a weekly development meeting?
- How does an analysis of the profiles reveal the ways in which the different knowledges of trainees, mentors and the researcher influence each other?
- Does the analysis of profiles across multiple sites reveal a consistency in the pedagogic concepts used?
    - If there is consistency, to what extent and in what ways do these concepts offer coherence to an ITE curriculum?

She is now seeking ATs who are happy to volunteer to participate in this research. The research will take place between 9th March and 22nd June 2018. At all times the confidentiality and anonymity of participants would be respected. The research is separate to the course and programme requirements and will have no influence on our usual practices.

 You will be asked to video record three weekly meetings. Diane would not be present during the recording. The filming would be undertaken by yourselves using a dedicated device provided by Diane. The videos would be uploaded by you to a secure Keele University computer drive that is password protected. One meeting would be selected at random by Diane for analysis, and the others deleted.

Diane will then transcribe the selected video and analyse sections using a research approach called semantic profiling. A summary information sheet is attached that explains this process.

Once the semantic profiles have been created by Diane, a meeting will then be arranged with Diane. It is anticipated that this meeting would last about 90 minutes and would be arranged at a mutually convenient time. This meeting would be videoed, and transcribed and saved securely by Diane. The analysis of this discussion, would then be shared with you at a final discussion meeting. It is anticipated that this second and final meeting would again last about 90 minutes.
If you think that you may be interested in volunteering to participate in this project, further details are outlined in the attached information sheet. This includes information about consent and what to do if you would like to withdraw from the project after you have volunteered and been selected.

Once you have carefully read the two attachments, if you would like to volunteer please could you email me by 5pm on 16th February 2018. If there are a number of volunteers

then Diane will randomly select ATs from the list of volunteers to participate. Diane will then email you to confirm your participation by 2nd March 2018 so that recordings can begin from the week of 9th March 2018. If you are eager to take part but are not selected on this occasion, Diane will email you to thank you for your support and to ask if you are prepared to go on a reserve list.

In the meantime, can I thank you for your interest. Please do not hesitate to contact me should you have any further enquiries or if you would welcome a conversation about the project.

Best Wishes
KNSTE Office Manager

Invitation to TEs (Mentors)

Dear Colleagues

Diane swift, our Executive Director is currently undertaking an EdD (professional doctorate in education) at Keele University. Diane is now at the stage of undertaking research for her thesis and so is seeking volunteers to participate in this work.

The research project aims to explore the type of knowledge that is exchanged during weekly development meetings. Diane's research questions are:

- How is professional knowledge structured in the semantic profiles of trainees and mentors during a weekly development meeting?
- How does an analysis of the profiles reveal the ways in which the different knowledges of trainees, mentors and the researcher influence each other?
- Does the analysis of profiles across multiple sites reveal a consistency in the pedagogic concepts used?
    - If there is consistency, to what extent and in what ways do these concepts offer coherence to an ITE curriculum?

She is now seeking TEs who are happy to volunteer together to participate in this research. The research will take place between 9th March and 22nd June 2018. At all times the confidentiality and anonymity of participants would be respected. The research is separate to the course and programme requirements and will have no influence on our usual practices. You will be asked to video record three weekly meetings. Diane would not be present during the recording. The filming would be undertaken by yourselves using a dedicated device provided by Diane. The videos would be uploaded by you to a secure Keele University computer drive that is password protected. One meeting would be selected at random by Diane for analysis, and the others deleted.

Diane will then transcribe the selected video and analyse sections using a research approach called semantic profiling. A summary information sheet is attached that explains this process.

Once the semantic profiles have been created by Diane, a meeting will then be arranged with Diane. It is anticipated that this meeting would last about 90 minutes and would be arranged at a mutually convenient time. This meeting would be videoed, and transcribed and saved securely by Diane. The analysis of this discussion, would then be shared with you at a final discussion meeting. It is anticipated that this second and final meeting would again last about 90 minutes. Diane hopes ultimately to further develop and refine the advice and support that the KNSTE offers to TEs and ATs and to contribute to wider professional discussions about coherence in initial teacher education curricula.

If you think that you may be interested in volunteering to participate in this project, further details are outlined in the attached information sheet. This includes information about consent and what to do if you would like to withdraw from the project after you have volunteered and been selected.

Once you have carefully read the two attachments, if you would like to volunteer please could you email me by 5pm on 16th February 2018. If there are a number of volunteers then Diane will randomly select TEs from the list of volunteers to participate. Diane will then email you to confirm your participation by 2nd March 2018 so that recordings can begin from the week of 9th March 2018. If you are eager to take part but are not selected on this occasion, Diane will email you to thank you for your support and to ask if you are prepared to go on a reserve list.

In the meantime, can I thank you for your interest. Please do not hesitate to contact me should you have any further enquiries or if you would welcome a conversation about the project.

Best Wishes
KNSTE Office Manager

Semantic Profiling Information Sheet

For this research, I will analyse the knowledge content of weekly development meetings held between Associate Teachers (ATs) and their Teacher Educators (TEs). These weekly meetings are the lynch pin of an AT's professional development. I will analyse the types of knowledge claims made during these meetings and examine how these impact on the AT's developing understanding of pedagogy.

In order to do this I will draw on a methodology known as Legitimation Code Theory (LCT). This is a graphical tool that makes visible the extent to which the dialogue is concept or context dependent. I will use LCT (http://www.legitimationcodetheory.com/) to create graphed profiles of dialogues held between the AT and TE. These are known as semantic profiles. Sematic profiles make explicit the extent to which the dialogue is either grounded in the context within which it occurs or relates to concepts that endure beyond the context and are used more widely within the profession. Karl Maton states 'When semantic gravity is stronger, meaning is more closely related to its social or symbolic context.' (2014: 110).

The stronger the semantic density (SD+), the more meanings are condensed within the practices; the weaker the semantic density (SD-), the less meaning is condensed. (Maton, 2014: 129). In relation to the TE and AT dialogue, terms that could be viewed as having a stronger semantic density include those such as pedagogy, specific types of pedagogy would have a higher SD than the general term, similar with terms such as assessment and specific assessment strategies, teaching and specific teaching approaches etc.

SD and SG can be used in combination to analyse dialogues with a view to creating semantic profiles or semantic waves that visualise the dialogue in relation to the knowledge content that is drawn upon. Figure I (overleaf) shares a typology of lines.

Line A1 illustrates 'entirely abstract, decontextualized and generalized knowledge' (Maton 2014: 122) . This is represented by a flatline of weaker semantic gravity. 'Knowledge would thus be freely floating and never recontextualized' (Maton 2014: 123). Line A2 represents a different type of flatline knowledge, one which is entirely situational, one that has a much stronger semantic gravity – it is close to its site and

locked closely together with its context. This would tend to be description of what a AT did rather than analysing the AT's actions in relation to a conceptual (pedagogic) framework. It would be a description of the actions of teaching rather than a reasoning.
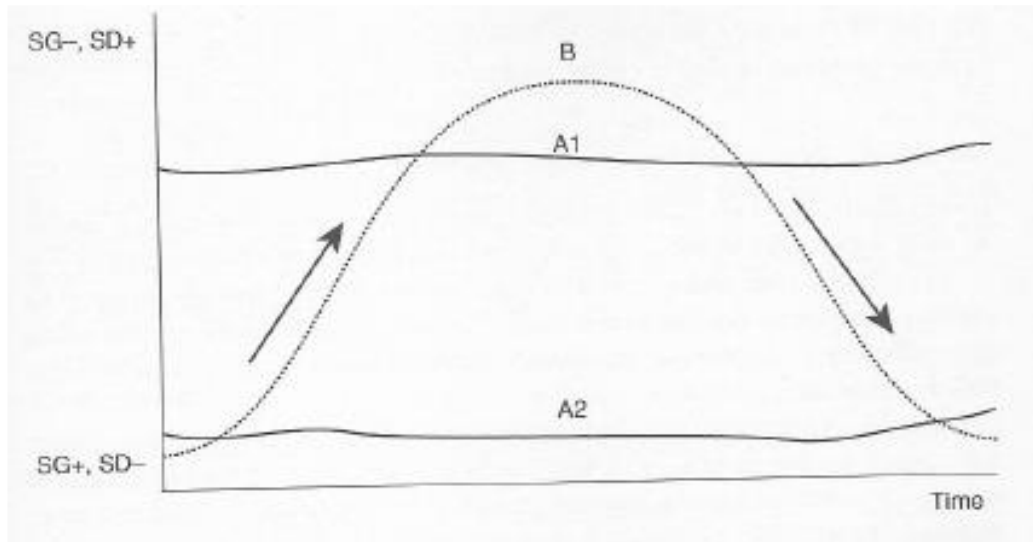
Figure 1 from Maton. K. (2014) Knowledge and Knowers, p. 143

A dialogue that embodied pedagogic justification would create a wave profile, illustrating movement between situated knowledge and conceptual frameworks. So for example the choice of group work could be related to an understanding of the principles of dialogic teaching so as to offer a principled justification. As McNaught et al suggest such a dialogue, 'involves recurrent movements in the strengths of 'semantic gravity' and 'semantic density' or crudely put context dependence and condensation of meaning' (2013: 50)

References

MacNaught, L., Maton, K., Martin, J.R., and Matruglio, E., (2013) Jointly constructing semantic waves: Implications for teacher training. Linguistics and Education 24 pp.50-63.

Maton, K. (2013) Making semantic waves: A key to cumulative knowledge-building. Linguistics and Education 24 pp. 8-22.

Maton, K. (2014) Knowledge and Knowers, Abington: Routledge

INFORMATION SHEET

Study Title: **What makes for legitimate pedagogic knowledge in initial teacher education?**

Invitation

You are being invited to consider taking part in the research study '*What makes for legitimate pedagogic knowledge in initial teacher education?*' This project is being undertaken by *Diane Swift* as part of her EdD (professional doctorate in education) programme being undertaken at Keele University.

Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with friends and relatives if you wish. Ask us if there is anything that is unclear or if you would like more information.

Aims of the Research

Each week, in the Keele and North Staffordshire Teacher Educations' (KNSTE) Initial Teacher Education (ITE) programme, the Teacher Educator (TE) and Associate Teacher (AT) meet to review progress and to set targets. During these dialogues, the TE and AT exchange knowledge(s) about practical experiences, teaching and pedagogy. This research is to explore the type of knowledge that is exchanged during these dialogues, in order to improve the support and advice that the KNSTE offers to both TEs and ATs and to contribute to wider professional discussions concerning the coherence of ITE curricula.

Why have I been invited?

As you are aware, Diane asked for volunteers to participate in this research. You, very kindly volunteered and have been randomly selected from this list of volunteers. Your volunteer time and support for this project is very much appreciated.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to complete the attached consent forms for both the use of data and quotes within Diane's EdD thesis. You are free to withdraw from this study at any point prior to the final discussion meeting, and without giving reasons. Whilst you may withdraw at this point, Diane, inevitably, will not be able to avoid drawing upon what has been learned through your participation up until this moment. However Diane can assure you that, all direct quotations and references that related to your participation will be removed from the thesis. If you do choose to withdraw, then any video or transcript material that related to your participation will be deleted within 5 days of Diane receiving notification of your intention to withdraw. To withdraw you simply need to email Diane (d.swift@keele.ac.uk).

What will happen if I take part?

Participation in the project will involve the following:

- The self-recording (video) of three of your weekly development meetings during placement two.

- Uploading the videos to a secure password protected Keele University computer drive
- Receiving and reviewing Diane's analysis of one of the weekly development meetings
- Participation in a discussion with Diane about the analysis, this would last approximately 90 minutes.
- Participation in a further discussion with Diane about the influences that these discussions have on subsequent weekly development meetings. Again it is anticipated that this meeting would last approximately 90 minutes.

What are the benefits (if any) of taking part?

By taking part you will be helping the KNSTE to further develop its advice and support for TEs and ATs in relation to conducting weekly development meetings. This work will also contribute to wider professional discussions about what makes for coherent content within ITE.

What are the risks (if any) of taking part?

The video recordings will be uploaded to a secure password protected Keele University computer drive. This drive is not publicly accessible and the file names will not allow the school or participants to be identified.

How will information about me be used?

 One of the weekly development meetings will be randomly selected by Diane. The other two will be deleted. The recording of the selected weekly development meeting will be transcribed and analysed by Diane so as to secure your confidentiality and anonymity. This transcription and analysis will be shared with you at the discussion meeting. The transcription and analysis of this research meeting will also be shared with you. This information, with your consent, will be saved on the secure Keele University password protected drive. This research links with work being undertaken at the University of Sydney's Centre for Legitimation Code Theory (http://sydney.edu.au/arts/research/lct/). Diane will be seeking advice and support from this centre so as to enable a rigorous analysis of the data. It may therefore be possible that elements of the video and transcripts will be shared with researchers associated with this centre. Any data shared will be anonymised.   The recordings, transcriptions and analysis will be kept until publication of Diane's full thesis. On successful publication the data will then be deleted. It may be that Diane will wish to refer to the thesis study in future publications. If this is the case then a new information and consent sheet will be sent to you to secure your additional permission for this.

Who will have access to information about me?

Your data may be shared with Diane's supervisory and examination team. The data may also be shared with researchers at the University of Sydney's Legitimation Code Theory Research Centre. It will not be shared beyond this. Should Diane wish to publish any aspects of her thesis subsequently renewed consent will be sought prior to submission of any publication.

Diane does however have to work within the confines of current legislation over such matters as privacy and confidentiality, data protection and human rights and so offers of confidentiality may sometimes be overridden by law. For example in circumstances whereby Diane is concerned over any actual or potential harm to yourself or others she must pass this information to the relevant authorities.

Who is funding and organising the research?

This research is being conducted as a part of Diane's EdD Research and so is not externally funded.

What if there is a problem?

If you have a concern about any aspect of this study, you may wish to speak to Diane who will do her best to answer your questions. You should contact her via d.swift@keele.ac.uk or alternatively, if you do not wish to contact Diane you may contact Dr. Sally Findlow (s.findlow@keele.ac.uk). Sally is Diane's academic supervisor.

If you remain unhappy about the research and/or wish to raise a complaint about any aspect of the way that you have been approached or treated during the course of the study please write to Nicola Leighton who is the University's contact for complaints regarding research at the following address:-

Nicola Leighton

Research Governance Officer

Directorate of Engagement and Partnerships

IC2 Building

Keele University

ST5 5NH

E-mail: n.leighton@ keele.ac.uk

Tel: 01782 733306

CONSENT FORM

Title of Project: *What makes for legitimate pedagogical knowledge in Initial Teacher Education*

Name and contact details of Principal Investigator: *Diane Swift, Keele and North Staffordshire Teacher Education, Teacher Education Bungalow (78), Chancellor's Building, Keele University, Keele, Staffordshire, ST5 5BGG. Tel: 01782 733119 / 07794891209: Email: d.swift@keele.ac.uk*

Please initial box if you agree with the statement

1.   I confirm that I have read and understood the Semantic Profiling Summary information sheet dated 14.01.18 (version no. 2) for the above study and have had the opportunity to ask questions

2.   I understand that my participation is voluntary and that I am free to withdraw at any time up until the final discussion meeting, and that this will result in any direct quotations or references being removed from the doctoral thesis.

3.   I consent to the recordings and transcripts that relate to my participation being stored on a Keele University password protected secure computer drive in a format that protects my confidentiality and anonymity.

4.   I agree to be contacted about possible participation in future research project

5.   I agree to take part in this study.

_____   _____   _____
Name of participant   Date   Signature

_____   _____   _____
Researcher   Date   Signature

CONSENT FORM

(for use of quotes)

Title of Project: *What makes for legitimate pedagogical knowledge in Initial Teacher Education?*

Name and contact details of Principal Investigator: *Diane Swift, Keele and North Staffordshire Teacher Education, Teacher Education Bungalow (78), Chancellor's Building, Keele University, Keele, Staffordshire, ST5 5BGG. Tel: 01782 733119 / 07794891209: Email: d.swift@knsps.uk or d.swift@keele.ac.uk*

Please initial box if you agree with the statement

1.   I agree for my quotes to be used ☐

2.   I do not agree for my quotes to be used ☐

3.   I understand that if I withdraw prior to the final discussion meeting that direct quotations and references in relation to my participation will be removed from the EdD thesis, but that Diane will not be able to avoid drawing upon what has been learned through my participation up until that point. ☐

_____   _____   _____
Name of participant   Date   Signature

_____   _____   _____
Researcher   Date   Signature

Appendix D: Full Data Set for School 1

School	1
School Information	Staffordshire 420 pupils 9% FSM Ofsted (Good) Academy Chain
TE Characteristics	Completed ITE with SCITT, completed Tier 2 training
BT Characteristics	Mature entrant I/v grade =1 AP3=2 Final=1
WDM Video	3 (F33) Total Length: 7:47
WDM Length	2 mins 24 Secs 44%
WDM Segments	4
WDM Ranges	BT: 2-4 TE: 2-4
IR Video	37 mins 30 Secs
IR Length and percentage of dialogue profiled	5 mins 37 Secs 15%
IR Ranges	BT: 1-2.5 TE: 1-2.5 R: 0.5 - 3
R Video Length	6 mins 11 secs
R Length and percentage of video profiled	5 mins 50 Secs 94%
R Ranges	BT: 1-3 TE: 0.5 – 3 R: 0.5-3
Figure Numbers	WDM: 5.1, 5.2, 5.6. 5.7 IR: 6.11 R: 6.15

Figure 1 WDM Profile: School 1 Graph 1

Figure 5.2WDM Profile: School 1 Graph 2

Figure 5.6 WDM Profile: School 1 – Graph 3

Figure 5.7 WDM Profile: School 1 Graph 4

Profile 6.12 R Profile: School 1

Figure 6.17 IR Profile: School 1
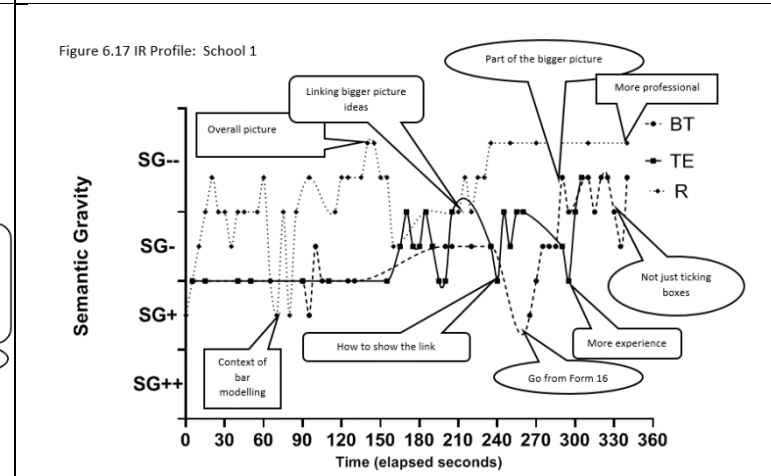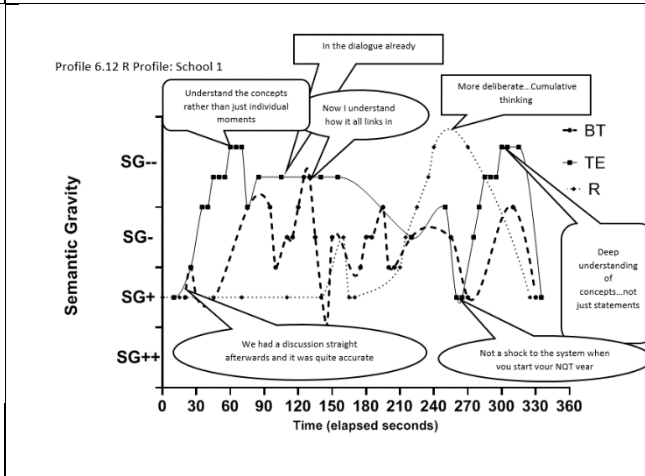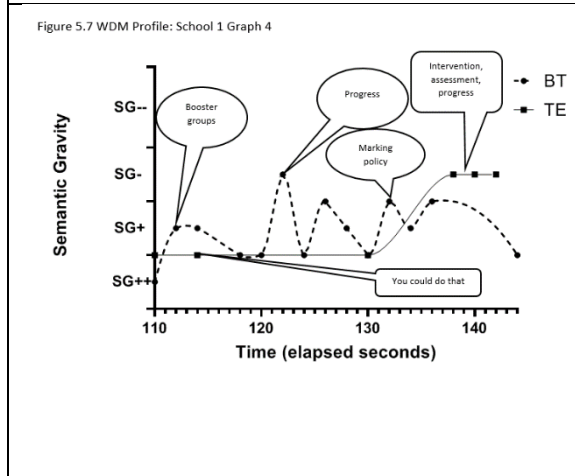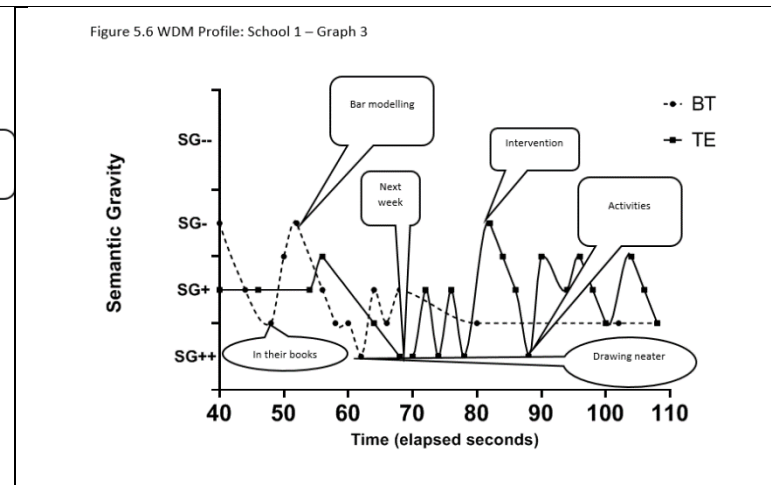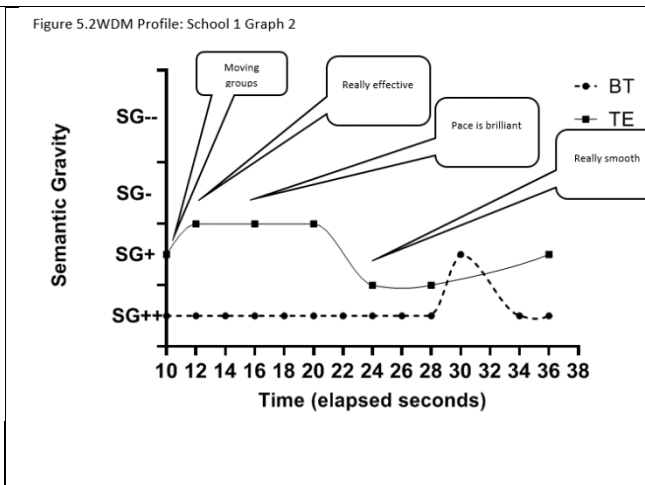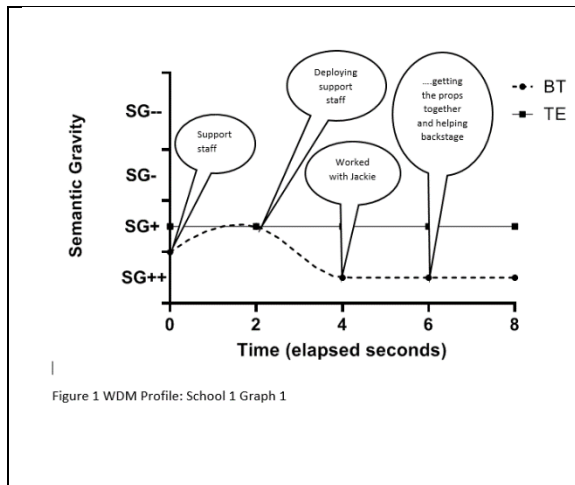
School 1 WDM: 4.32-6.58 (2 minutes 24 seconds)

4.32	BT	And then with the support staff, **(3.5)** not necessarily deploying the support staff **(3),** but I have worked with Jackie **(4)** this week
4.37	TE	Yep **(3)**
4.38	BT	In the performances **(4),** getting the props together and helping backstage with her
4.43	TE	And you have been working in maths on that as well, moving those groups **(3)** around and that's becoming really effective **(2.5)**, you pace is completely, I think, brilliant **(2.5)** for it, and , you know that transition of the groups **(2.5)** moving round, it…
4.57	BT	Yes **(4)**
4.58	TE	It's really smooth **(3.5)**
4.58	BT	I am finding it easier **(4)**, with more practise now **(4)**
4.58	TE	Yeah **(3.5)**
5.02	BT	As we do more maths, it's not something that I have done before, moving groups, **(3)** just, but the class are used to it, so they accept it and are happy, to do it, so I think that that's becoming a little bit easier now **(4)**, and so I am happy with that. **(4)** (turns over the SCITT WDM Scaffold)
5.13	BT	Um, the assessment wise, **(2)** I have started to see the maths books **(3)**, and I am now picking up with the
5.18	TE	Umm (positive affirmation) **(3)**
5.19	BT	the lesson and in the books **(3.5)**, things where we do need to go and recap **(2.5)**, so we have done the bar modelling **(2)** this week, I spent half an hour,
5.25	TE	Yep
5.26	BT	just demonstrating the bar models, **(3)**
5.27	TE	Bar modelling…yep…remodelling
5.28	BT	but I really did think that it worked **(4)**, because now that I am looking at the books and I can see, everyone's modelling is clearer **(3.5)**
5.31	TE	Yep **(3)**
5.33	BT	The drawing neater, **(4)** the fractions are shown better, **(3)**
5.35	TE	That's fantastic **(3.5)**
5.36	BT	So everything that I have done, the little bits that we have picked up, I can now see evidence in their books **(3.5)** of where the improvement is. **(3)**

5.42	TE	So in light of that, what we could do next week **(4)** is you continue with your maths **(3)** teaching, is on a Wednesday **(4)** we usually have a higher standard **(3)**group go out on a Wednesday afternoon**(4)**
5.53	BT	Okay**(3.5)**
5.54	TE	For intervention **(2)**, and then we have a consolidation **(2.5)**, sort of misconceptions group**(3)** go out on a Thursday, **(4)** so….on a Thursday afternoon for interventions, **(2.5)** so you could maybe, if you wanted to, have a look at a few activities, **(3)** that might stretch **(2.5)**, and some which might support **(3)** in readiness for those groups **(3.5)** to go out
6.14	BT	Okay that will be nice**(3.5)**
6.15	TE	And that will be based on the assessment**(2.5)** that you have done in class. **(3)**
6.17	BT	Okay**(3.5)**
6.18	TE	Yes that's lovely**(3.5)** (AT turns over the WDM)
6.22	BT	That might be good**(4)**, because I haven't seen much of the intervention groups **(3)**and the booster groups**(3)** so it will be nice to be involved in that
6.25	TE	And you could do that**(3.5)**
6.26	BT	Mmh
6.27	TE	Yeah, absolutely, **(3.5)** you can deliver some of those
6.30	BT	(reading from WDM): So planned developments**(3.5)** in relation to enquiries…. **(3.5)**so I said…assessment**(2)**, hopefully do the written part**(3.5)**, this weekend and then, as we now progress **(2.5)**through the maths**(3)**, I can now start gathering that evidence**(3.5)**
6.39	TE	Absolutely
6.40	BT	So, I have got to see how pupils showing progress**(2.5)**, what I've done and how my marking**(3)** supports the school's marking policy**(2.5)**
6.46	TE	Yep….. And that intervention**(2)** will feed nicely into that assessment**(2)** and progress **(2)**as well
6.51	BT	Lovely**(3.5)**

Semantic Gravity	SG	Descriptor	School 1: BT (Examples)	School 1:TE (Examples)
SG - - (Range 0-1.4) 0 Fully context independent reference 0.5 Concept selected when others also referred to 1 Context used as exemplification alongside others contexts	Weaker	Abstraction, Generalisation, Judgement (Highly Hierarchical or Horizontal within Vertical – creating a significant discursive gap, professional knowledge reservoir is continually referenced and questioned) Participants knowingly select concepts from a range of professional knowledge principles. They confidently refer to theoretical perspectives associated with such concepts. Propositions and articulations demonstrate an awareness of the unifying and integrative nature of such concepts.	0 0.5 1	0 0.5 1
SG- (Range 1.5 – 2.4) 1.5 May refer to literature, research or experience beyond the specific context. 2 Seeks to enrich understanding through reference to the context in relation to concept		Interpretation (Hierarchical or Horizontal within Vertical, creating a discursive gap, professional reservoir is drawn upon) Propositions relate to ideas that are informed by context independent concepts, and are applied to the specific context. There is some recognition that the concept can serve a purpose beyond the specific classroom context.	1.5 2 Assessment	1.5 2 Intervention, Assessment, Progress.
SG+ (Range 2.5 – 3.4) 2.5 Links elements from the specific case to concepts 3 makes reference explicitly to the contextual situation rather than conceptual elements		Summarises in relation to reproduction within the context (within vertical, the beginnings of a discursive gap, an oblique reference to the reservoir of professional knowledge) Participants draw solely on classroom contexts to descriptively articulate understanding and appreciation of activities, there is some reference to professional purposes. The meanings articulated are strongly embedded in the specific context and reference is not made to unifying or integrative principles.	2.5 Recap; Bar-modelling; Progress (BT's own & Pupils) Marking policy 3 Deploying support staff; moving groups; Maths books; maths; Demonstrating bar-modelling Fractions shown better; Improvement Intervention groups; Booster groups; Marking	2.5 Really effective; pace is brilliant; transition of groups; bar modelling; consolidation; interventions; stretch; support; assessment(in class) 3 Yep; Moving groups; maths teaching ; misconceptions; activities; in class
SG++ (Range 3.5 – 4.5) 3.5 Use of an everyday word applied to a professional context 4 Specific reference to school context that would not carry significant meaning beyond the context. 4.5 is everyday language that is not applied professionally (Horizontal)	Stronger	Reproducing contextual expectations (Segmented Horizontal, use of everyday language and lacks reference to the reservoir of professional knowledge) Participants recall specific events through description of actions. These have meaning within the context, but are unlikely to inform different contexts. Articulations are expressed using common everyday terms.	3.5 Support staff; in the books; Modelling is clearer Evidence in books; Okay, Okay that will be nice Planned developments, enquiries; written part; lovely 4 Have worked; in the performances; yes; happy with that; Easier; more practice; bit easier; it worked Drawing neater; Might be good 4.5	3.5 Really smooth; Yeah; that's fantastic; readiness for groups; Lovely: could do that; absolutely 4 Wednesday, Wednesday afternoon, net week; Thursday 4.5

School 1 – Initial Review Conversation-Annotated

7:15 – 12: 52 (5 minutes and 37 seconds)

 Sharing the graphs and rehearsing the model

The first 7 minutes was a discussion sharing LCT and the 'embryonic graphs.

 R is sharing a hand drawn sketch of the graphs, showing outlines of the waves

7.15	R	So just looking at this little dialogue, there were some very specific, (3) so like Jackie and performance props that's really tied closely to the context (2.5)
7.22	TE	Yes
7.24	BT	Mmmhh
7.26	R	Umm – whereas some of the things here (pointing to SG-) so the whole concept of intervention (2) … is maybe a big idea in pedagogy (1.5)
7.30	TE	Yes
7.31	BT	Yeah
7.32	R	Assessment is a big idea (1), …um progress is a big idea, and then inevitably in the middle, there is a bit of a judgment call (1.5) as to where these sit, and this isn't ,… the whole purpose of this conversation, is to check,… and we may end up moving them between boxes (1.5) and so none of this is.. umm fixed, ermhh …but obviously your marking related specifically to the lesson (2), it was these children's books,… recap my need to move up actually (1.5)..
8.00	BT	Yep
8.01	TE	Yeah
8.02	R	… Because recap is a(2)
8.03	TE	Yeah
8.04	BT	Yeah
8.06		… is a transferrable activity, (1.5) um activity that you do, so then some of the other words that we use were about pace, transition, (1) effective, improvement, misconceptions, stretch, support, booster groups, ..umm…and then it was, some of the being done in the context of bar modelling(2.5)
8.20	BT	Yep
8.21	R	Fractions, maths and the particular (3) support staff,
8.24	BT	Yep…okay
8.26	R	…so these are very early documents (1.5), I mean… these will end up being beautiful and word processed, so mmm (name of BT).. you started about support staff, but then it was thinking about deploying support staff, (3) and so that is where it is going up away from context, (1.5)
8.44	BT	Yep

8.45	TE	Yep
8.46	R	umm of thinking about that bigger professional **(1)**..ummh.. skill of deploying support staff
8.51	BT	And that was a point from my AP2, **(3)** so that's why it's a recurring theme, **(2)** from my last placement..from my..targets here we …support staff… and we waited till maths as well**(2.5)**
9.06	TE	Yeah
9.08	R	So that's a really good example **(2)** …so part of the argument of this (thesis) is that actually if we do that, it is about this accumulation of knowledge **(1)**, rather than knowledge staying context specific**(1)**
9.20	BT	Mmhh
9.21	R	You are able to connect experience with these bigger ideas **(1)** and
9.23	BT	Yeah
9.24	R	And it gets you thinking…mmh…it's a characteristic of a stronger profession**(0.5)**…if we've got that knowledge which is transferrable, to different… contexts**(0.5)**, umm…so…having then talked about the deployment of staff, you then, umh.. highlighted a specifics **(2)** , so working with Jackie, …ummh and the performance…and I think that (name of TE) what you were doing was trying to then think about the use of support staff in other contexts, **(1.5)** so working with
9.54	TE	Yeah
9.55	R	…maths **(2.5)**
9.56	TE	Yeah and trying to sort of link those ideas**(2)**, so that you can see the sort of bigger, contexts**(1.5)**, rather than being just quite specific**(2)**, So…I…and especially when you try and think about positives, or things that you have done that week, you sort of.. do tend to narrow yourself down**(2)** because you are thinking, right well, I can remember this bit or that bit…but from me being, the sort of person who can look at the overall picture**(1.5)**, I can sort of link those ideas a little bit better I think, because I have got that sort of bigger overview**(1.5)**, I think, rather than having to think about all the little things**(2.5)** that you have got to do all in one place. **(2.5)**
10.34	BT	Mmhh
10.35	TE	… So that's where I think that I was trying to go with it in terms of linking those bigger picture ideas**(1.5)** …
10.40	BT	Yeah
10.41	R	And we are,… I mean part of this is a wonder… and what we are wondering is, whether it is actually its more helpful for Teacher Educators **(1.5)** to have some of these bigger concepts **(1)** and not just the Teachers' Standards…**(1.5)**
10.54	BT	Yeah
10.56	R	And that actually if you are thinking… so how does that relate to assessment**(1)**, or how does that relate to your understanding of inclusion, **(1)** or how does that relate to your understanding of progress**(1)**,…is…might that enable people to be more professional**(0.5)**
11.10	BT	Mmmhh

11.12	R	As it were
11.13	BT & TE	Mmmhh, Yeah
11.14	TE	I think that with the Teachers' Standards**(2.5)** sometimes, you do look at it, as a, well I've got this one, and I've got this one, but it is that, you know...but what's the…what's the link**(1.5)** here, and how do I show that**(2)**, because it's quite specific, but if it was under a bigger category**(1.5)**, of well I can do those, so is it just tweaking what I do to do this little bit, it might be easier in a way**(1.5)**, I don't know how you feel, about that…
11.42	BT	No I agree with that, when you go to Form 16 **(3)** (whispers) this, this this and this …and you are very much trying to get tiny tick boxes for your evidence **(2.5)** and you are trying to get me to think of everything, and then just pull out little bits**(2)** as we go from the evidence**(2)** – but you kind of feel very specific little things**(2)** and I think it's right is should be part of..a bigger part of**(1)** …rather than covering it all
12.06	TE	I think it's easier for me**(2)**
12.08	BT	Yes I think that it is**(1.5)**
12.08	TE	Because I have had a few more years' experience**(2.5)** and I can see that actually well that kind of fits in here **(1.5)**, but it could link to over here as well, but when you are sort of trying to think about everything **(1)** – and, you know it does become more difficult to see how those ideas,….
12.24	BT	So I think that you are right, the TE should know some concepts**(1)**, because you guide me you see from there, so okay we chat about that, but you are trying to guide me to then the overall picture**(1.5)** and so if you didn't have that knowledge of concepts**(1)**, it would make it hard for me to also bring my knowledge up**(1)**, but also, just get my general teaching experience rounded**(1.5)** as well, not just trying to get the tick boxes**(2)** and that's where (TE name) is driving me - you can see where she's trying to move me to thinking about the wider picture, **(1)** because without that I wouldn't have it
		End of segment 12:52

School 1 – Initial Review Dialogue				
Semantic Gravity	**SG**	**Beginning Teacher (Examples)**	**Teacher Educator (Examples)**	**Researcher (Examples)**
SG - - (Range 0-1.4) 0 Fully context independent reference 0.5 Concept selected when others also referred to 1 Context used as exemplification alongside others contexts	Weaker ↑ ↓	0	0	0
		0.5	0.5	0.5 Characteristics of a strong profession Transferable to different contexts More professional
		1 Part of the bigger picture TE should know concepts Knowledge of concepts Bring my knowledge up Thinking about the wider picture	1 Think about everything (in connection with other concepts)	1 Assessment is a big idea Pace Transition Bigger professional ideas Accumulation of knowledge Rather than staying specific Connect with bigger ideas Have bigger concepts How relate to assessment, inclusion, progress
SG- (Range 1.5 – 2.4) 1.5 May refer to literature, research or experience beyond the specific context. 2 Seeks to enrich understanding through reference to the context in relation to concept		1.5 Guide me to the overall picture Teaching experience rounded	1.5 Bigger contexts Overall picture Bigger overview Linking bigger picture ideas What is the link? Bigger category Fits in	1.5 Big ideas of pedagogy Judgement call Moving between boxes May need to move up Transferrable activity Early documents Up away from context Connect with other contexts Wondering if helpful for TEs Not just the Teachers' Standards
		2 Recurring theme Go from evidence Specific little things Not just tick boxes	2 Link ideas Quite specific Narrow yourself down How to show the link Easier for me	2 Concept of intervention Related specifically to the lesson Because recap is Good example Highlight specifics
SG+ (Range 2.5 – 3.4) 2.5 Links elements from the specific case to concepts	Stronger	2.5	2.5 Little things All in one place Teachers' Standards More years' experience	2.5 Close to context Context of bar modelling Maths

3 makes reference explicitly to the contextual situation rather than conceptual elements	3	3	3 Very specific Particular Deploying support staff
SG++ (Range 3.5 – 4.5) 3.5 Use of an everyday word applied to a professional context	3.5	3.5	3.5
4 Specific reference to school context that would not carry significant meaning beyond the context.	4	4	4
4.5 is everyday language that is not applied professionally (Horizontal)	4.5	4.5	4.5

School-1 – Revisit Conversation (0.05 – 5.55) (5 minutes 50 seconds)

0.05	R	So this bit really, is only a very brief chat about any further thoughts, anything that on reflection you might have wanted to say **(3)** when we met before
0.15	TE	Meh heh
0.16	R	And whether you have referred back to the graphs or the discussions **(3)** at all in any of your thinking since then, and so it is over to you really
0.24	BT	We did actually – we had a discussion the day after **(3)**
0.25	TE	Yeah that's right (smiling)
0.26	BT	So we looked at what came out and we did reflect on it, **(2.5)**
0.30	TE	Yeah, definitely, definitely **(2.5)**
0.33	BT	The kind of thought that you had given (referring to the researcher) was quite accurate. **(3)** But we did discuss the interest of the graph as well
0.41	TE	I think that we have looked at more bigger ideas, **(1.5)** haven't we, so you've looked at ideas for umm, well we have talked about well on that one (pointing to graph) you (referring to R) were talking about interventions **(1.5)** and ideas like that and actually, you know, understanding, and concepts **(1)** and things like that rather than, just relating back to individual, moments **(1)**, it, you know, going to the bigger idea **(1)** and how is that going to shape your practice moving forward **(0.5)**, and
1.09	BT	Mmhh
1.10	TE	Mmh….I think that it does make you realise, that's in the dialogue already, but it's more sort of, what's the impact of that, and what's the, you know, merit of maybe relating more to those bigger ideas, **(0.5)** because they are sort of what you are (looking at BT) going to be looking at more if you …, as your career develops, **(1.5)** isn't it…
1.29	BT	Yes, yes
1.30	TE	…through the profession, **(1)** so that's kind of (looking at R) where….I mean you still refer to those, bits that you have done (looking at BT) don't you, but we look at how they impact, the bigger picture and things like that, so ummh,
1.42	BT	I can see them now as well, **(1.5)** because I am doing Form 16 and evidence **(2.5)**,
1.48	TE	Mmh (nodding looking at both R and BT)
1.50	BT	Gathered the evidence, doing the blurb now, but on those bits where progression, the outcomes and… what is it, the…mmh, your showing of responsibility for taking the outcomes, professional, the intervention groups

		that I have done, you can see how that is mapping out, not just from doing the maths lesson, **(2)** I have done a maths lesson, I have taken those children, I have done an intervention with them the other week, and I can see now how that relates now to that Teachers' Standard while taking me taking responsibility and how that actually worked, not just a sentence **(1.5)** now I can understand how it all links in, **(1)** which is…because I have done this batch of Form 16, it has become more obvious, **(2)** ummh doing more sequences and more assessment
2.31	R & TE	Mmmh
2.33	BT	Just lots of tying now! **(3.5)**
2.34	TE	Laughs
2.35	BT	You can see more how it is coming together**(2)**
2.38	R	Yeah
2.39	BT	When you go back to look at it
2.40	R	Yeah (child looks to come into the classroom at this point – open and closes classroom door promptly!)
2.44	R	It's interesting, …I probably haven't got the time… to do this…, but an AT who I was with yesterday made the same connection with Form 16, **(2)**
2.53	BT	Laughs
2.54	R	So now what's going through my head, is it because its second placement, or is it because you have been involved in the research? **(3)** And being…um
3.02	BT	I think that I would say that it's a mixture**(2.5)**
3.04	R	Yeah
3.05	BT	Because you (meaning R) are highlighting it, but also, for the second placement, you are doing more sequences, you get to see more assessment, but when I was sitting there, doing my evidence for my Form 16, I was just typing up last night, …I can just take it that little bit further, with my connections now**(2)**
3.18	R	Yeah
3.19	BT	But that is probably this as well, that has given me the big picture**(1.5)**, so I that I think that it is a combination**(2.5)**
3.24	R	Yeah
3.25	BT	But what you are saying, these things come at the right time, don't they?.... So with your research and that task….second placement…and then I am doing Form 16….so I would say that it's a mixture**(2.5)**

3.37	R	But I guess in some senses that… what you have just said to me, has given because If we hadn't had that chat(2.5) you probably wouldn't have made those connections(2)
3.42	TE	Yeah - definitely
3.43	BT	Yeah
3.44	R	Which suggests that it is…because… we…again…um um… what someone else has said to me is that…it… these concepts were probably there but it is now deliberate (1.5) – whereas before they were implicit and maybe they weren't always realising…
3:59	BT	Yes absolutely
4.00	R	But actually the deliberate practice has improved(1) … so that long term, cumulative, thinking (0.5) about things as they build rather than seeing things as segmented
4.11	TE	Yeah
4.12	R	Bits of experience really
4.14	TE	But I think that's really good though moving forward, especially you know for you, and your role next year (talking to BT) as well, you will be able to see how all of those bits merge in(1.5)
4.22	BT	Yes
4.23	TE	It won't be such a shock to the system, (3)
4.24	BT	No - laughs
4.25	TE	Because I think sometimes when you start your NQT year, (3) … when you are on your first day… oh my goodness, these are all my and there is no-one here standing behind me saying it will be fine, (laughs)
4.38	BT	…the (support) bubble goes
4.39	TE	But actually,
4.41	TE	Child at the door – no no now off you go! In a minute! Not now
4.43	TE	Um so it's quite good experience(2) really because you have got all those bits in place and you know the bigger ideas(1.5) …you know what's coming in terms of expectations, in the way of you know, of assessment, as a whole idea(1), but what feeds into that from the classroom(1), and from, you know, other bits and bobs, so you know, that's quite good, that you have been able to, be part of this, to make those, links because (1) you have then got that sort of deeper understanding, of all the concepts(0.5) they are, they are not just statements(0.5), like you have said, you can see, clearly well that links with that
5.22	BT	Yeah

5.23	TE	And that links with that, and you know that I have got the evidence for that and the practice to back it up, **(0.5)** as well
5.30	TE, BT	Positive nods and a few moments of silent affirmation
5.33	R	So the other bit to check is that looking back that you felt that the graphs, was…accurate**(3)**
5.36	TE	Yes
5.36	BT	Yes
5.37	R	So were they accurate?
5.38	TE	Yes
5.39	BT	Yes - accurate**(3)**
5.40	TE	Definitely**(3)** … and it is been really interesting…quite fascinated by it, it's been really good
5.49	R	Is there anything else that you want to add or say
5.52	TE	Nope can't think of anything
5.53	BT	Nope

Semantic Gravity	SG	Beginning Teacher	Teacher Educator	Researcher
School 1 – Revisit Conversation				
SG - - (Range 0-1.4) 0 Fully context independent reference 0.5 Concept selected when others also referred to 1 Context used as exemplification alongside others contexts	Weak er	0	0	0
		0.5	0.5 Shaping practice moving forward Impact of that (relating to bigger ideas) Deeper understanding of concepts- not just statements-practice to back it up	0.5 Cumulative thinking
		1 Now I can understand how it links in	1 Understanding and concepts rather than individual moments Bigger ideas Through the profession Linking classroom practice to concepts	1 Deliberate practice having impact
SG- (Range 1.5 – 2.4) 1.5 May refer to literature, research or experience beyond the specific context. 2 Seeks to enrich understanding through reference to the context in relation to concept		1.5 I can see them as well Not just a sentence Given me the big picture	1.5 More bigger ideas Talking about intervention Career develops Bits merge in	1.5 Deliberate practice
		2 You can see that its mapping out Not just doing maths Become more obvious See how it's coming together Take it further with connections	2 Good experience Of assessment	2 Same connection with Form 16 Chat to make connections
SG+ (Range 2.5 – 3.4) 2.5 Links elements from the specific case to concepts 3 makes reference explicitly to the contextual situation rather than conceptual elements		2.5 We did reflect on it Doing Form 16 Mixture / Combination	2.5	2.5
		3 Discussion the day after Quite accurate Support bubble goes	3 Not a shock to the system, when you start your NQT year	3 Reflection on what you might want to say referring back to graphs and discussions Second placement – refers to research in context Checking graph accuracy

SG++ (Range 3.5 – 4.5) 3.5 Use of an everyday word applied to a professional context 4 Specific reference to school context that would not carry significant meaning beyond the context. 4.5 is everyday language that is not applied professionally (Horizontal)	Stronger	3.5 Just lots of trying now	3.5	3.5
		4	4	4
		4.5	4.5	4.5

Appendix E: Weekly Development Meeting

Weekly Development Meeting Record   **Programme week …………..**

AT Name………………………………   **School……………………………........**

This record needs to be focused and purposeful rather than detailed and lengthy. It should be prepared by the AT PRIOR to the meeting and used to structure the co-analytical discussion with your TE. It can be annotated during the discussion and should then be filed immediately after the meeting. These records form an ongoing log of your progress on the programme. Your PT will be checking periodically to review the content of these records. One should be completed for each week and the appropriate programme week (I, C or F) noted in the box above, any gaps will need explaining! You may like to use the Teaching Standard Knowledge Organisers or Form 6 to support your reflections.

Review of your evidence of achievement. (Please type in/write your response to each prompt)
   Please bring evidence of your progress and impact on pupils' progress and learning to include in the discussion and review.

==Mentoring==- Using your LOP or Focus Lesson for this week, reflect what **impact** your teaching has had on pupil progress and/ or additional actions that need to be taken.

==Coaching-== As a consequence of co analysis using Form 14A, how will you use your evaluation of lessons to improve your practice?

==Coaching== -Which enquiries have been completed since the last meeting? Form this, discuss potential impact on your practice.

==Coaching -==Reflecting on Form 16; Do you have sufficient evidence to demonstrate a clear knowledge and understanding of each Teaching Standard?

==Coaching== How has your teaching of phonics/spelling/ grammar impacted upon pupil's progress/ learning?

<mark>Educating</mark>- Do you require any information from your TE to support assignments, enquiries or activities?
Review of your achievements (make reference to your research and reading) <mark>Educating</mark>- When you reviewed your Behaviour Journal / Portfolio, Which strategy/research / pedagogy did you use?   <mark>Mentoring</mark>- What was the subsequent outcome?   <mark>Educating-</mark> With relation to your subject knowledge progress, what support can be arranged next week to help you to progress?   <mark>Educating-</mark> Which form of assessment was the most informative or productive and how will you use it to support your teaching further?
Explain how you have been successful this week and the resulting impact on your/ pupil's learning. (relate this to the Teachers' Standards, and progress towards your targets)
What are the key areas that you would like to develop next? (relate these to the Teachers' Standards where you can) <mark>Educating-</mark> Where can you access the support/information/research/ strategies you require to help you succeed?   KEY - <mark style="background-color:magenta">COACH</mark> <mark style="background-color:#00FF00">MENTORING</mark> <mark>EDUCATING</mark> **<mark style="background-color:cyan">Although these are helpful from the perspective of the TEs who made the suggestions, the form is filled in by the AT....? Are they useful/ appropriate?</mark>**

TS8: Fulfil wider professional responsibilities **Please highlight and annotate as appropriate**	Proficient and Effective	Secure and Effective	Developing	Emerging / Not yet Evident AT needs support to reflect further on their practice so as to:
Do pupils have a fascination to learn about and from the world around them?	• demonstrates an astute understanding of both the school's and its associated communities its national/ international context • learners are motivated to make informed connections with experiences and learning beyond the lesson / classroom.	• demonstrates an effective understanding of the school and its associated diverse communities and its national/ international context • learners make reasonable connections with experiences and learning beyond the lesson / classroom.	• demonstrates an understanding of the school's local national/ international context • learners make some connections with experiences and learning beyond the lesson / classroom.	*The AT needs to develop a more informed understanding of the school and its associated diverse communities and the national context within which they are working. They can then draw on this to inform their teaching.*
Log a summary of evidence from this week – remember to refer to this evidence when completing Form 16 for this practice				
What is the impact of the use of support staff on pupil progress?	• deploys support staff so as to impact effectively on the engagement of learners to secure progression • evaluates this impact and makes appropriate adjustments.	• liaises with and deploys support staff so as to respond appropriately to the strengths and needs of the pupils.	• demonstrates a developing understanding as to how to deploy support staff to impact on learning.	*The AT needs to liaise with support staff more effectively so that they can plan for interventions to support pupil progress.*
Log a summary of evidence from this week – remember to refer to this evidence when completing Form 16 for this practice	<mark>Does this part of TS8 need to go on the LOP ? Do we need more on Part 2 of Teachers' Standards?</mark>			

Review of assessment making reference to pupils' progress. **Please highlight and annotate as appropriate.**	Proficient and Effective	Secure and Effective	Developing	Emerging / Not yet Evident AT needs support to reflect further on their practice so as to:
How well does your assessments identify strengths and diagnose next steps for improvement? (TS6)	• learners' progress is assessed regularly • pupils' learning is assessed so as to accurately target further improvements and secure rapid progress.	• learners' progress is assessed regularly • pupils' learning is assessed so that they know how well they have done and what they need to do to improve.	• pupils' learning is assessed regularly • pupils' learning is assessed constructively and provides appropriate written/verbal feedback.	*The AT needs to develop the capacity to asses learning appropriately so that feedback informs progress and is consistent with the expectations of the school.*
Are pupils enabled to demonstrate progress through appropriate tasks? (TS6)	• completed tasks demonstrate consistent progression in achievement • feedback clearly demonstrates that the AT assumes responsibility for the attainment, progress and outcomes of the pupils that they teach.	• completed tasks that demonstrate progression in achievement • the AT has used their prior assessments to inform their choice of learning activities.	• pupils' work demonstrates that the AT shows awareness of progression • the AT has taken some responsibility for pupil, progress with guidance from the usual class teacher or other professionals.	*The AT needs to ensure that the tasks and / or activities that they ask their pupils to complete build on prior capabilities and are not inappropriately pitched.*
Comments in relation to marking and assessment (teachers Standard 6): Discuss which forms of assessment(s) has had the greatest impact upon learning this week.				

Next Week.......

What are you planning to achieve in relation to enquiries and your assignment? What support can the school offer?
Planned Lesson Observation, Planned Focus Lesson, Phonics lessons, Observing experienced colleagues; (please include dates and times)
Do you need to arrange any meetings or inform your TE about any programme requirements? (e.g. lesson study requirements or visits etc)
Signed by TE

Additional Comments (if appropriate)

Appendix F Lesson Observation Profile

Name of AT .... **Class**_____ **School**_____ **Subject (s)**_____ **Time**_____ **Date**_____

Page 1 is to be filled in by the AT **at least 24 hours prior** to the lesson observation and emailed / given to the observer 24 hours prior to the observation.
To complete page 1, ATs and TEs **MUST** use the Target Setting Proforma (Form 6), the previous WDM and Focus Lessons. Some targets will remain the same from lesson to lesson. It is important to secure practice before moving on to the next priority or priorities in the AT's professional learning journey, and on occasions targets may reappear if necessary.

Observer to highlight ALL ACHIEVEMENTS (so tick boxes sequentially) and annotate table, as necessary. Subsequent discussions will use Form 14a to co- analyse AT strengths and areas for development. These should then inform the next Focus Lesson. The Teachers' Standards are presented sequentially, but do not need to be completed in this way.

Developing your Practice (Targets MUST be informed by Form 6 and previous reviews)	TS	AT – The Progress that I hope to evidence during this session is….	Observer's Response - The practice that I saw included …….and can be evidenced by when you…..
Target 1			
Target 2		Formative assessment, what we see	
Target 3			
As a result of previous lessons I am ambitious for pupils to:			
As a result of discussions 24 hours prior to this lesson plan I have:			To be completed by the observer after the plan has been seen and reviewed.

TS1: Sets high expectations which inspire, motivate and challenge pupils

Standard sub-headings	Proficient and Effective: (PE) AT consistently and effectively meets TS1	Secure and Effective: (SE) AT securely and effectively meets TS1	Developing Practice: (DP) With targeted advice AT is able to meet TS1	Emerging Practice: (EP) *ATs fail to meet the minimum level of practice.* AT needs targeted advice to be effective:
a. establish a safe and stimulating environment for pupils, rooted in mutual respect	• uses innovative strategies to establish a safe, stimulating, and mutually respectful environment • creates a highly productive and motivating learning environment	• uses a range of strategies to create a safe, stimulating and respectful learning environment • creates productive and motivational environment	• establishes a safe and stimulating environment rooted in mutual respect. • establishes a positive learning ethos	• currently unable to establish a safe and stimulating environment for pupils.
b. sets goals that stretch and challenge pupils of all backgrounds, abilities and dispositions	• enables a highly effective promotion of pupils' resilience, independence and confidence • sets goals that stretch, challenge and motivate all groups of pupils. • uses effective strategies to support the learning and progress of all groups of learners	• promotes pupils' resilience, independence and confidence. • sets goals that stretch, challenge and motivate pupils • uses strategies to support the learning and progress of pupils of all backgrounds, abilities and dispositions.	• develops pupils' resilience, independence and confidence. • sets goals that stretch and challenge most pupils • some strategies used to support pupils from all backgrounds, abilities and dispositions.	• currently unable to sets goals that stretch and challenge pupils of all backgrounds, abilities and dispositions.
c. demonstrate consistently the positive attitudes, values and behaviour which are expected of pupils	• motivates and inspires pupils to progress and enjoy their learning. • demonstrates and models the positive attitudes, values and behaviour which are expected of pupils and are consistent with school policies and expectations.	• demonstrates and models the positive attitudes, values and behaviour which are expected of pupils and are consistent with school policies and expectations.	• demonstrates positive attitudes, values and behaviour which are expected of pupils.	• currently unable to demonstrate consistently the positive attitudes, values and behaviour which are expected of pupils.

Observer to make additional relevant comments to TS1: Some suggestions include...

Are the pupils aware of relevant health and safety issues appropriate to the lesson?

Has AT ensured that the learning environment is safe and secure and consistent with school policies and expectations?

Appendix G: Focus Lesson

Form 10: Focus Lesson Pro-forma – Part One

AT Name:	
Observer:	
School:	
Date:	Lesson topic:
Year Group:	Prior learning:

Lesson Focus: Which aspect of my teaching am I trying to improve? (Refer to Possible Lesson Foci)

Details of planned teaching strategies to achieve the identified focus. (completed by AT)	Observations in relation to the Focus (completed by observer)

TE, please ensure that the observation comments are descriptive rather than evaluative.

AT can you now reflect on the Focus Lesson using the Part Two section of this pro-forma **prior** to receiving feedback. This can then be discussed at the next Weekly Development Meeting

Focus Lesson Pro-forma – Part Two

My initial thoughts in relation to the commentary are:

How was the pupils' learning affected by this aspect of my teaching?

Were there key points during the lesson when I needed to adapt or should have adapted my teaching?

What would I do differently if the lesson were repeated and why?

What did I learn from this experience that will help make my teaching more effective in the future?

How do I now feel about this focus? Have I to pursue this focus further?

Appendix H: Form 16

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Form 16:
Evidence and Reflections on the Teachers' Standards

Context

During your ITE programme you will engage with the Teachers' Standards. These Standards are included on page 2. Whilst the standards are the same for all teachers, the evidence and reflections that you are asked to share relate to the descriptors appropriate to a trainee (associate) teacher. These expectations are shared in Form 5, and on the LOP and in Form 6- Suggested Targets. They are also used to inform your Focus Lesson and suggested Lesson Foci (Forms 10 & 11). All sessions and enquiries are also mapped against the Teachers' Standards, as is Form 7 for lesson planning.

Completion of Form 16

On two key occasions, at the end of the face to face part of practice 1 and at the end of online practice 1 you need to complete Form 16. **This means completing the pro-forma on page 3 for each Standard for EACH placement. So you will end up with Form 16 for Placement One and a separate Form 16 for Placement Two.** For those of you on the enrichment special school placement you may wish to include your special school experience in the additional evidence section for Placement Two. You could do a third Form 16 if you prefer.

To complete Form 16 well, you need to share your understanding of the Standard, your current achievement descriptor, your evidence to support your claims and your target for further professional development. An example is shared on page 4.

What do you need to do?

Preparation:
- Read carefully the appendix to Form 16 that summarises each Teachers' Standard, outlines possible evidence, shares grade descriptors and lists a series of questions for you to consider in relation to each Standard.

Every Week:
- Make sure that you use Form 6 – Suggested targets with every LOP and Focus Lesson and at every WDM.
- Make sure that every lesson is thoughtfully and productively evaluated.
- Remind yourself of the Standards that each session, enquiry and assignment relates to.

During Practices 1 and 2
- Regularly look at Form 16 and begin to draft statements. You should make this a regular ongoing activity. You can then always amend what you have started if you create a 'better piece of evidence'

What counts as evidence?
- Everything that you do is evidence! On Form 16 we want you to be able to share the breadth and balance of your evidence. You should use any one piece of evidence **no more than 3 times.** Remember that by the end of both placements you will have a lesson plan for all subjects across the primary curriculum, these combined with your WDM reports, LOPs, Focus Lessons, Enquiries and Assignments mean that you will have a vast array of evidence from which to select.
- It is good practice to use evidence that relates to the strongest grade descriptor that you have achieved. This will not always be the case, but should predominantly be so. So if you are working at 'secure and effective' your evidence should relate to this descriptor or beyond. Remember that the descriptors are best fit rather than perfect fit.

Where does Form 16 go?
- Form 16 and its associated evidence can be created as a separate folder, or can form part of your assessment folder. Your Form 16 statement for each Standard should make it clear where each piece of evidence that you refer can be found.

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Form 16:
Evidence and Reflections on the Teachers' Standards

AT Name	
Practice School	
Key Stage and Class	
Date of completion of practice	
Teachers' Standard (number and short description)	
Grade descriptor that best describes my current practice	
The target that I want to prioritise in relation to this target is... (refer to Form 6) And the actions that I need to take are:	

My current understanding of this Standard:
I have developed my practice in relation to this Standard by:
My supporting evidence includes:
Additional notes or comments (any enrichment opportunities or particular experiences that you wish to share)
Extra-Curricular activities: