The complexity of teacher professional growth – experiences of professional learning and development, including practice-based inquiry

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Abstract

In this thesis, teacher professional growth is conceived as complex, relational, adaptive and recursive, comprising processes of learning and development. Teacher learning is considered an ongoing, everyday process of *building* on experience through interpretation, integration and application. Teacher development is viewed as a continuous, longer-term process of *journeying*, more outward-facing to encompass professional knowledge, practice and status. Professional growth unfolds within one or more organisational contexts that mediate the external conditions of an educational system currently dominated by performativity. Teacher practice-based inquiry is explored as a vehicle for professional growth.

Suggested critical aspects of teacher professional growth are intended *purpose*, enacted *opportunity* and lived *response*, considered intertwined or complex and employed as an interpretive framework. Six secondary teachers have participated in this study, through recorded conversational accounts of professional growth and twenty written accounts of their practice-based inquiries. Unravelling purposes, opportunities and responses in this material suggests categories of description and variation that together form a *possibility space*, for both interpreting past experience and projecting future potential. Teacher practice-based inquiry offers an expanded space of possibilities for professional growth.

This study utilises the theoretical perspectives of complexity thinking and participatory inquiry, complemented by agential realism, enactivism and relational being. Together, these trans-disciplinary approaches challenge representationalist ontologies and epistemologies, embracing axiology, and positioning researcher and participants as part of the phenomena to be studied. A recurring theme is *complicity*, mutually adaptive change, between teacher and learner, leader and teacher, teacher and context, and researcher and research. The contribution made by this thesis is a re-working of conceptualisations of teacher professional growth, combining identity, experience, learning and development, in a continual and complicit process of being and becoming, sustained through a sense of belonging. The resulting possibility spaces offer exemplary knowledge and tools for re-thinking teacher professional growth as a complex adaptive process.

Chapter One – Introduction

The practical and theoretical basis for this thesis

The purpose of this research is to understand ways in which teachers interpret, integrate and apply developmental experience within their practice – how they *live* their learning and *grow* professionally. It explores perceptions of teachers who have utilised practice-based inquiry as a vehicle for learning, the factors that enable and inhibit their endeavours and the perceived impact on their communities. While teacher professional learning and development is a well-established field, this research builds on the relatively few published accounts of actual teacher experience and perceptions of their own learning. The starting point is the notion of 'heutagogy' as 'learner-centred learning that sees the learner as the major agent in their own learning, which occurs as a result of personal experiences' (Hase and Kenyon, 2007, p.112). Teacher learning thereby embodies occupational knowledge and skills acquisition, through agentive response in further integration and application to practice. In this study, p*urpose*, *opportunity* and *response* in teacher development and learning, defined together as professional growth (Taylor, 2017), are identified as critical aspects and understood to be 'woven together' or *complex* (Morin, 2007, p.6).

Complexity *thinking*, a strand of complexity theory, has become an orienting perspective for this thesis, providing a conceptual, metaphorical, philosophical and methodological framework. Heutagogy is characterised as a 'child of complexity theory', due to its focus on self-organised or self-determined learning (Hase and Kenyon, 2007). Complex (in this case *living*) systems, in contrast to those that are simple or complicated, are distinguished as those that *learn*, through interaction with others, their organisational context and external conditions. A simple deterministic conception of professional growth assumes teacher development opportunities necessarily lead to changes in individual or group practices in line with stated training goals. A more complicated approach acknowledges many factors in the development of teacher practices, but nevertheless predicts the appropriate conditions and interventions likely to bring about desired changes in most cases. Complexity thinking acknowledges that development purposes and opportunities are shaped in contingent and unpredictable ways, through individual and collective teacher responses, and multiple interactions over time.

This thesis contributes to a growing body of complexity-oriented research in education, exploring the self-determined learning of six secondary teachers as case study participants. Four of these teachers have been my students when undertaking further professional and academic studies, two have become known to me mainly through this research. Complexity thinking is motivated by the practical, forward-looking question of '[h]ow should we act?', more than the 'fact seeking "What is?" or the interpretation seeking "What might be?"' (Davis and Sumara, 2006, p.25). This realisation has consolidated during the research process, moving the study from 'mirroring to making' – a 'future forming orientation' (Gergen, 2015, p.294). Such a shift implies that the 'aim of research would not be to illuminate *what is*, but to create *what is to become*' (Gergen, 2015, p.294). Therefore, exploring teacher development and learning affords expanded future contributions and possibilities for professional growth. This study becomes, in part, autoethnographic and, as an account of self-determined learning, my own practice-based inquiry.

A related methodological perspective is offered by the 'participatory inquiry paradigm', encouraging a shift from research '*on* people' or '*about* people' to research '*with* people' (Heron and Reason, 1997, p.285, original emphasis). A participatory approach, as understood and applied here, offers case study participants opportunities to co-design ways of exploring their professional growth, including through self-determined practice-based inquiry. Teacher development and learning, conceived as complex and unpredictable, individually and collectively self-generated, invites a participatory orientation, with profound implications for both research methods and their philosophical principles. Complexivist, participatory inquiry positions the researcher as part of the phenomenon to be studied, with the potential to influence and shape its reality, in contrast with forms of research positioning the researcher as objective onlooker, seeking representations of an independent reality. In the participatory paradigm, 'experiential encounter with the presence of the world is the ground of our being and knowing' (Heron and Reason, 1997, p.276).

The participatory and complexity paradigms also embrace *axiology*, in a broad conception of 'human flourishing' as intrinsically desirable, brought about through 'knowing how to choose and act' (Heron and Reason, 1997, p.287). Axiology is associated with the concept of *praxis*, or action aiming for a common good (Kemmis, 2011, p.10), not merely as a means-to-an-end but embodied in the action itself, as a way of living (Carr, 2006, p.426). Teacher professional growth

is understood as oriented towards the good or benefit of those involved and the self-similarity of teachers tending to conceive their own learning needs in terms of others' needs, particularly those of their own students (Taylor, 2017). Therefore, this research does not attempt to narrowly define the *impact* of teacher learning by measuring student achievement and surmising linear cause and effect. Instead, teachers' *perceived* impacts of their own development and learning in relation to that of others are sought, within the much broader conception of praxis. Reciprocal relationships between teacher experiences, their lived learning and the organisational contexts in which these occur, influenced by external conditions, are of principal interest.

Both complexity thinking and the participatory worldview are informed by an 'enactive view of cognition', which maintains that living beings 'enact or bring forth significance in their intimate engagements with their environments' (Thompson, 2011, p.114). Enactivism, in which cognition is considered 'a biological act' (Proulx, 2008, p.12), extends some forms of constructivism in asserting that 'our participation is affected by and affects back the world we live in' (p.23). A deeper understanding of the lived realities of teacher professional growth are sought through the experiences, perceptions and interpretations of participants, including my own. The bringing together of multiple perspectives, using material to hand and offered by participants, is a form of 'bricolage' that entails an 'active role for humans both in shaping reality and in creating the research processes and narratives that represent it' (Kincheloe, 2005, p.325). This study also utilises 'phenomenography', focusing on 'the *variation* in ways of experiencing phenomena' (Marton and Booth, 1997, p.111, original emphasis), in this case the complex processes of teacher professional growth, comprising learning and development.

Compatible insights are offered by 'agential realism', in which agency is understood as '*enactment, not something that someone or something has*' (Barad, 2007, p.178, original emphasis). Bringing together quantum physics and discursive social practices, agential realism asserts that 'knowing, thinking, measuring, theorizing, and observing are material practices of intra-acting within and as part of the world' (*ibid*, p.91). Through *intra-action* Barad provides a unifying concept between complexivist and participatory worldviews and, further, posits '*ethico-onto-epistem-ology', as* 'an appreciation of the intertwining of ethics, knowing, and being' (p.185, original emphasis). While, for Barad, agential realism extends beyond human agency, it is comparable with the complexity paradigm posited by Kuhn (2008, p.174) in which

'[h]uman beings are depicted as essentially self-referential and reflexive, and human enterprise as inescapably responsive and participative'. Similarly, within social constructivism, proposing our relational being Gergen (2009, p.53) suggests it is through 'collaborative action that all meaning emerges'. These perspectives share with the participatory paradigm emphasis on 'experiential knowing' and the co-creation of reality through interaction with the 'given' world (Heron and Reason, 1997, p.278). Ontologically and epistemologically, 'both the nature of the world and human sense-making are dynamic and emergent' (Kuhn, 2008, p.174).

The theoretical perspectives shaping this research and my positionality as researcher receive fuller discussion and justification in subsequent chapters. They are introduced at this stage to give meaning to the research aims and questions that follow and to make explicit from the outset my own *complicity*. Stewart (2007), interweaving the words *simplicity* and *complexity*, explains that education is an example of complicity because 'the student is changed by the educational process – but *so is the teacher'* (p.106, original emphasis). Here, this notion of complicity is extended to propose that what is researched is changed by the research process – but *so is the researcher*. Complexity thinking requires acknowledgement of the complicity of the researcher, who has an ethical responsibility to question how they are 'affecting or hoping to affect' what they study (Davis, 2008, pp.63-64). Complicity calls for the critical reflection of researchers or learners who are 'entangled' in what they are researching and learning (*ibid*, p.174). It is through complicity that I become a participant in my own research, recognising that 'we are woven into what we research, just as it is woven into us' (*ibid*, 2006, p.16).

Complicity, as used here, transcends everyday, often negative, connotations to become a recurrent theme in this work, across physical, biological, cognitive, social and educational fields. It offers a heuristic for many abiding dichotomies, between mind and body, nature and nurture, structure and agency, quantity and quality, cause and effect, objectivity and subjectivity, realism and idealism, voluntarism and determinism. These pairings can be conceived as interacting complicities, more than either/or dualities or conflated unities. Complicity has ontological implications as well as epistemological utility, foregrounding my position as researcher and an increasing awareness that teacher professional growth takes place through multi-level interactions, or *intra-actions*. As Cohen and Stewart (1999, p.63) explain, '[t]hings are complicit when their interactions change them, so that soon they have become different things altogether – and *still* they continue to interact, and change, and interact again, and

change again ...'. In a paradigm of complexity, this is 'recursive causality', wherein '[t]he product is the producer of that which produces it' (Morin, 2008, p.61). This study suggests that professional growth emerges at the boundary between teacher experience and context, through the interwoven relationship between purpose (intended), opportunity (enacted) and response (lived) (Lo, 2012; Taylor, 2017). These critical aspects are considered recursive, such that feedback shapes dynamic change and '[c]auses produce effects that are necessary for their own causation' (Morin, 2007, p.14). New insights into the *processes* of teacher learning and development, as professional growth, are pursued through an understanding of complicity.

The rationale and importance of this research

Reflecting on my own complicity, aspirations for professional growth wherein cultures of trust promote active responses to contextual needs, promoting ownership of opportunity and transformative purpose, will be apparent. Recognising that teachers work in politicised and normative public services, where expectations of multiple stakeholders are not necessarily or easily aligned, my work involves supporting heutagogy and praxis through action research and practice-based inquiry. Individuals and groups of teachers are afforded planned opportunities for self-determined learning, combining evidence, action and reflection, while respecting their context and acknowledging competing occupational demands. This approach contrasts with top-down effectiveness and improvement agendas, which tend to view teachers as the last stage of a centrally prescribed delivery chain. The term 'performativity' is short-hand for this latter outlook, which 'requires individual practitioners to organize themselves as a response to targets, indicators and evaluations' (Ball, 2003, p.215). Complexity thinking explores such issues by studying relationships between systems as a whole and their parts – a 'whole-part mutual implication' (Morin, 2006, p.6). For example, in the current education system, student and teacher performance is driven and measured competitively by examination results, with perceived success dependent on above-average outcomes (Taylor, 2015).

Renewed manifestations of performativity arise in calls for evidence-based or evidence-informed practice, which appear perfectly reasonable. However, questions of *what* and *whose* evidence quickly follow, initiating far-reaching debates encompassing educational research, professional practice and teacher education. Evidence-based practice usually carries the guiding

question *what works*, implying that ends justify means when the follow-up questions *for what purpose* and *for whom* are overlooked. These ends are often taken for granted as the targets and indicators of performativity, expressed as published outcomes for learners in high-stakes examinations. Contemporary and influential examples of research seeking evidence-based practice of *what works* are found in the work of John Hattie (2008, 2012) and the Education Endowment Foundation (EEF) Teaching and Learning Toolkit (EEF, 2016), as well the contribution of physician and populist exposer of 'bad science' Ben Goldacre (2013). Hattie's (2008) synthesis of over 800 meta-studies quantifies wide-ranging influences on pupil achievement in average effect sizes across the available evidence. Most teacher effects are between 0 to 0.4, leading Hattie to conclude that we should be implementing approaches that, on average, exceed 0.4 and bring about more 'visible learning'. We should not be content with 'what works', which is 'almost everything', so instead we should be concerned with 'what works *best*' (Hattie, 2008, p.18, my emphasis).

Another synthesis of influences on attainment, provided by the Teaching and Learning Toolkit (EEF, 2016), recommends expenditure of Pupil Premium funding targeted at children considered 'disadvantaged'. Impact is estimated as 'additional months progress', based on effect sizes, acknowledging that gains may or may not be realised when applying the toolkit. It becomes clear that *what works* is principally concerned with average effects on pupil achievement, privileging measures of attainment from testing. Goldacre (2013) makes the case for randomised controlled trials (RCTs) in education, asserting their rigour for establishing 'what works best', for teachers to adopt similar practices. This demands experimental designs incorporating sufficiently large samples, randomly chosen and assigned to groups, and the use of statistics focusing on the average effect across the whole sample. Goldacre (2013, p.7) stresses these proposals are not 'about telling teachers what to do', but 'empowering teachers'. However, *how* the quantified outputs of meta-studies and RCTs are to be used by teachers remains an open question for evidence-informed practice. Input-output educational research may show broad, averaged indications of *what works* or *what works best* across partially controlled groups, focusing on measured attainment. However, as Hattie (2008, p.viii) acknowledges, such approaches concern effects, not 'details and nuances', and similarly Goldacre (2013, p.13) concedes that they might tell us *what* works but not necessarily *why*.

Complexity thinking calls into question any 'assumption that what works well in one context should work well in most contexts' (Davis and Sumara, 2006, p.100). This was realised long ago by Stenhouse (1981, p.107), pointing out that teaching approaches cannot be assumed or predicted for all circumstances because the 'teacher's task is to differentiate'. The detail of different approaches for individual pupils and interactions in specific contexts, as opposed to average effects across samples, may be more useful evidence for teachers. Education understood as complex leads to acceptance of less prescriptive and controlling roles for research, towards 'description and critical explanation' (Radford, 2008, p.145). Rather than seeking a 'finished reality', this approach emphasises 'temporal', ongoing 'ways of interacting' with reality (Osberg *et al*, 2008, p.206). Emphasis on dynamic processes and systemic change through interactions between individuals, collectives and their contexts, rather than measured outcomes or essential features, is found in several theoretical perspectives coherent with complexity thinking, including organisational learning, participatory inquiry, agential realism, enactivism and relational being.

This research is important because its point of departure is an understanding that findings from published research cannot be put into practice simplistically and unproblematically. Teachers *re-contextualise* such evidence through heutagogy (interpretation, integration and application) and praxis (action for the good of all involved). A complexivist view proposes that 'knowledge must be contextual' (Haggis, 2008) and teachers are not detached observers but insider participants who come to know their learners and contexts well. Of central interest is practice-based inquiry as a vehicle for heutagogy and praxis, alongside experiences of professional growth where learning is less formalised, expansive or tacit. This work seeks ways to understand and nourish professional growth, through reading and listening to teacher accounts, conversing with and working alongside them, together describing, interpreting and acting upon experiences such that further insights can be gained and progressed.

Research aims and questions

Three research aims emerge from the preceding discussion, each with three associated questions, which are pursued in this thesis. The first aim is concerned with teacher perceptions and articulations of their own experiences of professional growth, how these are similar and

different across cases, their critical aspects and features and how they change over time. The second aim focuses more closely on the vehicle of practice-based inquiry, the perceived benefits and limitations of this approach, the situational enablers and inhibitors and ways of working independently and collaboratively through inquiry. The third, aim explores the heutagogy of lived learning, how learning is experienced and interpreted, how it is integrated and applied within existing practices and how it is shaped and shared through intra-actions. The term *intra-action* is used to indicate, beyond social interaction and communication, the agentic, complicit role teachers play as participators in the educational practices they pursue.

Research Aim One – To explore teachers' perceptions and conceptualisations of their own professional growth:

- What patterns and differences can be identified in teacher conceptualisations?
- What are the critical aspects and dimensions of variation in teacher accounts of learning and development?
- How do teachers' perceptions and projections of their learning change and develop over time?

Research Aim Two – To scope the possibilities for individual and collaborative practice-based inquiry in teacher learning and development:

- What are teachers' perceived impacts, benefits and limitations of practice-based inquiry?
- What situational processes enable and inhibit teacher experiences of practice-based inquiry?
- How do teachers learn and develop independently and collaboratively through practice-based inquiry?

Research Aim Three – To explore lived experiences of teacher professional growth, through interpretation, integration and application to practice:

- How is professional learning and development experienced and interpreted by teachers?
- How is teacher learning and development integrated and applied within practice?
- How is teacher learning and development shaped through ongoing intra-actions?

These three aims and associated questions are pursued throughout this thesis, first within a literature review offering a more thorough explication of the ideas introduced above. Drawing on a range of relevant theory, policy and research, the main literature review themes are summarised here. First, meanings of teacher professional growth are addressed, conceived as the combination of teacher development and teacher learning. While these terms are often used interchangeably, recent distinctions in the literature are explored and a definition arrived at based on existing ideas and models. The catch-all term *continuing professional development* (CPD) is located within this debate, and professionalism and professional identity are explored, recognising that what it means to 'be professional' is far from settled. Complexity thinking is also introduced, threading it through the literature on teacher learning and development, establishing terminology that informs the entire thesis. Addressing the organisational contexts and external conditions for teacher professional growth, issues of leadership, power and policy are considered, focusing on tensions between autonomy and accountability, emancipation and efficiency, performativity and creativity. These are located within discussions of educational effectiveness and improvement, which began as distinct research and development traditions but have become increasingly overlapped and conflated.

Published research is reviewed to establish the characteristics of teacher professional growth typically deemed effective and valuable, as well as the extent to which these are experienced. This material ranges from quantified studies seeking effects of professional learning and development, teacher responses to local, national and international surveys to more context-based and situated accounts of teacher learning and development. Teacher descriptions and perspectives are less prominent within the research literature, with much of the published material emanating from university teacher education and school effectiveness and improvement traditions. The underlying assumptions and causal models informing this research are addressed and problematised. Controversies over evidence-based practice are also discussed, tracing ongoing demands to establish *what works* in education such that practices deemed effective can be disseminated. This approach sits somewhat uneasily alongside practitioner research traditions, which acknowledge the importance of context and challenge formulaic solutions. Here, complexity thinking is again invoked in asserting the context-sensitivity of research, knowledge and practice, as well as recursive causal interaction.

The literature review then turns to heutagogy, its relevance to teacher professional growth and links to other contemporary learning theories, including Illeris' comprehensive theory of learning, Engeström's expansive learning and Marton and Lo's variation theory. The place of practice-based inquiry as a vehicle for self-determined learning, its relationship to evidence-based/informed practice and debates over what counts as research are considered. Complexity thinking as a trans-disciplinary perspective draws upon not only the cognitive and social aspects of learning, but also biological, evolutionary and physical considerations. It is explored throughout for both its insights into processes of learning and as an underpinning ontological, epistemological and axiological paradigm for this study. Similarly, variation theory is utilised in developing both a process model for conceptualising teacher learning and development and as the theoretical basis for phenomenography.

Chapter Two – Literature Review

Understanding teacher professional growth through complexity thinking

Assertions of teacher professional learning and development as complex processes are frequently found in the extensive literature (e.g. Day and Sachs, 2004; Timperley, 2008; Avalos, 2011). However, it is less common for complexity theory, particularly the variant known as complexity *thinking*, to be used as an explanatory or developmental framework. An important theme of this chapter is that while the features of effective teacher professional development are well-documented and commonly understood, they are neither prevalent in educational practice nor guaranteed to bring about desirable change. Allied to this are contested conceptions of teacher development, as *done to* teachers to improve their effectiveness, or *done by* teachers to grow professionally. Further emerging realisations are that causal assumptions underlying attempts to measure the effectiveness of teacher learning and development are seriously undermined by complexity thinking and that measuring apparatuses are constitutive of the phenomena they seek to gauge.

The etymology of complexity can be traced to the 17th century French *complexe*, meaning 'composed of parts', 'complicated' and 'intricate' (Harper, 2017). Further back, the word *complex* stems from the Latin *complexus*, meaning 'surrounding, encompassing'; *complecti*, meaning 'to encircle, embrace'; and *complectere*, meaning 'to weave, braid, entwine'. Harper (2017) notes a further meaning of complex as 'not easily analyzed', first recorded in the early 18th century. These origins point to principles of complexity thinking introduced here and threaded through this work, which have provenance and relevance in various theoretical traditions. As Morin (2008, pp.42-43) suggests, elements of complexity thinking can be found in the words, 2,500 years ago, of the Greek philosopher Heraclitus and in ancient Eastern philosophies. Nevertheless, the coalescing of ideas from many fields within complexity thinking, as a relatively new orientation, can productive in conceptualising teacher professional growth.

The trans-disciplinary development of complexity theory is charted by, among others, Cilliers (1998) and Richardson and Cilliers (2001), with its relevance to education set out by Davis and Sumara (2006) and Mason (Ed.) (2009). The starting point for exploring teacher professional growth lies in acknowledging 'the ubiquity of complexity' in organisations as 'complex systems'

(Richardson and Cilliers, 2001, pp.7–8). Drawing on the related field of organisational learning, complexity thinking involves '*Seeing Interrelationships, Not Things, and Processes, Not Snapshots*' (Senge, 2006, p.781, original emphasis and capitalisation). Complex systems contrast with 'simple', mechanical systems in which stimulus or change in one component leads to a predictable effect on another, and 'complicated' systems with a larger number of elements that interact in probabilistic or determinable ways (Cilliers, 1998; Davis and Sumara, 2005a). Complex, often living, systems are those that *learn* through the interaction of their components, individually and collectively, responding to situational conditions and exhibiting 'self-organization ... also known as *emergence'* (Davis and Sumara, 2006, p.81, original emphasis). A tendency towards treating the complexity of education, teaching and learning as merely complicated or even simple, has perhaps stifled attempts to understand it.

Complexity characterises processes at work in the brain, language and social collectives, interactions between parts or members in the system forming networked, *connectionist* structures where information and knowledge is *distributed* (Cilliers, 1998, Gershenson and Heylighen, 2005). Such networks tend to be 'scale-free' and 'decentralised', whereby nodes form clusters with relatively small degrees of separation between them (Davis and Sumara, 2006, pp.50-52). This combines efficient movement or information flow with robustness to node failure, the Internet providing a key example wherein each computer is linked to every other by no more than twelve steps (*ibid*). Systems that learn over time embody a history, past experience influencing future behaviour, where interaction with the environment characterises them as *open* (Cilliers, 1998, p.4). However, complex living beings are also organisationally *closed*, maintaining a boundary with their environment while structurally coupled and congruent with it (Thompson, 2010, p.45).

Complexity features *context-sensitivity* or responsiveness to initial conditions, leading to dynamic and unpredictable organisations and environments (Morrison, 2008, p.19). Unpredictability does not imply complex systems are chaotic or emergence is random (Cilliers, 2005, p.12) – they have a 'rich structure' (e.g. the brain, language) (p.11) – but non-linear interactions mean 'small causes can have large effects' and vice-versa (p.10). Multiple interactions generate potentially 'untrackable' causal paths, with unpredictability a structural feature of complex systems that cannot be discarded as 'random 'noise' or chaos' (Haggis, 2008, p.159). Thus, a complex ontology comprises unique and manifold interactions between

systems, including agents and collectives, over time, within the larger systems of which they form a part (Haggis, 2008, pp.159-161).

Emergence and self-organisation are important distinguishing features of complex, as compared to simple or complicated, systems. Emergence is a 'bottom-up' process, whereby discernible properties or capabilities of systems are not reducible to their components and require no 'overarching governing structures' (Davis and Sumara, 2006, p.5). This does not imply the absence of environmental influences, rather complex systems are adaptive in responding to these, with downward causation exerted from the higher-level organisation of the system to the lower-level parts (Capra and Luisi, 2016, p.158). All living beings exemplify complex emergence, through the autopoietic manufacture of their own components and the evolutionary process (Murphy, in Murphy *et al*, 2009, p.7). Similarly, self-organisation refers to the tendency of collectives to develop capabilities that 'exceed the possibilities of the same group of agents if they were made to work independently', for example ant colonies, flocking birds or human social groups (Davis and Sumara, 2006, p.81). Gershenson and Heylighen (2005, p.55) define organisation as 'structure with function', the latter implying goals or purposes that in most basic terms are associated with survival or flourishing. Self-organisation in complex systems features flexibility, adaptiveness and openness, without centralised control, arising from interactions between agents or components (Gershenson and Heylighen, 2005, pp.55-6).

The human process of complexity *thinking* is 'practice-oriented' with a 'pragmatic emphasis' (Davis and Sumara, 2006, p.25), resonating with the professional judgement and practical wisdom required for teaching. A growing body of literature conceptualises education, teaching and leadership in terms of complexity, sometimes referring to 'wickedity' (Bore and Wright, 2009). A 'wicked' issue or problem is one that is 'not easily defined, has many causal levels and cannot be solved by generic principles or linear heuristics' (*ibid*, p.242). In contrast, 'tame' problems usually have right or wrong answers and can be solved relatively easily, Bore and Wright (2009, p.242) suggesting that '[i]n education and schooling, wicked problems are considered erroneously to be tame and as a result illegitimate 'solutions' are attempted with the result that many simply do not work'. They find evidence in ever-changing educational policy initiatives relating to curriculum, pedagogy, achievement and accountability, all aimed at resolving seemingly intractable, therefore wicked, issues (*ibid*, p.243).

Applying complexity thinking to teacher professional growth, a simplistic approach might assume development opportunities necessarily precipitate changes in individual or group practices, following stated training goals. A more complicated approach would acknowledge multiple factors for developing teacher practice, supposing that appropriate conditions and interventions are likely to bring about desired changes. A complex approach accepts that development is influenced in unpredictable ways, through participant volition and motivation, their interactions with each other and with their environments. Such agentive responses also shape and are shaped by past experiences, current circumstances and future directions. Such contingencies can be considered, in complexity terms, as *attractors* or 'the organising forces that guide behaviour' (Kuhn, 2009, p.80). The model of professional growth developed and utilised in this thesis, based on previous work (Taylor, 2017), responds to Opfer and Pedder's (2011a) call for more research in this field to adopt a complexity framing. The epistemological implication is a focus on cases of the functioning of relationships between agents in context, 'as if from *within'* (Haggis, 2008, pp.159-161, original emphasis).

Distinguishing complexity *thinking* from other strands of complexity theory, it makes no claims as a metanarrative or theory of everything, but 'is an attitude toward the interpretation of particular sorts of phenomena', 'foregrounds its own implicatedness in those interpretations' and 'shapes attitudes and actions towards those phenomena' (Davis and Sumara, 2006, p.35). Thereby, complexity thinking has both epistemological and ontological implications for the phenomena we study and of which we form a part. A recurring theme of complexity thinking for this work is *complicity*, with derivations in 17th century French *complicit*, meaning 'accomplice', suggesting criminal connotations in common usage. However, complicity also stems from the Latin *complicem*, meaning 'partner' or 'confederate' and *complicare* meaning 'to fold together' (Harper, 2017). Jack Cohen and Ian Stewart, from work in biology and mathematics respectively, derive the terms *simplexity* and *complicity* through interplay of *simplicity* and *complexity* (Cohen and Stewart, 2000). Simplexity describes a 'process whereby a system of rules can engender simple features' (*ibid*, p.411), whereas complicity occurs when 'systems interact in a way that changes both and erases their dependence on initial conditions' (*ibid*, p.417). Suggestive of Latin origins, Stewart (2007, p.106) explains that education exemplifies complicity because 'the student is changed by the educational process – but *so is the teacher'* (p.106, original emphasis). Complicity between teaching and learning is expressed by Freire (1998, p.31) stating, '[w]hoever teaches learns in the act of teaching, and whoever

learns teaches in the act of learning'. In a further expression of complicity, '[a]s teachers learn, new knowledge emerges from the interaction of the teacher learning systems, and this new knowledge then recursively influences future learning and also what is to be known about teaching' (Opfer and Pedder, 2011a, p.388).

A contention here is that much teacher learning and development research and policy seeks *simplexity*, invoking input-output path models that assume training leads to changes in teaching and thereby student learning or outcomes. The measurement assumption is that output (effect), can simply be attributed to input (cause). However, this overlooks reciprocal relationships and confederations, folded together between teachers and learners, their colleagues and leaders, their organisational contexts and external conditions. Thus, complexity thinking may be more apt for attempting to understand teacher professional growth. This entails a shift away from 'input-output 'black-box' causal models' towards the exploration of 'specific, local linkages that actually interconnect actors, practices, and events across multiple levels of organization' (Lemke and Sabelli, 2008, p.122). The attraction of simplexity is obvious, particularly for policy-makers; if we can find *what works* and do more of it, surely we achieve better results or outcomes. However, this way of thinking becomes inadequate if we accept that learning and action result from agentive *responses* to experiences and opportunities, including those emanating from policy, such that initial purposes and intentions are re-shaped and dependency erased. This perspective is one of *complicity*.

Teacher professional growth – a combination of learning and development

Drawing on a range of published material and through listening to and interpreting teachers' accounts, professional *growth* can be conceptualised as a combination of *learning* and *development* (Taylor, 2017). A distinction between these two overlapping terms is evident in connotations of 'systematic career progression' in teacher development, and 'critically reflective and less performative' aspirations for teacher learning (O'Brien and Jones, 2014, p.684). A similar contrast is made by Timperley (2011), associating teacher professional *development* with 'delivery' (p.4) through 'someone else's *desire to tell'* (p.14, original emphasis), subsequently advocating professional *learning* as 'meaning-making' (p.4) motivated by one's 'own *need to know'* (p.14, original emphasis). From these distinctions, the term

professional growth is used to encompass *both* teacher learning and development. As an ongoing process, perhaps punctuated with breaks, professional growth is viewed as synonymous with *continuing professional learning and development (CPLD)*, adding *learning* to the more prevalent term CPD (O'Brien and Jones, 2014, pp.683-4).

Associations of *development* with *delivery* are relatively contemporary, for as Eraut (1977, p.10) pointed out forty years ago, 'it is the teacher who develops (active) and not the teacher who is developed (passive)'. This prompts consideration of what precipitated this shift of meaning and how widespread it has become. In Eraut's earlier definition, teacher development is 'the natural process of professional growth in which a teacher gradually acquires confidence, gains new perspectives, increases in knowledge, discovers new methods and takes on new roles' (*ibid*). This encompasses teacher *learning* and implies other earlier conceptions of teacher development emphasising 'refinement of judgement' (Stenhouse, 1975, p.24) and 'reflection upon experience' (Holt and Juraschek, 1998, p.24). Similarly, a more recent formulation of teacher development invokes 'change that would generally be categorised as learning' (Evans, 2002, p.132) and a decade of research concludes that 'professional development is about teachers learning, learning how to learn, and transforming their knowledge into practice for the benefit of their students' growth' (Avalos, 2011, p.10).

For Timperley (2011, p.14), development as delivery emanates from 'policy makers, researchers or professional development providers', promoting evidence indicative of more effective practices and therewith teacher compliance. However, her earlier study (Timperley *et al*, 2007) (discussed below) is perhaps an example of this approach. Similarly, Senge (2012, p.397) characterises 'drive-by staff development' as a succession of new ideas and methods presented by outside trainers, with little or no knowledge of school context, of teachers' existing practices or the challenges faced. Mockler (2013) refers to 'one shot', 'spray on' (p.36) approaches, noting *development* and *learning* as increasingly interchangeable, and the appropriation of *learning* by training providers seeking to avoid passive connotations of *development* while offering-up much the same experience (p.35). For Senge (2012, p.397), the alternative to 'drive-by' development is a 'reflective, generative' process that 'incorporates what educators already know and helps them improve what they can do based on the challenges they face now'. This focusses on real contextual issues, 'action learning' to put new ideas into practice and evaluate their effectiveness, as well as 'leadership and community engagement' that recognises wider

organisational conditions and the importance of relationships and involvement among all parties, including parents (*ibid*, pp.397-8).

A point of departure in this thesis is recognition of both a distinction and a conjunction between learning and development as interrelated contributors to teacher professional growth. This draws on Morin's (2006, pp.6-7) articulation of complexity thinking, wherein the relationships between the two elements or aspects are recognised, maintaining their distinction, while the recursive conjunction between them and the whole is also contemplated. At this stage, the distinction is made between *learning* as more reflective, generative and interpretive, and *development* as more externally influenced and mediated. However, the conjunction of learning and development resides in their common orientation towards processes of growth and change. Models for exploring the critical aspects, dimensions and features of professional growth, comprising learning and development, introduced in this chapter. First, meanings of the term *professional* and its variants are considered, prompting a discussion of performativity in establishing the external conditions for the teaching profession, followed by common characteristics and prevalent models of CPLD.

The 'P' in CPLD – professional, professionalism, professionality and professionalisation

The highly contested and debated term *professional* requires clarification when conceptualising professional growth or CPLD. The term is used by Hargreaves (2000, p.152) to encompass both 'professionalism' – 'quality and standards of practice', and 'professionalization' – 'status and standing'. More recently, Hargreaves and Fullan (2012, p.80, original emphasis) similarly distinguish between 'being professional' through actions, behaviour, character, conduct and performance, and 'being *a* professional' within the external views of others and associated self-regard. Behaviours ascribed to *being professional* include, 'not getting too personally involved with children, refraining from gossiping about parents, and learning to challenge colleagues' actions without criticizing them as people' (Hargreaves and Fullan, 2012, p.80). On the other hand, *being a professional* depends on teaching embodying the hallmarks of occupations considered as professions.

The recognised features of a profession include an identifiable body of knowledge and associated skills in its practical application, which may be indeterminate and 'relatively inaccessible to the uninitiated' (MacBeath, 2012, p.15). Typically, professions have a high degree of autonomy and self-determination over entry requirements, representative bodies and regulation of practices (*ibid*). Evetts (2013, p.780) emphasises the placing of trust in professionals by those they serve, their clients, often involving an exchange of confidential knowledge which both preserves trust and confers status. Thorpe (2014, p.2) confirms that, for a profession, 'those who are in it define the key terms', before suggesting that teaching lacks such self-determination. Similarly, Winch (2011) questions the professional characteristics of teaching, particularly the existence of an agreed body of theoretical knowledge to inform practice, partly arising from the contestability of much educational research. According to Winch (2011, p.16), the skilful application of such a knowledge base, in the role of technician, is associated with professionals such as doctors and lawyers but often resisted by teachers. Resistance may result from perceived loss of teacher autonomy in England over the last thirty years, following the establishment of a statutory National Curriculum and school inspection regime, as well as non-statutory government interventions such as the National Strategies (*ibid*, p.13). In this context, the teacher may become a 'low-level technician' who follows prescriptions with limited opportunity to exercise professional judgement (*ibid*, p.23).

An alternative to the technician is the 'craft worker', who does not rely on established theory but applies 'situational judgement' in response to 'local needs and conditions' (Winch, 2011, pp.16-17). This view of teaching, with training through apprenticeship, has recently been advocated by the former Secretary of State for Education in England, Michael Gove (Orchard and Winch, 2015, p.12). However, Winch finds difficulty applying this role to teaching, as the 'aims and general principles' of craft work are handed down and may be built on 'prejudice' rather than knowledge (p.17). Winch (2011, p.24) concludes that to enhance teaching as a profession the establishment of a more 'rigorous knowledge base' is preferable to the 'craft knowledge and/or technical recipes' pursued by successive governments, involving teachers in the generation, understanding and evaluation of theory to inform practice. Orchard and Winch (2015, p.14), rejecting teaching as purely technical or craft-oriented, set out their view of the 'professional teacher', who:

> is able to judge right action in various school and classroom contexts from a more
> reliable basis for judgment than intuition or common sense. A teacher who is able

to make good situational judgments does not rely on hearsay or unreflective prejudice. She draws on a well-thought-through and coherent conceptual framework, on knowledge of well-substantiated empirical research, and on considered ethical principles, to arrive at decisions in the classroom context.

Similarly, the 'teacher as professional', in terms of 'effectiveness' and 'identity', combines 'subject and pedagogical knowledge', 'practical experience' and 'research literacy' (BERA, 2014, p.10), the latter entailing critical understanding of published educational research (p.40).

Informed teacher decision-making is formulated in 'professional capital', with capital defined as the 'assets that can be leveraged to accomplish desired goals' (Hargreaves and Fullan, 2012, p.1). This in an alternative to 'business capital', which views teachers as educational assets to be deployed for a quick return, rather than developed or invested in (*ibid*, p.2) and teaching as 'technically simple' requiring only minimal training (p.36). In contrast, professional capital 'requires technical knowledge, high levels of education, strong practice within schools, and continuous improvement over time that is undertaken collaboratively, and that calls for the development of wise judgment' (Hargreaves and Fullan, 2012, p.37). Professional capital is a function of three other forms: human capital, involving subject and pedagogical knowledge (p.89); social capital, concerning relationships and interactions, support and trust (pp.89-90); and decisional capital, in the ability to make sound judgements based on practice and experience, including in uncertain situations (pp.93-94). For Hargreaves and Fullan (2012, p.86, original emphasis) it is through building teachers' professional capital that both teacher quality and status can be addressed – '[t]eachers need to be *professional* and to be *professionals*'.

Professionalism, as proposed by Evans (2008, pp.25-6), encompasses both practice and status, viewed as a 'collective notion ... shared by many', with 'professionality' as one's individual, singular stance towards/within this 'plurality'. For Evans (2008, pp.26-7) professionalism is 'the amalgam of multiple 'professionalities' – professionality writ large', within an iterative rather than linear relationship. Citing Archer, Evans compares this idea to the critical realist explanation of interaction between structure and agency. Mediation through interaction involves *reflexivity*, such that 'by reflexively defining their doings, subjects are ultimately responsible for shaping and reshaping the social order – while simultaneously being shaped by it, as persons, agents and actors' (Archer, 2013, p.8). Evans (2008, p.27) explains that 'the amalgamation of individuals' professionalities influences and shapes the collective

professionalism, which, in turn, stimulates or provokes responses in individuals that determine their professionality orientations'. Similarly, theorists of human development propose a mutually dependent 'dialectic between autonomy and self-regulation', where the latter concerns the developmental internalisation of social values and norms (Sawyer, 2013, p.92-3). Development is thereby *emergent* in the social structures arising from autonomous interactions, with these structures exerting causal influence over individuals (*ibid*). These dialectics between agency and structure, autonomy and self-regulation can also be interpreted as expressions of *complicity*.

The complex, mutually implicated relationship between professionalism and professionality (Evans, 2008) parallel Bourdieu's (1998) subtle and relational concepts of 'field' and 'habitus'. Professionalism, as an amalgam of professionalities, seems consistent with the notion that 'fields comprise both the structural relations sedimented from the past (actors long dead both individual and collective) and those current' (Byrne and Callaghan, 2014, p.113). Similarly, professionality implies the embodied 'reproductive dimension of human action' associated with habitus (*ibid*). However, Byrne and Callaghan (2014) further explain habitus in terms of 'pre-conscious orientations to action' (p.113), such that individuals are 'carriers of habitus but this is not synonymous with agency' (p.114). Arguing against utilitarianism and 'conscious calculation', Bourdieu (1998, pp.78-80) proposes:

> a relationship of ontological complicity between the habitus and the field. Between agents and the social world there is a relationship of infraconsclous, infralinguistic complicity: in their practice agents constantly engage in theses which are not posed as such.

Complicity as evoked here by Bourdieu appears to deny individuals conscious agency through the socialised routines of habitus. Instead, Archer (2013, p.5) argues for the 'extensiveness of reflexivity' in contemporary life, which accompanies a 'decline in routine action'.

Following Bourdieu (1998, pp.80-1), professionalism as enactment might be conceptualised as a 'feel for the game', where one is 'absorbed in their affairs' or 'doings', through their practices. Thus absorbed, they are 'not like *subjects* faced with an object', they perceive and act through embodied social structures, without a necessary 'strategic intention' or objective (*ibid*, original emphasis). However, in the account of Archer (2010, p.5) reflexivity involves 'subjective internal deliberations', which 'are responsible for mediating the conditional influence of objective

structural and cultural factors upon social action'. Gergen (2009, p.56, my emphasis) notes a 'family resemblance' between his idea of reciprocal influences, or 'confluence', and habitus, while questioning Bourdieu's implications of 'individual dispositions acquired from *determining structures* of family, education, physical location, and the like'. Following Gergen (2009, p.58), professionalism as enactment might be a case of 'drawing from our relational histories in such a way that new and more promising confluences result'. Introducing the term *confluence*, Gergen (2009, p.56) is attempting to move beyond 'traces of both a mind-world dualism and cause-effect explanation' found in *habitus*.

As teaching and teacher education are externally regulated and accountable practices, inevitably evidence of efficacy is sought in the assumed effects on student outcomes, particularly as measured in standardised and/or public assessments. The UK government Department for Education (DfE) publishes professional quality standards DfE, 2011, 2015, 2016b) and, through the Office for Standards in Education (Ofsted), evaluation criteria (Ofsted, 2017), which are used to inform training, development, performance management and inspection. Characterisations of these standards as instruments of government control are increasingly commonplace (Ball *et al*, 2012; Beck, 2008, 2009; Evans, 2011). Currently in England the Teachers' Standards (DfE, 2011), 'developed by an independent review group made up of leading teachers, headteachers and other experts' (DfE, 2014, p.1), are overseen by the government rather than teacher-led professional bodies, though this may change with the recent establishment of a 'Chartered College of Teaching' (Astle, 2017, p.124). Nevertheless, even within a political climate of prescribed curricula, recommended best practices, published performance measures and external scrutiny, teaching requires the exercise of agency and discretion in the application of policy to practice. Published professional standards and quality frameworks are '*enacted',* or 'observed, perceived and interpreted', which is the 'only *meaningful* conception of professionalism' (Evans, 2011, p.862, original emphasis).

In summary, the term *professional* is used here, regarding teacher learning and development, to denote both the occupational practice and performance of teaching as well the status and standing of teachers in the wider community. Teaching appears to lack some recognised hallmarks of professions, such as the technical application of a generalised knowledge-base, which may be resisted when addressing localised needs or asserting autonomy. However, while government advocates autonomy, imposition of occupational standards and associated

regulatory bodies simultaneously restricts it. This is compounded by limited coordination among teacher bodies to take on roles of professional gatekeeping and upholding and developing practice. These complex circumstances offer a plausible explanation for the relatively recent association of teacher professional *development* with *delivery* (Timperley, 2011, p.4), exacerbated by a shift from professionalism to performativity. Whether teachers consciously and actively influence their professional domain remains a fundamental question in debates over structure as a socialising force and agency as a reflexive response. Such issues of complicity, pertaining to teacher professional growth, are returned to throughout this study.

From professionalism to performativity – autonomy, accountability and inequality

The professional circumstances of teachers have been described as 'unstable', emphasising audit cultures as potential de-motivators (Stronach *et al*, 2002, p.131). These exemplify a business capital approach, whereby 'data give you all the answers' and 'numbers and spreadsheets will set you free' (Hargreaves and Fullan, 2013, p.36). Contrasts between business capital and professional capital are mirrored in 'managerial' and 'democratic' professionalism (Day and Sachs, 2004, pp.6-8), and 'organizational' and 'occupational' professionalism (Evetts, 2006, p.140-1; 2013, p.787-8). The former is externally regulated by hierarchies, standards and accountability, and permeates through institutions in a 'discourse of control', displacing the latter traditional 'discourse constructed within' teacher groups, based on collegiality, trust and discretion (*ibid*). Concern for '*teaching* quality', fostering innovation and collaborative practice development, is re-focused on '*teacher* quality', measured using student test scores to 'standardise practice and attribute blame to teachers where their students fail to 'measure up'' (Mockler, 2013, p.37, my emphasis). Shifts towards teacher development as delivery are encapsulated in 'performativity', which 'links effort, values, purposes and self-understanding to measures and comparisons of output', typically using standardised tests (Ball, 2012, p.19). In a system driven by targets and performance, teachers are the last stage of a centrally prescribed 'delivery chain' (Barber, cited by Ball *et al*, 2012, pp.514-5). The neologism 'deliverology', coined as a 'light-hearted term of abuse' by the British Civil Service for Prime Minister Blair's Delivery Unit, later became the watchword for target-setting, trajectory-mapping and performance management in policy implementation (Barber *et al*, 2011).

The pervasiveness of performativity is delineated in the 'global education reform movement' or GERM, widely infecting educational systems, symptoms including standardisation, prioritisation of basic skills, high-stakes testing and associated accountability (Sahlberg, 2011). Contemplating impacts of these reforms on educational practice, Sahlberg (2011, p.180) cites teaching to the test, narrowing of curricula, stifling of creativity and risk-taking, distancing from moral purpose, and professional demoralisation. A further impact is '*increased control*' from bureaucracy, holding schools to account for the autonomy required for parental choice within a marketised system (*ibid*, original emphasis), a paradoxical situation also noted by Day and Sachs (2004, p.5). Autonomy and accountability are described by Sugrue (2009, p.373) as the 'twin policy towers that cast the longest shadows on the educational landscape', leading to a 'competing and conflicting policy agenda'. The bottom-up rhetoric of autonomy coexists in uneasy tension with the top-down tendencies of accountability. Accountability eclipses autonomy when we spend longer 'reporting on what we do rather than doing it' (Ball, 2012, p.19).

The supposed advantages of accountability include informing parents of their children's educational achievement in comparison to their peers and ensuring public funding is well spent in schools to secure ever-improving results (Mansell, 2007, pp.14-15). However, the education policy imperative of examination results, by which teachers 'live or die', has led to 'hyper-accountability', with many unintended consequences associated with an 'education by numbers' where ends justify means (*ibid*). Mansell highlights many issues raised by the GERM, questioning the reliability of examination results and inspection judgements, whether rising results represent better educational standards, the narrowing of education to spoon-feeding for test readiness, and temptations to seek shortcuts, even cheating, to improve results (*ibid*, pp.219-225). For O'Neill (2013, p.14) such 'perverse incentives' are fuelled by an 'expensive irrelevance' of 'bogus units of measurement' across disparate and non-comparable educational programmes. Perhaps the most damning indictment of hyper-accountability is that it may be 'anti-educational', turning 'the pupil into a passenger in the learning experience' and placing effort and responsibility with the teacher (Mansell, 2007, p.226).

Performativity and audit cultures are frequently traced to neoliberalism, which takes an 'accountable and utilitarian approach to education' (Kascak *et al*, 2011, p.71). Neoliberalism promotes belief in the market as a 'natural, normal and desirable' for directing society, supplanting notions of an economy under human control (Davies and Bansel (2007, p.253). This

belief is manifested in increased competition, performance measures and accountability structures, with education a product to be bought and sold, prioritising 'economic productivity' over 'the social good' (*ibid*, p.254). Performativity as an 'enactment' of neoliberalism, 'formed within the logic of competition', shapes teacher identity (Ball and Olmedo, 2013, p.88). School effectiveness and improvement studies signal neoliberalism when tending to avoid 'debate about educational values and purpose', emphasising 'basic skills' in primary schooling and 'vocational preparation' in secondary (Wrigley, 2008, p.145). Similarly, neoliberal educational reforms outlined by Apple (2013, p.50) comprise prescribed curricula and pedagogies, testing and accountability, within a context of privatisation and competition. This 'odd combination' of marketisation and centralisation has impacted globally on 'institutions throughout society and even on our commonsense' (*ibid*, p.49). However, Apple rejects 'TINA', that 'there is no alternative', proposing the democratic pursuit of wider educational goals, relevant to the lives of students beyond the measures of standardised testing (*ibid*, p.50).

Exploring the encapsulated beliefs of neoliberalism and marketisation, as external conditions for teacher professional growth, Apple (2013, p.6) asserts their 'religious status' in assuming 'choice, competition, markets' lead to 'efficient and effective schools'. However, this rarely promotes greater equality and, despite commonplace commitments to social justice and inclusion, prevailing educational policy and institutionalised practices often entrench the opposite (*ibid*). For example, the ranking of measurable performance at student, teacher, school, university and regional levels reinforces elitism and inequality (Dorling, 2010, 2015). In the wider global economy, despite reductions in severe poverty, the gaps in wealth between richest and poorest are widening to the point where the richest 1% now own more wealth than the rest of the world (Oxfam *et al*, 2016). Oxfam have calculated that '[i]n 2015, just 62 individuals had the same wealth as 3.6 billion people – the bottom half of humanity'; the wealth of these 62 increased by 44% in the previous five years, while the bottom half declined by 41% (*ibid*, p.2). From a complexity perspective, the 'absurdity' of pursuing 'unlimited economic growth' on a 'finite planet' is obvious (Capra and Luisi, 2016, p.366). In rich countries like the UK, where wealth gaps have widened, the educational attainment gap for those on lower incomes, the 'disadvantaged', has proved stubbornly persistent (Taylor, 2015; DfE, 2017c). These stark realities provide the backdrop for teacher professional growth, schools and teachers exhorted by policy to narrow educational gaps in the interests of social mobility while economic gaps widen as an accepted by-product of markets and unlimited growth.

Dorling (2010) posits inequality as both an 'antecedent' and 'outcome' of social injustice, underpinned by five related beliefs – 'elitism is efficient, exclusion is necessary, prejudice is natural, greed is good and despair is inevitable' (p.2). While these beliefs are seldom openly supported, the few who accept them are rarely confronted or challenged (Dorling, 2015, p.3). A belief in elitism is perpetuated by 'bell-curve thinking', whereby national and international tests are designed so that results fit a normal distribution, most individuals clustered around average scores or grades with the highest and lowest attainers tapering off to either side (Dorling, 2015, p.46; Taylor, 2015, p.247). The normal distribution is found in many naturally-occurring phenomena such as heights and weights of populations, with 'normality' indicating closeness to the mean, leading to fallacious yet widespread notions in education of the 'normal' child (Davis *et al*, 2000, p.107). Dorling (2015, p.51) traces bell-curve thinking to 'IQism', the intelligence quotient used as a measure of 'ability' in post-World War Two Britain to select age 11-plus pupils for type of secondary school. The modern-day equivalents, cognitive ability tests, are still deployed where selective schooling remains and more widely for grouping students by ability. In the early 1980s, Stephen Jay Gould (1996) first drew attention to the 'mismeasure' of intelligence, using mathematical constructs (factor analysis) of correlations and rankings of results from mental tests. Challenging Herrnstein and Murray's (1994) famous bell-curve hypothesis, Gould (1996, p.26) exposes 'deep and instructive fallacies' in the reification of IQ to a 'unitary, linearly ranked, innate, and minimally alterable intelligence'.

The Programme for International Student Assessment (PISA) exemplifies bell-curve thinking, with student scores in reading, mathematics and science tests normally distributed across seven levels (OECD, 2014, Annex B). The stated emphasis in PISA is 'mastery of processes, the understanding of concepts and the ability to function in various situations within each domain' (OECD, 2013, p.15) with the words 'capacity' and 'proficiency' used repeatedly as shorthand. Assumption of normally distributed outcomes is buried within PISA technical documentation, confirming that however students perform in tests the aggregated results would fit a bell-curve (Dorling, 2015, p.52). Designed to compare performance between national education systems by sampling their students' 'capacities', the resulting bell-curve:

> suggests that right across the rich world children are distributed by skill in such a
> way that there is a tiny tail of truly gifted young people, and a bulk of know-
> nothings, or limited, or barely able or just 'simple' young people (*Ibid*, p.46).

Dorling (2015, p.46) challenges claims that league table rankings help countries at the bottom to pull themselves up. Even if overall standards improve, bell-curve thinking ensures that those at the extremes are kept in their respective places and gaps remain, such that:

> [t]his imagined world is a utopia with all benefiting from increased competition, from being labelled by their apparent competencies. This is a world where it is imagined that the good of the many is most enhanced by promoting the ability of the few (*ibid*).

In England, over 500,000 15/16-year-old students each year take the General Certificate of Secondary Education (GCSE), usually in at least eight subjects. The grades awarded across all subjects (A* to G, becoming 9 to 1) have remained similar in recent years, in a normal distribution skewed slightly towards higher grades (Taylor, 2015, p.240). The Office of Qualifications and Examinations Regulation (Ofqual) and the examination boards it regulates ensure 'comparable outcomes':

> Awarding organisations predict GCSE outcomes for each subject based on prior attainment of the cohort. The aim is that, in normal circumstances, roughly the same proportion of students will achieve each grade in a given subject as in previous years (DfE, 2017c, p.42).

This reveals not only bell-curve thinking, but also self-fulfilling prophecy, because statistical projections of GCSE results from prior attainment at primary school are used to maintain comparable outcomes (Taylor, 2015, p.244). The examination is system is designed, not so that all can do well but to differentiate students, acting as a '*limiter* and *sorter*', rendering system-wide improvement unachievable (*ibid*, original emphasis). The embeddedness of bell-curve thinking and its potentially damaging consequences for those *below average* are long-standing concerns. Fifty years ago, Benjamin Bloom described normal-curve conditioning and the self-fulfilling prophecies perpetuated, through tests that differentiate students 'even if the differences are trivial in terms of the subject matter' (Bloom, 1968, pp.2-3). Education as a *purposive* activity should lead to a very different distribution of outcomes than the normal-curve and its assumptions of underlying randomness (*ibid*).

Individual 'ability' is confounded by whether it is interpreted as an innate capacity or simply a current stage of development or attainment (Hart *et al*, 2004, p.6). It is common for teachers to talk of 'more' or 'less' 'able' learners, and such 'ability labels not only *explain* differences in

attainment but also *predict* future events' (*ibid,* original emphasis). An alternative to the 'ability thinking' of labelling, ranking and grouping young people by their supposed capacities has been called 'learning without limits' (Hart *et al*, 2004; Dorling, 2015, p.55). However, achieving this entails abandoning normal-curve conditioning in standardised tests, which are used to compare students, teachers, schools, regions and nations, and also to measure the effectiveness of teacher professional learning and development. The profound importance of such a shift in educational beliefs, purposes and aspirations is difficult to overstate, with academics and activists reinvigorating long-standing debates over the 'mismeasurement of learning' (NUT, 2016). As Gould (1996, p.50) concluded over twenty years ago:

> We pass through this world but once. Few tragedies can be more extensive than the stunting of life, few injustices deeper than the denial of an opportunity to strive or even to hope, by a limit imposed from without, but falsely identified as lying within.

Characteristics of effective CPLD – the gap between values and experience

There is widespread consensus among researchers and educators about characteristics of 'effective' teacher CPLD. Effectiveness tends to be associated with positive changes in teacher practices, particularly those benefitting students, in terms of perceived or measured impact on outcomes. Agreed characteristics of effective CPLD are summarised in this section, informed by an overlapping evidence base of literature reviews, meta-studies and surveys, including six prominent sources from the UK, USA and New Zealand (Timperley *et al*, 2007; Darling-Hammond et al, 2009; Guskey and Yoon, 2009; Opfer and Pedder, 2011b; Cordingley and Bell, 2012; Stoll *et al*, 2012). These are compared with findings of the Teaching and Learning International Survey (TALIS) conducted by the Organisation for Economic Co-operation and Development (OECD) in 2007-8 and 2012-13. Broadly, these sources conclude that effective CPLD is: intensive, varied, ongoing and sustained; learner-focused and curriculum/subject-related; collaborative and builds relationships; work-based, with active learning; oriented towards experimentation, inquiry and research; enhanced by coaching, mentoring, co-teaching and peer observation; promoted by networking and wider professional learning communities; challenging and supportive of dialogue, thinking and change; nurtured by leadership, trust, coherence and cohesion; and supported by external expertise.

Considering these characteristics more closely, CPLD opportunities that are ongoing and sustained over a period of weeks or months are generally considered more effective than one-off events (Opfer and Pedder, 2011b, p.4; Cordingley and Bell, 2012, p.4). While time is important, it 'must be well organized, carefully structured, purposefully directed, and focused on content or pedagogy or both' (Guskey and Yoon, 2009, p.497), with an emphasis on curriculum content or subject matter (Darling-Hammond *et al*, 2009, p.10; Opfer and Pedder, 2011b, p.4). A sustained, learner-centred approach suggests a 'moral imperative and shared focus' based on 'aspirations for students' (Cordingley and Bell, 2012, p.4), with professional development informed by 'assessment of individual and school needs' (Stoll *et al*, 2012, p.5). Relatedly, assessment is emphasised as a bridge between identifying 'professional learning needs' and 'student learning needs' (Timperley *et al*, 2007, p.xxxii).

There is similarly broad agreement that effective CPLD is goal-directed and aligned with institutional priorities (Darling-Hammond *et al*, 2009, p.10; Cordingley and Bell, 2012, p.5). Such an approach 'starts with the end in mind' and, again, desired ends are defined in relation to learners' identified needs and tracked outcomes (Stoll *et al*, 2012, p.4). For teachers, the changes that result from CPLD concern 'classroom practice', 'subject or process knowledge', as well as 'personal' and 'interpersonal capacity' demonstrated through confidence, motivation and collaboration (Stoll *et al*, 2012, p.4). For Opfer and Pedder (2011b, p.4) the integration and alignment of CPLD priorities with day-to-day practices signals coherence. However, Stoll *et al* (2012, p.4, citing Argyris and Schön) recognise that tracing intentions and changes through to outcomes requires a theory of action, 'a set of logically connected statements that connect people's actions with their consequences for quality and performance'. Effective activity sequences typically involve a 'catalyst to engage', followed by 'instruction in key theoretical principles', leading to application of 'theory into practice' (Timperley *et al*, 2007, p.xxxvi). They also maintain a 'student perspective', linking teaching with learning, as well as teacher opportunities to 'discuss and negotiate' both their existing theories and those introduced through 'professional instruction' (*ibid*).

Another prominent claim is that effective CPLD is collaborative, building 'strong working relationships among teachers' (Darling-Hammond *et al*, 2009, p.11). Collaborative CPLD implies 'the need for intense and sustained involvement with colleagues' (Opfer and Pedder, 2011b, p.5), or 'joint practice development' (JPD) (Stoll *et al*, 2012, p.7), focusing on situational and

organisational needs, particularly of students. Cordingley and Bell (2012, p.4) summarise three key steps in such joint working, in terms of 'identifying starting points, sharing evidence about practice and trying out new approaches'. This begins to describe a participatory inquiry or research orientation to CPLD, which is active, practical and work-based. Further steps in embedding shared learning include the linking of theory to practice and the application of new approaches to different contexts (Timperley *et al*, 2007, p.xxxii; Cordingley and Bell, 2012, p.4). Action research and inquiry become 'key tools' in effective CPLD (Stoll *et al*, 2012, p.6), involving risk-taking, challenge and experimentation (Cordingley and Bell, 2012, p.4), for example through 'team teaching and peer observation and feedback' (Opfer and Pedder, 2011b, p.4). Coaching and mentoring provide means of 'embedding inquiry-oriented learning in day-to-day practice', informed by peer observation and review (Stoll *et al*, 2012, p.4), thereby enhancing CPLD and offering induction and support for newly-appointed teachers (Timperley *et al*, 2007, p.12). Non-hierarchical models such as co-coaching, aimed at development rather than deficits, can empower teachers 'to try out new things by providing a context of reciprocal vulnerability', facilitating the 'development of trust' (Cordingley and Bell, 2012, p.4).

Contexts deemed effective for CPLD include 'a professional community of practice' (Timperley *et al*, 2007, p.xxvii) or 'professional learning communities within and between schools' (Stoll *et, al*, 2012, p.7). Communities of practice are a 'learning partnership among people who find it useful to learn from and with each other about a particular domain', which may occur either intentionally or incidentally through interactions or networking among members (Wenger *et al*, 2011, p.9). Features of high quality collaboration include 'trust and mutual support' (Opfer and Pedder, 2012b, p.5) and 'a focus that can draw contributions from all members' (Cordingley and Bell, 2012, p.4). However, Fullan (2006, p.6) cautions that such communities can operate superficially, becoming a 'program innovation' in an individual organisation, rather than bringing about deeper learning or building capacity with system-wide influence across multiple contexts. Similarly, Hargreaves and Shirley (2009, pp.43-44) warn of 'contrived collegiality' and 'collective effervescence' in pursuing data-driven quick-wins, without establishing longer-term relationships of trust. While there is agreement over potential for communities of practice to enhance CPLD, this depends on the types of collaboration and learning they support. To sustain changes of practice, CPLD needs to challenge established thinking (Stoll *et al*, 2012, p.3) and explore existing 'beliefs and assumptions' (Cordingley and Bell, 2012, p.4), including 'prevailing discourses' associated with low expectations of learners (Timperley *et al*, 2007, p.xxvii).

There is consensus that establishing 'necessary conditions' for effective CPLD involves leadership (Stoll *et al*, 2012, p.8) putting in place 'systems of support, coherence, and cohesion' (Opfer and Pedder, 2011b, p.5). A 'supportive environment' requires 'active school leadership', leaders learning alongside staff to develop 'a learning culture' and the 'leadership of others' (Timperley *et al*, 2007, p.xxvii). A learning culture implies conditions conducive to all members of an organisation, individually and collectively, to 'continually enhance their capabilities' (Timperley *et al*, 2007, p.273). These are 'schools that learn', or 'incubation sites for continuous change and growth', conducive to positive teacher identities and self-determination, becoming 'a living system for learning' (Senge, 2012, pp.4-5). Senge sets out 'five disciplines' applicable to staff development, comprising: 'mental models' of how learners learn and teachers teach; 'personal mastery' in raising aspirations for self and others; 'team learning' through collaborative relationships; 'shared vision' for school development, and; 'systems thinking' to build communicative structures (*ibid*, pp.397-404). A synthesis of eleven leadership studies estimates effect sizes for five dimensions deemed 'educationally significant' to student outcomes (Robinson, 2007, p.9). Greater impact is reported for 'promoting and participating in teacher learning and development' (0.84) than other dimensions: 'establishing goals and expectations' (0.35); 'strategic resourcing' (0.34); 'planning, coordinating and evaluating teaching and the curriculum' (0.42); and 'ensuring an orderly and supportive environment' (0.27) (Robinson, 2007, p.8). While plausible, such studies assume linear, if indirect, causal links between leadership activities and student outcomes. Complexity thinking contemplates recursive casualties, where positive student outcomes reduce external accountability pressures, enabling leaders to spend more time on CPLD activities with staff.

Finally, involvement of specialists outside schools is considered important for effective CPLD (Darling-Hammond *et al*, 2009, p.9; Cordingley and Bell, 2012, p.4), 'connecting work-based learning and external expertise' (Stoll *et al*, 2012, p.5). Timperley *et al* (2007, p.xxvii) conclude that the funded involvement of external support is 'typically necessary but not sufficient', also noting that such expertise may have little or no impact. Unsurprisingly, in many of the studies examined by Timperley *et al* (2007, p.xxix) the participation of researchers provided external expertise, with the research itself informing CPLD, such that this finding may be an 'artefact of study selection'. Similarly, in the studies reviewed by Guskey and Yoon (2009, p.496), those showing measurable impact on student learning involved 'program authors or researchers who presented ideas directly to teachers and then helped facilitate implementation'.

The Teaching and Learning International Survey (TALIS) conducted by the Organisation for Economic Co-operation and Development (OECD) provides snapshot indications of the extent to which teachers experience and value some of the features outlined above as well as other aspects of CPLD. The first survey in 2007-8 included over 73,000 teachers in 23 OECD and partner countries, but *not* England or the UK (OECD, 2009, p.75). Teachers reported both perceived level of impact and extent of participation in nine 'types of development activity' listed in Table 1, sorted by percentages of teachers reporting a 'moderate' or 'high' 'impact' (*ibid*, p.86). The relatively high percentage attributing moderate or high impact across all types (over 70% in each case) is noticeable, however there is considerable variability in the percentage of teachers 'undertaking' each type in the previous eighteen months (*ibid*, p.82). Particularly notable are relatively low proportions of teachers (fewer than 40%) participating in individual and collaborative research, qualification programmes, mentoring and peer observation, and observation visits to other schools.

Types of development activity	Teachers reporting moderate or high impact	Teachers undertaking activity
Individual and collaborative research	89.3%	35.4%
Qualification programmes	87.2%	24.5%
Informal dialogue to improve teaching	86.7%	92.6%
Reading professional literature	82.8%	77.7%
Courses and workshops	80.6%	81.2%
Professional development network	80.2%	40.0%
Mentoring and peer observation	77.6%	34.9%
Observation visits to other schools	74.9%	27.6%
Education conferences and seminars	73.9%	48.9%

Table 1 – Types of professional development undertaken by over 73,000 teachers in 23 OECD and partner countries, but *not* England or the UK (OECD, 2009, p.75).

TALIS was carried out again in 2012-13, this time with 154 headteachers and 2,496 lower secondary teachers in England contributing (OECD, 2014, p.210). Participation in the previous twelve months (but not perceived impact) was reported in similar activities to those surveyed in 2007-8, as shown in Table 2. In the 2012-13 survey courses/workshops were the only type of professional development experienced by more than half of teachers in England and the OECD (informal dialogue and reading professional literature were removed as choices). The types most closely associated with characteristics of effective CPLD (summarised above), particularly networking and research activity, were experienced by between a quarter and half of teachers asked, though coaching and mentoring activities appear to be more commonly undertaken in England (OECD, 2014, p.319).

Types of professional development recently undertaken by teachers	OECD Average	England
Courses/workshops	70.9%	75.0%
Education conferences or seminars where teachers and/or researchers present their research results and discuss educational issues	43.6%	29.4%
Observation visits to other schools	19.0%	19.5%
Observation visits to business premises, public organisations, nongovernmental organisations	12.8%	5.6%
In-service training courses in business premises, public organisations, nongovernmental organisations	14.0%	22.4%
Qualification programme (e.g. a degree programme)	17.9%	10.0%
Participation in a network of teachers formed specifically for the professional development of teachers	36.9%	33.3%
Individual or collaborative research on a topic of interest to the teacher	31.1%	26.6%
Mentoring and/or peer observation and coaching, as part of a formal school arrangement	32.5%	57.0%

Table 2 – Types of professional development undertaken by lower secondary teachers in England (2,146) and across 34 OECD countries in the previous 12 months (appx. 108,000) (OECD, 2014, p.341)

In 2012-13, TALIS also surveyed teachers on their participation in and reported impact of the *content* (rather than types) of CPLD activities, as shown in Table 3. The range, teacher take-up and perceived impact of these content areas reinforces close links between teacher and student learning. Most content areas can be located within the conceptual framework of principles for learning identified by the UK Teaching and Learning Research Programme, in relation to 'curriculum and domain knowledge', 'interaction and pedagogy', 'information technology' and 'assessment and learning' (TLRP, 2006, p.4). As before, these areas of content are sorted by percentages of teachers reporting a 'moderate' or 'large' impact, in each case greater than 75%. The wide range of participation is again apparent, with subject knowledge and pedagogical aspects most commonly experienced (OECD 2014).

Content in professional development activities	Teachers reporting moderate or large impact	Teachers undertaking activity
Knowledge and understanding of subject field(s)	90.8%	72.7%
Pedagogical competencies in teaching subject field(s)	87.2%	67.9%
Knowledge of the curriculum	84.3%	56.3%
Student evaluation and assessment practices	82.9%	57.2%
Student behaviour and classroom management	80.9%	43.7%
Teaching cross-curricular skills (e.g. problem solving, learning-to-learn)	80.5%	38.5%
Approaches to individual learning	80.4%	40.7%
ICT skills for teaching	80.3%	54.2%
Student career guidance and counselling	79.9%	23.6%
Approaches to developing cross-occupational competencies for future work or future studies	79.2%	20.7%
New technologies in the workplace	78.8%	40.0%
Teaching students with special needs	77.3%	31.7%
Teaching in a multicultural or multilingual setting	76.7%	16.4%
School management and administration	76.4%	18.4%

Table 3 – Content in professional development activities (OECD, 2014, pp.342-4).

From the two TALIS surveys, based on positive impacts perceived by the large majority participating, it appears that teachers tend to value their learning opportunities whatever the type and content. However, fewer than half of teachers in TALIS 2012-13 experienced most of the types of professional development surveyed and in terms of those widely considered effective (inquiry/research, coaching/mentoring, networking) only around one-third of teachers reported such opportunities (with some variation among teachers in England). The most frequently cited barrier to participation, by 50.6% of all TALIS 2012-13 respondents and 60.4% of teachers in England, is 'conflicts with my work schedule' (OECD, 2014, p.353). These findings are consistent with conclusions that 'teachers engage in very little professional development that could be considered effective at improving teaching and learning' (Opfer and Pedder, 2011b, p.20). Moreover, there appears to be no guarantee that simply engaging in promising activities will lead to a positive impact. In Timperley *et al*'s (2007, p.xxxvi) review every type of activity to 'promote professional learning' was associated with both 'positive outcomes' and 'no or low impact'. Thus 'no individual activity stood out as more effective than others' and a 'variety' of activities were considered necessary, often serving 'multiple purposes', with a 'clear alignment' between the activities and their 'intended learning'.

In summary, despite broad agreement over effective features of CPLD, experience among teachers is not prevalent and their presence is no guarantee that learning will take place or changes to practice will follow. Darling-Hammond *et al* (2009, p.19) conclude that in the USA 'well-designed professional development is still relatively rare' and few teachers have 'regular opportunities for intensive learning'. Similarly, Opfer and Pedder (2011b) suggest the 'lost promise of teacher professional development in England', finding an absence of features deemed effective and a lack of 'school-level capacity and coherence for teachers' learning' (p.22), apart from in some higher-performing schools. Opfer and Pedder (2011a, p.377) also describe 'frustrations' when reviewing research into CPLD, expected to show its effects on teachers and learners, instead finding lack of replication or conflicting evidence arising from linear 'process-product designs'. Further, they question the theoretical assumptions, stating:

> [w]e believe the professional development effects literature has committed an
> epistemological fallacy by taking empirical relationships between forms of activity
> or task (e.g., being activity based), structures for learning (e.g., collaboration
> between teachers), location (e.g., situated in practice), and so on, and some
> measure of teacher change to *be* teacher learning. For the most part, this research

is based on the assumption that teacher professional development consists of a repertoire of activities and methods for learning and that teacher learning follows more or less directly from the frequency with which professional development programs use these specific activities, structures, and so on (Opfer and Pedder, 2011a, p.377-8, original emphasis).

Extending this argument, in many of the aforementioned studies two further assumptions are made, that a measure of student change *is* student learning and, where a measure of teacher change coincides with this, precursor CPLD activities must be responsible. However, if CPLD activities *per se* are no guarantee of impact on teacher or student learning then different understandings are needed, Opfer and Pedder (2011a, p.378) concluding that 'teacher learning must be conceptualized as a complex system rather than as an event'. Developing this conceptualisation is a purpose of this chapter, but first some of the current models of CPLD and pervasive ideas underpinning them are considered.

The quest for 'what works' – models of effectiveness and the concept of recursion

Surveys such as TALIS report *teacher views* on the effectiveness of learning experiences focusing on attitudes and beliefs, which might include *perceived* impacts for students. Other studies attempt to use measures of *student outcomes* traced to teacher learning and development assuming a causal chain or path (e.g. Timperley *et al,* 2007). For Timperley *et al* (2007, p.19) 'teacher satisfaction' is not accepted as evidence 'because to do so may promote the development of a closed system in which adult perceptions and preferences become the criteria for success, not the desired outcomes for the students'. Guskey and Yoon (2009, p.496) find that only nine of the 1,343 initially identified studies satisfy standards set by the US 'What Works Clearinghouse', which seeks 'scientific evidence about "what works" in education'. Only studies with a randomised control trial (RCT) or quasi-experimental research design meet the evidence standards deemed necessary for causal validity (Guskey and Yoon, 2009). Similarly, Goldacre's (2013) appeal to the UK government for 'building evidence into education' (*what works* appearing fifteen times) acknowledges different research designs but prioritises RCTs. Coinciding with the establishment of a 'What Works Centre', the Educational Endowment Foundation (EEF) is funded to carry out evaluations of interventions aimed at raising

attainment, particularly among students identified as disadvantaged (James, 2013). Policy demands for 'educational effectiveness' and evidence of *what works* maintain a strong focus on measurable student attainment, whereby '"progress", "growth", and "learning gains" are often regarded as synonyms' (Reynolds *et al*, 2014, p.206). As Mockler (2011, p.518) states, this 'instrumentalist' approach 'privileges that which is simple and easy to measure, indicators and evaluations over the more complex and untidy dimensions of this very human enterprise'.

The rigour attributed to RCTs assumes that random allocation evens out differences among participants, such that both the intervention group and control group can be considered, essentially, 'the same' (Goldacre, 2013, p.9). Goldacre (2013, p.8) further explains:

> We simply take a group of children, or schools (or patients, or people); we split them into two groups at random; we give one intervention to one group, and the other intervention to the other group; then we measure how each group is doing, to see if one intervention achieved its supposed outcome any better.

The likelihood of randomisation successfully controlling the many potential differences to form comparable groups is challenged through computer simulation (Davies *et al*, 2008). Where only one 'confounding influence' is controlled for, randomisation seems to work as intended; however, 'there appears to be an extremely high probability that random assignment will not do an adequate job of controlling for multiple extraneous variables' (Davies *et al*, 2008, p.313). Learning as a conscious, purposive, personal and collective human activity is influenced by many factors (complicated) and, further, with the potential for agentive response to embrace, resist and re-shape teaching or intervention (complex). Claims made for randomisation depend on conceptualisations of teaching and learning as a process – if 'more complex and dynamic than predictable and controllable, the ability to creating equal comparison groups while theoretically possible is highly unlikely' (Davies *et al*, 2008, pp.306-7). The theoretical model underlying RCTs in education treats teaching as a medical intervention, with the response from the student-cum-patient easily controllable. If such assumptions are wrong this might explain why RCTs in education to date have been inconclusive (Davies *et al*, 2008, p.316). A similar point is made by James (2013) in response to Goldacre (2013), reflecting on over fifty years of unfulfilled claims for experimental research in education.

Value-added modelling (VAM) is also used in educational effectiveness research and school accountability, attempting to quantify differences made by individual teachers and schools to

student outcomes (Reynolds *et al*, 2014; Taylor, 2015). For secondary schools in England, value-added (VA) (currently 'Progress 8') is published in performance tables, calculated as the averaged difference between actual and expected outcomes, the latter based on prior attainment from primary schooling (DfE, 2017b, p.7). The theoretical assumption is that measured differences, for individuals or aggregated across groups, can be attributed to schools or teachers. Crucially, VA across whole cohorts is a zero-sum measure at any unit of analysis (students, teachers, schools), so actual outcomes of around half the cohort will exceed those expected (predicted from prior attainment), with the other half falling short (Taylor, 2015, p.244). The VA equivalent of IQ-ism's bell-curve is the 'snake-plot', formed by ranking scores from left to right, schools deemed lacking drooping down to the left, schools deemed effective soaring upwards to the right, with the majority in the middle (*ibid*). If one school's VA score improves, the measure itself dictates that this will be at the expense of (an)other school(s) where VA declines (*ibid*). Several studies show lack of stability in VA measures across classes and year groups, raising doubts that they capture any meaningful information about teaching characteristics (Baker *et al*, 2010; Newton *et al*, 2010). Moreover, in terms of what is measured, most of the variation in school outcomes is attributable to 'pupil prior attainment and background' (Gorard, 2010, p.761). Propagated errors from the assessments used to calculate VA, mean that signal-to-noise ratio is too low for a viable high-stakes performance indicator (Perry, 2016, p.18), such that 'a sizable proportion, if not the majority, of observed differences between scores are likely to reflect measurement error and non-school differences rather than genuine differences in performance' (p.20).

Perhaps the most serious issue with VAM and similar quantitative approaches with potentially 'high stakes' for teachers, leaders and schools, is interpretive. It lies in assuming any measured gains or losses in actual over expected outcomes must be attributable to the teacher or school, rather than any contingent and complex behaviours or attitudes of pupils (Nash, 2004). Byrne (2009, pp.106-7) states that such assumptions of one-way downward causation in multi-level modelling should be challenged. Berliner (2014) concludes that the 'fatal flaw' in VAM is its failure to successfully control or account for the 'myriad exogenous variables that are interacting with life in classrooms' (p.26). There have been efforts in England to take account of pupil-level 'contextual factors' collected in annual school censuses, such as gender, ethnicity, date of birth, free-school meals and so on (Gorard, 2010). However, these do not begin to capture or control for the 'incentive' and 'interaction' dimensions of learning involving,

respectively, 'motivation, emotion and volition' and 'action, communication and co-operation' (Illeris, 2014, p.34). In fact, the predictive potential of contextual value-added (CVA) measures precipitated political concern and their subsequent abandonment, due to potential dis-incentivisation for students of certain backgrounds (DfE, 2010, p.68; Taylor, 2011). Despite these concerns, VA continues to be presented in performance tables that 'sit at the heart of the accountability framework' which, government claims, 'provide a reliable and accessible source of comparative information on pupil progress and attainment' (DfE, 2016a, p.4).

The aim of the 'best evidence synthesis' from Timperley *et al* (2007), produced for the New Zealand Ministry of Education, is to show *what works* (the phrase appearing twenty-nine times) in CPLD. The theoretical model for this work posits two 'black boxes' in a partially reciprocal causal chain from CPLD to student outcomes. This can be summarised as follows: 'professional learning opportunities' leading to/from 'teachers' interpretation and utilisation', (black box 1) leading to/from 'teacher outcomes' (change/no change in practice) leading to (only) 'student learning opportunities' leading to/from 'students' interpretation and utilisation', (black box 2) leading to/from 'student outcomes' (positive/negative/no change) (*ibid*, p.7). Crucially, the only stage in this pathway depicted as *one-way only* is between the first three teacher-level steps and the second three student-level steps. While evidence drawn from controlled and measured experimental studies are favoured, Timperley *et al* (2007, p.22) recognise limitations of a quantitative meta-analysis for answering *how* and *why* questions, also pursuing a 'realist synthesis' (Pawson, 2002a). This entails a carefully constructed quantitative and qualitative comparison, drawing cautious conclusions to 'unpack' the first black box in the model using the 'best evidence' (p.xiii), considered measurable from input to output using effect sizes largely derived from tests of student outcomes (p.xxv).

In this model, despite a linear causal path *from* teacher outcomes (of professional learning) *to* student outcomes (of teaching), more complex processes are implicated (Timperley *et al*, 2007). For example, it is recognised that '[e]xpecting teachers to act as technicians and to implement a set of 'behaviours' belies the complexity of teaching, the embeddedness of individual acts of teaching, and the need to be responsive to the learning needs of students'. (*ibid*, p.xxix). While simplexity can be inferred from the assertion that '[h]ow teachers change their practice, of course, impacts on student outcomes', it is also stated that '[t]here is no direct relationship between teaching inputs and student learning because *how* students interpret and

utilise the available information determines *what* they learn' (*ibid*, p.7). This suggests complicity, with interpretation and utilisation (by teachers in black box 1, or students in black box 2) potentially altering or erasing the initial conditions in a recursive process between the teacher and student levels.

Another prominent contribution to *what works* agendas is the influential work of John Hattie, in which professional development is reduced to a single numerical effect size, averaging combined effects in five meta-analyses including the synthesis from Timperley *et al* (2007). In his first book, comprising 537 meta-studies over a 27-year period, Hattie (2008) emphasises *average* effect sizes across the available evidence, not 'details and nuances' (p.viii), presented in the form of a 'barometer of influences' (p.18). The average effect size of *all* influences on achievement across 52,649 studies is 0.40, with most of the assumed teacher effects in the region of 0.15 to 0.40. Thus 0.40 becomes the 'typical effect' or 'hinge-point', 'a "standard" from which to judge effects' (Hattie, 2008, p.17). 'What works' amounts to 'almost everything', as very few approaches have a negative effect, so efforts should be focused on 'what works best' (p.18), methods that, on average, exceed 0.40, to bring about more 'visible learning'.

Professional development is well into the 'zone of desired effects', with an effect size of 0.62, ranking 19 in the list of 138 influences (Hattie, 2008). This is calculated by simply averaging the (already averaged) effects of five meta-analyses, from – 1980 (0.81), 1980 (0.80), 1985 (0.37), 2004 (0.45) and 2007 (0.66). The latter figure is Timperley *et al*'s (2007, p.58) average of averages for effects on student academic outcomes. Noteworthy in the 183 effects averaged to arrive at 0.66 is a standard deviation of 0.83, ranging from -1.01 to 5.31. The very high effects at the top of this range are explained by literacy interventions for children with 'special learning needs' often starting 'from a very low baseline' (Timperley *et al*, 2007, p.60). In a later publication, Hattie (2012, p.213) averages five more quantified studies of professional development – 1988 (0.40), 2008 (0.54), 2010 (0.21), 2010 (0.57), 2011 (0.25) – with a revised average effect size of 0.51 and a fall in ranking to 47 (p.252). Minimal contextual information is provided about all ten studies, apart from their link to 'student outcomes' – the 1988 study involved '[u]sing consultants to coach teachers', the second 2010 study was 'in mathematics' and the 2004 study was 'in science' (*ibid*, p.213). In several studies, professional development had greater impact for teachers than students (Hattie, 2008, p.120).

Pawson (2002b) critiques the 'basic 'logic' of meta-analysis' (p.169), pre-dating these syntheses yet casting doubt on the meaningfulness of resulting 'means of means of means of means', considered to be 'oversimplified outcomes' (p.165). Further concerns include 'melded mechanisms' from assuming different studies in the same broad policy domain are comparable, and 'concealed contexts' where personal and situational details of specific programmes are lost in their aggregation (*ibid*). Pawson (2002b, p.166) suggests '[o]utcome measurement is a tourniquet of compression', particularly when variation and diversity within and between studies is squeezed out through repeated averaging, leading to 'spurious precision'. Higgins and Simpson (2011, p.199) specifically question Hattie's averaging of effects across studies with 'little apparent conceptual connection', using different outcome measures with no weighting applied. Considering Hattie's (2008, p.17) choice of 0.40 as the 'hinge point' for desirable influences on student achievement, Higgins and Simpson (2011, p.199) conclude that 'the process by which this number has been derived has rendered it effectively meaningless'. Similarly, Terhart (2011, p.436) states that in Hattie's 'meta-meta-analysis (mega-analysis)', through 'repeated cumulation the original detailed empirical information disappears'. Nash (2004) questions Hattie's assumptions (in precursor work) that the many influences on achievement can be isolated and measured as behaviours and causes, concluding:

> Students are not like billiard balls to be shot into this and that pocket as if the teacher were some kind of self-propelled cue ball. The classroom is a place where actions are negotiated, rather than behaviours displayed, and where the consequences of those actions, both short-term and long-term, are mediated by complex processes of cultural interpretation (p.46).

The theoretical model underlying these studies (Timperley *et al*, 2007; Hattie, 2008, 2012) is reflected in a common conceptual framework, a 'path model', proposed by Desimone (2009) for all teacher development impact studies. In this model, 'core features of professional development' lead to/from 'increased teacher knowledge and skills; change in attitudes and beliefs', which lead to/from 'change in instruction', which lead to/from 'improved student learning' (p.185). While mediating influences such as context or teacher identity are recognised, and two-way interactions are depicted between each stage, the model is designed to facilitate measurement along the path in the presumed causal chain and is explicitly 'positivist' (Desimone, 2009, p.186). However, Desimone (2009, p.184) describes this path model as 'nonrecursive', regarding the interactive relationships between core features, using the

statistical meaning of this term whereby variables influence each other with 'no clear unidirectional linear sequence' (Morrison, 2009, p.64). Conversely, so-called *recursive* models have 'variables arranged in a linear sequence', with unidirectional causation and without reciprocal influences, considered unusual in education as they 'tend to oversimplify the direction of variables and to overlook interaction effects' (Morrison, 2009, pp.63-64).

School effectiveness studies seeking the influences of leadership, including teacher professional learning, on student outcomes, signal a shift towards reciprocal models and adaptive processes. More specifically, research in this field suggests *indirect* causal influences of leadership on student outcomes, yet '[t]heorists and practitioners know that the nature of life in schools is both complex and cyclical' (Hallinger and Heck, 2011, p.153). The quantitative approach proposed by Hallinger and Heck (2011) involves large-scale longitudinal surveys across schools, analysed using structural equation modelling (SEM) to estimate two-way effects between the broad constructs of leadership, school improvement capacity and student achievement in tests. Again, recognition of reciprocal effects is described as 'nonrecursive' (*ibid*, p.157) and the constructs are assumed to be measurable. Crucially but confusingly, recursion has a very different (almost opposite) meaning in complexity thinking as a key principle, defined by Morin (2008, p.49) as 'a process where the products and the effects are at the same time causes and producers of what produces them'. Morin (2008, p.49) continues, '[t]he recursive idea is, therefore, an idea that has broken away from the linear idea of cause and effect'. For example, Kemmis and McTaggart (2005, p.282) describe participatory action research as 'recursive', 'reflexive' and 'dialectical', whereby we 'investigate reality in order to change it' and 'change reality in order to investigate it'; another expression of *complicity*.

Reviewing 111 articles published in *Teaching and Teacher Education* journal during the first decade of the twenty-first century, Avalos (2011) draws attention to teacher professional learning as a 'complex process' requiring individual and collective 'cognitive and emotional involvement' as well as 'capacity and willingness' to explore existing beliefs about practice and possible alternatives (p.10). This takes place in diverse 'educational policy environments or school cultures, some of which are more appropriate and conducive to learning than others' (Avalos, 2011, p.10). Studies overlooking these aspects of teacher volition and uniqueness of context may explain 'frustrations' expressed by Opfer and Pedder (2011a, p.377), that the presence of CPLD characteristics considered effective does not mean effects are realised. The

complexivist conception of recursion is explicitly proposed by Opfer and Pedder (2011a, p.384) who identify the teacher, the school and the professional learning in which they are involved as 'three overlapping recursive systems'. These encompass, respectively: beliefs, knowledge and classroom practices; collective norms and capacities; and learning tasks and activities. Arriving at this conceptualisation, Opfer and Pedder (2011a, p.381) reject published studies aggregating large-scale measurable effects, despite their privileged technical standards. Instead they seek studies identifying 'generative mechanisms' and explaining 'why teacher learning may or may not occur as a result of professional development' (*ibid*, pp.381-2).

The 'Interconnected Model' proposed by Clarke and Hollingsworth (2002) recognises 'the complexity of professional growth' (p.950), without explicit complexity thinking, proposing that 'change occurs through the mediating processes of "reflection" and "enactment"' (p.950). Clarke and Hollingsworth (2002), identify four domains: the 'external' ('sources of information, stimulus or support'); the 'personal' ('teacher knowledge, beliefs and attitudes'); 'practice' ('professional experimentation'); 'consequence' ('salient outcomes') (pp.950-1). A '"naive" linear model' offers the simplest path, however, when interpreting their own empirical evidence more intricate interconnections are identified between these domains, including 'cyclic' relationships in action research spirals as a 'learning process intrinsic to teacher professional growth' (*ibid*, pp.960-1). Thus, the complexivist conception of recursion is also suggested in this model. Implicit but less prominent in the models proposed by Clarke and Hollingsworth (2002) and Opfer and Pedder (2011a) is the relationship between teacher learning and studentlearning. In contrast, Butler and Schnellert (2012, p.1207) propose a nested, cyclical model consisting of 'multiple layers of inquiry' – student nested-in practice nested-in teacher levels. This is derived from the goal of fostering student self-regulation (student-level inquiry) through recursive practices of planning, teaching and assessing (practice-level inquiry), through which 'teachers may self-regulate their own learning' (teacher-level inquiry) (Butler and Schnellert, 2012, p.1208).

A further model of recursive change, offered by Lofthouse (2015), depicts a 'metamorphosis' combining 'individual professional learning and institutional growth'. In this model, enabling attributes of professional learning at personal and organisational levels feed into 'cycles of practice development', which in turn promote changes of behaviour and culture at both levels (Lofthouse, 2015, pp.36-38). A generative and reciprocal process is envisaged, whereby ongoing

professional learning and associated changes in individual and contextual behaviours enhance the very conditions that are supportive of them. Thus, the model suggests complicity between person and context and, of those considered, it is closest to the model developed in this thesis although derived independently. Particularly relevant in this model are: implications of 'institutional growth' emerging from 'conscious integration of the individual's growth with the organisation's supporting infrastructure'; that 'both the vehicle and objective for professional learning can be practice development'; and 'the flow of professional learning, from foundations to outcomes is reciprocal and cumulative' (*ibid*, pp.36-37).

Teacher professional growth – learning and development as a recursive process

The model of professional growth developed here, based on previous work (Taylor, 2017), is proposed as a tool for complexity thinking. It shares similarities with those previously mentioned in a nested recursive process model, re-invoking Eraut's (1977, p.10) term 'professional growth' as a 'natural process', encompassing learning within a wider conceptualisation of development. The model draws on distinctions between teacher learning and development (O'Brien and Jones, 2014) and contemporary connotations of development as delivery (Timperley, 2011), while reclaiming earlier more active meanings, involving opportunities offered and necessarily interpreted and responded to by teachers. In complexity thinking, complex systems that learn are 'incompressible, i.e., any description claiming completeness must be as complex as the system itself' (Richardson and Cilliers, 2001, p.9). However, while models and abstractions inevitably entail *complexity reduction*, '[i]t is exactly in this reduction that we generate understanding' (Osberg *et al*, 2008, p.208). Therefore, as cautioned by Engestrom and Sannino (2012), the process model offered here makes no universal claims. It is one of many possible models, drawing on and synthesising ideas across the literature of teacher learning and development, with *purpose*, *opportunity* and *response* proposed as distinguishable, critical aspects of professional growth (Taylor, 2017).

The knowledge acquired through teacher *development* remains the complex blending of subject content and curriculum knowledge, knowledge of learners and their needs, pedagogical know-how, with wider contextual, leadership, policy and moral purposes (Shulman, 1987, p.8). The broadening of teacher development to encompass the 'enhancement of status' is also included in the model proposed here, through 'professionality' as the singularity of

'professionalism' (Evans, 2008, p.30). Utilising the language of variation theory, knowledge, practice and status comprise both 'direct' and 'indirect' objects of learning, respectively the 'content' and 'capability' to be acquired (Marton and Pang, 2006, pp.197-8). For example, the object of learning *for the teacher* in planning to teach a specific topic, combines both the content knowledge to be taught and the capability in enabling others to learn through 'pedagogical content knowledge' (Shulman, 1987, p.8). Successful accomplishment is a hallmark of professionality, conferring status to the teacher among those involved. Teachers' interpretations of these processes, their integration into daily practices and application in new situations, beyond acquisition and competency, are envisaged as teacher *learning* within this model (Taylor, 2017, pp.88-89). Thus, the teacher-as-self is also implicated in the direct and indirect objects of learning, suggesting *complicity*.

The key insight of variation theory used here is that the *intended* object of learning is not pre-determined because it is dynamically *enacted* and differentially *lived* through experience (Lo 2012, pp.28-9; Lo and Marton, 2012, pp.9-10). Within this model, intended *purposes* of teacher learning and development vary in the extent to which they are 'transmissive' (concerned with compliance) or 'transformative' (concerned with collaborative inquiry) (Kennedy, 2014b, p.692), and in their *external* (top-down) or *situational* (bottom-up) derivation. These are *dimensions* of variation, not dichotomies (Taylor, 2017, p.90), and Kennedy (2014b, p.692) identifies 'malleable' purposes such as mentoring, between transmissive and transformative, and potentially influential in either direction. A quadrant of purposes with two dimensions (transmissive-transformative; external-situational) is envisaged and characterised in Figure 1 (adapted from Taylor, 2017). Similarly, enacted *opportunities* for teacher learning and development might vary according to whether they are 'planned' or 'incidental', 'formal' or 'informal', forming a second quadrant of variation (Reid in Fraser *et al*, 2007, p.160-1). Lived *responses* to these purposes and opportunities may be individual or to varying degrees collective in their co-ordination and coherence, as well as actively experienced in different ways, again exemplified in Figure 1. The process model, at this stage, focuses on the *teacher*, although the vital involvement and interaction with others is implied in the quadrants.

Figure 1 – Teacher professional growth, combining learning and development, as a recursive process of purpose, opportunity and response (developed from Taylor, 2017)

Variation across *proactive* and *reactive* (rather than active or passive) teacher response is proposed, through individual and/or collective teacher action, even when complying with or ignoring imposed development initiatives. As Cilliers (1998, p.108) explains, the processes of self-organisation are considered 'neither simply passive reflections of the outside, nor are they actively determined from the inside'. What transpires through generative, non-deterministic and recursive self-organisation cannot be predicted precisely from knowledge of the individuals involved, the initial conditions or circumstances (Mason, 2008, p.2; Morrison, 2008, p.18). In this model, teacher learning is therefore conceived as *emergent*, arising through individually and collectively lived responses to intended purposes and enacted opportunities for learning and development, which are 'woven together' or *complex* (Morin 2007, p. 6).

Developing the model of professional growth in Figure 1, listening to teachers talk about their professional growth, the intertwining of intended purpose, enacted opportunity and lived response becomes increasingly evident (Taylor, 2017). Teacher accounts suggest their

responses to development purposes and opportunities re-shape them, often through the agencies of motivation and volition and the contingencies of informal or incidental opportunity (*ibid*, p.100). Further apparent complexity in these accounts include the *self-similarity* of teachers seeking to meet the needs of their learners by addressing their own learning needs, as well as the *re-contextualisation* required for new ideas or knowledge to be put into practice. So, response involves *re-purposing* and *re-enacting*, which implies both responsibility, in the conventional sense of how we act (Davis and Sumara, 2006, p.25) and 'response-ability' in terms of how we invite and enable others to respond (Barad, in Kleinman, 2012, p.34; Oyama, 2000, p.149). While enacted opportunities for teacher development might be expected to address intended purposes associated with knowledge, practice and status, when the whole is realised as professional growth, teacher learning through interpretation, integration and application as a lived and self-determined response follows. Thereby, a complex relationship between teacher development and teacher learning becomes apparent, a mutual dependence and influence, or a holding together in tension and potential; in short, *complicity*.

The model in Figure 2 (developed from Taylor, 2017) envisages professional growth, comprising teacher learning and development, as the interwoven relationship between intended purpose, enacted opportunity and lived response. It shows a further hallmark of complexity, 'contextualism' (Stewart and Cohen, 1997, p.34) or 'whole-part mutual implication' (Morin, 2008, p.100-1), whereby these interwoven strands are situated within organisational contexts and cannot be understood separately from them. Further utilising the language of variation theory, contexts in which professional growth occur are the 'external horizons' for the objects of learning and development, comprised as parts and whole (Lo, 2012, p.24). Organisational contexts are shaped by relationships, leadership, capacity and ethos, as discussed above in terms of conducive circumstances for CPLD and further considered below in relation to practice-based inquiry. External conditions, influenced by policy, culture, society and values, concern the professional status of teaching, alongside prevailing performativity and tensions between autonomy and accountability. While this model visualises the teacher in context, its reduced complexity does not show relationships with other teachers or with learners. However, colleagues and students could be envisaged as other recursive systems existing and interacting within shared organisational contexts.
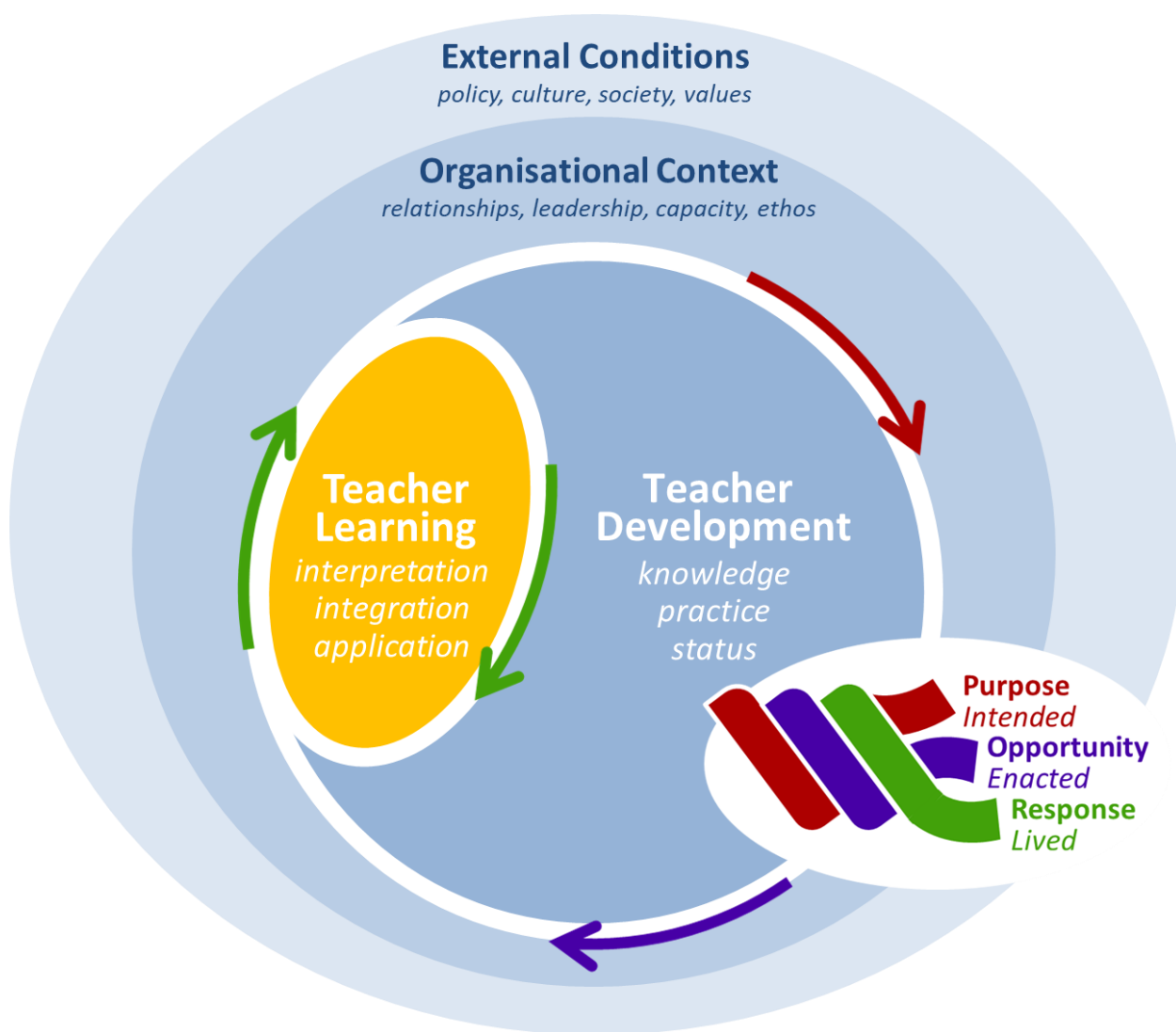
Figure 2 – Teacher professional growth, combining learning and development, as a nested complex system.

In summary, this working model or heuristic defines teacher development as the process of enhancing the knowledge, practice and status of individuals and collectives, through identifiable purposes and opportunities. Teacher learning involves the interpretation, integration and application of teacher development processes, through personal or collective responses, which can shape future purposes and opportunities. Together, it is suggested, these recursive, nested and complicit processes comprise professional growth. The characterisation of teacher *development* as outward-facing in this model relates to the knowledge and skills required and realised through practice considered effective, alongside the wider professional status conferred (Evans, 2008, p.30). The term *professional* (and its variants), as discussed above, is taken to encompass knowledge and skills, quality and standards, as well as status and standing in relation to the practice of teaching (Hargreaves, 2000; Evans, 2002, 2008, 2011).

The nesting of teacher *learning* as a recursive sub-process within the wider process of teacher *development* implies the deeper interpretive, integrative and applicative levels of heutagogy (Hase and Kenyon, 2007, 2013).

From deliverology to heutagogy – the complex basis for self-determined learning

Heutagogy concerns self-determined or learner-centred learning, with which Hase and Kenyon (2000, p.5) in their seminal paper extend Malcolm Knowles' earlier formulation of andragogy as self-*directed* learning. Knowles (1973) invoked andragogy when questioning assumptions made about differences between adults and children as learners, characterising the adult learner as a 'neglected species' and pedagogy, which (in Greek) means to lead the child, as a 'millstone' when adults are taught as children (p.42). The assumptions of andragogy are: 'changes in self-concept' away from dependency towards self-directedness; 'the role of experience' as a resource for learning; 'readiness to learn' based on need; 'orientation to learning' through problem-solving (Knowles, 1973, pp.45-48); with the later addition of self-awareness of 'the need to know' (Knowles *et al*, 2005, pp.64-65). Hase and Kenyon's (2000) extension of andragogy to heutagogy emphasises intuition, capability, flexibility and interaction in dealing with the non-linear, contingent and unplanned (p.5), in a rapidly changing world with increasing access to information (p.2). These demands are routinely encountered in the contemporary work of teaching and educational leadership.

Heutagogy extends beyond taught knowledge and skills, or 'competencies' that might be acquired, towards 'an integrative experience' involving changes in underlying 'values, attitudes and beliefs' (Hase and Kenyon, 2007, p.112). While acquired competencies may be replicable in familiar situations, *learning* implies application and transfer to new situations (*ibid*). Heutagogy is thus concerned with 'capability' or 'self-efficacy', making use of the 'building blocks' of knowledge and skills to deal with contingency or uncertainty in future life experiences including complex or challenging circumstances (Hase and Kenyon, 2013, p.25). Similarly, Timperley (2011) states that '[k]nowledge is deepened through trying things out in practice' (p.18), pointing to *integration* as a characteristic of more advanced levels of professional learning (pp.23-24). When teachers work collaboratively and creatively, heutagogy resonates with 'joint practice development', refining existing practices and integrating new approaches, rather than

simple replication through 'transfer of practice' (Fielding *et al*, 2005, p.32). Importantly, heutagogy is not restricted to adult learning and Hase and Kenyon (2015) suggest its wider applicability across age and context, acknowledging a place for more didactic approaches (p.11), without necessitating a pedagogy-andragogy-heutagogy continuum (p.25).

The heutagogical emphasis on more fundamental and holistic change is comparable with conceptualisations of *transformative* learning. Illeris (2014), building on the work of Mezirow to incorporate emotional and societal as well as cognitive dimensions, defines transformative learning as implying '*change in the identity of the learner*' (p.40, original emphasis). *Identity*, viewed as 'how one experiences one's self, one's qualities and properties, and how one is experienced by others' (Illeris, 2014, p.38) is clearly relevant to teacher professional growth and, for Day (2012, pp.14-15), teacher identity implies the 'person inside the professional'. Teacher identity is shaped by three interacting dimensions: personal characteristics influenced by life experience; situational work-based circumstances and relationships; and professional, cultural and policy expectations (Day *et al*, 2007, pp.106-7; Day, 2012 pp.14-15). In the recent VITAE project in England, studying the lives and effectiveness of 300 teachers, the prominent situational enablers of a 'stable sense of identity' were strong leadership and supportive colleagues (Day, 2012, p.15). However, teachers more frequently cited their personal and family circumstances outside the workplace, suggesting that to understand teacher growth both the person and the professional should be considered.

Setting out a 'comprehensive understanding' of learning, Illeris (2014, pp.32-35) stresses two integrated processes of 'interaction' between the learner and their environment and individual, internal 'acquisition and elaboration'. The latter combines 'content' with the 'incentive' to make sense and use of it through 'motivation, emotion and volition' (Illeris, 2014, p.34), which are also central to heutagogy. Thus, Hase and Kenyon (2015, p.26) conclude, '[a]ssociations are made by the learner, not by the teacher, no matter how hard teachers might try to make them on the learner's behalf'. Distinguishing andragogy and heutagogy, Hase and Kenyon (2000, p.5) explain that the latter 'goes beyond problem solving by enabling proactivity' – learning becomes self-*determined*, as well as self-directed. However, Knowles (1973, p.173) had previously underlined proactive initiative-taking in andragogy, complaining that 'the products of our educational system don't know how to learn – they only know how to be taught'. So, while heutagogy has much in common with andragogy, Hase and Kenyon's (2007) development

of Knowles' important contribution signals a further departure from teacher-led curriculum design and delivery. Further, heutagogy has a complexivist provenance, dubbed by Hase and Kenyon (2007) a 'child of complexity theory', acknowledging the workplace as a complex adaptive system in which the self-determined learner strives to become capable (p.114). Despite the focus on *self*-determination in heutagogy, it also emphasises 'collaborative learning' (Blaschke, 2012, p.66; Hase and Kenyon, 2007, p.115) through a 'relational approach' (Canning and Callan, 2010, p.79).

Complexity *thinking*, as a pragmatic response to wide-ranging implications of complexity theory, is particularly relevant to self-determined learning. As previously stated, it is characterised by an awareness of individuals and organisations as complex systems that learn, with a concern for action and practice (Davis and Sumara, 2006, p.25). Learning implies more than simply 'taking in' knowledge, to encompass adaptation to changing situations for both individuals and collectives (Davis and Sumara, 2001, pp.88-9). Complexity thinking considers learning as 'trans-level', such that new possibilities for collectives arise from individual change and adaptation of group members, through ideational interaction (Davis and Sumara, 2006, p.142). Learning is thus *emergent*, through the 'co-evolution of the individual, the social group and the wider society' (Morrison, 2008, p.21), enabling structural changes at each level. Emergence in heutagogy is associated with unpredictability, as learning is 'constructed by the learner in a process of purposeful, self-organised adaptations' (Hase and Kenyon, 2015, p.28). Similarly, contingency and interaction mean that learning may be *expansive* too, such that 'learners learn something that is not yet there', constructing and implementing 'a new object and concept for their collective activity' (Engeström and Sannino, 2010, p.2).

Heutagogy is coherent with key ideas arising from neuro-science, that learning is 'a natural process for human beings' and 'is much more than content acquisition or the development of cognitive skills' (CERI and OECD, 2007, p.197). Learning is defined as the 'process of expansion of a person's capacities', which 'always involves the interaction of cognitive and emotional processes' and 'always occurs in social contexts through interaction between learners and their environments' (*ibid*). Thus, learning spans the 'internal psychological' *and* 'external interaction' dimensions of the comprehensive model proposed by Illeris (2009a, p.8). A process of self-organised, emergent knowledge construction, or 'complex constructivism', is further developed by Doolittle (2014) through six principles of learning. First, learning involves individual

'adaptation to the environment' and 'active construction of knowledge' and experience, which is self-organised into 'internal models' (Doolittle, 2014, p.494). These models emerge as a 'natural consequence of an individual's on-going experience', such that learning can be considered a 'function of both individual interaction and existing internal models'. This process takes place within a hierarchy of influences or 'selection pressures' that involve 'individuals, family, friends, and local and global culture' (*ibid*).

Heutagogy is also associated with 'double-loop' learning, which entails critical self-reflection and questioning of thoughts, actions and beliefs, asking how and why we learn (Argyris, 2006, p.268; Blaschke, 2012, p.59; Hase and Kenyon, 2015, p.22). This becomes a process of 'meta-reflection' in 'spirals of reflection', helping to make intuitive or tacit practices of the learner conscious, explicit and shared (Canning and Callan, 2010). Such a process is often described as 'reflexivity', a 'complexification' of reflection through recursion, concerned with 'exposing or questioning our ways of doing' (Hibbert *et al*, 2010, p.48). Earlier conceptualisations of reflexivity, as a 'complex interpersonally negotiated process of interpretation', involve shared experiences and communication 'bent back' through our own experience (Winter, 1989, p.40). For Bateson (1988, pp.143-4, original emphasis), 'circuits of interaction' through 'double description' bring about 'learning of context' as a new logical type – 'Learning II' or '*deutero-learning*'. As Morin (2014, p.17) explains, a process is recursive when 'the product produced by the process is necessary for sustaining the productive process'. Recursion, a key concept in complexity thinking, is an underlying process in heutagogy, such that capability and growth are self-sustaining in building on prior knowledge and drawing on new experience.

The heutagogical emphasis on personal, integrative experience invokes the *lived* object of learning in variation theory (Lo, 2012; Lo and Marton, 2012). Lo (2012, pp.47-48) explains the dual short-term and long-term educational goals of an object of learning comprising, respectively, 'the specific aspect', 'knowledge' or 'content' and 'the general aspect', 'capability or attitude', comparable with the content and incentive aspects in the comprehensive model of learning of (Illeris, 2009a, 2014). By emphasising both aspects, variation theory overcomes education policy dilemmas that pitch 'mastery of subject knowledge' and 'higher-order thinking capabilities' as somehow in opposition (Lo, 2012, p.25). While variation theory is principally concerned with classroom-based learning and a pedagogical approach, the focus on what is experienced or lived encompasses self-determination. The *intended* object of learning may be

teacher-defined, though when *enacted* through the 'complex and dynamic nature of classroom interactions' the ways in which it is *lived* by each learner may vary considerably (Lo and Marton, 2012, pp.9-10). Extended to professional learning, the teacher is also a learner, thereby their own experience becomes part of the object of learning.

In heutagogy, what is intended, how it is enacted and the way it is lived are *all* self-determined, though contingently and expansively shaped, and the object of learning includes the self with others. A similar position is taken in complexity thinking, which questions assumptions that 'learning is somehow "caused by" or "due to" experience' (Davis and Sumara, 2006, p.11). Rather, learning is '*dependent on*' but not '*determined by*' experiences or activities that may include teaching (Davis and Upitis, 2004, p.124, original emphasis). Similarly, variation theory posits that 'the teaching and learning relationship is not one between cause and effect, but between what is made possible … and what possibilities are actually made use of' (Lo and Marton, 2012, p.10). Understood in this way, learning becomes the *self-determined response* to experience. Similarly, Jarvis (2013, p.412) concludes that learning is 'an interactive response to the sensations of externality – it is a personal expression of living'.

In summary, both heutagogy and variation theory share the complexivist insight that 'what is learned itself is more appropriately attributable to the *agent* than to the *agent's context*' (Davis and Sumara, 2006, p.12, original emphasis). This understanding does not diminish the importance of context, or the teacher's role, but foregrounds the learner's response in determining learning itself. In other words, as complex beings, systems that learn, we are 'structure-determined' with a continually changing biological and neurological structure 'in response to emergent experiences', which might include teaching (Davis and Sumara, 2006, pp.99-100). There is a 'structural coupling', a recursive 'continual back-and-forth influence' between learner and context, 'knower and known' (Proulx, 2008, p.23). Incorporating variation theory, learning experienced or lived might be influenced or triggered by prior experiences, contexts, others and the use made of actual possibilities (Lo and Marton, 2012, p.10). Learning situations (classrooms, workplaces or informal situations) thus become 'spaces of the possible' (Stewart and Cohen, 1997, p.34) where what *might* happen is as important as what *does* happen.

Drawing on the model outlined in Figure 2 above, it is suggested that lived *responses* to intended *purposes* and enacted *opportunities* for learning recursively shape and are shaped by each other (Taylor, 2017). For example, a teacher may intend changing their approach to a curriculum topic, responding to the situational purpose of the interests and prior knowledge of students, or the more external purposes of a prescribed syllabus. A series of formal/informal and planned/incidental development opportunities are enacted, including discussions with others and collection of materials. In response to these opportunities the teacher produces, trials and adapts classroom resources and activities, generating further learning intentions and opportunities based on responses from their learners. Such a familiar workplace scenario is readily formalised to become a process of *practice-based inquiry*.

Practice-based inquiry – a vehicle for self-determined professional learning

There are many well-established terms combining *practice-based/practitioner/action* with *inquiry/enquiry/research*, with respect to teacher learning and development, usually holding similar or equivalent meanings. These terms sometimes have specific provenance, with teachers seen as: students of learning (John Dewey); reflective practitioners (Donald Schön); problem solvers (Stephen Corey); researchers (Lawrence Stenhouse) (Lytle and Cochran-Smith, 1994; Hopkins, 2008). They share a shift from 'outside-in' research, generated by experts in universities and transmitted for use by teachers, towards an 'inside/outside' view of knowledge and expertise residing in the school (Lytle and Cochran-Smith 1994, p.23). Similarly, Kemmis (2011) contrasts traditional objective approaches of 'spectator' research with more subjective, 'participant' orientations of practitioner research. In my own work with teachers and educational leaders the term *practice-based inquiry (PBI)* is preferred, considered as *a form of research* that supports self-determined learning and is inherently participatory. Here, the question posed many years ago by Stenhouse (1981) of *what counts as (educational) research* remains relevant and debateable, with the distinction made between 'research *on* education' and 'research *in* education' (p.113, original emphasis). PBI, as an educational process for teachers to inform their practices, is principally concerned with the latter. However, oriented towards application of personal, situated and wider sources of knowledge, PBI entails research both *on* and *in* education, combining 'research literacy' with 'practical experience' (BERA, 2014, p.10). As a vehicle for professional learning, PBI affords 'interplay' between 'public knowledge' and 'practical wisdom', linking theory and practice (Boyd *et al*, 2014, p.9).

Research from a spectator position tends to 'objectivise practice', while the participant researches 'from within', without necessarily following the same methodological conventions (Kemmis, 2011, pp.7-8). Reid (2004, p.8) defines this 'rigorous and systematic thinking about professional practice' as *inquiry* – a 'different' but not 'lesser activity' to research. Appropriate rigour comes from awareness of strengths and limitations of inquiry, and its implications for practice. Recurrent concerns that practitioner research lacks generalisability beyond its context, failing to contribute to a broader body of knowledge about teaching (Thomas, 2012), miss its point and purpose. PBI involves teachers investigating, individually or collaboratively, their own practices in the workplace; gathering, distilling and sharing evidence, drawing on wider sources of knowledge, taking action to change practice and reflecting critically on both processes and outcomes. Practice-based inquiry is therefore close to 'enquiry-based practice', for which teachers require 'capacity, motivation and opportunity to use research related skills to investigate what is working well and what isn't effective in their own practice' (BERA, 2014, p.37). Above all, PBI as a creative knowledge-generating process provides opportunities for '[s]implistic notions of knowledge transfer and acquisition … to be replaced by an enriched conception of collaborative expansive professional learning' (Hatcher, 2011, p.412).

The position of the practitioner inquirer as an *insider* in PBI aligns strongly with the participatory paradigm of Heron and Reason (1997), principally concerned with '[p]ractical knowing: knowing how to choose and act' (p.287) and echoed in the 'practice-oriented' question of complexity thinking, '[h]ow should we act?' (Davis and Sumara, 2006, p.25). Further comparisons can be made with agential realism (Barad, 2007), in which agency is understood as '*enactment, not something that someone or something has*' (p.178, original emphasis), and 'knowing, thinking, measuring, theorizing, and observing are material practices of intra-acting within and as part of the world' (p.91). The formulation *intra*-action, rather than *inter*-action, emphasises both the participatory epistemological position we hold in the world and the ontological agency to shape that world. Agential realism therefore challenges the very possibility of taking an outsider, spectator position and objectivity lies in 'agential separability' or 'exteriority within phenomena' (Barad, 2007, p.184).

The view that research, inquiry or evaluation should be objective, distanced and dispassionate seems commonly held. In contrast, complexity thinking holds that 'we can never develop an objective appreciation of something of which we are part' and therefore we should not stand

back but 'get involved', acknowledging 'our implication/complicity' (Davis and Sumara, 2008a, p.174). Therefore, misapplying the quality criteria of objectivist, outsider, spectator research (typically validity, reliability and generalisability) to subjectivist, insider, participatory inquiry can be considered a category mistake. Addressing concerns of insider bias and asking whether practice-based inquiry can be considered 'real research', teachers cited by Schaenen *et al* (2012, p.80) conclude: 'Think science. But focus on Darwin's fieldwork rather than large-N experimental design'. Appropriate criteria for PBI informed by complexity thinking might be sought in evidence and knowledge claims that are 'viable, reasonable, relevant and contingent' (Davis and Sumara, 2006, p.26). PBI, by definition, need not pursue transferability across wider contexts, however collective approaches and outcomes may lead to 'situated generalisation' (Simons *et al*, 2003). Insights gained from collaborative PBI might be codified in policies or established in organisational practices and, through wider dissemination, others may find relevance to their own situations. However, this process is seldom one of simple replication, as further response, re-purposing and opportunity for self-determined application and re-contextualisation usually follow.

The starting point for PBI is often reflection, looking back on experience. This involves teachers recounting reflection-in-action, their thinking in the moment and improvisation, as well as reflection-on-practice, their re-thinking after the event (Schön, 2011, pp.61-62; Ghaye, 2011, p.6). Fruitful opportunities to draw meaning from significant moments or critical incidents and to make tacit knowledge explicit often ensue. A next step entails exploring wider sources of related knowledge, policy, research and commentary, to shed further light on aspects of practice holding significance for self-determined learning. Beyond reflection, the further optical metaphor of *diffraction* helps to visualise this process, involving 'reading insights through one another in ways that help illuminate differences as they emerge' (Barad, 2007, p.30). However, diffraction is more than a metaphor in agential realism, with epistemological and ontological implications (*ibid*, p.72). When teachers form diffraction patterns between their accounts or evidence of personal experience and relevant published material, critical features become amplified while those mattering less than initially assumed are diminished. New insights gained contribute not only to self-determined learning, but also to 'making a difference in the world as opposed to just being endlessly self-reflective' (Haraway, 2000, p.104).

A further step, from practice-based reflection to inquiry, entails the temporal shift from *looking back* on previous experience towards *looking ahead* to future development, enacting and implementing change. This brings PBI closer to action research, frequently identified as an appropriate strategy for investigating and implementing change in complex and unpredictable situations (e.g. Phelps and Hase, 2004; Radford, 2007). PBI may involve typical spirals of small-steps change associated with action research, through repeated cycles of planning, acting, observing and reflecting (Kemmis and McTaggart, 2005, p.278). However, portfolio-building, bricolage, case studies, lesson and learning studies, and surveys might also be appropriate inquiry strategies. Self-determined decision-making and justification of PBI approaches can ameliorate risks identified by Radford (2007) of action research, particularly as a mandated form of professional development, becoming mechanistic and controlling of teacher practices. Similarly, Hopkins (2008) warns against action research being 'prescriptive' (p.55) or perceived as purely a problem-solving, or 'deficit model of professional development' (p.58). Appreciative inquiry offers another alternative, avoiding a tendency towards tackling perceived deficits, instead encouraging affirmation of identifiable strengths to grow confidence and build capacity in organisations (Cooperrider and Whitney, 2001). As Schaenen *et al* (2012, p.78) explain, '[a]ction research is possible for teachers when it is generated by real classroom puzzlements, not just by the requirements of a university course or school-based reform effort'.

Performativity revisited – the possibilities of practice-based inquiry

The self-determined aspirations of PBI are inevitably constrained within the normative and externally regulated public-service profession of teaching, characterised by performativity. Radford (2007, p.273) suggests that 'empowerment becomes a process of developing as an 'effective performer' enjoying a high level of practical control within a relatively limited framework of possibilities for action'. A renewed manifestation of performativity is seen in ongoing calls for evidence-based practice in teaching, with obvious implications for CPLD. At first sight, it appears perfectly reasonable that teaching should be evidence-based or evidence-informed. However, questions of *what* and *whose* evidence quickly follow, initiating far-reaching debates over educational research, policy direction, professional practice and teacher education. Evidence-based practice, when guided by the question *what works*, implies that the ends justify the means if the follow-up questions *for what purpose* and *for whom* remain unasked (Biesta, 2007). These ends are often taken for granted as the targets and indicators of

performativity, inevitably expressed as published outcomes for learners in high-stakes examinations. However, the stakes are often higher for schools, colleges and teachers than they are for the students themselves (Mansell, 2007, p.15).

Complexity thinking encourages exploration of educational matters through relationships between the system and its parts at institutional, teacher and student levels, their 'whole-part mutual implication' (Morin, 2006, p.6). For example, student, teacher and school performance is driven and measured competitively by examination results, which are themselves constrained by normal-curve conditioning, with perceived success and failure dependent on above-average outcomes (Simon and Campano, 2013). In a highly paradoxical political context where sustained increases in published results are interpreted as 'dumbing-down', schools are expected to raise measurable attainment while strenuous efforts are made to ensure comparable year-on-year standards, rendering system-wide school improvement an impossible endeavour (Taylor, 2015). Wrigley (2008, p.145) asserts that 'is no longer tenable to discuss school improvement in the English context without recognising its entanglement with a neo-liberal project of privatisation', explicitly recognising the complexity of this relationship. Attempts to understand these entanglements within our education system inevitably entail *complexity reduction* (Osberg *et al*, 2008, p.208). However, the socially-constructed system of schooling is itself a 'political act' of complexity reduction, limiting human learning to a set of opportunities and outcomes deemed valid (Biesta, 2010a, pp.497-8). Thus, a symptom of the GERM is an over-reduction of learning as a complex, recursive, non-linear process, to a simple, input-output causal outcome (Sahlberg, 2011, p.180).

Teachers are often well-aware that input-output assumptions are inadequate, experiencing that what works well in some situations can be responded to very differently in others (Davis and Sumara, 2006, p.100). Yet performativity, informed by *what works*, treats all situations as equal through complexity reduction. Recognisably worthwhile outcomes may be sought by top-down policy agendas, improvement initiatives and associated accountability systems. However, the measurement of these outcomes using standardised tests fitted to a normal-curve, represses the complexity of learning (Simon and Campano, 2013, p.33). Competition for a ration of above-average grades becomes the imperative. Yet teachers know that some students inevitably fall short when measured this way, and that they and their schools will be held accountable rather than the system that has allowed this to happen (Taylor, 2015). These

circumstances characterise the complex, contradictory, multi-layered educational context we inhabit and in which we are complicit. Several responses to these external conditions for teacher professional growth have been articulated.

Nearly twenty years ago, Hargreaves (2000, p.169) described the regulatory drivers of performativity as the 'antithesis of any kind of professionalism'. The proposed solution was a 'post-professional' or 'postmodern professionalism that opens schools and teachers up to parents and the public' (p.175), with credibility gained by establishing standards through self-regulated professional bodies (p.171). However, Hargreaves (2000, p.132) recognised the 'paradoxical challenge' of accepting public scrutiny for professional influence and, wary of postmodern professionalism reinforcing performativity, Stronach *et al* (2002, pp.130-2) suggested professionals 're-story themselves' away from audit cultures and deficit models. Instead, they argued that healthier practice 'needs exercise rather than medication', motivation not coercion, relying on 'positive trust' rather than 'performance ranking' (*ibid*), heralding more recent proposals for professional capital (Hargreaves and Fullan, 2013). Seventeen years on, Hargreaves (2016) sees autonomy and transparency as 'two good ideas gone bad'. Autonomy means schools run as competitive businesses, separated from local democratic engagement, concerned with 'hiring and firing' more than teacher professionalism and decision-making (*ibid*, pp.122-3). Relatedly, transparency is less concerned with openness, trust and shared responsibility, distorted by top-down scrutiny and data-driven bureaucracy (*Ibid*, pp.124-5).

Another prominent response to pressures of performativity is promotion of teacher resilience (Gu and Day, 2007, 2013). More than survival and bouncing-back from adversity, resilience involves the 'capacity to manage the unavoidable uncertainties inherent in the realities of teaching' (Gu and Day, 2013, p.39). This acknowledgement of complexity points to wicked issues faced by teachers, which cannot be tamed and handled through basic 'competence' and instead require 'greater *capability*' (Bore and Wright, 2009, p.252, original emphasis). Teacher capability is situated and developed within the continual change and localised contexts of schooling, characterised by masters level expectations (outlined in the next section) (*ibid*, p.253). Similarly, teacher resilience, as a 'dynamic construct', is derived both individually and contextually, through positive personal experiences and favourable organisational conditions (Gu and Day, 2013, p.40). However, wider debates critique notions of resilience that accept vulnerability and insecurity, promoting adaptivity at the expense of resistance to the

unfavourable consequences of neoliberalism and hopes for political change (Evans and Reid, 2013). In teacher education, the language of humanism and autonomy risks losing its transformative meaning by reinforcing an entrepreneurial performance culture in professional practice (Kascak *et al*, 2011).

The 'post-performative' teacher, neither compliant nor resistant to external control, balances tensions between accountability and the autonomy exercised in their own classrooms (Wilkins, 2011). Sharing Ball's (2003) concern for the 'teacher's soul', or identity, and potentially false perceptions of devolved power in accepting the 'terrors of performativity', Wilkins (2011, p.397) nevertheless finds new teachers creating 'micro-autonomous spaces', who say 'I can do what I like as long as I hit my targets'. Such statements can be interpreted as 'ventriloquism' by the 'vocabulary of performance' (Ball, 2003, p.218). However, Wilkins (2011, p.403) sees little evidence of instrumentalism in these teachers, finding instead 'idealism', 'resilience' and 'positivity' while acknowledging this may change. Similarly, Chua (2009) proposes more fluid 'design thinking', teachers exercising playful yet serious pursuit of other worthwhile goals for students besides handed-down targets, thereby 'exorcising the terrors of performativity'. For Chua (2009), 'saving the teacher's soul', the latter defined as the 'self, as experienced as one's own cognitive consciousness', involves nurturing a richer, broader and more flexible 'professional soul' within teachers as designers (p.162). Similarly, embracing complexity, Mockler (2013, p.42) conceives professional learning as 'identity work', 'formation' and the 'ongoing becoming' of teachers beyond performative constraints.

Self-determined learning through PBI provides opportunities for building resilience and capability, including through design thinking and identity work, with inquiry becoming a 'stance' rather than built around short-lived projects (Cochran-Smith and Lytle, 2011, p.20). While PBI can both resist and reinforce the negative consequences of performativity, it at least offers a vehicle for teachers to act deliberatively and self-critically. An inquiry stance can infuse everyday work with research ethics, as a 'way of understanding and enacting ethical practice' (Mockler, 2014, p.156). Simon and Campano (2013) associate an inquiry stance with activist resistance to normal-curve conditioning, while recognising that an uncritical approach might instead be reinforcing. For Sachs (2001), an 'activist' identity is 'rooted in principles of equity and social justice' (p.157-8), in contrast to an 'individualistic', 'competitive', 'controlling and regulative', 'externally defined' and 'entrepreneurial' identity (p.155-7). Teacher activism,

'developing counter-practices' through inquiry (Simon and Campano, 2013, p.33), may bring localised benefits, however changing the underlying beliefs that reinforce social injustice and inequality is likely to require a concerted political effort (Apple, 2013; Dorling, 2015).

In a 'Fourth Way' prospectus for educational change, wherein schools become catalysts for regeneration and improvement based on agreed values, accountability becomes our 'conscience, not our Grand Inquisitor' (Hargreaves and Shirley, 2009, p.111). Elmore (2002, p.5) asserts accountability as 'a reciprocal process', where expectations of performance must be accompanied by provision for the capability and capacity to meet them. Internal accountability, where there is strong alignment and clear responsibilities among and between colleagues, is also likely to lead to greater responsiveness and success in dealing with external demands (Elmore, 2002, pp.20-21). Purposes of PBI or action research in developing praxis, mean for teachers 'the accountability is to themselves and to their students' (Schaenen *et al*, 2012, pp.76-77). However, Elmore (2002, p.5) also points out the 'brutal irony' that schools are often 'hostile and inhospitable places for learning', both for adults and students. Supportive 'nutrients' of professional growth, being 'valued', 'encouraged', 'noticed', 'trusted', 'listened to' and 'respected', vie with counterproductive 'toxins', being 'ignored', 'judged', 'over-directed', 'misunderstood', or 'not being listened to' with 'ideas being rejected or stolen' and receiving 'constant carping criticisms' (MacBeath in NCSL/SHA, 2005, p.9). More recently, MacBeath (2012, p.13) similarly distinguishes 'satisfiers' and 'dissatisfiers', adding contact with students and colleagues to the satisfying nutrients and bureaucratic pressures and performativity to the dissatisfying toxins. In complexity terms, respectively, these act as attractors and repellers to professional growth.

Based on evidence of widely accepted features of effective and valued CPLD remaining uncommon in teacher experience and practice, both hopes and disappointments in responding to performativity seem entrenched. Self-determined learning is no panacea for performative impositions nor inoculation against the GERM. However, there is often a sense of immediacy and locality in teachers' desires to meet the day-to-day needs and interests of their learners through positive shared experiences, informed by reflection and inquiry (Taylor, 2017). Many teachers realise that examination success is a 'by-product of effective learning' not its sole purpose or definition (Watkins, 2010, p.12). Complexity thinking posits learning as an emergent phenomenon, irreducible to teaching, experiences or triggers, and interpreted by the learner. If

measurable outcomes are a by-product of this complex process, they are also shaped by the measuring apparatus of assessment and examination. PBI *can* facilitate critical understanding of the conditions that influence teachers' work and open-up space for agency to respond, affording opportunities for 'professional renewal' (Sachs, 1999). However, while critical perspectives are crucial, it is even more important to 'nourish the alternatives', helping teachers 'see what is possible' and 'see that they can participate' (Gergen, interviewed by Aceros, 2012, p.1010).

The responsibilities of practice-based inquiry and the role of the tutor

Discussions of autonomy and accountability in PBI as a form of self-determined learning raise questions about its axiology, or wider purpose and intrinsic value. There is self-similarity in accounts heard, teachers tending to conceive their own learning requirements in terms of others' needs, particularly those of their students (Taylor, 2017). However, contemporary learning needs are entangled with performativity and deliverology, prompting ethical questions about the nature and purpose of education, which teachers must consider for themselves. PBI encourages such consideration, from an inherently participatory and insider perspective, affording collaboration and interaction with others. It seeks to 'shed light' on practice to achieve a positive or 'benevolent change' in the lives and experiences of others (Dadds, 1998, p.41) and, in its relation to action research, seeks to bring about 'socially just change' (Townsend, 2013, p.337). Therefore, the principal aims of practice-based inquiry *are* self-determined learning, or *heutagogy*, alongside ethically informed *praxis*.

In Aristotelian 'practical philosophy', *praxis* is a means towards a good life for those involved and for humankind (Kemmis, 2011, p.10) but also implies an ethical process of living – the 'good of *praxis* cannot be 'made': it can only be 'done'' (Carr, 2006, p.426, original emphasis). Praxis is guided by *phronesis*, deliberative wisdom or 'the disposition to act wisely and well' (Kemmis 2010, p.421), in comparison to *poiesis* as goal-directed and productive action requiring expertise, associated with a craft and guided by *technē* or 'instrumental 'means-end' reasoning' (Carr 2006, pp.425-6). *Both* forms of practical action and their reasoning, praxis/phronesis and poiesis/technē, are valuable and constructive in enhancing the expertise, achievements *and* ethical well-being of those involved. However, Carr (2006, pp.433-4) suggests that in a

'dominant culture of modernity' the latter have eclipsed the former, exemplified in the instrumental discourses of performativity, deliverology and *what works*. Ethically engaged PBI, informed by a practical philosophy, has the potential to recover praxis *with* phronesis and poiesis *with* technē as complementary – to consider *what works* and *what matters*.

The extent to which complexity encompasses values within the purposive field of education is debated (and further considered in Chapter Three). For example, Morrison (2008, p.26) concludes that 'complexity theory cannot tell us how we should act' as it is essentially 'amoral'. In the normative and purposive field of education, the descriptive utility of complexity holds no prescriptive connotations (Kuhn, 2008, p.178; Morrison, 2008, p.26). Thus, complexity might be misunderstood as something to be sought or achieved, rather than an inevitability of mutually interacting minds, collectives and contexts. However, this overlooks the part we play in shaping complexity, through our participation in and response to unfolding events. While complexity *theory* itself offers no practical, intentional or moral suggestions, the human act of complexity *thinking* is deeply ethical. As Kuhn (2008, p.179) points out, 'to enlarge the complexity by which participants … understand their own situation is to facilitate change'. Dealing with the incompressibility of complexity and its inevitable reduction in our attempts to understand it, 'we have to make *choices'* (Cilliers, 2005, p.264, original emphasis). Teachers thereby develop the capability to handle wicked issues (Bore and Wright, 2009), exercising decisional capital in their professional roles (Hargreaves and Fullan, 2012).

PBI informed by complexity thinking treats contexts as 'spaces of the possible' or 'phase spaces', with study of workplace practices interested not only in what happens but what might happen in different circumstances (Stewart and Cohen, 1997, p.34). Kuhn (2008, p.171) suggests that through collaborative inquiry, phase space intersects with 'phrase space', or following Kemmis (2011), 'communicative space' (p.14) or the 'living conversation-space of practice' (p.10). Echoing the intended, enacted and lived cycle of variation theory (Lo, 2012), Morin (2014, p.19) points out that '[w]hen we decide upon an action the action often does not fulfil our intent because it enters in a play of interactions, retroactions and so on'. This lack of certainty serves to reinforce deliberation, communication and responsibility over decisions and choices made from those possible. While complexity thinking accepts the contingent and unpredictable it also encourages us to be 'prudent and attentive' in 'preparing for the unexpected' (Morin, 2008, p.56). A further comparison can be made with agential realism, in

which '[p]articular 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, p.178). *Matters* and *mattering* are used here in two senses, drawing attention to what is important and also to what comes into being or exists.

The teacher or tutor in self-determined learning clearly holds a different role to that of a traditional pedagogue. Hase and Kenyon (2015) propose the heutagogical function of a 'guide' or 'facilitator' (p.11), with emphasis on both encouraging and participating in questioning and dialogue, rather than directing (p.166). Much of my own work takes this approach in supporting master's level study, where expectations in England articulated by the Quality Assurance Agency, provide a strong basis for self-determined learning and developing capability. For example, the Framework for Higher Education Qualifications in England, Wales and Northern Ireland (QAA, 2008a, p.21) specifies that holders of a master's qualification:

- deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences;
- demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level;
- continue to advance their knowledge and understanding, and to develop new skills to a high level.

Further, the Higher Education Credit Framework for England (QAA, 2008b, p.19) stipulates that learning at master's level (Level 7) 'will reflect the ability to':

display mastery of a complex and specialised area of knowledge and skills, employing advanced skills to conduct research, or advanced technical or professional activity, accepting accountability for related decision making, including use of supervision.

Self-determination is therefore enshrined in the academic standards, and if accountability for the use of supervision lies with the learner, this implies *watching over* rather than *directing*, particularly when the learning context is the workplace. Appropriate support requires respect for teachers' organisational situations and often competing occupational demands, including those encountered through performativity. This entails sensitivity to complex overlapping and

interwoven needs, interests and relationships, often based on power. Perhaps the most important question, posed some years ago by Sachs (1999, p.45) but still pertinent is 'whose questions get asked?'. For self-determined PBI the answer is clear – questions must belong to teachers, where fruitful agendas for inquiry are negotiated between students and tutors as equals (Sachs, 1999, p.45; Schaenen *et al*, 2012, pp.73-74). The role of the tutor in PBI is captured in Schein's (2011, p.4) conception of the 'process consultant', pertaining to 'humble inquiry' as a form of 'helping' in business leadership but educationally relevant. Humble inquiry recognises that leaders or helpers do not necessarily 'understand the complex realities of the situation' and must therefore obtain this information from others to help or lead successfully (Schein, 2011, p.4). The process consultant contrasts with the 'expert' who provides services or information and the 'doctor' who diagnoses problems and offers prescriptions, instead helping the 'client' to solve their own problems and adopting the other roles only on request (*ibid*).

PBI need not concern problem-solving and may take a positive, generative and appreciative approach (Cooperrider and Whitney, 2001). Appreciative inquiry shares with complexity thinking a focus on organisational learning, generative processes and interrelationships, where the tutor becomes an '*Agent of Inquiry*', and the organisation is a 'living spiritual-social', not mechanical, system (Cooperrider and Whitney, 2001, p.72, original emphasis). The agent of inquiry is a facilitator of 'possibilities, hope, and inspired action', who seeks to 'give the process away' helping participants 'in making it their own' (*ibid*). Similarly, the tutor in heutagogy 'relinquishes ownership of the learning path and process to the learner' (Blaschke, 2012, p.59). In PBI, the process of gathering evidence, taking action and reflecting on practice is self-determined through identifiable personal, team and institutional priorities. However, the tutor as process consultant or agent of inquiry is not only an external influencer – she/he, too, is a self-determined learner.

Hinting at complexity, Cochran-Smith and Lytle (2011, p.19) discuss the 'dialectic' of practice and inquiry in a 'reciprocal, recursive, and symbiotic relationship'. Similarly, the relationship between inquirer and tutor affords changes to practice through self-determined learning for each in response to the influence of the other. The tutor as process consultant or agent of inquiry responds to and learns from a growing awareness of the learning needs and organisational context of the inquirer. Simultaneously, the inquirer responds to and learns from this sharing of awareness, as well as insights offered by or sought from the tutor, often drawn

from other contexts and wider sources of knowledge. This recursive, dialogic, mutually supportive process changes both tutor and inquirer such that the terms of the relationship are continually re-defined. Thus, both design thinking (Chua, 2009) and identity work (Mockler, 2013) are exercised through mutually self-determined learning in this relationship of complicity, which holds important practical and ethical implications.

Where PBI contributes to a qualification, issues of power enter the relationship through assessments and associated financial transactions. Both tutor and inquirer have vested interests in success and academic standards must be maintained, secured by internal moderation and external examination. Shared understanding of the self-determined nature, quality and expectations of such work, articulated in the master's level descriptors (QAA, 2008a, p.21; 2008b, p.19), assists both tutor and enquirer in managing the complicity of their relationship. In practical terms, PBI holds potential for material changes to lived experiences, which means the ethical planning and accounting for one's own intra-actions. Self-determined learning through PBI, is a response to experience, which generates purpose and opportunity for new experiences, possibilities and alternatives. With this response, comes the need to both act responsibly *with* others and to enable response-ability *for* others.

Summary – towards a complexity-informed methodology

Drawing on a range of perspectives and existing literature pertaining to teacher professional growth and practice-based inquiry, key insights can be summarised with respect to the initial research aims. Evidence indicates broad consensus over features of teacher development and learning considered fruitful and effective: continuous, diverse and sustained over time; focused on learner and curriculum needs; practical and work-based, involving active experimentation and inquiry; collaborative and encouraging of trusting relationships, reflection and dialogue; and supported by coherent and cohesive leadership, networking and external expertise. Many of these features are afforded by practice-based inquiry, however their experience among teachers is not prevalent, despite agreement over their perceived value. Avalos (2012, p.10) concludes that even professional development with the strongest evidence of impact is not 'of itself relevant to all teachers', so that we need to explore:

the interacting links and influences of the history and traditions of groups of teachers, the educational needs of their student populations, the expectations of their education systems, teachers' working conditions and the opportunities to learn that are open to them.

Accepting this complexity, we should not be disappointed or surprised when features of professional growth considered effective are present but unsuccessful, or when seemingly unpromising approaches prove fruitful. As Lemke and Sabelli (2008, p.122) suggest, 'all genuinely complex systems are individual, surprising, and not a little perverse'.

The literature points to lack of agreement over the status of teaching as a profession, if viewed as such at all, in the extent to which it is autonomous, self-governing and constitutes an established body of knowledge. Contemporary educational policy tends to confer autonomy to schools and colleges when balanced with accountability for measurable performance. This has brought about a shift from professional learning as individual and collaborative sense-making, to professional development as delivery towards performance against measurable targets. The *Standard for teachers' professional development* (DfE, 2016b), while recognising many of the characteristics of effective CPLD discussed above, proposes an input-output model of 'direct professional development', leading to 'improved practice' leading to 'improved pupil outcomes' (p.5). There is considerable evidence of external conditions and contexts for teacher professional growth moving away from occupational, democratic professionalism concerning *teaching* quality, towards organisational, managerial professionalism emphasising *teacher* quality (Day and Sachs, 2004; Evetts, 2006, 2013; Mockler, 2013). Paradoxically, much of the literature indicates a focus on the former as more conducive to the latter.

Perhaps the most influential external conditions for professional growth are standardised, normalised and competitive assessment regimes that guarantee failure as well as success (Hattie, 2015, p.3). Resulting measures are used to gauge the effectiveness of teachers and their organisations, both for research and accountability purposes. Hattie (*ibid*), whose own work has focused on measures of achievement, associates the 'in built failure' brought about by demands for narrowed gaps, standards constrained by the normal curve, with the 'politics of distraction'. Performance indicators predicated on normal distributions of outcomes across populations are predominantly a means of comparing and ranking individuals and organisations that, intentionally or not, reinforce elitism and inequality (Dorling, 2010, 2015). Further, if

educational success in a 'good' school is defined by *above-average* performance, and comparable year-on-year standards must be maintained, then continual improvement becomes 'an impossible endeavour' (Taylor, 2015). Thus, policy demands and parental expectations for all children to attend a 'good' school cannot be fully realised, yet this is the prevailing situation in which teacher professional growth must be located and understood.

The principal critique of 'educational effectiveness' agendas (Reynolds *et al*, 2014) and the global education reform movement (GERM) (Sahlberg, 2011), is the complexity reduction of education to a narrow set of measures. These prioritise proficiencies in literacy, numeracy and basic science, at the expense of arts, humanities, technologies and other subjects or capabilities. In England, the long-standing requirement for comparable outcomes in public examinations coexists, largely unnoticed, in tension with political demands for school improvement, gauged by the same measures. There is no indication in current policy of a shift away from *above-average* thinking, despite government assertion that accountability 'measures must avoid creating perverse incentives or unduly hindering innovation' (DfE, 2016d, p.21). The emphasis on 'outcomes not methods' to 'drive up standards' (*ibid*, p.9) and related inspection criteria (Ofsted, 2017, pp.61-2) offer limited articulation of *outcomes* beyond attainment and progress, although 'personal development, behaviour and welfare' are separately judged (*ibid*, pp.55-7). Progress, as measured in performance tables, is a zero-sum calculation at pupil and school levels, yet for a school to be deemed at least *good* it must be 'above average or improving across most subject areas' (*ibid*, p.61). The measuring apparatus governing educational experience, symbolised by bell-curves and snake-plots, determines success or failure as much as the endeavours of participants in the process.

Against this backdrop, drawing on the various perspectives discussed in this chapter, *intended purposes*, *enacted opportunities* and *lived responses* are proposed as critical aspects of teacher professional growth. These are conceived within a recursive process model, with associated dimensions of variation in teacher experience (Figure 1). Listening to teachers talk about their learning, in previous research and study visits, suggests these critical aspects and dimensions as complex, discernible but not meaningfully quantifiable (Taylor, 2017). This model is re-conceptualised (in Figure 2) as a complex adaptive system, individual and collective growth occurring within one or more *organisational contexts* constrained by *external conditions*. Such an attempt to model professional growth inevitably involves complexity reduction and is

therefore one of many possible interpretations. This model is not an *a priori* theory to be tested; rather it offers a heuristic with which to explore further cases, provisional and open to elaboration (Thomas, 2010, p.577). Crucially, the model is recursive in the sense adduced by complexity thinking and complicity, not statistical modelling, whereby the critical aspects are considered relational and reciprocal. In this thesis, the model is used to unravel purposes, opportunities and responses in teacher accounts, while recognising their intertwined complexity. Interpreting the parts within the whole offers further understanding of teacher professional growth, exemplifying possibilities.

This 'view from complexity' is open to criticisms frequently levelled at postmodern positions and attempts at deconstruction (Cilliers, 2005). First, acknowledging alternative interpretations is vulnerable to accusations of self-refuting relativism, but as Cilliers (2005, p.260) points out 'the claim that we cannot have complete knowledge does not imply that anything goes'. Richardson (2005, p. 42) explains that while complexity thinking does not privilege certain *general* positions or theories, claims and conclusions drawn from *particular* contexts or circumstances may hold greater plausibility or certainty. In this study 'modest claims' are preferred to the alternative of 'arrogant self-assurance', as they invite continued attempts at understanding and further possibilities (Cilliers, 2005, p.260). A second related objection may arise that a 'performative contradiction' resides in acknowledging a *necessarily* limited and reduced understanding of complexity, rendering it a 'weak position' (*ibid*). However, Cilliers (2005, p.261) counters that such an objection is again fuelled by an irresponsible arrogance, as '[w]e only have limited access to a complex world and when we are dealing with the limits of our understanding, we are dealing with ethics'. A further, perhaps most important, criticism of the modest claims associated with complexity thinking is that of 'vagueness'. Drawing on Derrida, Cilliers (2005, pp.261-2) explains that for claims to be 'intelligible' and thereby 'distinguishable' from others, their limits must be clearly understood, as '[w]e can make strong claims, but since these claims are limited, we have to be modest about them'.

This thesis attempts to interpret and understand professional growth *as experienced by teachers* and the extent to which they are complicit in shaping and influencing their practices, workplaces and profession, while these simultaneously shape and influence them. The aim is to open and shed light into the 'black box' of 'teachers' interpretation and utilisation of available understanding and skills' and its relation to practice and outcomes, which is 'far from simple'

(Timperley *et al*, 2007, p.7). As Opfer and Pedder (2011a, p.378) conclude, for this we need to 'shift the conceptual framing of teacher learning and professional development research from a cause-and-effect approach to a focus on causal explanation so that we understand under what conditions, why, and how teachers learn'. Returning to distinctions between development and learning, the extent to which teacher (or student) learning is typically motivated by *one's own need to know* remains open when considered *relational* to *others' desires to tell* (Timperley, 2011, p.14). What becomes important is *response*, through interpretation, integration and application (Hase and Kenyon, 2007; Taylor, 2017), recursively re-shaping the initial conditions, purposes and opportunities for learning and development.

This study does not seek inputs and outputs, causes and effects, but instead explores generative processes of learning and development within organisational contexts influenced by external conditions. The ways in which teacher professional growth is both self-determined *and* externally dependent, particularly through practice-based inquiry, are central to the research aims and questions. These considerations engage long-standing debates over voluntarism and determinism, agency and structure, further addressed in the next chapter in setting out the methodology for this thesis. Finally, my motivation for studying teacher professional growth resonates with Webster-Wright's (2009, p.728) review of two decades of related research, which:

> reveals most professionals as enthusiastic learners who want to improve their practice. Let us listen to their experience and work to support, not hinder, their learning. Rather than deny, seek to control, or standardize the complexity and diversity of professional learning experiences, let us accept, celebrate, and develop insights from these experiences to support professionals as they continue to learn.

Chapter Three – Research Methodology

Utilising complexity thinking to shape methodology

The previous chapter embraces calls to pursue complexity thinking in researching teacher professional growth, conceptualised as a complex non-linear process (Opfer and Pedder, 2011a). Webster-Wight (2009) advocates a 'reframing' of professional development, as the '*experience* of learning' is 'still poorly understood' (p.704, original emphasis), casting aside associations with delivery for understanding how professionals learn over time, so that they can be better supported. More broadly, complexity thinkers encourage renewed efforts to study human activities utilising insights such as indeterminacy, non-linearity, self-organisation and distributed intelligence (Gershenson and Heylighen, 2005). Similarly, Gergen (2009, p.58, original emphasis) proposes less concern for effects of supposedly 'independent factors or variables to make predictions', towards consideration of '*relational pathways*' that bring about more positive confluences and futures. In studying the motivation of language learners, Ushioda (2009) has argued for a 'person-in-context relational view', in contrast to 'context as independent variable, to capture the mutually constitutive relationship between persons and the contexts in which they act – a relationship that is dynamic, complex and non-linear' (p.218). Such perspectives, suggesting the complicity of person and context, are aspired to in this study of teacher professional growth.

This chapter sets out the methodological considerations of the thesis, starting with guiding paradigms and philosophical positions, followed by practical decisions regarding research strategy and design, chosen cases and methods. The need or necessity to base research on philosophical and paradigmatic grounds is far from universally accepted in education and other disciplines. There is widespread disagreement over paradigm definitions, their typologies, emphases, perceived importance and implications for research practice. The chapter begins by discussing contemporary paradigm meanings and debates, summarising prevalent typologies, while expanding upon and justifying the position taken. Although such debates have been characterised as 'paradigm wars' (e.g. Denzin and Lincoln, 2011), Lather (2006) offers a path through these 'stuck places' towards 'paradigm proliferation' hoping that 'more interesting and useful ways of knowing will emerge' (p.53). Complexity theory itself is implicated in paradigmatic warfare, between study of material substances in complexity *science* and the

process orientation of complexity *thinking*, however a concern of the latter is to move beyond dualisms to dialectic interaction (Simpson, 2005, pp.94-6).

Questions of ontology, epistemology and axiology are addressed to further elucidate the complexivist and participative approach adopted. The conjunction of these questions is sought in Karen Barad's *'ethico-onto-epistem-ology',* as 'an appreciation of the intertwining of ethics, knowing, and being' (Barad, 2007, p.185, original emphasis), further utilising complexity thinking and drawing on the participatory paradigm, agential realism, enactivism and relational being. These perspectives share an ontological consideration of the mutually constituted nature of research and researcher, the epistemological positioning of the researcher as part of the phenomena researched and axiological concern for the ethical implications that follow. They also challenge common representationalist views of the mind engaging with the world, re-casting abiding dualities of objectivism-realism and subjectivism-idealism. Other contributions emanate from the related fields of phenomenology, pragmatism and post-structuralism, and sources range across professional practices in health and education, feminist studies, natural and social sciences, cybernetics and neuroscience. Complexity thinking encourages such trans-disciplinarity, mindful that borrowing ideas from different disciplines can lead to misunderstanding or misappropriation, instead seeking 'participation in the emergence and evolution of insights' (Davis and Sumara, 2008b, p.43).

Having embarked on this research with tentative complexivist and participatory leanings, without a firm *a priori* philosophical framing, recognising the centrality of agentive response in teacher professional growth has reinforced this orientation and opened-up new theoretical linkages. In this chapter, Morin's (2008, 2014) paradigms of simplicity and complexity are used to frame a discussion of paradigmatic positioning that attempts to move beyond exhausted debates between adherents of quantitative, qualitative and mixed-methods research. In keeping with the complexivist principles of 'distinction' and 'conjunction' (Morin, 2006, pp.6-7), further explained below, prevalent research paradigms are distinguished while noting their relations and connections in negotiating this difficult terrain.

Research paradigms – debates, typologies, simplicity and complexity

A paradigm is defined by as a 'set of basic beliefs' or 'worldview' (Guba and Lincoln, 1994, p.107). Successive editions of the Sage Handbook of Qualitative Research (Denzin and Lincoln [Eds]) classify a range of 'competing paradigms' (1994), acknowledging 'contradictions, controversies and emerging confluences' (2000, 2005, 2011). At the outset, Guba and Lincoln (1994, p.116) specify that 'no inquirer, we maintain, ought to go about the business of inquiry without being clear about just what paradigm informs and guides his or her approach'. Thus, paradigmatic considerations take precedence over concern for methods, because they have ontological and epistemological implications for research (*ibid*, p.105). Methods, as 'tools or techniques' for collecting data 'are wisely chosen only when they are derived from and related to the larger set of assumptions and procedures that constitute the overall research methodology' (Schensul, in Given, 2008, p.516). However, others take a different view. Introducing the Sage Handbook of Mixed Methods Research, Teddlie and Tashakkori (2010) assert the primacy of *questions* driving research, 'to move researchers beyond the paradigm debate' (p.18). Further, Gorard and Taylor (2004) associate paradigms with '[g]rand words, big theories and untestable propositions about the nature of the social world' (p.149), defining a paradigm differently, as 'a set of accepted rules within any field for solving one or more puzzles' (p.148). Here, practical and procedural considerations take precedence over the philosophical, and abstraction to paradigms is considered unhelpful or not useful to researchers (*ibid*, p.164).

Paradigm debates are perpetuated between and within communities of qualitative research (QUAL), quantitative research (QUAN) and mixed methods research (MMR), in stated allegiances, writings, handbooks and journals. Whether differences are properly concerned with method, methodology or both is a focus for discussion (Creswell, 2011), though at the basic level of data collection and analysis there seems little controversy. QUAN implies the use of numbers, QUAL the use of words and MMR some combination of the two, Gorard and Taylor (2004, p.6) pointing out that 'words can be counted, and numbers can be descriptive'. However, the quantitative-qualitative divide is not straightforward, holding wider methodological and philosophical implications. Qualitative research has become a movement, field or research community (Denzin and Lincoln, 2011), understood historically as a reaction to scientifically privileged quantitative methods that lend research authority, particularly among policy-makers (Schwandt, 2005). The establishment of mixed methods research is, partly, a

reaction to the increasing prominence of qualitative research (Creswell, 2011). The elevation of data-types to supposedly incompatible and entrenched methodologies has led some to reject paradigmatic positioning, ostensibly in favour of pragmatism (Biesta, 2010b; Gorard and Taylor, 2004; Morgan, 2007). However, it can be argued that pragmatism is itself a guiding paradigm, as one of four philosophical worldviews identified by Creswell (2014, p.6), discussed below.

Paradigms are elucidated in several interrelated questions (Guba and Lincoln, 1994, p.108):

- The ontological question – what is the form and nature of reality and, therefore, what is there that can be known about it?

- The epistemological question – what is the relationship between the knower or would-be knower and what can be known?

- The methodological question – how can the inquirer (would-be knower) go about finding out whatever he or she believes can be known?

In their first classification Guba and Lincoln (1994) delineate four paradigms – 'positivism', 'postpositvism', 'critical theory *et al*' and 'constructivism', stating their allegiance to the latter. A fifth 'participatory inquiry' paradigm or 'participative worldview', proposed by Heron and Reason (1997), appears in later classifications (e.g. Lincoln *et al*, 2011). Heron and Reason (1997, p.277) pose a further 'axiological' question guiding paradigmatic considerations: 'what is intrinsically valuable in human life?'. The acceptance of axiology, the 'philosophy of values' (Given, 2008, p.52), signals a rejection of positivist and post-positivist paradigms that may seek to exclude values from research (Guba and Lincoln, 2005, p.196; Given, 2008, p.53). In the participative worldview, axiology is intertwined with ontology through the *purpose* of inquiry, leading Heron and Reason (1997, p.277) to a further question: '[f]or what purposes do we cocreate reality?'.

Paradigmatic differences in the nature of reality, ontology, typically range between forms of *realism* and *relativism*, perceived as opposites. Realism posits a world that 'exists independently of the researcher' that can be 'discovered' (Pring, 2004, p.59). In its most basic form 'naïve realism', associated with positivism, takes independent and objective descriptions of the world to represent reality (Guba and Lincoln, 1994, pp.109-110; Pring, 2004, p.60). Blackburn (2005) describes this position as 'absolutist', supposing a 'security and self-assurance' that the relativist considers 'dangerous unthinking innocence and complacency' (p.xvii). Noonan (in Given, 2008, p.580) draws attention to two binaries structuring 'classical ontology

(ideal-material, relative-absolute)'. The ideal-material duality concerns questions of whether reality is constituted within the mind or in physical entities. Materialism seeks reality in the substantial matter of which the world is made while, in idealism, the mind *'creates* the world we live in'* (Blackburn, 1999, p.260, original emphasis). The relative-absolute dichotomy concerns matters of truth, fact and objectivity, absolutism seeking these as virtues and relativism rejecting such certainties (Blackburn, 2005). The 'relativist slogan', that '[t]here are no facts, only interpretations', often attributed to Nietzsche (*ibid*, p.xv), receives the common complaint that relativism means 'anything goes' (*ibid*, p.17). However, 'no particular conceptual system is ever fully adequate to the complexity of reality' (Noonan in Given, 2008, p.580). When we 'grasp natural and social reality as processes of change and development', for the ideal-material and relative-absolute binary, '[o]ne does not exclude the other; each implies the other' (*ibid*). This is also a position reached through complexity thinking.

Postpositivism supposes a 'critical realism' whereby understanding of reality is imperfect, with objectivity not always maintained and therefore requiring 'critical examination' (Guba and Lincoln, 1994, pp.109-110). Critical theory recognises a 'historical realism' that shapes understanding over time to arrive at a 'virtual reality', with a 'transactional and subjectivist' epistemology. Within the constructivist paradigm, relativism maintains that we understand the world through 'local and specific constructed realities' with no single, absolute, unalterable reality. These differences purportedly lead to fundamental paradigmatic incompatibility or 'incommensurability', particularly between positivism-postpositivism and critical theory-constructivism (Guba and Lincoln, 1994, p.116). Heron and Reason's (1997) 'participatory inquiry' paradigm maintains a rejection of absolutism but stresses 'experiential knowing' within a 'subjective-objective ontology', proposing that 'what emerges as reality is the fruit of an interaction of the given cosmos and the way mind engages with it' (Heron and Reason, 1997, p.279). This suggests that ontology and epistemology are inextricably linked, a position compatible with agential realism, relational, enactivist and complexivist worldviews.

The principal epistemological distinction within Lincoln *et al's* (2011, p.100) typology (and its predecessors), is between the 'dualist/objectivist' separation of knower and known within positivism-postpositivism and their 'transactional/subjectivist' relationship within critical theory-constructivism. The dualist view is commonly associated with Descartes' legacy (Cartesian dualism) in distinguishing mental activity and substance from the material and

physical world; separating mind and body (Blackburn, 1999; Heylighen et al, 2007). This leads to *representationalism,* a position prevalent in Western thought, whereby our knowledge of an essential, objective and external world resides in our imperfect, subjective and internal representations of that world (Barad, 2003, p.806; Varela *et al,* 2000, p.134). Put simply, the world is separated into 'words and things' in representationalism (Barad, 2003, p.811). While a subjectivist epistemology needs no separation between knower and known and is transactional in the sense that 'knower and respondent co-create understandings' (Denzin and Lincoln, 2011, p.13), according to Barad (2003, pp.805-6) 'both scientific realists and social constructivists ... subscribe to representationalism'.

Another methodological distinction between paradigms concerns the 'criterial question', addressing a further *foundational* and *non-foundational* binary*,* whereby criteria for the former 'are discovered' and the latter 'are negotiated' (Lincoln *et al*, 2011, p.119). Blackburn (2005) writes of the 'foundationalist guarantee that by following scientific method, we get things right' (p.195), involving accurate use of the senses to observe and gather data, logical inference of implications and a fixing of meaning (p.140). An alignment between foundationalism and positivism-postpositivism is clear, while 'new-paradigm inquirers', encompassing critical theory-constructivism and participatory paradigms tend towards forms of non/anti-foundationalism (Lincoln *et al*, 2011, p.119). Some strands of critical theory 'locate the foundations of truth in specific historical, economic, racial, gendered, and social infrastructures of oppression, injustice, and marginalization' (*ibid*). This implies differences with other newer paradigms, particularly constructivism, which reject foundational truth criteria in favour of dialogue or negotiated agreements, a position associated with postmodernism (*ibid*).

Varela *et al* (2000, pp.138-141), citing Richard Bernstein, describe the apparent human need of a secure 'foundation for knowledge' as the 'Cartesian anxiety' (p.140). They note its origins not only in Descartes but also Locke and Kant, stating that 'treating mind and world as opposed subjective and objective poles, the Cartesian anxiety oscillates endlessly between the two in search of a ground' (*ibid*, p.141). Objectivism and subjectivism are thus 'both forms of absolutism' as they seek, respectively, externally or internally secure foundations for knowledge without finding a 'middle way' (Varela *et al*, 2000, p.230). Complexity thinking, as utilised here, despite its various scientific and systems theoretical origins, is considered non-foundational, aligning with postmodernist and poststructuralist viewpoints (Cilliers, 1998;

Heylighen *et al*, 2007). Morin (2008, pp.24-25) explains that the 'either-or' duality of subject and object always 'cancels one of the two terms' – one or the other 'becomes noise' – though, paradoxically, they are inseparable and mutually defining. While inescapable uncertainty means this is not necessarily a satisfying or agreeable solution to the anxiety, it accepts that 'the world is interior to our mind, which is inside the world' (Morin, 2008, p.26).

The four worldviews delineated by Creswell (2014, pp.6-11) – postpositivist, constructivist, transformative and pragmatic – to some extent overlap Lincoln *et al's* (2011) typology. However, for Creswell (2014, p.3), paradigms are no more fundamental than the 'continuum' of qualitative, mixed methods and quantitative 'research approaches'. The more absolutist tendencies of positivism are omitted in Creswell's typology, instead focusing on postpositivism as 'deterministic' and 'reductionistic', searching for probabilistic causes and effects, based largely on experimental research with quantifiable findings (Creswell, 2014, p.7). Creswell (2014) maintains that while postpositivism 'seeks to develop relevant, true statements' (p.8) it is also 'antifoundational' in acknowledging the fallibility of evidence and that 'absolute truth can never be found' (p.7). However, objectivity in answering questions and testing theories or hypotheses is crucial, attending to bias, validity and reliability (Creswell, 2014, pp.7-8).

Constructivism is traced to the work of Lincoln, Guba and others, attentive to subjective meaning-making through social interaction (Creswell, 2014, p.8). Theory generation, rather than testing, is attempted and participants' views on their lives and workplaces as well as their social and historical contexts are sought (Creswell, 2014, p.8). Like Lincoln *et al* (2011), Creswell (2014, pp.8-9) associates constructivism with qualitative research, recognising the researcher's involvement in the interpretive process and the social and cultural background and experience they necessarily bring. The transformative worldview articulated by Creswell (2014, pp.9-10), encompasses aspects of both critical theory and the participatory paradigm in Lincoln *et al's* (2011) typology. Transformative intentions lie in the 'study of lives and experiences of diverse groups that have traditionally been marginalized', linking 'political and social action to these inequities' to propose an agenda for change beyond constructivism (Creswell, 2014, p.10). Pragmatism is characterised as wide-ranging, more concerned with practical than philosophical issues, including problem solving, asking *what works* and focusing on the 'intended consequences' of research (Creswell, 2014, pp.10-11). However, complexity thinkers attend to

pragmatism's philosophical basis, traced to the work of the early 20th century American pragmatists Pierce, James and Dewey and, later, Rorty (Davis and Sumara, 2006, p.73).

The proliferation of paradigms set out by Lather (2006, p.37), attributed to Lather and St. Pierre, is organised under headings indicative of underlying purposes. These offer an alternative categorisation, seeking to 'capture the play of both the dominant and emergent knowledges vying for legitimacy in order to open up a history of what contains thought and how thought is both shaped by and excessive of that containment' (*ibid*, p.36). In this mapping 'Positivist' and 'Mixed methods' approaches appear under the purposive heading 'Predict', while 'Interpretive', 'Naturalistic' and 'Constructivist' are among those headed 'Understand' (*ibid*, p.37). 'Emancipate' is the heading given to paradigms including 'Critical', 'Feminist' and 'Praxis-oriented', comparable to Creswell's (2014) transformative worldview. The purpose of 'Postmodern', 'Poststructural' and other 'Post-'paradigms is to 'Deconstruct', this latter grouping indicating a 'break' or 'shift' from the previous three (Lather, 2006, p.37). A final listing, headed simply 'Next?', signals Lather's (2006, p.37) acceptance of emerging and future possibilities, including 'Neo-positivism' (evidenced in political demands for evidence-based practice), 'Neo-pragmatism' and 'Participatory/dialogic' paradigms. The latter approach is perhaps closest to complexity thinking as articulated by Horn (2008, p.132), whereby one 'thinks dialogically and so relates contrary concepts in a complementary manner'.

According to Morin (2008, p.39), a dominant paradigm of simplification is characterised by the related principles of 'disjunction' which 'separates that which is linked', and 'reduction' which 'unifies that which is diverse'. For example, there is disjunction when biology and culture are researched in separate disciplines, or the brain is studied biologically and the mind psychologically forgetting not only that one does not exist without the other, but 'that one is, at the same time, the other' (*ibid*). Reduction focuses on the component parts of a system or object of study without consideration of their relation, connection or context, an approach Morin (2007, 2014) associates with classical science while acknowledging its past and continued importance and successes. However, the 'logical operations' of disjunction and reduction are 'both brutal and mutilating' (Morin, 2008, p.51). As pointed out by Gershenson and Heylighen (2005, p.48) an analytical approach alone is insufficient to understand something complex – 'by taking apart the components it will destroy their connections'. An alternative, trans-disciplinary paradigm of complexity concerns 'distinction' and 'conjunction', where relationships between

parts are recognised while maintaining their distinction, and similarly an understanding of the recursive conjunction between parts and the whole is sought (Morin, 2007, pp.10-11). Thus 'holism' is also insufficient and can lead to a reduction to the whole, overlooking the parts (Morin, 2008, pp.100-1).

Morin's paradigm of complexity, like the participatory paradigm, considers both object of study and subject or observer in their normal environment or context, in contrast to an isolation and separation associated with simplicity (Horn, 2008, p.132). According to Maturana and Varela (1992, p.40) we are 'necessarily and permanently immersed' in making acts of distinction, 'indicating any being, object, thing or unity ... as separate from its background'. Thus, the alternative to reductionism is 'contextualism', whereby the situation in which a system exists or arises is also considered (Stewart and Cohen, 1997, p.34), as '[w]e cannot understand the significance of the context when we have removed the context!' (Morin, 2014, p.15). So, a paradigm of complexity is characterised by distinction and conjunction, a 'relational circuit' between parts and whole as context (Morin, 2007, pp.6-7; Morin, 2008, pp.100-1). Similarly, Gershenson and Heylighen (2005, p.55) describe the structure of complexity as a 'combination of distinction (difference) and connection (integration)'.

Morin (2008, pp.49-51), identifies three further related principles associated with a paradigm of complexity, which also articulate complicity. First, the 'dialogic' principle recognises two processes that are 'not simply juxtaposed, they are necessary to each other', for example 'order' and 'disorder' in the reproduction of living organisms, through the 'encounter' of the hereditary stability of DNA with the chemical instability of proteins and amino acids (*ibid*). Similarly, subject and object are 'indissociable', yet our typical ways of thinking 'exclude one through the other' (*ibid*, p.25). A second principle of complexity is 'organizational recursion' exemplified in biological and sociological reproduction:

> [w]e, as individuals, are products of a process of reproduction that precedes us. But once we have been produced, we become the producers of a process that will continue. ... Society is produced by interactions between individuals, but society, once it has been produced, feeds back on individuals and produces them. If there were no society and its culture, no language, no acquired knowledge, we would not be human individuals. In other words, individuals produce society that produces individuals. We are at the same time products and producers. (Morin, 2008, p.49)

The third and related 'holographic' principle addresses reductionism, holism and the alternative whole-part mutual implication – in a hologram both 'the part is in the whole' and 'the whole is in the part' (*ibid*, p.50). Again, biologically each cell in an organism 'contains the totality of the genetic information of that organism', and, 'while no-one possesses the totality of social knowledge', language, culture and the law 'enter into us' from childhood (*ibid*). Importantly, these principles of complexity are not suggestive of conflation or reduction to the whole; complexity is concerned with distinction and conjunction, not elision.

Concluding this discussion of paradigms, my own position is that research is inevitably shaped by the experiences and attitudes of those involved. However, these beliefs or principles may be held unconsciously, making their elucidation more important (Morin, 2008, p.2). Research based upon whether one works predominantly with words, numbers or both, or within a segregated discipline or research camp, suggests the reduction and disjunction of simplicity (Morin, 2008, 2014). Here, (post)positivism is side-lined, not for its quantitative leanings, as numerical evidence can be informative, but for its tendency to neglect axiological and participatory concerns, which are central to this study. The recognition of both context and oneself, within and as part of the research process, is crucial to a complexivist approach, wherein '[o]ne does not "apply" complexity principles; one takes part in their articulation and elaboration' (Davis and Sumara, 2008b, p.43). Complexity thinking explores principles of distinction and conjunction to allow paradigmatic positions to speak *to* rather than *past* each other. While complexity theory is often described as pragmatic in its orientation towards the practical (Morrison, 2008, p.27), philosophical matters are also fundamental. In complexity thinking neither the philosophical nor the practical is privileged over the other; they are *complicit*. As noted, complexity thinking expands pragmatism's 'research problem' of 'what works' (Creswell, 2014, pp.10-11) to ask the 'practice-oriented' question, '[h]ow should we act?' (Davis and Sumara, 2006, p.25), which implies possibilities, choices and responsibilities. Rorty (1980, p.378), accepting that the goal for some is ultimate truth, encourages us:

> [t]o see keeping a conversation going as a sufficient aim of philosophy, to see wisdom as consisting in the ability to sustain a conversation, is to see human beings as generators of new descriptions rather than beings one hopes to be able to describe accurately.

The next four sections frame the philosophical and practical approaches taken in this study through the four principal paradigm questions of ontology, epistemology, axiology and methodology (Guba and Lincoln, 1994; Heron and Reason, 1997). While discussed in turn, these questions are entangled in an 'ethico-onto-epistem-ology' (Barad, 2007), informing a complex, participatory methodology. There are also postmodern and poststructural influences on this work, following Cilliers' (1998, p.22) argument that 'post-structuralism is not merely a subversive form of discourse analysis, but a style of thinking that is sensitive to the complexity of the phenomena under consideration'. As Davis and Sumara (2006, p.68) point out, both 'post-structuralist and complexity theories have a self-awareness of sorts', helping to tackle issues of knowledge representation. The complexity and participatory worldviews, with their pragmatic, experiential and phenomenological orientation, are complemented by the contemporary philosophical perspectives of agential realism, enactivism and relational being, which together offer a navigable path for this research.

An ontology of complexity – nested, contingent, agential and relational

The ontological polarities of absolutism and relativism, or materialism and idealism can be considered false dualisms (Pring, 2004, p.16), or co-implications rather than mutual exclusions (Noonan in Given, 2008, p.580). The participatory worldview espoused in this thesis posits a subjective-objective ontology, such that our experience of reality is articulated in the mind, through tangible participation and active engagement within the world (Heron, 1996, p.162). As Heron (1996, p.162) summarises '[w]orlds and people are what we meet, but the meeting is shaped by our own terms of reference'. Such considerations align with complexity thinking and shelve 'classical thinking', which assumes that distinctions made using suitably precise observations of a system or phenomena will be 'absolute and objective, i.e. the same for all observers' (Gershenson and Heylighen, 2005, p.48). The latter principle of 'distinction conservation', assumes correspondence between 'what things are' and 'how we see or know them to be' (*ibid*, p.50); a 'map making' process, associated with some forms of realism and known as '*representationalism*' (Richardson, 2008, p.23, original emphasis).

Avoiding confusion between *what things are* and *how we know them to be*, Gershenson and Heylighen (2005, pp.50-51) propose an 'ontological distinction' between 'absolute being' (abs-

being) and 'relative being' (rel-being). This evokes Immanuel Kant's distinction between inaccessible 'things-in-themselves' (noumena) and human experience of them (phenomena) (Barad, 2007 pp.30-31), as well as Bhaskar's (2008, p.11) 'intransitive' and 'transitive' objects of knowledge in critical realism. Rel-being is restricted to properties distinguishable 'by an observer within a context', with the potentially limitless properties of complex abs-being out of reach (Gerhsenson and Heylighen, 2005, p.50-51). This does not imply abs-being and its many rel-beings are different or separate; it accepts that, from our own context or perspective, only certain properties are accessible and greater complexity increases these properties and perspectives. Crucially, complexity thinking is dissuasive of the classical approach of seeking a single, correct, complete perspective or context. Acknowledging the ubiquity, indeterminacy and incompressibility of complex systems, means that multiple perspectives are contemplated 'in order to have a less-incomplete understanding of the system' (*ibid*).

Another perspective of complexity thinking considers the nature of reality in terms of nested complex systems, distinguishable by their scale or relative sizes and their timescales of learning or evolution (Davis and Sumara, 2006, pp.28-29). From the planetary to the cellular, with evolutionary timescales ranging from eons to seconds, Davis and Sumara (2006, p.28) present (Russian doll-like) the 'levels of complex co-activity' that may be of interest to educational researchers: 'the biosphere', containing 'the species', containing 'the society, or the body politic', containing 'collectivities: social bodies, bodies of knowledge, and so on', containing 'the person, or body biologic', containing 'bodily subsystems, organs and cells'. Crucially, phenomena studied at higher levels appear more stable than those at lower levels due to their 'relatively slow evolutionary pace' (*ibid*, p.29). Educational theories tend to focus on the layer of the person (in forms of *constructivism*) nested inside the layer of the social (in forms of *constructionism*) (*ibid*, p.28). Davis and Sumara (2006, p.117) summarise a shift in focus from constructivism to constructionism as 'the manner in which the individual constructs the world to the manner in which the world constructs the individual'. The mutual implication or complicity of these two approaches is a key ontological concern.

Boundaries between layers or levels distinguish them but do not separate them (distinction and conjunction), the openness of complex systems means they are not 'tidy lines' (Davis and Sumara, 2006, p.29) and may be better described as 'interfaces' (Cilliers, 2001, p.141). Layers are interpenetrating as 'there are relationships which cut across different hierarchies', there is

structure at every scale (i.e. 'complexity is usually fractal') and 'cross-communications between hierarchies are not accidental, but part of the adaptability of the system' (*ibid*, p.143). Importantly, hierarchies in complex systems do not pre-suppose greater significance of higher levels such 'that causal processes run downwards' (downward causation) (Byrne, 2009, pp.106-7). Relationships across boundaries in a stratified ontology, encompass issues of mind and body, voluntarism and determinism, agency and structure, and remain the focus of debate across many disciplines. As a trans-disciplinary approach, complexity thinking encourages consideration of educational matters across ontological layers in what Davis and Sumara (2006, p.107) term 'level jumping'. In a study of teacher professional growth, the main levels of interest and relevance are the person, the collectives and bodies of knowledge in which they participate, and wider politics and society (close to Figure 2). However, this does not deny or overlook adjacent levels – internal psychological and biological subsystems involved in learning, as well as the evolutionary processes that shape them over millennia.

Transcendental or critical realism is suggested by some (including Byrne, 2009; Byrne and Callaghan, 2014; Gerritis and Verweij, 2013) as an appropriate meta-framework for understanding complexity. A 'stratified' ontology is found in Bhaskar's account of critical realism, an 'onion-like layering' such that 'more complex orders tend to emerge from more simply composed strata' (Harvey, 2009, p.25). Bhaskar (2008, p.2) sets out critical realism's three distinct domains of the 'real', the 'actual and the 'empirical', stratified in terms of underlying natural 'mechanisms' (in all three domains), the actual 'events' these produce (in the real and actual domains) and the 'experiences' of these events (in only the empirical domain). Bhaskar explains that:

> [i]t is only if we make the assumption of the real independence of such mechanisms
> from the events they generate that we are justified in assuming that they endure
> and go on acting in their normal way outside the experimentally closed conditions
> that enable us to empirically identify them. (*ibid*)

For Bhaskar (2008, p.3), understanding open systems requires an alternative approach to that of 18th century philosopher David Hume, whose causal laws imply 'a constant conjunction of events' and therefore closure. Addressing what is empirically inaccessible or independent of human activity (i.e. transcendental), Bhaskar (2008, p.3, original emphasis) replaces Kant's transcendental idealism with transcendental *realism*, providing 'an ontological basis for a

concept *of natural necessity'* in the form of generative laws, mechanisms or structures considered necessary for the intelligibility of empirical findings. For example, evolution through natural selection, if correct, must precede our attempts to understand it from the empirical evidence that led Darwin and others to the theory (Bhaskar, 2008, pp.11-12). The 'critical' dimension accepts fallibility in descriptions of the world (Scott, 2005, p.635), recognising 'normative judgements' in their interpretation, from which Gerrits and Verweij (2013, pp.173-174) propose 'negotiated subjectivism' as central to critical realism's rejection of positivism.

While Byrne and Callaghan (2014, p.74) retain a form of essentialism in the natural necessities of critical realism, others from social science and complexity perspectives offer alternatives. For example, Bhaskar (2008, p.26) seeks to avoid the 'epistemic fallacy' of thinking 'that ontological questions can always be transposed into epistemological terms'. However, accepting this, Van Bouwell (2003) warns of the analogous 'ontological fallacy' of 'taking an a priori ontological stance which transposes or reduces epistemological and methodological matters into an ontological matter' (p.85). A plurality of 'explanatory practice', seeking 'situated knowledge' of the world and 'social ontology as *a posteriori* changeable', is preferred to the critical realist imposition of a '*prefabricated* ontology' (Van Bowel, 2003, p.96, original emphasis). Similarly, linking critical realism to complexity in social research, Gerrits and Verweij (2013) citing Williams, abandon the necessity of universal causal laws in favour of 'specific configurations that are temporal in time and local in place' (p.178), concluding that 'contingency is both epistemological and ontological in nature' (p.173). Distinguishing between the physical and the social, Williams (2011, p.52) summarises a shift from critical to contingent realism: 'the real nature of the social world is that it is contingent (although such contingency is shaped actively by agents), with the caveat that this contingency is grounded in the final instance in the physical world'. Contingency should not be confused with randomness or accident and the contingent realism proposed by Williams (2011), developing critical realism, offers an ontology that is compatible with the indeterminacy and incompressibility of complexity.

Contingency is also inherent in agential realism, an elaboration of Niels Bohr's philosophy derived from quantum physics, rejecting scientific accessibility of 'objects of investigation as they exist outside human conceptual frameworks', without accepting the Kantian distinction between noumena and phenomena (Barad, 2007, pp.30-31). The further step taken by Bohr, unusual for a natural scientist, was to recognise that knowledge-making and scientific practices

'are material enactments that contribute to, and are a part of, the phenomena we describe' (*ibid*, p.32). Barad (2007) develops Bohr's epistemological insights and questioning of Newtonian ontology (p.31), to set out the starting point for agential realism that 'we are part of the nature that we seek to understand' (p.247), a position shared with the participatory paradigm, enactivism and complexity thinking. Agential realism implies a *performative* approach, which 'takes account of the fact that knowing does not come from standing at a distance and representing but rather from *a direct material engagement with the world*' (*ibid*, p.49, original emphasis).

Performativity is exemplified in the scanning tunnelling microscope (STM), which produces images of a substance's atomic structure by 'feeling' it with a small electric current flowing between the measuring instrument and material, without making contact (*ibid*, pp.51-53). This process requires careful experimental preparation, much more than taking a photograph, as electrons from the substance 'tunnel' (a quantum phenomenon) across the micro-space to the probe. Barad (2007, p.53) explains that '[i]mages or representations are not snapshots or depictions of what awaits us but rather condensations or traces of multiple practices of engagement', informing our 'belief in the reality of atoms' and contributing to 'a web of evidence and practices that produce what we take to be evidence'. Barad (2007, p.56) concludes that 'theorizing and experimenting are not about *intervening* (from outside) but about *intra-acting* from within, and as part of, the phenomena produced'. It is worth reiterating the point made here that not only experimenting but *theorising* too is a performative act of engagement. Thus, Barad (2007, p.63) develops Michel Foucault's explication of 'discursive practices', as not limited to linguistic considerations but also concerned with 'material conditions that define what counts as meaningful statements'.

Barad (2007) provides a detailed and compelling account of Bohr's 'philosophy-physics' and related debates and collaborations (including with Einstein, Heisenberg and Schrödinger) involving thought-experiments, many of which only became physically possible after their lifetimes. Central is the phenomenon of diffraction, familiar in wave interference patterns seen in overlapping water ripples and classroom laser-light experiments. The famous double-slit experiments of quantum physics reveal the paradox that light and matter can be observed as consisting of either waves ('disturbances' with 'extension in space') or particles ('localized objects') (*ibid*, p.100). Bohr's great insight is that this indeterminacy of mutually exclusive states

is resolved by the specific measuring arrangements, borne out in later experimental findings in quantum physics, '*where "phenomena" are the ontological inseparability of objects and apparatuses*' (*ibid*, p.128, original emphasis). Barad (2007) explains that '[r]eality is composed not of things-in-themselves or things-behind-phenomena but of things-in-phenomena' (p.140) and '[a]pparatuses are not passive observing instruments; on the contrary, they are productive of (and part of) phenomena' (p.142).

Inescapably, a study of learning, development and growth concerns the ontology of living being. From the enactive perspective, drawing from biology, cognitive science and phenomenology, 'living is sense-making in precarious conditions' (Thompson, 2011). Making this proposal, Thompson (2011, p.114) resists defining and objectifying *life* as a list of functional properties, preferring to consider *living* as a process. The enactive proposition is particularly apt for a study of professional growth, offering ways of thinking through ongoing debates over agency and structure, voluntarism and determinism. Thompson (2011, pp.119-120) describes sense-making as the 'source of intentionality' that is 'threefold', involving 'sensibility' in being open to the environment, 'significance' in terms of the intrinsic attractiveness or 'valence' of the environment, and the 'direction or orientation' adopted by the living being in response. While this is not a humanist perspective, encompassing the living process generally with simple organisms used as instructive examples, it reinforces the importance of the emergent 'milieu or niche' for survival and growth (*ibid*, p.119). The reciprocal relationship between organism and environment is one of mutual dependency – in Welton's terms (cited by Thompson, 2011, p.120, original emphasis) '*[t]he organism enacts an environment as the environment entrains the organism*'. However, there is 'interactional asymmetry' in the capacity of living beings in their sense-making to 'modulate the coupling with the environment' (*ibid*, p.121).

Complexity thinking, drawing on enactivism, embraces biological as well as psycho-social perspectives, conceptualising the learner as a complex system, embodying its history, such that it 'can change *its own* structure as it adapts to maintain its viability within dynamic contexts' (Davis and Sumara, 2006, p.6, original emphasis). In short, the learner is *structure determined* (*ibid*), a key insight of the enactive approach to cognitive science articulated by Varela *et al* (2000), building on Maturana and Varela (1992) and further developed by Thompson (2010). The unpredictability of responses in animals and humans when externally 'nudged', as complex rather than simple or complicated systems, is determined by 'biologically-and-experientially

constituted structure' (Davis and Sumara, 2006, pp.99-100). Changes to systems, living or non-living, through their interactions with other systems or the environment, are 'brought about by the disturbing agent but *determined by the structure of the disturbed system*' (Maturana and Varela, 1992, p.96, original emphasis). Here, structure does not connote its social relation with agency, but is defined as 'the components and relations that actually constitute a particular unity and make its organisation real' (*ibid*, p.47). Structure determination is not only central to scientific explanation, but also a matter of common-sense. For example, if our car remains static when pushing the accelerator, we do not assume our foot is at fault, the structure of the car is questioned (*ibid*, 1992, pp.96-97).

Recurrent and recursive interactions between compatible or congruent systems, or unities (individuals) and their environments (contexts) are described as 'structural coupling', whereby mutual changes or adaptations in structure are triggered (Maturana and Varela, 1992; Maturana and Pörksen, 2004, p.85). Thompson (2010, p.45) further explains that 'two or more systems are coupled when the conduct of each is a function of the conduct of the other'. In other words, they are *complicit*. A biological view of cognition posits the nervous system as a structurally determined, distinct entity from its environment and therefore *closed* (Maturana and Pörksen, 2004, p.61), although its plasticity enables structural coupling with other systems and its environment (p.85). However, in terms of exchanges of matter and energy needed to survive, the being in which the nervous system is embodied can be characterised as *open* (*ibid*, p.66). Thereby, 'the state changes of an autonomous system result from its operational closure and structural coupling' (Thompson, 2010, p.45). Similarly, as Morin (2008, p.113, original emphasis) states, living beings are both '*closed*' in 'protecting their integrity and identity', 'but also *open* to their environment'. This insight is crucial to understanding teacher professional growth, aligning with Jarvis's (2013, p.412) view of learning as 'a personal expression of living', 'an interactive response to the sensations of externality'. The evolutionary history of a species, its *phylogeny*, is intertwined with the 'history of structural changes in a particular living being', known as its *ontogeny* (Maturana and Varela, 1992, p.95), or 'processes of becoming' (Maturana and Pörksen, 2004, p.43),

Summarising the key philosophical implications of the enactive worldview, Maturana and Pörksen (2004, p.27) suggest absurdity and 'conceptual acrobatics' in positing an independently existing yet inaccessible external reality, which we have no way of validating. Instead, the

distinction between object and subject collapses and becomes circular, whereby '[t]he subject and, at the same time, inevitably, the instrument of my inquiry is the observer', because '[t]here is no way of approaching what we want to explain from outside ourselves' (*ibid*). Reaching this position, Maturana and Pörksen (2004) reject solipsism on the strength of everyday experiences (p.62), embrace a *super-realism* of multiple 'equally valid realities', avoiding a relativism that would imply an *absolute* reference point or single *true* reality (p.34). The notion of 'objectivity in parentheses' is used to describe '[t]he domain of constitutive ontologies: all Being is constituted through the Doing of observers', avoiding the term subjectivity as this again implies a devaluing of statements that do not correspond to an absolute reference point (*ibid*, p.42). Proulx (2008) compares objectivity in parentheses to Latour's (1996) formulation of *interobjectivity*, which for Davis and Sumara (2006, p.70, original emphasis) is a restatement of the notion of *complicity.*

Interobjectivity provides an alternative to ideational and transcendental reinforcements of empirical experience, through recursive processes of praxis, in the actions of knowers influencing what is known. In the field of biology and cognition, for Maturana (2000, p.465) descriptions are subservient to *lived* actions, as '[i]nterobjectivity takes place in the flow in which relations take place – it is the happening of that flow, not a commentary on it'. Shotter (2013) brings together Latour's and Moghaddam's renderings of interobjectivity with Barad's intra-activity and agential realism to which, the insights of the enactive approach and complexity thinking can usefully be compared. In aspects of everyday life, intersubjective negotiation of meaning is impractical or insufficient, where there is a 'common "it" involved', for example in the precise and doubt-free practices of engineering (*ibid*, p.32). Asking how such interobjectivity is possible, Shotter (2013, pp.32-33) follows Latour in pointing to bodily immersions and interactions in our surroundings, echoing (without citing) the enactive view. However, resulting 'objectifications' are emergent and untraceable to individuals, arising from spontaneous responses to '*dialogically structured* activities', which Shotter explicitly compares to Barad's intra-actions (*ibid*, original emphasis). Further, Shotter (2013) proposes 'intra-objectivity', shifting emphasis '[f]rom a determinate world of separate things to an indeterminate world of inseparable flowing processes'.

Complexity thinking draws on these insights, considering reality as reducible neither to its physical or material components nor to mental or linguistic constructions. While there can be

'no observerless observations or knowerless knowledge' (Proulx, 2008, p.22), this need not lead to the 'extreme denial of the commonsense position' in 'solipsism' – that the 'only reality that I *know* is the one inside my own head' (Stewart and Cohen, 1997, p.196, original emphasis). Common sense suggests that there are real things and happenings in the world outside our immediate experience, leading Stewart and Cohen (1997, pp.195-200) to reject 'reality as a figment of imagination' and propose 'that imagination is a figment of reality'. Heron and Reason (1997, p.277) make a similar point, stating that 'the mind's conceptual articulation of the world is grounded in its experiential participation in what is present, in what there is'. By exploring the processes of co-evolution and interaction between agents within and as part of their contexts, complexity thinking finds a way through objective-subjective, real-relative binaries while holding onto common sense experience.

In relational being, Gergen (2015, p.154) also rejects the dualism of 'an inside-the-head psychology as opposed to an outside-the-head, physical world'. Such views lead to a taken-for-granted 'bounded being' in Western culture, self-centred and individualistic, where what is most important to us 'lies buried within – in thoughts, feelings, desires, hopes, and so on' (Gergen, 2009, p.4). Gergen (2015, p.154) explains that while social constructionism has sought explanations of human nature such that 'negotiated assumptions and values' shape 'rational action', it has held onto a dualist worldview. So, for example in the seminal work of George Herbert Mead and Lev Vygotsky, 'the inside acquires its content from relationships with others' but 'retains its ontological primacy – as prior to relationship' (*ibid*). Instead, Gergen (2009) prioritises relational processes, side-lining intractable debates pitching determinism against voluntarism, human action influenced by external forces or individual choices and the separating out of causes and effects. Instead, it is through confluences of 'co-action' or 'collaborative action that all meaning emerges' (p.53) such that 'cause and effect are mutually defining' (p.54). Likewise, from an enactive viewpoint, in causal relationships subject and object 'exist only in mutual dependence and in mutual determination' (Varela, in Pörksen, 2004, p.91). A similar point is made by Barad (2007, p.176), stressing both meaning and materialising, that '[c]ause and effect emerge through intra-actions. Agential intra-actions are causal enactments'.

Gergen (2009, p.37) emphasises that relational being is not proposing a form of idealism whereby '"nothing exists" before the moment of co-action'. He continues, '[w]hatever exists simply exists', it is 'in the process of co-action whatever there is takes shape as *something for*

us'. Metaphors of baking and chemistry replace those of billiard balls in exemplifying this subtle yet important shift in thinking about human action: '[w]ith a combination of flour, butter, eggs, milk and a griddle, we bring about a pancake'; '[b]y compounding hydrogen and oxygen we have water'; 'a lighted match does not cause the combination of gasoline; rather the combustion is the achievement of a particular combination of flame and gasoline' (Gergen, 2009, pp.54-55). In human relationships, the essence of co-action is revealed in the simple but substantial question' of whether another can be helped without them 'affirming that it is help and not hindrance' (*ibid*, p.31). Again, *response* is emphasised in co-action – I cannot be taught without being responsive to my teacher, or lead in the absence of responsive followers. Donati and Archer (2015, p.55), without citing Gergen's relational being, propose a 'relational realism' that similarly seeks to avoid the opposites of 'subjectivism' and 'objectivism'. From this they develop the 'Relational Subject … who exists only in relation and is constituted by the relations that he/she cares for' (Donati and Archer, 2015, p.55).

The various perspectives outlined, which shape the ontological positioning of this study, share a re-working of inside-outside, mind-body, agency-structure dualisms, focusing on the 'person-in-context' (Ushioda, 2009) and their co-defining realities. Rather than attempt to fix these relations *a priori*, through a pre-determined ontology, the purpose of inquiry is the unravelling of their complicity, interobjectivity through en/co/intra-action. Drawn from physical, biological, cognitive and social disciplines, the ideas utilised here share emphasis on our practical experience of being part of the world we inhabit. The ontology of professional growth, proposed at this stage, consists of nested complex systems comprising individual teachers (biological and psychological) within their organisational contexts (collective and social) and wider external conditions (cultural and political). This is envisaged in Figure 2, recognising the multiple spaces that teachers inhabit, in classrooms, staffrooms, schools/colleges, federations and other collective bodies. Within these contexts, teachers as autonomous beings are structurally coupled in a complex relational web of ongoing intra-actions, or confluences of co-actions, which afford purpose and opportunity for professional growth. The agency and contingency of lived response through enacting these opportunities is understood as teacher learning, recursively shaping further purposes and opportunities for growth.

An epistemology of complexity – participation, connection, enaction and intra-action

The epistemological question of the relationship between knower and known, researcher and research, is typically framed in objective/external versus subjective/internal terms. The principle of 'distinction conservation' in classical thinking, strives for knowledge as 'a mapping from object to subject', with action as 'a mapping back from subject to object' (Gershenson and Heylighen, 2005, p.50). From a complex systems perspective, acts of distinction made by one knower in their context, may not be meaningful or possible for others in different contexts, leading to 'indeterminacy' or even lack of recognition that different aspects of the same system are being observed (*ibid*, pp.50-51). This does not imply that all perspectives are equally accurate or fruitful, but reinforces that knowledge is contextual rather than universal (Byrne, 2005, p.97; Haggis, 2008) and 'a principal requirement of a complexity-based epistemology is the exploration of perspectives' (Richardson *et al*, 2001, p.13). In seeking objective knowledge, Western science has tended to treat the subject or knower as either a distraction to be eliminated or a mirror-like reflection of reality (Morin, 2008, p.23). However, subjectivity and objectivity need not be opposed; 'objectivity is not not-subjectivity' (Barad, 2014, p.175). As Morin (2008, p.24) explains, subject and object are mutually defining:

> there is no object except in relation to a subject (who observes, isolates, defines, thinks), and there is no subject except in relation to an objective environment (which allows the subject to recognize itself, to define itself, to think itself, etc., but also to exist).

The common separation of would-be knower and known, or 'subjective understanding' and 'objective knowledge', can be visualised as 'two isolated domains that must somehow be bridged' (Davis and Sumara, 2006, p.27). In this topology, learning becomes the one-way bridge from objective knowledge to subjective understanding, associated with 'depositing' or 'banking' pedagogies (Freire, 1996, p.53) and 'transmission' purposes for CPD (Kennedy, 2005, 2014a). Complexity thinking offers an alternative topology, subjective understanding nested *within* objective knowledge, such that learning is re-conceptualised as 'maintaining fitness' in the 'ongoing negotiations of the perceived boundary' (Davis and Sumara, 2006, p.27). This acknowledges a 'dialectical relationship between knowledge and the system within which it is constituted' (Cilliers, 2005, p.13). Similarly, representationalist forms of research can be conceived as bridging separate domains of objective knowledge and subjective understanding,

though in a complex participatory approach they are again nested, with research/inquiry becoming a re-negotiation of their boundary. Complexity thinking, the participatory paradigm, enactivism, relational being and agential realism propose comparable shifts in topology, challenging the classical separation of subject and object, knower and known.

Constructivist and interpretivist epistemologies suggest more intricate relationships, whereby 'the knower and known interact and shape one another' (Denzin and Lincoln, 2011, p.13). A similar position is reached in the participatory worldview, through an 'extended epistemology', wherein the 'knower participates in the known' and 'articulates a world' through 'critical subjectivity' (Heron and Reason, 1997, p.280). However, Heron and Reason (1997, p.288) consider both critical theory and constructivism as lacking in acknowledgement of 'practical knowing', which in the participatory paradigm is 'primary' and of 'central intrinsic value'. Practical knowing is an expression, enactment or consummation of three related propositional, presentational and experiential forms of knowing on which it is grounded (*ibid*, pp.280-2). First, experiential knowing involves direct, material and felt encountering of the world, based explicitly on enactivism through 'articulated reality' (*ibid*, p.280). Heron and Reason (1997, p.280) come close to interobjectivity, (without using the term) when explaining that the objectivity of the known world is relative to how it is 'intersubjectively shaped' and 'subjectively articulated'. Presentational knowing is the symbolisation of experiential knowing through 'graphic, plastic, musical, vocal, and verbal art forms', and propositional knowing is the further formalisation and expression in linguistic and presentational concepts. Practical knowing is therefore the fulfilment of the other ways of knowing, which 'brings them to fruition in purposive deeds' (*ibid*, p.281).

The emphasis, in the participatory paradigm, on knowing through direct experience, expression and action, participating within the world, reinforces the intertwining of ontology and epistemology and resonates with the notions of intra-action, co-action, inter/intra-objectivity and complicity. Likewise, Proulx (2008) utilises complexity thinking to distinguish between constructivism and its extension towards 'enactive cognition', which Varela et al (2000, p.217) posit as a 'middle way' between objectivism and subjectivism, addressing the Cartesian anxiety. Echoing Morin (2008, p.24), Proulx (2008, p.21) explains that: 'knower and the known ... us and the physical external environment, are reciprocal and simultaneous specifications of the other. They co-define each other'. Thus, as discussed in ontological terms, enactivism moves beyond

subjective constructions or intersubjective co-constructions of an external world, towards interobjectivity, 'making knowledge ontological and brought forth' (Proulx, 2008, p.23). For Varela *et al* (2000, pp.134-5) everyday matters of 'representation as construal', such as features of a landscape presented on a map or ideas expressed in the form of text on a page, pose few problems. However, the Cartesian anxiety, a double doubt, arises from realising that the quality of our internal representations relies upon their fit with the external world, but our only way of experiencing this world is through our sensory cognition. In the absence of a secure basis for knowledge the only perceived alternatives become 'the despair of nihilism or the sticky web of relativism' (Barad, 2003, p.813).

Varela *et al* (2000, p.135) characterise, before rejecting, the widely-held and entirely plausible 'stronger sense of representation' as follows:

> (1) the world is pregiven; (2) our cognition is of this world – even if only to a partial extent, and (3) the way in which we cognize this pregiven world is to represent its features and then act on the basis of these representations.

Similarly, Barad (2003) sets out a 'tripartite arrangement' consisting of knowledge (representations), known (what is ostensibly represented) and knower (who does the representing) (p.804), which separates the world into 'domains of words and things' (p.811) or in linguistic terms 'signifier and signified' (p.42). The efforts of representationalism to accurately depict reality invoke optical metaphors of mirroring and reflection (Barad, 2007, p.86), articulated in Rorty's (1980, p.12) earlier conclusion that '[t]he picture which holds traditional philosophy captive is that of the mind as a great mirror'. As the basis for an approach to inquiry, associated with both Descartes and Kant, the strategy involves 'getting more accurate representations by inspecting, repairing, and polishing the mirror' (*ibid*). Similarly, for Gergen (2009, pp.203-7), many intractable problems of epistemology are premised on 'bounded being', i.e. 'the "knower" looking out to assess an independent world', expecting the mind to accurately mirror the world. This leads to partitioning of knowledge-making in distinct disciplines, defined by 'one's relational participation' more than any demands made by the 'contours of the world', with the unfortunate but unsurprising by-product that 'knowledge claims of one group may be discounted by another' (*ibid*). If we abandon the idea of boundedness as a construction of 'sophisticated games of language' rather than an ontological reality, accepting the notion of mind itself as a relational product of co-action then, continuing problems of relationship between mind and world are diminished (*ibid*).

Representation(al)ism is consistent with input-output information processing models of the mind, associated with 'cognitivism' in psychology (Varela *et al*, 2000, p.138) and with 'functionalism' in computational modelling (Cilliers, 1998, pp.60-61). In the latter field, brain is the hardware on which the software of mind runs with our senses providing an interface to the world. The philosopher Hilary Putnam proposed the hypothesis of functionalism in the early 1960s, abandoning it twenty years later, influenced by the work of pragmatists, particularly James, Dewey and Rorty (Putnam, 1997). Drawing on Putnam's rejection of functionalism, Cilliers (1998, pp.62-66) explains that representation, as the process linking linguistic symbols and their meaning, is an inadequate model for explaining language and the brain as complex systems. The first concern is reductionism and the oversimplification of meanings to fixed and absolute definitions when dealing with contingency (*ibid*, p.65). Related to this are overlooked normative and environmental, or contextual, aspects to meaning-making, which involve 'shared beliefs' and 'complex interactions with the environment' (*ibid*, p.66). A further argument proposed by Cilliers (1998), already implicit, concerns the historical and recursive influences on the 'states of a complex system' (p.66), whereby experience influences future behaviour, and interaction with the environment implies openness (p.4). The history and context of complex systems pose the practical problem of 'incompressibility' – any representation is a simplification, which must 'leave things out' (Cilliers, 2005, p.13).

Research into the processes at work in the brain, language and social structures suggests their networked, connectionist structure, whereby information and knowledge are distributed through interactions between parts or members of the system (Cilliers, 1998; Thompson, 2010). The fields of cybernetics, artificial intelligence and neuroscience have shown how in living and non-living systems 'intelligence can be realized through an adaptive network of relations transforming sensory input into decisions about actions' (Heylighen *et al*, 2007, p.8). Cilliers (1998, p.25) explains the relevance of the connectionist structure and function in modelling complex systems using neural networks, which undermines conventional notions of mirror-like representation through distributed encoding of information and self-organising capacity. 'Distributed representation' arises, whereby individual nodes and connections do not carry meaning or correspond to identifiable symbols, (Cilliers, 1998, p.72). The self-organisation of internal structure relates to a key finding of neuroscience, that of brain flexibility or 'plasticity', whereby learning entails the strengthening or weakening of neuronal connections (CERI and OECD, 2007, p.13).

Using connectionist insights to problematise philosophical aspects of representation(al)ism, Cilliers (1998, p.80) refers to Jacques Derrida, who denied 'one-to-one correspondence between a word and its meaning'. For Derrida, meaning in language is generated but never finalised through recursively interacting 'traces' in a system or pattern of 'differences', and Cilliers (1998, p.46) compares 'traces' to the weights of connections between nodes in a neural network. From this dynamic and recursive process the neologism *différance* is derived, which is 'literally neither a word nor a concept', but an 'assemblage' (Derrida, 1968, p.280). Derrida (*ibid*) continues:

> the word 'assemblage' seems more apt for suggesting that the kind of bringing-together proposed here has the structure of an interlacing, a weaving, or a web, which would allow the different threads and different lines of sense or force to separate again, as well as being ready to bind others together.

As meaning is generated through recursive interaction, *différance* carries the threefold implication of *deferral* or delay as traces propagate through the system, *difference* as traces are altered through their interaction, and *deference* between trace*s* as no trace is privileged over another (Cilliers, 1998, pp.44-45). Here the similarity between the ideas of assemblage and complexity are striking, and *différance* appears close in meaning to complicity. In another comparison, *différance* has been linked by Barad (2014) to diffraction/intra-action, wherein '[d]ifference is understood as differencing: differences-in-the-(re)making' (p.175). Cilliers (1998, p.46, original emphasis) further explains:

> According to the post-structural 'logic' of trace and *différance,* no word in language (or neuron in the brain) has any significance by itself. Meaning is determined by the dynamic relationships between the components of the system. In the same way, no node in a neural network has any significance by itself – this is the central implication of the notion of distributed representation. Significance is derived from patterns of activity involving many units, patterns that result from a dynamic interaction between large numbers of weights.

The enactive challenge to representationism is based on our structural 'capacities for understanding' as biologically rooted or embodied, and enacted through experience, language, our social and cultural history, within a world in which we are also embodied (Varela *et al*, 2000, p.149). Enactivism extends connectionism, addressing the relationship between cognition and the world and drawing on phenomenological concerns with subjective experience, the

mind considered an 'embodied dynamic system in the world' in contrast to connectionism's 'neural network in the head' (Thompson, 2010, pp.10-11). Using the example of colour perception and cognition, including linguistic and cultural dimensions, Varela *et al* (2000, pp.157-173) explain colours are neither 'out there', an objectivist-realist view of 'cognition as the recovery of a pregiven outer world', nor 'in here', a subjectivist-idealist view of 'cognition as the projection of a pregiven inner world'. Several decades of scientific studies suggest colour perception and cognition as a 'mutual specification' of sensorimotor experience, enaction or embodied action, within the world (*ibid*). Linking complexity thinking and enactivism, Proulx (2008, p.22, original emphasis) explains that 'we are *in* the reality we bring forth. We do not bring forth any reality, we bring forth the one that *we can,* and so it is always dependent on us'. Summarising the enactive approach, Varela *et al* (2000, p.205, original emphasis) propose:

> cognitive capacities as inextricably linked to histories that are *lived*, much like paths that exist only as they are laid down in walking. Consequently, cognition is no longer seen as problem solving on the basis of representations; instead, cognition in its most encompassing sense consists in the enactment or bringing forth of a world by a viable history of structural coupling.

And:

> In the enactive approach reality is not a given: it is perceiver-dependent, not because the perceiver "constructs" it as he or she pleases, but because what *counts* as a relevant world is inseparable from the structure of the perceiver (Varela, 1999, p.13, original emphasis).

In agential realism, the alternative to the 'deeply entrenched' and 'common-sense appeal' of representationalism is a performative approach (Barad, 2007, pp.48-49). This implies that knowing involves participation in and engagement with the world and the issue becomes 'the nature of these enactments' (*ibid*, p.49). Barad (2007) positions agential realism as 'posthumanist', such that the human mind ceases to be at the centre of all epistemological concerns (p.183) – a 'critical naturalism' with 'humans as part of nature' (pp.331-2). Thus, the privileging of language and culture in meaning-making are rebalanced with performative and material influences (*ibid*, pp.132-4), prompting comparison with the enactivist view of all living as 'sense-making in precarious conditions' (Thompson, 2011). For Maturana and Varela (1992), '[k]nowing is effective action, that is, operating effectively in the domain of existence of living beings' (p.29), and '[a]ll knowing is doing and all doing is knowing' (p.27). In agential realism,

agency is not conceived in purely human terms as an expression of free will in opposition to determinism or as a binary with structure (Barad, 2007, p.177); the role that humans play 'is as part of the larger material configuration of the world' (p.171). Ongoing recursive intra-actions continually reconfigure what is possible and not possible at any particular moment – 'possibilities do not sit still' – and new possibilities lead to 'exclusions' (previous possibilities, now impossible) (*ibid*, p.177). For Barad (2007), 'agency is the space of possibilities opened up by the indeterminacies entailed in exclusions' (p.182), entailing onto-epistem-ology – '*[a]gency is "doing" or "being" in its intra-activity*' (p.178, original emphasis).

While Barad (2007) arrives at agential realism through close study of Bohr's work in quantum physics, its relevance to the 'macro-world', beyond analogy, in addressing 'widely applicable philosophical issues' is explicit (p.70). Thus, inseparability and intra-activity within phenomena is 'just as much about electrons with one another as it is about onto-epistemological intra-actions involving humans' (Barad, 2014, p.175). Agential realism involves 'agential separability', whereby apparatuses of measurement or agencies of observation, seen as discursive practices, enact 'agential cuts' drawing boundaries within phenomena, causally changing them, and bringing about the 'possibility of objectivity' (Barad, 2007, p.175). Rather than assuming a pre-existing distinction between subject and object, a Cartesian cut, distinctions are enacted within phenomena through agential cuts (Shotter, 2013, p.308). So, '*a condition for objective knowledge is that the referent is a phenomenon* (and not an observation-independent object)' (Barad, 2007, p.120, original emphasis). Agential realism bears striking similarities to the enactivist view, which also informs complexity thinking through the concept of interobjectivity. As Davis and Sumara (2006, p.15, original emphasis) explain:

> rather than striving for an impossible objectivity, embracing a self-referencing subjectivity, or holding onto a culture-bounded intersubjectivity, for the complexivist truth is more about *interobjectvity*. It is not just about the object, not just about the subject, and not just about social agreement. It is about holding all of these in dynamic, co-specifying, conversational relationships while locating them in a grander, more-than-human context.

The philosophical basis of phenomenography concerns epistemological questions of how 'we gain knowledge about the world' (Marton and Booth, 1997, p.12), and 'ways in which people experience phenomena' (Booth, 2008, p.451). Again, phenomenography sets out to overcome

'person-world dualism' reinforced by the mirroring of individual constructivism and social constructionism (Marton and Booth, 1997, p.12). Marton and Booth (1997, p.13, original emphasis) articulate a non-representationalist and relational position that has much in common with those already outlined:

> There are not two things, and one is not held to explain the other. There is not a real world "out there" and a subjective world "in here". The world is not constructed by the learner, nor is it imposed upon her; it is *constituted* as an internal relation between them. There is only one world, but it is a world that we experience, a world in which we live, a world that is ours.

This epistemology of phenomenography, with knowledge as a relation between knower and known (Booth, 2008, p.451), is comparable with the proposal of '*knowledge as an outcome of relational processes*' (Gergen, 2009, p.204, original emphasis). In what can be construed as a humanistic expression of enaction and intra-action, Gergen adds that '[t]hrough co-action people generate a world of the real' (*ibid*).

The epistemology of this study follows closely from the ontology articulated in the previous section – my relationship to the practice and chosen case studies of professional growth is one of participation, connection, en/co/intra-action. This participatory and relational positioning is informed by Kemmis' (2011) discussion of educational practices as 'ecologies' and research '*in* educational praxis' (as opposed to '*about*', '*on*' or '*into*') (p.12, original emphasis). Kemmis (2011, p.12) proposes that a 'first-person, participant perspective' is required for 'unmediated access to the intentions and lived experience of the participant'. While this position is clearly impossible for a tutor or researcher, a 'third-person', 'spectator' perspective is also untenable. Therefore, my role as researcher begins as 'interlocutor', 'intersubjective', providing a 'second-person perspective' that 'may switch back and forth' between the objective and subjective (Kemmis, 2011, p.12). However, as both interlocutor and in some cases tutor, my role increasingly becomes 'interobjective' in shaping, through intra-action with my participants, the reality that we have co-defined. As Proulx (2008, p.23), drawing on Maturana and Varela (1992), explains:

> [i]t is not that intersubjective agreements are arrived at and that these create a world, nor that I create my own subjective world, nor that there is a meaning to the physical world lying "out there." Interobjectivity asserts that it is within the junction

of the physical world and I that the world of meaning emerges, it is in this continual back-and-forth influence of knower and known – in this structural coupling.

An axiology of complexity – possibility, responsibility, response-ability and complicity

The axiological question of intrinsic value is addressed within the participatory worldview in terms of 'human flourishing', seen as 'enabling balance within and between people of hierarchy, cooperation, and autonomy' (Heron and Reason, 1997, p.287). This is comparable with the concept of *praxis*, defined by Kemmis (2011, p.10) as 'action that aims for the good of those involved and for the good for humankind' and 'with moral, social and political consequences'. These values seem particularly apt in the context of teachers' professional lives, inextricably linked with personal experience (Day, 2012, p.15). The prioritisation of such values informs Heron and Reason's (1997) critique of inquiry that excludes those involved from its design, signalling a shift from research '*on* people' or '*about* people' to research '*with* people' (p.285, original emphasis). Following the participatory position espoused in this work, the teacher cases are viewed as participants, not as 'objects of research' (Gergen, 2009, p.234). From a complexity perspective, axiology is further informed by concerns for all life-forms, human and non-human, including 'survival, growth and development', as well as 'long-term well-being' and 'increasing adaptivity' (Heylighen, 2011, p.7).

The participatory paradigm's principal concern with 'practical knowing' is associated with individual and collective choices and actions 'to enhance personal and social fulfillment and that of the eco-networks of which we are a part' (Heron and Reason, 1997, p.287). This is echoed in the practice orientation of complexity thinking, concerning ways of acting (Davis and Sumara, 2006, p.25), or 'praxeology' (Heylighen, 2011, p.6). However, Morrison (2008, p.26) argues that complexity cannot inform our actions, asserting 'whilst complexity theory may offer suggestions for practice, it gives no guarantees; it is a theory without responsibility or accountability'. As mentioned in Chapter Two, both Morrison (2008, p.26) and Kuhn (2008, p.178) caution against confusing 'is' with 'ought' when considering the goal-directed process of education in terms of complexity, which offers useful descriptions but no prescriptions. Accepting this point illuminates a key distinction of complexity *thinking*, as a strand of complexity theory, which itself provides no intentions or solutions but is 'catalytic of change,

precisely *through* offering different descriptions' (Kuhn, 2008, p.179, original emphasis). Therefore, an understanding of complexity prompts consideration of possibilities and alternatives in the ways we act responsibly and accountably.

Considering the ethical implications of uncertainty and contingency, when dealing with inevitable complexity in social and human affairs 'we cannot escape the moment of choice' (Heylighen *et al*, 2007, p.130) as ethical concerns are 'always already part of what we do' (Cilliers, 2005, p.264). While we cannot know fully the future effects of our actions, we can take responsibility for ongoing judgements, starting with respect for 'otherness and difference as values in themselves' (Cilliers, 1998, pp.139-140). We can anticipate and predict, by collecting as much information as possible and considering alternative and likely consequences, keeping open possibilities to revise our judgements if found flawed (*ibid*). One way to conceptualise the scale of such decision-making is through 'spaces of the possible' or, in mathematical terms, 'phase spaces', to study not only what a system does but also the alternatives (Stewart and Cohen, 1997, p.34). In game theory, the phase space of a game can be represented in a 'game tree', which maps all possible moves or rules to go from one state of the game to the next (*ibid*, p.50). In a relatively simple game such as 'boxes', played on a 5 x 6 grid of dots with players taking it in turns to draw lines and claim boxes, the game tree of all possible moves (2^{49}) cannot be written down and there is no simple winning strategy. The total possible moves in a chess game is commonly estimated to be greater than the number of atoms in the universe.

An important axiological concern is the extent to which we have conscious, intentional choice or autonomy when acting responsibly and accountably, raising once again age-old questions of determinism and voluntarism, structure and agency. For Bourdieu (1998, pp.80-82), as discussed in Chapter Two, our embodied socialisation or habitus leads to a 'feel for the game' that may be 'bad' or 'good' based on 'pre-perceptive' anticipation, being 'ahead of the game'. Space for conscious, response-able choice or reflexivity in this account appears limited (Archer, 2010). From the perspective of phenomenology, Thompson (2010, p.314), drawing on Merleau-Ponty's example of a football game, explains that the flow of skilful action is experienced and therefore not unconscious, though without a subject-object structure. The temporal unfolding of experience involves a 'prereflective self-awareness' and 'bodily self-consciousness', with reflection possible outside immersion in activity (*ibid*, p.315). Importantly, *both* processes involve conscious self-awareness and are comparable to Schön's (2011) 'knowing-*in*-action',

extended to 'reflecting-in-action' through continuous thinking, (p.54, original emphasis), and the way we 'reflect on' our 'knowing-in-practice' deliberatively or speculatively after the event (p.61). These insights point to responsibilities for the actions and the choices we make from the complex possibilities. As Oyama (2000, p.149, original emphasis) concludes, '[o]ur cognitive and ethical responsibilities are based on our *response-ability*, our capacity to know and to do, our active involvement in knowledge and reflection'.

An understanding of complexity and complicity encourages thinking about ethical possibilities and alternatives in the ways we act and respond to the actions of others, for the good of all concerned. Complexity thinking and agential realism sensitise us to alternative possibilities for agency in the situations we encounter and the different ways in which we can respond within unfolding events. Our responses are entwined with both responsibility, in the conventional sense of how we act, and 'response-ability' in terms of how we invite and enable others to respond (Barad, in Kleinman, 2012, p.34; Oyama, 2000, p.149). As Barad (2007, p.185) explains, 'what we need is something like an *ethico-onto-epistem-ology* – an appreciation of the intertwining of ethics, knowing, and being – since each intra-action matters'. The participatory worldview takes a similar approach, that '*participation* implies *engagement*, which implies *responsibility*' (Skolimowski, cited by Heron and Reason, 1997, pp.277-8). The origins of pragmatism as a worldview also emphasise 'that questions of collective knowledge cannot be dissociated from matters of morals, ethics, personal meaning and cultural standards' (Davis and Sumara, 2006, p.73). These considerations have far-reaching implications for the pursuit and study of practice-based inquiry and self-determined learning as vehicles for professional growth and for those who provide help and support. Most importantly, following Davis (2008, p.63), the 'ethical imperative' is to foreground how I am implicated in this study, in different ways and in multiple roles, accounting for my complicity.

Accepting complicity as a moral concern within complexity thinking, relying upon communication and relationships that cannot be simply overlooked, Davis (2008, p.64, original emphasis) raises important ethical questions for educational researchers:

- How am I complicit in (i.e. affecting or hoping to affect) the phenomenon that I study?
- How is this research *educational* – that is, how does it educate?
- How might this research be taken up?
- How might I represent/present these interpretations?

Addressing these questions in turn, as researcher, tutor and self-determined learner, I am studying practice-based inquiry *through* practice-based inquiry. Gaining insights from shared experience, this study is a formalised and theorised account of work with four of my students, seeking their perspectives as professional learners. Broadening the scope of study, experiences of professional learning beyond participants' study with me are sought, and two more teacher participants are involved who were not my students. Through the perspectives of these six participants I hope to gain deeper insights into qualitatively different ways of experiencing and conceptualising professional growth. I anticipate this will positively affect my future practice as a teacher educator, and perhaps that of others. Educational aspirations for this work lie in contributing to a growing body of evidence and awareness that teacher professional growth is complex, adaptive, person-specific and context-sensitive. Learning and development, therefore, cannot be fully understood using educational effectiveness metrics and simple input-output models. Exploring a small number of richly informative cases, this study contributes knowledge of teacher experience to a wider community of teachers, leaders and teacher educators, of which I am part. I hope that this research is taken up in renewed possibilities for teacher response-ability, determining their own purposes and opportunities for professional growth. Teacher perceptions and experiences are presented through written description, tabular and diagrammatic analysis, exemplified in teachers' own words, though inevitably through my own interpretive framing. Resulting interpretations have in each case been shared with participants for clarification and elaboration, with presentational scope for influencing future opportunities for professional growth, working with teachers and educational leaders. The methodological implications of this complicity are further discussed in the next section.

Upholding appropriate ethical research practices, the British Educational Research Association's (BERA) *Ethical Guidelines for Educational Research* have been observed in this study (BERA, 2011). BERA sets out key 'responsibilities to participants', which have informed this research at every stage. First, 'voluntary informed consent' has been gained from all participants, from the outset providing them with full 'openness and disclosure' of information about the purposes and aims of the research, and the extent of their involvement (*ibid*, pp.5-6). Related to this and specific to the participatory approach pursued, my 'dual role' as tutor and researcher in relation to four of the participants required careful consideration. The main concern was to ensure that the involvement of my tutees in this research would in no way impinge on the outcome of their studies, favourably or otherwise. The ethical responsibilities of the 'right to withdraw' at any

time, for 'any or no reason', as well as avoidance of 'incentives' or 'detriment arising from participation' were therefore established (*ibid*, pp.6-7). The 'entitlement to privacy' incorporating 'confidentiality and anonymity' was also expressed to participants, with the additional assurance that no parts of their contribution would be published, should such an opportunity arise, without further explicit consent (*ibid*). Data security was assured through password protection of storage devices and encrypted remote backup.

While this research has not directly involved children, and vulnerable young people or adults, the practice-based inquiries carried out by participants have sometimes included children. In each case, these inquiries were produced for submission as masters assignments and were thereby subject to appropriate ethical approval within the awarding institutions. Crucially, codes of practice are only a first step to be followed-up through a process ethics that keeps an open-minded vigilance to ethical matters that might be raised at any point during the research process (Hiles, in Given, 2008, p.55). The sharing of case studies with participants, known as 'member checking', is considered an ethical and quality concern in avoiding misinterpretation, seeking plausibility and credibility of accounts and enabling further participation (Savin-Baden and Major, 2013, p.477). In this study, more than affording participants a right to review, material was actively shared and further clarifications and contributions were encouraged, while mindful of the workload demand this might generate.

A methodology of complexity – case study, phenomenography and bricolage

My complicity in this study, explicated in the previous section and throughout this work, points to a methodology of practice-based inquiry. I am seeking greater understanding of teacher professional growth, including my own, so that I can better nourish it for others and myself through my work. It follows, too, from the proposed ethico-onto-epistem-ology, that to *study* practice-based inquiry means to *do* practice-based inquiry. A deeper understanding of individual teacher professional growth appreciated as complex, context-sensitive and unique, invites a study of cases. Stake (2000, p.435) maintains that '[c]ase study is not a methodological choice but a choice of what is to be studied', so here the cases of interest are *experiences* and *interpretations* of teacher learning and development, particularly through practice-based inquiry. While Hamilton (2011, p.1, my emphasis) explains that 'a case study approach is often

used to build up a rich picture of an *entity*', when viewed in complex, participatory and relational terms, the case or entity becomes the system of processes. In this study, the focus or case is the confluence or complex system of the teacher, their context, and their experiences and conceptions of practice-based inquiry and professional growth, comprising learning and development.

The three types of case study identified by Stake (2000, p.437) – intrinsic, instrumental and collective – all pertain to this research. The teachers, chosen purposively, are of *intrinsic* interest due to their individual experiences of practice-based inquiry and their professional growth more broadly. They are also *instrumental* in offering further insights into the general nature of these experiences, together making a *collective* contribution. This raises the issue of generalisability, often considered lacking in case studies (Denscombe, 2010, p.60). The 'external validity' sought by experimental and quantitative studies, through sampling and inferential statistics (Cohen *et al*, 2007, p.136), is not the purpose of case study. Collecting 'views, perceptions, experiences … can give the researcher in-depth insights into participants' lived experiences', with validity supported by 'multiple perspectives and different kinds of data collection' (Hamilton, 2011, pp.1-2). The extent to which cases fit, relate or generalise to other situations, or their 'relatability' (Bassey, 2001, p.5), thereby relies as much on the reader as the researcher (Elliott and Lukeš, 2008, p.98; Denscombe, 2010, p.61). Similarly, Thomas (2010, pp.577-9), discussing the 'complexity and frailty' of generalising on human relationships, uses the Aristotelian concept of *phronesis*, or practical wisdom and knowledge, suggesting that in case study 'validation comes through the connections and insights it offers between another's experience and one's own'. The 'exemplary knowledge' offered by case study supports a process of 'abduction' rather than induction (*ibid*), or the 'lateral extension of abstract components of description' (Bateson, 1988, p.153).

Several common misunderstandings tend to undervalue context-specific knowledge offered by case studies, compared to research seeking generalisations (Flyvbjerg, 2006). As noted in relation to CPLD studies in Chapter Two, 'predictive theories and universals' are elusive in human research, thus practical 'concrete, context dependent' knowledge can be more valuable (*ibid*, p.224). Allied to this, a tendency to overvalue generalisation for scientific progress underestimates the 'force of example' (*ibid*, p.228). Summarisation and generalisation are not necessarily desirable from the rich narrative of case study and difficulties in achieving this are

more often due to the 'properties of the reality studied' than the research strategy (*ibid*, p.241). Flyvbjerg (2006) challenges assumptions that case studies are only suitable for generating hypotheses, advocating their utility for theory building and testing (p.229) and refuting suggestions of greater bias towards verification of pre-conceived ideas than other approaches (p.237). Similarly, Byrne (2009, pp.1-3) asserts that multiple, comparative case studies can provide 'useful theoretical descriptions of the social world', distinguishing between 'generalizing', in seeking causal understanding beyond the unique and specific, and 'universalizing' in expecting law-like relationships that cannot be established.

Further developing the implications of complexity thinking for case study, Haggis (2008, p.161) contrasts 'cross-sectional abstraction' of narrative and case study evidence, tending towards common themes across cases, with 'dynamic systems abstraction' focusing on multi-level interactions of an individual narrative within its wider contexts. The latter approach seeks both similarities and differences between cases, shifting the epistemological position of the researcher 'to see the relevant dynamic system as if from 'inside'' (Haggis, 2008, p.164). In relation to the participants in this study, there is variability in my position within the confluence of the teacher, their context, and their experiences and conceptions of practice-based inquiry and professional growth. In one sense, viewed as a nested complex system, I am already inside this confluence as *part* of the wider educational system in which teachers live and work. Thus, my role affords some awareness of external conditions experienced, however each participant also encounters wider externalities of which I have no knowledge.

Two of the six case participants (Teachers A and B), were not my students and therefore I have not been directly involved in their professional growth or experience of practice-based inquiry. With one (Teacher A) I had no relationship prior to this study and with the other (Teacher B) I have, in the past, worked in their school as an outside tutor. Two participants (Teachers D and F) became involved in this study after they had completed their studies with me, so I was further outside the professional spaces they inhabit. The other two cases were simultaneously students and participants (Teachers C and E). Proximity to the teacher participants therefore varies with my relationship to each one, which itself is dynamic and temporal. Any sense of this group forming a sample with representativeness to a larger population or subset of teachers is meaningless, as the research seeks depth and nuance not broad categorisation. I decided not to foreground gender, ethnicity or any other personal characteristics of the six teachers, apart

from those they themselves chose to share and articulate in conversation as relevant to their professional growth. A participatory approach points towards self-categorisation and characterisation, rather than assumption or imposition.

The research foci of phenomenography are the 'qualitatively distinct ways' in which phenomena are experienced by different people and associated variation in these experiences (Booth, 2008, p.451). Phenomenography is well-suited to a study of professional learning and development, conceived as a complex process, for several reasons. As already noted, phenomenography shares with complexity thinking an explicitly non-representational and non-dualist view of experience as the 'internal relationship between persons and phenomena', attending not only to the mental or physical aspects of experience but their mutually defining relationship (Marton and Booth, 1997, p.120). Phenomenography acknowledges the 'complex of all possible ways of experiencing' phenomena (*ibid*, p.113), and thus the inevitability that this experience is different and partial for each of us (p.13). Here, the phenomena of interest are professional growth and practice-based inquiry, and the different ways in which they are experienced elucidates not only the experiences themselves but also what professional growth 'is like' and 'could be like' (*ibid*, pp.12-13). An exploration of *possible* ways of experiencing professional growth indicates a 'part-whole relationship between the different ways identified and the phenomenon itself', such that statements about '*experience*' of professional growth might also be informative of its '*nature*' (*ibid*, pp.115-116, original emphasis).

Phenomenography is particularly relevant to a study of learning, informed by variation theory and used within the heuristic models (Figures 1 and 2), whereby what is experienced or 'lived' may be qualitatively different from what is 'intended' and 'enacted' (Lo and Marton, 2012, pp.9-10). Consideration of another's lived experiences requires 'second-order perspectives and descriptions', which involve 'taking the place of the respondent, trying to see the phenomenon and the situation through her eyes, and living her experience vicariously' (Marton and Booth, 1997, p.121). For Kemmis (2011, p.12), the intentions and lived experiences of praxis can only be accessed 'unmediated' from a first-person perspective. The act of interpreting another's first-hand experience is inevitably reflexive, 'bent back' through shared experience into our own 'subjective system of meanings' (Winter, 1989, p.41). However, this can also be considered outwardly as an act of empathy, derived from the German *Einfühlung*, 'feeling into' or projecting oneself into another, so 'other's experiences echo within us' (de Waal, 2010, p.65).

The distinction between first and second-order perspectives relates to previous discussion of generalisation in case study. First-order accounts seek general statements about teacher professional growth, whereas a second-order approach is interested in participants' varied experiences (Marton and Booth, 1997, p.120). These experiences are typically explored in 'statements', 'acts' and 'artifacts' relating to the phenomena studied, which might be seen by the researcher as more or less 'valid', 'consistent', 'useful' or 'functional' (*ibid*). However, such judgements need to be resisted or 'bracketed' (p.120), acknowledging that participants are 'affected by what affects *them*, and not by what affects the researchers' (p.13, original emphasis). Thus, *phenomenology* captures first-order reflections on personal experience, while *phenomenography* explores second-order reflections on others' experiences (*ibid*, p.120). The second-order perspective of phenomenography is comparable to the second-person role of *interlocutor*, as outlined by Kemmis (2011, p.12), which can be considered both *intersubjective* and potentially *interobjective* (or *intra-objective*, following Shotter, 2013).

Attentive to variation in ways of experiencing a phenomenon such as professional growth, phenomenography proposes 'categories of description' arising from the accounts of participants (Marton and Booth, 1997, p.125). Collectively, across the cases chosen in a phenomenographic study the 'complex of categories of description' that encapsulate identifiable ways of experiencing the phenomena is called the 'outcome space' (*ibid*). Again, drawing on variation theory's origins in phenomenography, categories of description can be considered as 'critical aspects' with 'dimensions of variation' spanning *particular* ways they are experienced, which have 'critical features' (Lo, 2012, p.65). In complexity thinking, 'features' are 'simplified general concepts', which are experienced and exemplified in specific 'instances' (Cohen and Stewart, 2000, p.408). So, a teacher identifying the trialling of classroom resources as a *feature* of their professional growth, might describe a recent Year 9 geography lesson as an *instance* of this feature. Outcome space is comparable to phase space in envisaging possibilities, and 'phrase space' Kuhn (2008, p.171) in its communicative potential. Drawing on these concepts, the term *possibility space* is used to describe different ways of experiencing professional growth and practice-based inquiry in teacher accounts, comprising features and instances of purpose, opportunity and response.

Possibility spaces presenting the categories of description for a group of case teachers, offer insights not only into their actual experiences, but also the possible ways of experiencing

professional growth and practice-based inquiry as phenomena. In ways not fully realised when first assembling it, the heuristic model visualised in Figure 1 can be considered a possibility space for professional growth that draws categories of description from the literature, exemplified through teacher accounts. The subsequent complexification of this model in Figure 2, recognises the importance of organisational context and external conditions as well as the intertwining of purpose, opportunity and response. In the next stage of development in this thesis, the heuristic model is put to work in generating a more elaborate possibility space of professional growth, using teacher experiences and accounts. At the same time, teacher experiences of practice-based inquiry, as contributory to professional growth, generate a second, overlapping possibility space.

Heron and Reason (1997, p.284) have articulated two 'participatory principles' for cooperative inquiry: 'epistemic participation', such that the propositional knowledge acquired or generated is 'is grounded by the researchers in their own experiential knowledge'; and 'political participation', such that participants 'participate fully in designing the research that intends to gather knowledge about them'. Both are attempted in this study, but the latter has proved less practicable. Views and ideas of participants have been sought in gathering material and evidence of their professional growth and practice-based inquiry, but full involvement in research design has been restricted by busy lives and workloads. A compromise reached, without impairing the quality of evidence gathered nor harming the paramount ethical relationship between researcher and participants, was communicated and pursued with informed consent, seeking evidence of experience in four ways:

- Examples of participant written reports of practice-based inquiry and accompanying resources, produced for masters or doctoral studies.

- Discussions with participants, usually via e-mail and prompted by initial analysis of study reports, to further elucidate critical aspects and dimensions of professional growth.

- Recorded conversations, to gain deeper understandings of participants' experiences of professional learning and development, its enablers and inhibitors and the role of practice-based inquiry in supporting professional growth.

- An open request, to provide any further existing and naturally occurring evidence of participant professional growth that they deem to be significant.

Documented practice-based inquiries draw on teacher-defined evidence, naturally occurring or gathered deliberatively, partially achieving the more participative aims of co-inquiry. These are self-determined, formalised accounts of teacher experience of PBI, carefully planned, evidenced, theorised and reflected upon in their formation, sometimes with my involvement as tutor. This is associated with *bricolage*, stemming from the French expression for using existing materials for new purposes, with contemporary 'do it yourself' connotations (Given, 2008, p.65). Bricolage as a form of qualitative inquiry is characterised by 'eclecticism, emergent design, flexibility and plurality' in researching phenomena from multiple perspectives (Rogers, 2012, p.1). Its development is charted by Rogers (2012), beginning with Claude Levi-Strauss' work in seeking the underlying structures of human meaning-making, which itself can be viewed as a process of bricolage (p.3). Traditionally utilising material to hand, bricolage also draws on data gathered for particular purposes of a study (Wibberley, 2012, p.6). Various metaphors are associated with bricolage, evoked deliberatively by the researcher while influencing the meaning made by the reader:

> weaving; sewing; quilting (both patchwork and embroidered); montage; and collage
> – the fragments of data or different materials, can though, be thought of as either
> being drawn into an ordered whole (stained glass) or left disjointed and jarring
> against each other (smashed glass) (Wibberly, 2012, p.6).

The approach taken in this thesis seeks both similarities and differences in teacher accounts and experiences of professional growth, both the stained glass and the smashed glass. Bricolage is explicitly 'grounded on an epistemology of complexity', acknowledging uniqueness of context, influenced socially, culturally, historically and linguistically, and questioning 'modernist empiricist' theories that may overlook variation (Kincheloe, 2004, p.2). For Kincheloe, 'the task of the bricoleur is to attack this complexity' and to recognise and document their own influence in the process of scholarship, acting upon the 'concept that theory is not an explanation of the world – it is more an explanation of our relation to the world' (*ibid*). The process of bricolage, utilising naturally occurring evidence, attempts to accommodate multiple and emergent possibilities, rather than adhering to fixed, pre-defined research plans that may constrain or define the research outcomes (Wibberley, 2012, p.7). However, recognising that clarity of process is an ethical as well as methodological concern to, 'minimize the impact of ... research on the normal working and workloads of participants' (BERA, 2011, p.7), the four-way approach above was followed in this study. The fourth left open the possibility of further

evidence to be contributed, taken up by two teachers. However, I believe that openness to the possibility of further contributions signalled response-ability to participants, which aided the gathering of rich material through conversation and e-mail communications.

Quality criteria for the chosen data collection methods concern viability, reasonableness, relevance and contingency, more than traditional notions of validity and reliability (Davis and Sumara, 2006, p.26). Evidence gathered is as rich and detailed as possible, without placing unmanageable burdens on participants, keeping open possibilities for further material or interpretations to arise and be shared. An important concern is the credibility of evidence and its interpretation, strengthened through collaboration and ongoing discussion to ensure that participants recognise their experiences in case studies, offering clarification and elaboration (Creswell and Miller, 2000, pp.127-128). From a participatory and co-operative perspective, Heron (1996, p.163) sees no reason to abandon terms such as *validity* and *truth*, even when holding different meanings across paradigms. In the participatory worldview, valid means 'sound, well-founded, well-grounded' (Heron, 1996, p.163), not in an absolutist or foundationalist sense, but within an extended epistemology where propositional and presentational knowing is rooted in experience and consummated in practice (Heron and Reason, 1997, p.282). Heron (1996, p.163, original emphasis) maintains that forms of knowing cannot be considered without 'acknowledging their relationship with *truth'*. Again, this is not to be confused with a foundationalism or representationalism that seeks truth in *correspondence* to reality; instead truth becomes *congruence* in 'articulating reality', 'both revealing and shaping', 'finding meaning in and giving meaning to' reality (Heron, 1996, p.163). Similarly, Davis and Sumara (2008, p.33, original emphasis) associate complexity thinking with 'coherence theories' that are concerned with '*internal fit* rather than *external match*', pointing to 'viability' and 'utility' as the truth values for perception and interpretation.

Quality criteria for judging and justifying interpretations in qualitative, participatory and naturalistic research have long been a source of contention (Schwandt *et al*, 2007). Reasonable demands for rigour lead Guba and Lincoln (in Schwandt *et al*, 2007, p.18) to propose 'analogs or metaphorical counterparts' to the conventions of internal validity, external validity, reliability, and objectivity. The resulting 'criteria of trustworthiness' are, respectively, 'credibility', 'transferability', 'dependability' and 'confirmability' although, as Guba and Lincoln note, paralleling criteria from more positivist paradigms risks overlooking those pertaining to

naturalistic inquiry (*ibid*, p.19). Without claiming to resolve ongoing debates, they propose 'the term *authenticity* to refer to these new, embedded, intrinsic naturalistic criteria' (*ibid*, p.20, original emphasis), comparable with the ethical concerns of complicity (Davis, 2008, p.64). The first criterion of authenticity is 'fairness', seeking a balance of views and underlying beliefs through openness, inclusion, negotiation and attentiveness to issues of power (Guba and Lincoln, in Schwandt *et al*, pp.20-22). Secondly, 'ontological authentication' recognises co-creation of reality (interobjectivity and complicity) through inquiry, often leading to 'increased appreciation of some set of complexities' (*ibid*). Similarly, 'educative authentication' arises in possibilities for increased understanding of diverse perspectives, which not only educate and inform others but offer 'catalytic authentication' in prompting action. Finally, 'tactical authentication' concerns whether such action is 'empowering or impoverishing, and to whom' (*ibid*). The practical approach taken in this study to collection and interpretation of evidence, much of which is self-generated by participants, is informed by these naturalistic criteria, which overlap the viability and utility associated with complicity.

Gathering and interpreting evidence – listening, conversing and unravelling

Gathering and interpreting documentary and conversational evidence for this study, the nested, complex process model of professional growth, outlined at the end of Chapter 2 was used as a heuristic, a theoretical tool to promote thinking and understanding. The critical aspects of *intended purposes*, *enacted opportunities* and *lived responses* in teachers' written reports of practice-based inquiry and talk about professional growth, framed by *organisational contexts* and *external conditions*, were sought. Drawing on previous work (Taylor, 2017), these critical aspects were considered intertwined, but the typical shape of a report on practice-based inquiry, setting out intentions, methods and implications, aided disentanglement. Unravelling the threads of purpose, opportunity and response in teacher conversation on professional growth proved difficult and required listening several times over. The framework of Table 4, as a tool for inquiry, provided a diffraction grating for the complex processes articulated in written and spoken accounts, identifying and amplifying the critical features that made a difference to teacher experiences (Haraway, 2000; Barad, 2007).

Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Contexts	External Conditions

Table 4 – Unravelling teacher accounts of professional growth and practice-based inquiry.

The documentary evidence of teacher experiences of practice-based inquiry comprises twenty written commentaries across the six case study participants. While these documents were originally framed and produced for different purposes, they offer insights into the learning and development of their authors. The teachers designed and justified their own methodologies, drawing on published material including theory, research and policy, reflecting on and interpreting evidence of practice, drawing conclusions and substantiating decisions and outcomes. A deliberative approach was taken, perhaps more than reading, of *listening to* and interpreting these documents treated as descriptions (Hua, 2012), for their contribution to each case study of professional growth. This entailed distinguishing between the teacher writing from a first-person or third-person perspective, concentrating on the former without overlooking third-person commentary on the literature and research-base for the study. Commentary considered important was noted, but first-person accounts of evidence, action and reflection through inquiry and the meanings made by teachers hold greater significance to this study. Central to these considerations is the concern for differences and variation across experiences, which might lie outside any similarities or common themes (Haggis, 2008, p.161).

During the process of diffracting written teacher accounts through the heuristic framework of Table 4, questions were noted for participatory exploration through e-mail communication. The rich potentiality of the material for raising a multitude of questions and the inevitability of complexity reduction, were balanced with the need for manageability and concern for teachers' limited time. Questions were (largely) restricted to: (i) clarification of purposes of, opportunities for and responses to practiced-based inquiry; (ii) illumination of organisational contexts and wider external conditions; (iii) the extent to which experiences of practice-based inquiry have influenced subsequent practice or how perspectives have changed. The resulting grids were e-mailed to teachers, with questions added, to which all responded in due course, four via e-mail and two in conversation. In each case participants were encouraged to offer further comments

and insights, including on the process of analysis itself. Use of e-mail for asynchronous communication afforded time for participants to think before responding (Savin-Baden and Major, 2012, p.363), offering a 'non-coercive exchange where participants could respond when they liked' (James, 2007, p.972).

In-depth face-to-face conversations took place with each teacher participant towards the end of the period of collaboration, communication and evidence gathering, treated as a privilege granted (Denzin, 2001, p.24). A process of listening in which 'meaning is experienced' and 'thinking is produced' (Hua, 2012, p.69), was recorded in two ways – in brief fieldnotes during conversations and through audio recording and subsequent re-listening and elaboration (further discussed below). The former encapsulated some of the dynamics and emphases of conversation that were less noticeable when listening again, helping to 'transform information into shared experience' (Denzin, 2001, p.24). These complexity-oriented 'coherent conversations' were intended to not only capture different viewpoints but to enable 'people's priorities and own agendas to emerge' (Kuhn, 2009, p.86). While conversations were framed by ten prompts, using questions prepared in advance to address the research aims, they were open-ended in enabling participants to respond as they wished and to allow elaboration (Savin-Baden and Major, 2012, p.359). In each case the questions were shared around a week before meeting, to provide participants with time to think and, if they wished, prepare responses. It was apparent that all participants had made some preparatory notes.

The ten conversation prompts (in Table 5), arrived at deliberatively, necessarily entail inclusions and exclusions. Despite the open-endedness of conversation, there are other questions that could have been asked, which might have changed this research and interpretation of the evidence. A growing awareness of intra-acting to shape inquiry (Barad, 2007) and the complexity of the unfolding meaning-making phase/phrase/outcome space became apparent. Striving to adequately address the initial research aims and questions of this study, through both documents and conversations, the mapping in Table 5 was carried out. During conversations, further prompts and follow-up questions (why and how?) were used to clarify and assist in promoting thinking and responses to generate meaning. While the questions were followed in the order in which they appear in the right-hand column of Table 5, they were not posed slavishly, particularly when clear that questions had been addressed in earlier responses. Again, this highlights the importance of listening carefully, using note-taking to assist in

remembering what has already been said (Savin-Baden and Major, 2012, p.361), while relying on audio recording to capture verbatim and to allow listening again.

	Documentary evidence	Conversation prompts
Research Aim One – To explore accounts of teachers' perceptions and conceptualisations of their own professional growth: • What patterns and differences can be identified in teacher accounts? • What are the critical aspects and dimensions of variation in teacher learning and development? • How do teachers' perceptions and projections of their learning change and develop over time?	In written accounts of practice-based inquiry, and in other documentary evidence provided by participants: • Drawing out the key learning experiences and first-person aspects of these accounts. • Seeking the similarities and differences in written accounts of teacher experiences and discernible categories of description. • Looking for changes of view occurring through practice-based inquiry, and actual or proposed changes to practice.	1. In the context of teaching and/or educational leadership, what is professional learning? 2. Looking back over your career, what are the significant experiences that have shaped your professional learning? Why? What did you learn and how? 3. How have your perceptions of professional learning changed or developed over time?
Research Aim Two – To scope the possibilities of individual and collaborative practice-based inquiry in teacher learning and development: • What are the perceived impacts, benefits and limitations of teacher practice-based inquiry? • What situational processes enable and inhibit teacher practice-based inquiry? • How do teachers work independently and collaborate with others through practice-based inquiry?	In written accounts of practice-based inquiry, and in other documentary evidence provided by participants: • Seeking any explicit organisational or external enablers and inhibitors. • Attending to evidence of collaboration, interaction and teachers' own interpretations of this. • Identifying the stated practical implications, benefits and limitations of practice-based inquiry.	4. How has practice-based inquiry/research impacted on your professional learning? What are the main benefits and limitations of this approach? 5. To what extent have you been able to collaborate with others through practice-based inquiry/research? Who and how? 6. What aspects of your professional life have been supportive of practice-based inquiry/research and what has got in the way? What are the enablers and inhibitors?
Research Aim Three – To explore the lived experience of teacher professional growth, through interpretation, integration and application in practice: • How is professional learning and development experienced and interpreted by teachers? • How is teacher learning and development integrated and applied within existing practices? • How is teacher learning and development shaped through ongoing intra-actions?	In written accounts of practice-based inquiry, and in other documentary evidence provided by participants: • Drawing out the key learning experiences and first-person aspects of these accounts. • Identifying the stated practical implications, products and applications of practice-based inquiry. • Attending to evidence of collaboration, interaction and teachers' own interpretations of this.	7. What factors or drivers outside your workplace influence your professional learning? 8. What factors or drivers inside your workplace influence your professional learning? 9. How do you put your learning into practice and how do you learn in/through your practice? How does your professional learning influence practices in and/or beyond your workplace? 10. In what ways is your professional learning shaped through interactions with others? Who and how?

Table 5 – Mapping of research aims and questions to documentary evidence and conversation prompts.

Following face-to-face conversations, a process of repeatedly re-listening to each digital audio recording and further building upon and refining the fieldnotes took place. Questioning the productive value and taken-for-granted, though often unspecified, necessity of verbatim transcription (Davidson, 2009), I concluded that this process 'should be more about interpretation and generation of meanings from the data rather than being a simple clerical task' (Halcomb and Davidson, 2006, p.40). Transcripts, while offering a more detailed written record than fieldnotes, remain imperfect, with potential loss of data and meaning contained in intonation and expression, as well as potential errors in translating audio to text (Tessier, 2012). The audio recordings themselves provide a better record of each conversation and a means to re-play and review responses. 'Replayability' facilitates content analysis directly from the audio rather than a translated textual form, keeping as much original information as possible, is 'closest to the original event' and in the 'voice of the participant' (Tessier, 2012, p.452). The solution proposed by Halcomb and Davidson (2006, p.41), followed in this study, combines note-taking and audio recording during the meeting, reflecting on and refining fieldnotes immediately afterwards, with further revision through replaying. However, listening repeatedly, the actual words used by each teacher gradually replaced the notes taken in meetings, clarifying meanings and giving more authentic voice to the material.

Marton and Booth (1997, p.134) note that, when re-reading transcripts, emphases shift due to the limitations of our awareness – '[t]he data shimmers in the intense light of our analysis'. Similarly, MacLure (2013), arguing for a post-representational approach, writes of the 'emergence of sense', 'when the data 'glows'', and in this study re-listening offered an auditory equivalent. More specifically, following Barad's (2007, p.30) invocation of diffraction, this approach offered such sense-making, as noted in my reflective diary:

> *It is only through repeated listening to recorded conversations that certain key points, connections and threads begin to clarify. This brings to mind the sonic equivalent of interference patterns resulting from diffraction. Different threads of conversation come together and either amplify or diminish each other, a physical phenomenon known as* **phasing** *(familiar through musical interests).*

The resulting conversation fieldnotes (summarised in Appendix One) consist mainly of complete and direct quotations, combined with my own questioning and clarifying, as well notes on the non-verbal cues that seemed significant. Where ellipses signify words removed, these are merely repetitions, hesitations or stumbles that I considered superfluous to meaning-making.

Listening again, many times, making sense and meaning as part of a wider process of interpretation is crucial to this study and, again, I noted this in my reflective diary:

Repeatedly, at different stages of the interpretation, analysis and unravelling process, I find myself going back to the recorded conversations, listening again. While existing understandings are reinforced, sometimes new interpretations are made, from the way something is said, how it connects back to what was previously said, or how it relates to something I have said. Each time the conversation fieldnotes have become closer to verbatim transcriptions, however, if I had started with the latter I suspect an important process of listening, clarifying and interpreting might have been lost.

When attempting to unravel the threads of purpose, opportunity and response, elicited in conversation and within teacher accounts, again the importance of positionality and relationality became apparent. The mind-mapping software *Inspiration* was used to organise and visualise the identified threads in two layers, the first summarising critical features, the second exemplifying and elaborating these. The resulting mappings or *dynamic process abstractions* (further discussed below) attempt to show not only identifiable purposes, opportunities and responses of professional growth, but also their highly complex, interwoven relationships and temporality in their confluence. As noted in my reflective diary:

*Purpose, opportunity and response are highly intertwined and discernible only by placing oneself in the position of teacher. These are **their** purposes, opportunities, responses, contexts and conditions, but always in relation to those of others. Viewed from the perspectives of others, purposes become responses and responses become purposes, which together build opportunities and contexts. Teacher purposes and responses become opportunities for others, colleagues and learners. Organisational contexts are built from purposes, opportunities and responses, often mediating external conditions. Following-up accounts of PBI in conversation, sometimes several years after they took place, suggests responses lived at the time have spawned new purposes and opportunities, which have since been enacted and responded to.*

At the time of reflection, this prompted speculation that these complex relations and intra-actions begin to describe a process of emergence in professional and organisational growth. More specifically, attractors around which professional learning could fruitfully occur became clearer and, conversely, in some cases repellers to such learning were encountered.

Further reflections on the process of unravelling teacher accounts reinforced the importance of maintaining a focus on the whole experience of professional growth while seeking to analyse out the component parts. Realising this and calling to mind Morin's (2006, p.6) notion of 'whole-part mutual implication', I made the following statements in my reflective diary:

> *While it is possible to unravel purposes, opportunities and responses in teachers' accounts of their professional learning and development they can only be understood in relation to each other. The same can be said of the critical aspects or categories of description in ways of experiencing professional growth. New dimensions of variation have emerged through interpretive unravelling, but while these parts suggest possibilities, the holistic experiences from which they arise should not be overlooked. There are occasionally parts of teacher accounts that sound discordant, where listening to the whole conversation, sometimes repeatedly, is needed to clarify or make sense.*

The process of interpretation and analysis is one in which separability is achieved through making cuts, acts of distinction that co-define subject and object within the phenomenon of another's account (Barad, 2007; Maturana and Varela, 1997; Shotter, 201). From the perspective of phenomenography, 'the researcher has to step back consciously from her own experience of the phenomenon and use it only to illuminate the ways in which others are talking of it, handling it, experiencing it, and understanding it' (Marton and Booth, 1997, p.121).

Several stages of interpretation were attempted, utilising, analysing then synthesising the raw material of evidence collected. Recognising the inseparability of data collection and analysis and the necessary cuts (inclusions and exclusions) made in the process, the framework for analysis of documents and conversations (Table 4) and the conversation prompts (Table 5) provide one layer. However, the research aims and questions themselves (also in Table 5) can be considered an earlier stage of interpretation, articulating possible and intended meanings from the complexity of teacher professional growth. Utilising the notion of 'dynamic systems abstraction' (Haggis, 2008, p.162), visualisations of the critical features of purpose, opportunity and response for each case were produced (Appendix Three). Considered as *dynamic process abstractions* these diagrams do not attempt to '*transcend* the complex particularity' of each case (Haggis, 2008, p.152, original emphasis), they serve more as a 'tool for analysis' than a 'description of 'what is'' (p.162). Producing these diagrams, I noted in my reflective diary:

*Creating, diagrammatically, unravellings of purpose, opportunity and response for each teacher, based on conversations with them, is itself an interpretive process. Borrowing from Haggis and Gergen, these could be called **dynamic process abstractions**, attempting to identify and place related processes temporally and spatially within a confluence. They also invoke the complexity notion of **attractors**, where processes coalesce, for example around students/learners, colleagues/teams or families/outside organisations. Manipulating, on screen, examples/elements of each critical aspect of purpose, opportunity and response has helped to interpret the relationships and place me in the position of each case teacher.*

These abstractions and unravellings are combined across the six teacher cases to form categories of description and variation for teacher professional growth and practice-based inquiry. The resulting *possibility spaces* for professional growth and practice-based inquiry are discussed and exemplified, summarised in tabular form and visualised diagrammatically in the chapters that follow. They are offered as tools for thinking and abduction, a means of extending exemplary categories of description to past experiences and future possibilities (Bateson, 1988; Thomas, 2010). Thus, a two-fold process of abduction is aspired to in these *possibility spaces*, of being 'carried away' by the unfamiliar and a 'carrying over' of familiarities to new situations (Shotter, 2009b, p.225). Chapters Four, Five and Six discuss and exemplify evidence gathered through documented practice-based inquiries and recorded conversations with the six participating teachers. Chapter Four addresses the first research aim, exploring rich accounts of teachers' perceptions and conceptualisations of their own professional growth. Chapter Five considers the second research aim, scoping the possibilities of individual and collaborative practice-based inquiry in teacher learning and development. Chapter Six turns to the third research aim, exploring how teacher learning is experienced, or *lived*, through interpretation, integration and application in practice.

Chapter Four – Perceptions and Possibilities of Professional Growth

In Chapter Four, ways of experiencing professional growth are explored and interpreted to identify patterns and differences, as well as changes in teacher perceptions and projections over time. Perspectives on professional growth articulated by the six teachers have much in common, sharing similarities both with each other and with the literature explored in Chapter Two, but there are also important nuances and differences. Interpreted through complexity thinking, the distinction and conjunction (Morin, 2006, pp.6-7) of teacher professional learning and continuing professional development (CPD), more than their synonymity or conflation, emerges in teacher accounts. The complex construct of development *with* learning, or learning *within* development, together understood as teacher professional growth, is further explored and exemplified in this chapter.

Unravelling perceptions and experiences from teacher accounts, unpicking the threads of purpose, opportunity and response, introduces further categories of description and variation. In defining and discussing these categories, the vocabulary used by teachers is maintained, with direct quotations from the source material *italicised*. Across the discussion, patterns of complicity emerge, between teacher learning and development, with the learning of others, and with organisational contexts. Temporal and spatial differences in these patterns become increasingly important for interpreting how teachers live with and potentially resolve tensions between autonomy and accountability. Shifts in teacher perceptions of professional growth during their careers are in confluence with changes in aspiration, role, workplace and wider educational policy. First, each teacher as a person in context is introduced, providing sufficient biographical background and outlining key attractors for their professional growth.

Teacher professional growth – the person in context

The six participating teachers work in the state-funded secondary education sector, within schools and academies in the Midlands region of England. All have been practising teachers for at least five years, studying part-time to masters or doctoral level alongside their workplace duties. Four are female and two are male, but gender arises as significant to perceptions and experiences of professional growth for only two teachers. Biographical and contextual information is based on evidence provided in conversation and documentation, interpreted as

relevant to teachers' own perceptions of their learning and development. Known details that are not foregrounded in teachers' articulated perceptions of professional growth are not included, through concern for keeping personal data to a minimum and maintaining privacy (BERA, 2011, pp.7-8). Short portraits of each teacher, with glimpses of their experience of professional growth, introduce them as persons in context and the complex attractors that shape and characterise their professional growth. Understanding each teacher's professional growth as they themselves perceive and articulate it means recognising their ways of being and acting as persons within the prominent or overlapping contexts they inhabit.

Teacher A is an experienced geography teacher who has practised in several schools and currently works part-time, facilitating extensive subject-related activities with publishers and exam boards. Teacher A describes several *'click moments'* in their professional growth. For instance, attending a CPD course to acquire web-site production skills, with the intention of engaging in something potentially interesting and useful. Without obligation, Teacher A applied these newly-acquired skills to developing a subject-related website, for sharing teaching resources and networking with other teachers. Another is Teacher A's work with prominent educational organisations and publishers, which stems from *'being in the right place at the right time'*, always saying *'yes'* to opportunities arising and wanting to get involved with innovative organisations. This is made possible by the affordability of part-time working. It is also influenced by Teacher A's feeling of needing more than what school alone can offer, partly due to the pressures of performativity in *'doing whatever it takes'* to get results. Teacher A gains status and respect from these wider connections and is tempted, like some acquaintances, to leave teaching. However, Teacher A likes being with and working with young people, staying at school while pursuing other opportunities. Teacher A undertook a MA in Education, considered a *'good qualification to have'*, when a paid-for opportunity arose at school. This course involved practice-based inquiries, influencing both knowledge and practice, and successful completion helped to renew Teacher A's confidence in their own capabilities. Several attractors are discernible in Teacher A's professional growth: passion for teaching subject, developing resources; being and working with students, encouraging their independence; working for innovative external organisations and publishers.

Teacher B started as a science teacher with career-long aspirations for headship, currently a vice-principal with responsibility for a Teaching School Alliance (TSA) offering School Centred

Initial Teacher Training (SCITT). Teacher B's professional doctorate, embarked upon as a hobby to pursue interest in leadership performance, was not intended for professional impact and has never been shared with colleagues. Yet Teacher B knows that this seven-year study has profoundly shaped their persona and confidence in performing as a leader, wondering *'whether I've just moulded myself into my thesis or whether my thesis has moulded me'*. Both further study and career ambition are strongly motivated by desire to make family members proud, including a supportive partner and parents who were teachers and school leaders. Other key drivers are a competitive university peer group who have kept in touch and a strong sense of being *'the best one can be'*, as well as a tendency to be spurred on by setbacks or discouragement. Teacher B has worked in several schools, finding their *'niche'* in a multi academy trust (MAT) with like-minded female colleagues, where learning at all levels is valued highly, in a teacher development role leading the TSA. Teacher B associates professional learning with the drive to achieve long-standing career goals, however a growing interest in teachers' *'early career development'* in the current role has led to questioning headship as the ultimate ambition. Prominent attractors in Teacher B's professional growth are: personal drive and ambition, including to make family proud; providing the best educational experiences for learners; nurturing teachers through early career and leadership development.

Teacher C is an experienced teacher who is also the senior leader responsible for another SCITT within a different TSA. Teacher C associates professional learning with self-directed inquiry, in an ongoing and constructive process of supporting learners and their learning. Teacher C's recently completed masters study was entirely integrated with their workplace role and practice, through a series of reflective and research-based assignments. Their inquiry-orientation towards professional learning goes further than masters study, is encouraged in others and permeates intentions for transformational change. Teacher C recognises that much of what drives school leaders' actions and decisions emanates from policy or inspection expectations, with a conviction not to follow this slavishly but do what is right for students. Teacher C believes in coaching others to get the best from them, while recognising that sometimes colleagues simply want pragmatic advice. An acute organisational awareness suggests dilemmas of *'self-justification'* to Teacher C, having to provide a rationale for policy enaction that is not necessarily believed in, in order to show leadership. Another predicament resides in realising that developmental practices might be best self-determined, but this does not guarantee them happening, so leaders must consider ways to make them possible,

attractive, even compulsory. Building a *'sense of urgency'* for change, *'coaching conversations'*, moving beyond target-setting and *'flipping'* the narrowing of gaps to the finding of strengths are ways of managing such dilemmas for Teacher C. The main attractors in Teacher C's professional growth are: joint practice development, focus on student learning; establishing programmes and capacity-building, own and others' coaching; implementing change and managing dilemmas.

Teacher D started their career as a sports coach then trained as a physical education teacher, pursuing pastoral roles to a head of year post, before becoming a parent and currently teaching several subjects part-time. Teacher D's unusual route into teaching, through apprenticeship coaching with a professional football club, grew into a desire to work with young people. Diligent commitment to study while working in this role led to A-levels at college, a degree, a school-based PGCE and then a masters degree. The organisational and time-juggling skills acquired along the way have served Teacher D well, in the various personal and professional roles pursued. Teacher D is a self-professed *'people person'*, *'sociable but not loud'*, who works and talks with everyone in the school community and treats them as equals. Building relationships, drawing on past experiences and adapting to new ones are prominent in Teacher D's conversation and written accounts of learning and inquiry. Before becoming a mother, Teacher D worked extensively and confidently with parents as a pastoral leader, using interpersonal skills gained through coaching, later studying parental influences on their children's learning. Concerns with external policy drivers and their impact on organisational circumstances rarely feature in Teacher D's discourse, though published research has been engaged through studies and utilised in practices. Wider influences on Teacher D's professional growth emanate from working in organisations experienced as supportive learning communities, combined with an encouraging family. The principal attractors for Teacher D's professional growth are: building relationships with all to better understand and support their needs; drawing from, building on and adapting to life experiences; working and studying hard, in an organised and thorough way.

Teacher E also trained as a physical education teacher, working mainly in special school contexts, before further training to become a special educational needs co-ordinator (SENCo) in a mainstream academy. Teacher E is someone who *'moves around'* in teaching, who has perhaps not yet found a comfortable niche, with each school impacting on their experiences of

professional growth. Determination to achieve and a passion for further study have enabled Teacher E to gain several post-graduate qualifications and to reach the position of SENCo in their current school. Teacher E knows that their own professional growth is advanced by that of others, including Teaching Assistants (TAs) when given opportunities for development that can be shared across the team. Teacher E's school recently went into special measures, based on mathematics where *'results went down due to curriculum changes'*. While accepting of this situation and striving to attend to it with colleagues, practical advice is minimal from inspectors, who Teacher E suggests have no answers or solutions other than to demand improved results. These demands are taking place at the same time as cuts in SEN budgets and reduction in TA capacity for supporting students with numeracy and literacy needs. Finding a lack of external support and guidance for tackling SEN, Teacher E looks to practical solutions and their own further study to build the knowledge, capability and confidence to act in the best interests of students who are currently *'let down'* by the system. Teacher E's response to discouragement during their own schooling and lack of family support has been to turn negatives to positives, increasing their drive for success. Assessment for learning is an ongoing interest for Teacher E, to engage and support students of all needs and capabilities in their own learning. Prominent attractors in Teacher E's professional growth are: passion for self-study, turning setbacks to positives; meeting complex student needs through formative assessment; supporting development of others, building relationships.

Teacher F is a music teacher and developing leader in a relatively small school, who has taken on additional subject, pastoral and whole-school responsibilities early in their career. Building school teams and acquiring educational leadership capabilities have been initial work-based priorities, with a range of professional and academic courses pursued avidly to develop associated skills. Teacher F's school has been through a period of difficulty and rapid change, being deemed by the inspectorate as requiring improvement, leading initially to increased monitoring of staff by senior leaders. Despite these challenging circumstances, senior colleagues have been supportive of professional growth and Teacher F says, '*there feels like a plan for my development as well as everybody else'*. Through masters study, Teacher F chose to carry out several critically reflective practice-based inquiries into organisational changes precipitated by inspection, finding trust between teachers and leaders eroding and developmental relationships replaced by check-list scrutiny. Since then, discussion among colleagues and changes in leadership roles have begun to re-establish trust and distribute

responsibility for improvement, with a broader focus on student achievement and treating people well. However, a combination of stressful circumstances and wider interests has encouraged Teacher F to seek new opportunities while utilising recent learning experiences. Specifically, ambition has turned to working with international organisations to support the building of educational leadership capacity in post-conflict countries, linked to professional qualifications and doctoral study. Key attractors to professional growth for Teacher F are: building educational leadership capability and capacity; establishing holistic staff and student achievement and well-being; pursuing international educational leadership development.

For each of the six teachers, the complexity of their professional growth, summarised here, has been visualised diagrammatically in a *dynamic process abstraction* (Appendix Three), generated from *recorded conversation summaries* (Appendix One) and *practice-based inquiry summaries* (Appendix Two). These diagrams highlight critical features of purpose, opportunity and response, and organisational contexts and external conditions; the unravelled threads that coalesce around confluences and attractors to professional growth, positioned to suggest their temporality and relationality. These six abstractions are further combined to form a *possibility space* for teacher professional growth (discussed below), expanded for practice-based inquiry (Chapter Five). Each of these *dynamic systems abstractions* and *possibility spaces* can be envisaged as generated from the complex, nested process model for teacher professional growth proposed in Figure 2 (as suggested in Appendix Four).

Distinctions and conjunctions in conceptualisations of professional learning and CPD

The six teachers' conceptualisations of professional learning and continuing professional development (CPD) echo distinctions between learning as inwardly focused on reflective practice and CPD as more outwardly concerned with performance and advancement (O'Brien and Jones, 2014, p.684). In short, professional learning is associated with ongoing, personal, new, interesting and useful experiences, while CPD is described in terms of updating, imposing, conforming and fixing. Teacher professional learning tends to be conceived in personal terms as a continuous, holistic process, involving relevant and chosen purposes and opportunities for growth, which sometimes lead to career progression. These purposes are often situational, oriented towards the needs of learners or colleagues in the workplace, but they may also be

personally focused or outward-facing to external contexts beyond the school. Professional learning stimulates innovation, interest and enjoyment, even a passionate response:

> *'Professional learning I would see as having an emphasis on the useful … I would look at professional learning as what I do outside of school, which I think I find more useful'.* (Teacher A)

> *'More of a journey … an aspirational journey of where you want to go as a professional …. my professional learning is what I've then done with that [courses and CPD] to take my career forwards, because actually I could have just done all those one-offs and still not taken my career anywhere'.* (Teacher B)

> *'Professional learning is very much a continuous process, focussing on inquiry, analysing what you do, reflection and evaluation. … Professional learning is perhaps something that's a little bit more ongoing and constructive'.* (Teacher C)

> *'From professional learning you're developing continually and you're gaining experiences along the way and improving on what you already know and then building on those experiences. … professional learning is more about the whole of you and the experiences you use to build on'.* (Teacher D)

> *'Professional learning is a passion and enjoyment. Something to, kind of, develop my mind and develop personally and something I enjoy doing as well. … I get to choose what I'm learning about, something I'm interested in'.* (Teacher E)

> *'Reflection and self-development. … The professional learning … that's more self-directed really … looking at a completely different aspect … to do with something I was interested in as well. … professional learning could also be developing your interests outside of school'.* (Teacher F)

These descriptions are couched in broadly heutagogical terms, the emphasis on personal choice, interest and enjoyment suggestive of self-determination, of 'what and how the learner wants to learn, not on what is to be taught' (Hase and Kenyon, 2013, p.7). This is articulated clearly by Teacher E stating, '*I get to choose what I'm learning about, something I'm interested in'*. These perceptions hint at transformative learning, in some cases exceeding knowledge and skills acquisition to imply 'a qualitatively new structure or capacity within the learner' (Illeris, 2014, p.5). Professional learning, for example, Teacher B associates with career aspiration and progression, Teacher C views as '*more about the whole of you*' and Teacher E suggests '*you can*

see it makes you better in your role, in your job and whatever you do'. Professional learning is thus understood as relating to 'transformative' purposes (Kennedy, 2014a, p.349), affording 'increasing capacity for professional autonomy'.

In comparison and contrast with professional learning, CPD is perceived as more functional, less personal, not necessarily useful and often associated with opportunities imposed. CPD might involve courses, with attendance expected or demanded, to update specific practices, build necessary skills or to resolve identified concerns. Everyday phrases invoked by teachers include *'done-to'*, *'ticking boxes'* and *'jumping hoops'*, associated with 'transmissive' purposes (Kennedy, 2014a, p.349) and echoing the language of CPD as 'delivery' (Timperley, 2011, p.4):

> *'Continuing professional development in my experience is not always useful, and I would say that's more about refresh, refreshing. … a hoop-jumping exercise, to tick boxes … we must do five days' worth, so we're going to do it'.* (Teacher A)

> *'Courses and one-offs to support an additional aspect of your role … keeping abreast with what's going on. … box-ticking exercises'.* (Teacher B)

> *'CPD, it felt like more of a done-to thing … CPD was more about what you wanted teachers to do. … to me CPD sometimes feels like a bit of a deficit model, where there's a problem and you put somebody on a course to fix that problem'.* (Teacher C)

> *'CPD is more about the development in a certain area – so, specific to something in your teaching that maybe you need developing further… CPD it's very much subject-specific and focusing in on an aspect of your teaching, so it could be assessment and moderation'.* (Teacher D)

> *'CPD is something you're told you have to do … you don't always get the choice about what kind of CPD you're doing. It's sometimes a case of, we're doing this because it's a whole-school thing and we have to do it. … it's a hoop you've got to jump through, you'll jump through it because you're told you've got to do it, you've got to conform'.* (Teacher E)

> *'CPD I've seen it as this idea of skill-building within the school, within your environment. … I need a specific set of skills and so I'd do the NPQSL [National Professional Qualification for Senior Leadership] and then I'd do the masters*

programme through the university, which has really helped with leadership'.

(Teacher F)

The *'five days worth'* mentioned by Teacher A refers to the imposition, in 1988 by then Secretary of State for Education Kenneth Baker, of 'five further professional days to the teacher's working year' (Bangs *et al*, 2011, p.47). These in-service training (or INSET) days, dubbed 'Baker Days', were introduced ostensibly to provide teachers time to accommodate the subject knowledge required to teach the newly introduced National Curriculum (*ibid*). This coincided with an imposition of 1,265 annual working hours as 'directed time in teachers' pay and conditions', which led to a decline in voluntary support for extra-curricular activities (Waters, 2013, p.97). The pervasiveness of this policy demand is articulated nearly thirty years on, by teachers who joined the profession later yet still associate CPD either with imposition or directly with INSET days.

The six teachers' articulations of professional learning and CPD suggest these terms are not synonymous, but neither are they mutually exclusive nor independent. Some express uncertainty in distinguishing them, for example Teacher B says, '*are they different, are they the same, I don't know*'. Teacher D's statement that '*from professional learning you're developing continually*' combines terms from both concepts, before specifying CPD as pertaining to pedagogical content knowledge. It is clear that *both* learning and development are valued to some extent, particularly when they merge or, '*marry into one*' (Teacher E), with *'one moving the other forward'* (Teacher B). Alongside distinctions between professional learning and CPD, complexity resides in 'conjunctions' between them (Morin, 2006, pp.6-7), or 'simultaneities' rather than 'discontinuities' (Davis, 2008, p.51). Exploring relational links between learning and CPD, the former becomes a potentially active *response* to the latter. For example, describing *'courses and one-offs'*, Teacher B explains that they *'were all great courses, I got lots from them and I'm sure they had an impact on my classroom practice and pupil outcomes'*. However, Teacher B continues, professional learning is concerned with '*what you do with it*', '*I couldn't have done one without the other, but I think my professional learning is more my central drive, than necessarily attending CPD*'. Clarifying the importance of this response, Teacher B states that while teachers may be *'put on CPD'* by a line manager, they *'might not do anything with it'* or *'move forward'*. Responding to and following up CPD opportunities, *'the way in which I've*

reflected and joined those up with my own ambitions, with my own aspirations and my own interests, have actually then shaped my professionalism, my identity, my learning' (Teacher B).

A similar point regarding responsive follow-up to courses attended is made by Teacher C, stating that teachers '*… like to go to a course and come back with lots and lots of ideas that then they can go and do in the classroom'*. However, such opportunities do not always provide ideas to be put into practice or shared more widely: *'CPD was, you went out on a course for a day and came back, and I think the only thing you thought about or talked about was what you had for lunch!'* (Teacher C). Or, the experience of one-off events may be interesting, but this does not guarantee a response indicative of professional learning: *'… you're inspired on a day's course and then you've forgotten all about it a week later'* (Teacher C). The main implication is that little or no meaningful application, follow-up or proactive response to CPD events limits potential for professional learning. However, this does not necessarily render such opportunities as fruitless, as Teacher C attests:

> *'I went on a coaching course … three or four years ago now. I don't think I properly understood the concept of coaching before I went on that course. … it did change the way I thought about lesson observation, about lesson feedback, but also just in day-to-day interactions with people'.*

A similar conjunction between learning and development is expressed by Teacher E, associating personal enjoyment and motivation for professional learning in following-up CPD within their workplace role:

> *'… professional learning … you're doing it because you want to do it, you enjoy doing it, and at the back of your mind you can see it makes you better in your role, in your job and whatever you do. … [CPD is beneficial] I think if it's targeted to your role, and if you're involved in that process, and I think if people are clear on the expectations they have of you'.*

Categories of description and variation in purpose, opportunity and response

Teacher conceptualisations of professional learning and its relation to CPD lead to further categories of description. These do not replace but complement the dimensions of variation, set out in Chapter Two, in critical aspects of purpose (transmissive-transformative; external-

situational), opportunity (planned-incidental; formal-informal) and response (reactive-proactive; individual-collective). Using language heard in teacher accounts, these categories of description help to locate ways of experiencing professional growth within the previously identified quadrants, interpreted as confluences of purpose, opportunity and response, within related organisational contexts and external conditions. Together, these categories of description form a *possibility space* for professional growth as a complex *process*, summarised in Table 6 and visualised in Figure 3, for interpreting recounted experiences, as well as projecting potential for future action. They are introduced in the next two sections and further explained and exemplified through Chapters Four, Five and Six.

Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Contexts	External Conditions
Variation of experience in:	Variation of experience in:	Variation of experience in:	Variation of experience in:	Variation of experience in:
• Personal fulfilment – confidence, achievement, ambition • Learner focus – direct, indirect, incidental • Pursuing values – outcomes, behaviours, rights • ~~Developing~~ others – upskilling, capacity-building, nurturing	• Professional roles – curriculum, pastoral, leadership • Courses and study – one-offs, sustained, inquiry-based • Range of situations – workplace, partnership, external • Collaboration – coaching, teamwork, organisational	• Self-determination – receptivity, responsibility, identity • Integration and application – reflection, adaptation, transformation • Relating to others – conversing, consulting, empathising • Organisational awareness – self-improving, self-accountable, self-justifying	• Deemed effectiveness – lacking, stable, successful • Leadership and management – stressed, empowering, supportive • Working relationships – stressed, competitive, supportive	• Policy direction – conflicting, coherent, reinforcing • External accountability – pressured, accommodated, mediated • Family and friendships – motivating, supportive, negative

Table 6 – A possibility space of teacher learning and development (professional growth).

Figure 3 – A possibility space of teacher learning and development (professional growth).

First, *personal fulfilment* as a purposive category, encapsulates variation towards intended gains in confidence, achievement or ambition. Confidence may be sought and earned through the respect, pride or trust of others, and linked to achievement in gaining qualifications or securing positions. Personal fulfilment is associated with '*motivation*, *emotion* and *volition*' as incentives for mobilising learning, which are bound together with the knowledge and skills ('content') acquired (Illeris, 2007, pp.26-27, original emphasis). For the six teachers, opportunities to gain confidence and ambition are pursued through career progression and promotion and/or successfully combining professional and family commitments. *Professional roles* form a related category of description in opportunities for professional growth, with variation in terms of curriculum, pastoral and leadership positions held currently and over time. A second opportunistic category of description spans the range of *courses and study* undertaken and associated with both professional learning and CPD, varying across one-off events, to more sustained and longer-term and/or inquiry-based courses or experiences. In realising personal fulfilment, taking up professional roles and pursuing courses and study, the teachers demonstrate *self-determination*, a responsive category with variation in receptivity to

opportunities arising, responsibility taken for fulfilling roles and formation of related skills and professional identity.

Teacher conceptualisations of their own learning are typically traceable to the learning of others, particularly students, even when wider organisational or external purposes and interests are served. Conversations with teachers about their own learning often turn, unprompted, to discussion about their students' or colleagues' learning, suggestive of educational complicity; that 'the student is changed by the educational process – but *so is the teacher'* (Stewart, 2007, p.106, original emphasis). *Learner focus* becomes another category of description and a principal *attractor* for purposes of professional growth among all six case teachers. However, a discernible orientation towards learners varies in the extent to which it is purposively direct, indirect or even incidental. A direct *learner focus* is found where purposes are explicitly oriented towards the curriculum, pedagogy, outcomes, behavioural, social or attitudinal needs of learners, or simply working with young people:

> *'… actually what I care about is this subject and being with the kids.'* (Teacher A)
>
> *'… the thing that calls anything that I do … I want to make sure that it's better for the pupils that are going through the education system.'* (Teacher B)
>
> *'… you're looking at how people learn and how people develop'.* (Teacher C)
>
> *'… professional learning helps you almost teach anything, so the skills to be a teacher.'* (Teacher D)
>
> *'… those eureka moments with students, that's brilliant, I love that! I can see what I'm learning here, what they're learning, they're enjoying this, you know, you're in your element.'* (Teacher E)
>
> *'Student achievement is at the centre of everything, and sometimes I think people can get lost by thinking it's about* my *professional development.'* (Teacher F)

Professional learning and development may be ostensibly oriented towards personal aims and interests, such as working for external media publishers (Teacher A), researching leadership as performance (Teacher B), or strategic educational planning (Teacher F). Even so, such purposes can, in conversation, be traced back through perceived impacts on others to student/pupil needs and can be considered as having an incidental *learner focus* within opportunities enacted. For example, Teacher B says of their masters and doctoral studies:

'… it is a hobby, and I don't intend for it necessarily to have that impact, I do it because I enjoy it … and I choose the topics of my assignments … more for what I have an interest in, on an extra level. … it's more my interests that drives my research, it naturally has an impact but not purposely'.

Similarly, Teacher F states that *'time away'* to pursue personal interests on a strategic planning course, *'even though it wasn't connected'*, has *'a positive impact … when you come back to school'*.

For the teachers whose leadership roles have brought additional tiers of responsibility beyond immediate classroom practices, a *learner focus* may still be explicitly articulated and realised indirectly through development of teaching capabilities:

'… doing the very best I can and having the best outcomes I can for the individuals that it impacts on [other teachers] … ultimately they then go back into a classroom and have an impact on pupils and they're our next generation'. (Teacher B)

'… the only reason for re-designing the [observation] form is to get the trainee teachers and their mentors to reflect on their practice, to help pupil learning'.
(Teacher C)

The *indirect* influence of school leadership on student outcomes has been associated with 'strong claims' in related literature (Day *et al*, 2010), typically through 'staff motivation, commitment and working conditions' (Leithwood *et al*, 2006, p.32). Again, a pattern of complicity is evident where those with leadership roles are engaged in the learning and development of teachers, who themselves are engaged in the learning and development of students, all of which contributes to their own professional growth. This is voiced by Teacher B in terms of their role in monitoring and supporting early career development: *'I'm here to make sure that the pupils are learning in the classroom under your care, and if they are, great. It's about instilling the reason people are coming into the profession and embracing that'.*

Learner focus as a purposive category of description for professional growth, while an obvious educational concern, demands further questions of *what* purpose and *why*. The agendas of school effectiveness/improvement and evidence-based practice, oriented by the quest for *what works* and embedded in policy, tend to privilege measured student outcomes in standardised and/or public examinations. However, 'personal values', associated with ''what matters' to us

as individuals', are entangled with the 'values embedded within the political system' (Stevenson and Tooms, 2010, p.5). The current UK government's values for education are bluntly stated, 'what matters most – outcomes not processes' (DfE, 2016d, p.110), which also underpin inspection (Ofsted, 2017). Inevitably, measurable outcomes feature in teacher accounts of learning and development, but policy is experienced variedly and shaped by personal and professional histories and projections (Priestly *et al*, 2016, p.138). It is worth recalling previous policies emphasising Every Child Matters (ECM), which was a 'popular agenda for many' for its broader range of valued outcomes for children and young people (Waters, 2013, p.274). These five outcomes, to 'be safe, healthy, enjoy and achieve, participate and be economically capable', in the first decade of this century became the basis for curriculum development and school inspection (*ibid*, pp.273-4). However, even before its abandonment by the Coalition government, ECM was 'beaten … to a pulp' by performativity (*ibid*, p.82).

Thus, a further purposive category of description, closely associated with *learner focus*, concerns *pursuing values*. While these values may *relate* to measurable student, teacher and school performance, other outcomes (e.g. enjoyment, pastoral care), behaviours (e.g. independence and well-being) and rights (e.g. curriculum subject entitlement) are often foregrounded. The six teachers, in different ways, demonstrate the pursuit of measurable outcomes *and* wider educational values and goals in their teaching and leadership roles:

> *'I practise mental rehearsal, thinking through the lessons in advance and imagining how students will enjoy the work that has been planned for them'.* (Teacher A)

> *'… embed that learning and the results will come at the end. … if you get it right then the results will follow, and attitudes will follow'.* (Teacher B)

> *'… quantifiable outcomes is just a small aspect … of what we do as educationalists and the other stuff is, as equally, if not more sometimes, important'.* (Teacher C)

> *'I think if you've got the skills to teach and relationships with kids, your behaviour management and all those things, learning just happens anyway'.* (Teacher D)

> *'… involving students more in their learning, rather than purely … conducting a test and looking at how they've done … so you could show the small steps in progress in their learning over a period of time'.* (Teacher E)

> *'… changing the way we praise students, plenty of rewards … really making it you're here to achieve and hopefully that translates to good results'.* (Teacher F)

In some cases, awareness is shown of unintended consequences from a narrow *learner focus* on examinations, alongside a pursuit of wider values. For example, Teacher A's intentions for practice-based inquiry into revision techniques (further discussed in Chapter Five), included '*… understanding the benefits so that I could improve results … was what I was getting kids to do effective and were there better ways than others*', personal interest in '*my own inability to remember information*', and thinking that '*kids need to be more independent*'. Teacher A considers a student '*that is independent and gets good exam results*' to be a '*better employee*' than one who has '*been dragged through and gets the same exam results*', concluding '*it's about the whole person really*'. This highlights awareness of the risk, identified by Mansell (2007, p.226), of the student becoming a 'passenger' in learning when all responsibility for measured outcomes is placed on teachers. Teacher C describes exam results as '*proxies for learning*' on which '*teachers are judged*', pointing out '*the huge range of external interventions that happen in schools, often not by the class teacher*' and when students have '*external home-tutors, ineffective teaching can be masked*'. The proportion of state-educated 11-16 year olds in England and Wales receiving some degree of private tuition has increased to 25% (42% in London), in a pattern of 'shadow-schooling' (Kirby, 2016, p.2).

Teachers' day-to-day concerns for student learning focus on interactions, relationships, small-steps in progress, student behaviours and attitudes to teaching. Assessment is conceived in 'formative' and 'ipsative' terms, where comparisons are made, not between students, but from each student's former achievements to their current learning needs (Brooks, 2002, p.47). These shorter-term purposes become the values pursued in professional growth, because teachers can influence them more directly and immediately, with noticeable and tangible student responses. Contrary to prevailing policy, processes *do* matter, as they are where teachers hold response-ability to act in the best interests of their learners, families, colleagues and communities. A temporal distinction, between political emphasis on longer-term outcomes and more immediate ongoing processes and interactions, potentially re-balances *what matters* in professional growth and highlights patterns of complicity. Teachers learn in and through their students' learning and leaders learn in and through their colleagues' learning:

> *'I'm drawing on my, not just my own experiences out of the classroom, but other children's and bringing them in to sharing their experiences. Because, you don't just learn off a teacher, you can learn off everybody. … they become mini-teachers,*

because they have experiences outside of the classroom as well … the kids are so
engaging with that, so, it works'. (Teacher D)

'… we're giving them [students] so much information and they don't always have
time to process what we're asking them to do, sometimes. I think I learned that
really, that was a good thing for me'. (Teacher E)

'Ofsted were only in for two days, I wanted to actually look at this [trainee target-
setting] myself, and by doing a proper analysis of actually what the data was
looking like and then moving things forward, rolling out some training, working with
staff and interviewing people'. (Teacher C)

Professional growth is experienced through a *range of situations*, an opportunistic category of description, across school-based situations, wider partnership arrangements or outside the school workplace. Typically, development opportunities are enacted in immediate workplace settings, often entailing collaborative working (discussed below), sometimes initiated through iterative response to external courses or events. For Teacher C, situations extend to partner organisations across the TSA, while a main work-base is retained: *'I think I am closer than most people in the school to seeing the partnership as my workplace, because of the role that I do'*. Similarly, Teacher B's range of situations has expanded across the MAT (multi-academy trust), through opportunities for organisational collaboration with purposes maintaining a learner focus whereby *'everybody who works within our seven schools, actually just does it and collaborates because they want the best for those pupils'*. In Teacher A's case, *'moving further away from school'*, publishers and media companies offer external situations that have become additional organisational contexts for professional growth in which opportunities are enacted.

A further responsive category of description involves *integration and application*, with variation in types of reflection, whether confined to deliberation or becoming adaptive through trialling and experimenting. *Integration and application* may extend to transformation, articulated as *seeing* or *doing things differently*, establishing changes to patterns of working practice. In some cases, *professional role* is an affordance for *integration and application*, providing response-ability. For example, after attending an event focusing on the centrality of achievement Teacher F says, *'having taken on this new role … luckily I was able to bring that back. I was in a position that I could do something here with it. … I think that's had the biggest impact'*. Developing teaching resources, for Teacher A, is a prominent way to learn through practice, articulating

purpose, opportunity and response: '*I am always making new resources, whether it's teaching resources or more efficient ways to mark or, you know, new activities … which I would then give out to the rest of the department'.* Opportunities for such practical learning through resource development are found in day-to-day classroom practice, in the process of 'tweaking': '*I tweak them in the lesson sometimes, if they're not working. I did it today. Sort of put the freeze button on and just tweak something*' (Teacher A).

Adaptation of teaching resources and approaches, meeting unfolding needs and responses of others, exemplifies reflection-*in*-action as a process of improvisation in 'making on-the-spot adjustments to what you are doing' (Ghaye, 2010, p.6). Understood through complexity thinking, the emphasis shifts from reflection to *enaction*, so that 'what is known is acted out in what is done', through *interobjectivity* (Davis and Sumara, 2006, p.70). This trial-and-error approach was dubbed some time ago as 'tinkering', considered central to knowledge creation processes in schools, through embedding into practice information gained or shared (Hargreaves, 1999, p.131). More recently, tinkering has been viewed as indicative of a 'will to learn' and a precursor to active involvement in learning (Van Eekelen *et al*, 2006, p.409). For instance, Teacher A considers classroom use of geographical information systems (GIS) to increase students' understanding and enjoyment of subject content. Investigating different classes and age-groups with/without GIS, Teacher A finds students using GIS, *'when questioned'*, can more readily *'remember specific facts about the case study'*, for example in flooding, *'particular landmarks that were threatened by flooding and the extent of the flood'*. Teacher A has also shown that students can increase their marks in practical assessments for examination when using GIS, and that *'spatial exploration, awareness and recognition'* can be promoted by GIS in other subjects including history and biology.

Tweaking and tinkering are also referred to by Teacher C, in general terms describing longer-term processes of change and development to team working practices: '*we're constantly tweaking and tinkering, and we actually get on each other's nerves a lot of the time, because there's too much tinkering! Sometimes we just need to leave things alone, but it's for the best of intentions*'. This process is more akin to reflection-*on*-practice, rather than improvisation, in addressing issues of significance, 'looking back and going over things again' (Ghaye, 2010, p.7). Therefore, tweaking and tinkering as ways of acting, hold different temporal possibilities conceived as either improvisation in-the-moment or evolving practice over-time. Teacher C

recounts an example of tweaking and tinkering with lesson observation forms, to shift the focus from *'what the teacher was doing'* to what *'students were doing'*. This is described as *'an evolutionary process'*, linked to practice-based inquiry and using published research evidence:

> *'I think, the research that I looked at and I read as part of that really helped that practice and helped that to evolve. I think it would have been a lot more superficial if we hadn't done it like that'.* (Teacher C)

Thereby, reflection-on-practice, extended to practice-based inquiry, also entails 'reflection-for-action' or planning for future action, and 'reflection-with-action' in making decisions and taking action alone or with others (Ghaye, 2010, p.7). This completes a cycle of reflection *and* enaction, or intra-action within phenomena (Barad, 2007) and co-action with others (Gergen, 2011), indicative of action research: reflection-*in*-action, reflection-*on*-practice, reflection-*for*-action, reflection-*with*-action. The complexity, recursivity and interobjectivity of this process affords adaptivity to contextual conditions and events, with responses shaping future decisions and actions as events unfold, in ongoing deliberations and in establishing patterns of working. This 'complexification' of reflection through recursion is 'reflexivity' (Hibbert *et al*, 2010, p.48).

Distinguishing CPD from professional learning, aimed *at* others more than the self or *by* others towards the self, initiates the additional purposive category of ~~developing~~ others. Here, *developing* is struck through, despite its usage by teachers, to question whether we <u>can</u> develop others, drawing on the insight of complexity thinking that living beings, while influenced by their contexts, are self- or structure-determined (Davis and Sumara, 2006, p.100). Just as the English language does not permit us to *learn* others, so we cannot *develop* them, but we can support and guide others to develop themselves. Variations across the teacher cases, particularly for those holding *professional roles* in leadership, involve planned-formal upskilling through training or CPD opportunities, building individual or team knowledge and capacity and more informal-incidental nurturing and coaching:

> *'… if you nurture young teachers and embed that practice you've got life-long teachers who care about the pupils'.* (Teacher B)

> *'… we've moved … to more of a joint practice development approach. … when looking at CPD programmes, I'm trying to balance that'.* (Teacher C)

> *'… it's trying to get other people to think, maybe, in that little bit more critical way and try to engage with the research, even if it's in a very small way'.* (Teacher C)

> *'… a big starting point, really, was to upskill the TA's skills in terms of literacy and numeracy'.* (Teacher E)

Significantly, case teachers perceive and discuss their work in ~~developing~~ others through accounts of their *own* professional learning, suggesting patterns of complicity. Often this involves *collaboration*, an opportunistic category of description that varies in scale across coaching, teamwork or organisational liaison between schools or wider collectives. The associated responsive category of description in *relating to others* suggests variation in conversing, consulting or empathising.

For Teacher F, *collaboration* with colleagues in other schools and *relating to others* simply entails *'talking about things, and you're building projects together'.* Teacher D, previously a pastoral head of year and returning to work part-time after becoming a parent, explains an instance of supporting a form (tutor group) alongside a less experienced tutor new to the school, who *'… asked me … would you mind giving me some tips on how to be a form* tutor'. Teacher D suggested observing, *'… so yesterday I delivered the form, and he kind of took the TA role, like I would usually do in form … he could see how I deliver it, my relationships, the rules I put in'.* This type of *collaboration*, coaching through modelling, building relationships and ~~developing~~ others, comes naturally to Teacher D from their early career role as a sports coach: *'that's where I started, so I think that's where my strength is'. Relating to others* in this way can become empathic, reciprocal and mutually supportive: *'…he's brilliant at maths and he could help me when I'm delivering my maths lessons, but it's I suppose about sharing the learning, so I'm going to do that a little bit more with him now'* (Teacher D). This approach exemplifies Teacher D's association of professional growth with drawing on experience: *'I'm still using my pastoral experiences without realising … I'm out of the pastoral role, but in a way, I'm not. It's always there … actually using it to help other staff that are coming in'.* Use of the pervasive managerial term *'delivery'* to mean *teaching*, is noteworthy, discordant with the pastoral and student-centred approaches heard more holistically in Teacher D's conversation.

Teacher E describes providing CPD opportunities for their teaching assistant (TA) team, *'dwindling'* due to funding cuts, as *'sometimes we don't feel really we've got that knowledge to be able to support students in their learning'.* In a collaborative approach to upskilling, *'some of the TAs'* have attended, for instance, *'autism-based courses and they've fed back to members of staff in the department'.* Teacher E has been *'selective about which staff we've asked to go on*

those courses', as some *'don't really feel they get a lot out of it'*, while addressing the needs and strengths of both individuals and the team through nurturing and capacity-building. As a result, TAs have started to *'feel much more part of things'* and two who are *'really interested in autism'* have attended *'courses and they've brought back some really important things we could put into place'*. These include use of *'visual timetables'*, aids to *'active listening'* and coping with *'a high-pressure environment in an exam'* (Teacher E). Responding pragmatically to a recognised need for self-improvement suggests a further category of description in *organisational awareness*, which is discussed and exemplified in the next section.

Categories of description and variation in organisational contexts and external conditions

Further categories of description in ways of experiencing organisational contexts and external conditions arise in teacher accounts of professional growth. First, there is variation in perceiving and enacting *policy direction*, which is essentially external and top-down, yet interpreted and sensitised to context through local mediating, contesting or re-shaping (Bell and Stevenson, 2015, p.149). In teacher accounts, *policy direction* is experienced as conflicting, coherent or reinforcing of values pursued. Teacher A, for example, suggests that *'the system has sort of fallen apart a little bit really, because I think there's no responsibility taken by students, it's all on teachers'*. Teachers C, E and F mention funding cuts or curriculum reforms, from conflicting priorities of *policy direction*, which have adversely affected aspects SEN, CPD and arts provision. However, for the two leaders (Teachers B and C) working in TSAs, *policy direction* towards school-led teacher training and development is coherent with and reinforcing of their attractors for professional growth in ~~developing~~ others.

A related category concerns *external accountability*, experienced as pressured in driving organisational priorities, accommodated through internal quality assurance procedures, or mediated through agency exercised at school level. Since its inception in 1992, Ofsted has routinely and publicly graded schools, applying the familiar *inadequate*, *satisfactory/requires improvement*, *good* and *outstanding* labels. School leaders and teachers experience regular changes to these grades and underlying criteria, such that '[w]hat was 'outstanding' last year is now only 'good' and what used to be 'satisfactory' now 'requires improvement'' (Waters, 2013, p.107). The chief determinant of this categorisation is published and normalised data from

examinations, regardless of the quality and richness of student learning experiences (*ibid*, p.109). Some schools become 'outstanding' by hitting the necessary metrics, 'playing the game', but without necessarily offering a 'splendid' educational experience and vice-versa (*ibid*). This points to a further category of description for organisational contexts in terms of their *deemed effectiveness*, recognising that public inspection judgements and examination results may not provide a complete picture and might differ from experience.

Teacher C, investigating whether *'performative culture'* is *'a positive thing'*, links performativity to both policy and accountability, stating *'it comes purely from the government accountability measures … and then schools are forced to go down that route'*. As Day *et al* (2016, p.223) acknowledge, while measurable outcomes 'are key indicators in identifying school "effectiveness," they are insufficient to define "successful" schools'. *Deemed effectiveness* is often derived from periodic inspection outcomes but also through ongoing internal self-evaluation and quality assurance, varying according to whether schools are judged broadly as lacking, stable or successful. As previous and forthcoming examples indicate, variation in *deemed effectiveness* can affect profoundly *working relationships*, a further category of description experienced as supportive or stressed, and sometimes competitive. For instance, Teachers B, C and F experience working relationships whereby competition with peers, mostly friendly, encourages them to strive and work even harder. Making sense of these contexts and their external influences, teachers show *organisational awareness*, a responsive category of description, encompassing self-improving, self-accountable and self-justifying interpretations.

For some, accountability is understood first and foremost as internally-derived and role-based, inherent to teaching. For example, Teacher B states that *'in education'*:

> *'… accountability is there from day one … whether you're a classroom practitioner, your accountability is huge, because those pupils have got to go out into the big wide world and accomplish something themselves'.*

Teacher B does not deny or downplay external accountabilities brought to bear and perpetuated by leaders, saying of a previous school, '*I saw people really down-trodden, really just waiting to get out, because they were just fed up with it being so top-heavy*'. However, holding oneself to account, striving to be *'the best we can be'*, is more important and immediate:

'… the external bits come along with it, because at the end of the day if you're doing that bit right, you know, the likes of Ofsted, surely you're doing that bit right. But actually, which one matters more? … I never think about the external ones in that sense; if we're doing the right job and we're making sure that everyone's getting the best outcome out of what you're doing, then the other bit will follow'. (Teacher B)

Later in the conversation, Teacher B reiterates and simplifies this point: *'the accountability is yourself and the external factors will then just follow'*. Teacher B says of their own role in observing new and recently qualified teachers:

'I'm not here to be massively judgemental, I'm here to just see what you do on a daily basis. Now, I've always seen that as a positive thing, because actually if you're not quite there you get feedback to say how to improve. Or if you are there, then don't worry about it'.

The self-accountability articulated by Teacher B is sustainable when matched by expectations and measures of success, whereby *external accountability* can be accommodated or mediated. In a school deemed successful close scrutiny is considered unnecessary, with 'outstanding' schools 'exempt' from inspection (Ofsted, 2017, p.8). This is the case for Teachers B, C and D, in schools with successful *deemed effectiveness* and where more empowering and supportive *leadership and management* is experienced alongside trusting *working relationships*. For example, Teacher B says, *'the culture here … everybody is on a learning pathway here, no matter who you are, where you're at',* and *'it's very much, as I say, a collaborative approach on absolutely every level'*. Similarly, Teacher D states that *'to me it's just a community of people working together'*. Teacher C shows an organisational awareness of multiple self-accountabilities:

'I think that as school we very much feel accountability to our students and their parents. As a SCITT this takes a slightly different form. We try to be more business headed in terms of the financial model and we are also acutely aware that our trainees pay £9,000 so giving them value for money guides our work. The third aspect of this is our accountability to our partner schools to provide outstanding teachers that are going to work within them'.

In Teacher F's school, deemed lacking or 'requiring improvement', *external accountability* is experienced as pressured, leading to *'strain'* and *'worries'*. Teacher A, in a school deemed stable or 'good' but not 'outstanding', says of *collaboration*, *'I don't think there's time, everybody's so stressed'*. Teacher E's school, in 'special measures' due to below-average achievement in mathematics, exemplifies the entanglement of *policy direction* and *external accountability*. As Teacher E explains, maths is *'a much more difficult course now'*, so *'results went down due to curriculum changes'*, following government pursuit of 'more robust and rigorous GCSEs' (DfE, 2016d, p.88). Teacher E says of Ofsted, *'their focus is just so, so narrow, it's just unreal'*, adding that lack of practical support *'comes across like passing the blame really'*. A recent independent report commissioned by government, 'Thriving at Work', reports a survey indicating 75% of education staff suffering from stress in the previous two years (Stevenson and Farmer, 2017, p.46). A recent government commissioned workload survey with 3,186 respondents found 93% considering workload as a 'fairly' or 'very' 'serious problem' (Higton *et al*, 2017, p.72). In a survey of 16,379 teachers undertaken by the National Union of Teachers, 62% cited 'Ofsted inspection, including 'mocksteds'' as a cause of 'unsustainable workload demands', with 80% and 70% respectively citing expectations over marking/book scrutiny and data-entry/analysis (NUT, 2014).

Teacher C explores these issues through practice-based inquiry, investigating attitudes of teachers and leaders towards observation for both developmental and accountability purposes, across several organisations within the TSA. While Teacher C notes that observation is typically *'used as a tool to evidence the quality of teaching rather than develop it'*, *deemed effectiveness* derived through *external accountability* appears to influence approaches to lesson observation and performance monitoring. Schools in the TSA *requiring improvement* tend towards forms of grading and compliance, partly to provide evidence for inspection, despite leaders' stated scepticism of its value. The *outstanding* school in the TSA is more creative in empowering teachers to collaborate through observational development (e.g. lesson study and triad approaches). O'Leary (2014, p.36) concludes that prioritising observation for performativity purposes can lead to a 'nullification' of any developmental intentions, with associated teacher 'anxiety', 'disempowerment' and 'discontent'. Teacher C is acutely aware of this dilemma, while accommodating both the accountability and developmental purposes of lesson observation:

> *'I think that the two things have to co-exist, but getting the correct balance is extremely challenging, as teachers are naturally suspicious of any quality assurance*

processes. …we have introduced a lesson dialogue approach to observation … we encourage teachers to select a class to be observed and a focus that they wish to develop … to think about their practice, rather that put on a show for the purposes of an observation. This is fine … working with competent and committed teachers. … when working with teachers who require improvement, this … led to further support for those teachers, leading to them being mistrustful of the process'.

A similar inquiry (discussed in Chapter Five) carried out by Teacher F in a school that '*requires improvement'*, also explores tensions between observation for developmental and monitoring purposes and the impact on *working relationships*. Here, the precarious nature of *trust* arises, in terms of what might be lost in the clash of accountability and autonomy at the organisational level. External conditions for accountability at the policy level, perceived inconsistencies and lack of public trust in education services have led to increasing scrutiny since the 1970s (Mansell, 2007, p.247; Hargreaves and Shirley, 2009, p.5). However, O'Neill (2013) states that accountability is no successor or replacement for trust, which must still be exercised in judging educational benefits '*for oneself*' (p.13, original emphasis). Imposed and over-complicated forms of accountability that 'create perverse incentives and frustrate serious educational objectives, are often a source rather than a remedy for mistrust' (O'Neill, 2013, p.10). In teacher examples, mistrust can be sown at school-level through *external accountability* that is accommodated and experienced as pressured, particularly when this combines with criticising *leadership and management* and stressed *working relationships*.

Tensions between accountability and autonomy are reflected in current inspection 'grade descriptors'. If 'outcomes for pupils' are to be judged 'outstanding':

> For pupils generally, and specifically for disadvantaged pupils and pupils who have special educational needs and/or disabilities, progress from starting points is above average across nearly all subject areas. (Ofsted, 2017, p.61)

Progress from starting points is typically evaluated using value-added modelling, a zero-sum measure that places roughly half of all schools above average, with the other below (Taylor, 2015, p.247). Teacher F refers to *'Progress 8'*, recently established as the 'headline indicator of school performance', which 'aims to capture the progress a pupil makes from the end of primary school to the end of key stage 4' (age-16) as a 'value added measure' (DfE, 2017b, p.7). A feature of 'outstanding' leadership and management, is stated as follows:

> Staff reflect on and debate the way they teach. They feel deeply involved in their
> own professional development. Leaders have created a climate in which teachers
> are motivated and trusted to take risks and innovate in ways that are right for their
> pupils. (Ofsted, 2017, pp.45-6)

While these two criteria are not necessarily conflicting, they reinforce that for schools to be considered effective, measurable outcomes and results must also be favourable, regardless of teacher motivation, trust, innovation, risk-taking and involvement in CPD. In schools where *deemed effectiveness* is successful, performance can be balanced with development because *external accountability* is depressurised by above average indicators and mediated by self-improvement and self-accountability.

For Teacher E, in a school recently deemed *inadequate*, personal, organisational and external accountability are irreconciled. Describing professional learning, Teacher E expresses self-accountability towards students in their care, as *'ultimately you're trying to do the best for the young people that your trying to support and teach'*. Similarly, in the context of diminishing sources of funding and support for students with special educational needs and disabilities, Teacher E *'thought well, I want to do something about it myself because these students are being let down massively'*. Teacher E acknowledges shortcomings, highlighted by inspectors, in progress made by students during their schooling as measured by external assessments: *'you've got to make sure that students make progress from their given starting point. … it's quite clear that there's a lot of issues'*. However, concerns are raised about the focus of inspection and reliance on assessment metrics:

> *'I think their [Ofsted's] agenda was just too much focused on data. … assessment*
> *systems are different from school to school … how can we accurately assess their*
> *starting points from the primary school data? … obviously we've got to do our own*
> *baseline assessments early … I don't think it's really an accurate picture'.* (Teacher E)

Here, Teacher E is describing *policy direction* in assessment and primary school accountability as accommodated in their school. Standardised tests at the end of primary schooling (Key Stage 2) have continued in reading and mathematics, alongside teacher assessment in writing, now reported as 'scaled scores' from 80 to 120, centred and normally distributed around 100 (DfE, 2016c, p.3). The more familiar National Curriculum Levels have been dropped (*ibid*), with schools encouraged to develop their own

alternative assessment approaches (Lilly *et al*, 2014). During the recent inspection, advice on dealing with these assessment issues was elicited:

> *'The inspector suggested using reading age to track and show student progress, as well as evidence in English. This was the most beneficial aspect of Ofsted, as they can't give advice but after a while the inspector gave in and told me'.* (Teacher E)

The lack of practical guidance and support from Ofsted is perhaps the furthest reaching implication of *deemed effectiveness* experienced by Teacher E in relation to professional growth. Further articulating the operational limits of inspection:

> *'… the recent Ofsted report, I think the most important thing really are the recommendations …. it came across to me that they don't really have an opportunity to really be open about what they write. They've just got a small, very narrow agenda. … I don't think they have enough of a focus on helping schools … when I look through the report … most of it doesn't really give the school kind of scope to understand what they need to do to improve'.* (Teacher E)

This experience has not diminished the *organisational awareness* of self-accountability and self-improvement for Teacher E, who says *'my driver is not Ofsted'*. Teacher E explains:

> *'We're trying to do what we're trying to do for our young people. We're aware that … we've got a lot of issues with … SEN students, making progress in maths and English. … because we don't have the answers, we're not averse to someone showing us or even dictating what we need to do … rather than people asking us the questions, about what are you going to do about, particularly Key Stage 4 students … . Well, if I knew the answer then we wouldn't be in the same situation'.*

Although Ofsted's strapline promises 'raising standards, improving lives', when *deemed effectiveness* is lacking this does not extend to practical guidance or support beyond further 'monitoring' (Ofsted, 2017, p.30). Left to address the school's shortcomings, Teacher E says of leaders, *'they haven't got the answers, because if they did it wouldn't be happening'*, reiterating a plea for greater support in pursuing student-centred values:

> *'We need people to show us the way really, because we feel like we're letting students down but we know we're not. We know that we can hand-on-heart say, we're doing the best we can with the resources we have and we care more about*

the students, not about numbers and ticking boxes and Ofsted, they're all irrelevant'. (Teacher E)

The solution offered by government policy is a 'school-led system', where 'self-improvement' shifts responsibility for school improvement from local authorities to the 'best leaders' from successful academies who support those 'falling behind' (DfE, 2016d, p.72). For teachers participating in this study, the two TSAs with successful *deemed effectiveness* (Teachers B and C) are supporting less successful nearby schools, while the two schools deemed lacking (Teachers E and F) are left to seek out such support or have it imposed through (re)academisation. The premise of this approach is that what works in one school will work elsewhere, an assumption challenged by complexity thinking (Davis and Sumara, 2006, p.100).

Local enactment and potential mediation of both policy and accountability is influenced by *leadership and management*, a category of description in organisational contexts for professional growth, with variation across supportive, more proactively empowering or sometimes criticising approaches. Teachers A, D and E, describe leaders as supportive of their study or attendance at courses and events, while showing limited interest in the benefits or outcomes. Teacher F says of line-managers, *'there feels like a plan for my development as well as everybody else'*, and Teacher C is *'entirely empowered to make decisions, develop our practice and change policy without any constraints'*, supported by *'coaching conversations'* with senior colleagues. Teachers A and B recount experiences of being criticised by leaders with little or no evidence or justification, experienced by Teacher A as being *'under fire'* and for Teacher B it *'really knocked me'.* Teacher B's response to this setback, many years ago, was to *'drag my career back up and prove to this new senior team member that I could do it'*.

For Teacher A, the experience of *leadership and management* as criticising is interpreted through conversation as a repeller to professional growth:

> *'I think the style of management … is very punitive, looking for problems, and I think that has the opposite effect on me, because I think well if you're going to find something wrong anyway, I'll just go and focus on something else, where I get you know a bit more, you know, satisfaction'.*

This re-focussing is towards the attractor of external publishers and media organisations, where *'I get an awful amount of respect'*. However, crucially, making sense of this experience, Teacher

A also concludes that the management style *'feels like it's coming from above the people above, it feels like they're under pressure'.* Asked about the source of this pressure Teacher A says:

> *'Whilst this is over-simplistic I think most things stem back to league tables … a lot of the problems are about us trying to get as good as the next school and … you can't all be winners in a league table. … I do think league tables have been a massive driver in standards going down, because we're doing so much of it for them now, and morale plummeting really.'*

Here, the *organisational awareness* of self-justification highlights unintended consequences of external accountability. School league tables were introduced for the General Certificate of Secondary Education (GCSE) examination results in 1992, alongside the establishment of the schools inspectorate, the Office for Standards in Education (Ofsted) (Mansell, 2007, p.21). The perception of a subsequent decline in standards relates to Teacher A's interest in *pursuing values* in student independence and responsibility alongside results. However, Teacher A also voices ambivalence towards league tables:

> *'If it wasn't for league tables I think kids would be taking more responsibility. But I don't know what the answer is, because without the league tables and without the pressure, there would be some teachers that would coast and not do so well'.*

Reiterating that, inevitably, *'somebody has always got to be at the bottom, otherwise the system wouldn't work'*, Teacher A recognises the wider implication that *'when you're trying to achieve the unachievable, people who are in charge of that, I suppose, are just looking for ideas like the rest of us'*. Thus a 'relentless pursuit of the unattainable' is perpetuated (Barker, 2008), fuelled by *above-average* thinking that overlooks the inevitability of some schools falling behind, when effectiveness is determined by league table ranking (Taylor, 2015).

Exemplifying *organisational awareness* of self-justification, Teacher C recounts the influence of government policy in the introduction of the English Baccalaureate (EBacc), a school performance metric comprising GCSEs in five subjects: 'English, maths, science, humanities and a language' (Waters, 2013, p.58). This led to a reduction in the number of students taking Teacher C's subject, which is not included in the metric: *'I haven't necessarily got a problem with that, in terms of that balanced curriculum, but as a result we've gone down from four music groups … to one … which is really sad'*. Responding to government policy in this way,

through accountability measures, has been disparagingly termed 'bastard leadership', a form of managerialism preventing genuine decision-making at school level (Wright, 2011). Teacher C expresses frustration, *'I sort of saw red really … in leadership group, when people try to justify it'*, by arguing for language subjects in the EBacc:

> *'Well hang on, we weren't making this argument two years ago or three years ago. I would have felt much more respect for that person if they'd made the argument then, but now we're making it and we're trying to almost justify why we're putting these policies in place … I can understand why we do it, we have to at the end of the day'.*

The possibility of self-justifying is explained in detail by Teacher C, in the complex response of accommodating *external accountability* measures, needing to steer as leaders while experiencing *policy direction* in conflict with *pursuing values*:

> *'People are thinking about their jobs and their schools and what they need to do, but I'm not sure that we always do things that are in the best interests of the students. … what I hate most on leadership group … constantly it was about, because Ofsted want us to do this, Ofsted want us to do that, and it just drives me mad because personally I think that's weak leadership. If we're doing something because Ofsted want it, then we're not doing the right thing, are we? … I think you want to self-justify if you are going along those lines, that you feel you have to, because it is being imposed from above. But … a strong leader doesn't want to necessarily admit that they are just doing it because of accountability measures, because it is quite a weak argument … in terms of your staff. So you have to sort of flip it and, whether you believe it or not, you have to come up with, I suppose, your own rationale for why you're doing something and for your own self-justification. So, you can argue that to somebody else without just saying, very weakly, well I'm sorry I don't agree with it, but this is just what we have to do'.* (Teacher C)

The act of 'flipping' is separately adduced by Teacher C for appreciative over deficit thinking in school development and, in lesson observation, *'observing from the point of view of the learner rather than … the teacher'*. Here, it is short-hand for self-justifying, showing *organisational awareness* of the complex issues faced by leaders in accommodating or mediating policy and accountability. As Wright (2011) suggests, schools are caught between 'bastard' leadership in

compliance with government agendas, avoidance of which may precipitate 'value conflict' (p.348), and 'wicked' leadership in exercising autonomy and managing complexity.

Changing perceptions and projections of professional learning and development

The six teachers' views of professional learning and development have in some cases remained stable, while others express shifts of emphasis or more substantive changes over time. As pointed out by Bell and Stevenson (2006, p.22) '[c]hange may be inevitable – but there is no inevitability about how change is experienced'. For some, changes relate to categories of description already discussed, such as *personal fulfilment*, *professional roles*, *self-determination* and *working relationships*. However, a further

important category in external conditions for teacher experiences of professional growth is *families and friendships*, which are predominantly supportive relationships, enabling uptake of new opportunities and career progression. Teacher B has gained inspiration and encouragement from both parents and partner, and Teacher C's partner, a headteacher, has provided a *'profound … impact on my practice and the things that I do'*. Teacher D also speaks of highly supportive parents and grandparents, the benefits of studying at the same time as their partner, when *'we were both focused on learning'*, as well as the importance of becoming a parent. For Teacher A, connections with outside organisations and subject networks are more prominent than family and friendships, but friends leaving teaching are also mentioned. Teacher E's response to teachers, family and friends who have been more negative than supportive is to *'turn that round, use that as a positive'*, reinforcing ambition to succeed and study. In Teacher F's case, *family and friendships* have prompted questioning and uncertainty over current and future career roles, without eroding interest in educational leadership and further study.

Teacher D holds stable views on professional learning as holistic and inevitable:

> *'You continually learn and you will never know everything, but the aim is to gain an array of experiences to help you continually learn and to support your teaching practice … I guess they haven't changed, because you're always going to learn'.*

However, with different life and career circumstances, Teacher D suggests *'maybe the intensity of what you're going to learn will change over time … it speeds up and slows down depending on your journey at the time'*. Career progression has enabled significant professional growth but, recently becoming a parent, Teacher D has decided *'to take a step back but to realise that the route's still there eventually, and I still feel I know my route is more pastoral than curriculum'*. Emphasis on *'professional learning as drawing on experience'* runs through Teacher D's conversation, with life events as developmental opportunities. Having recently returned to work following maternity leave, Teacher D says, '*I feel that I've just used my professional learning to help me, sort of integrate back in*'. Teacher D's previous pastoral roles, including as head of year, involved close working with parents:

> *'I didn't feel out of my depth and that I hadn't got a clue, because I wasn't a parent, but again I guess that's working with children for half of my life. … I feel that you still have those understandings, and you understand the emotion parents go through'.*

Recalling parents anxiously dropping young children at school for a residential trip, Teacher D says, *'you are sensitive to those feelings even though I wasn't a parent at the time'*. Relating to parents in this way is close to empathising, 'feeling into' or projecting oneself into another, such that 'other's experiences echo within us' (de Waal, 2010, p.65). Teacher D says they have:

> *'… probably more empathy now. … I think you push barriers a little bit and make allowances that maybe before you might not have understood … you're learning in a different way aren't you, in that you're using your own experiences now, that help you link them into school … you try and think more like a parent now rather than just a teacher'.*

There is stability, too, in Teacher B's perspective on their professional growth, reinforcing self-determination and strong career aspirations, stating *'I think it's always been my own personal drive, I do think that does underpin it absolutely'*. However, this sense of personal drive has changed in focus over time, mainly through new roles in different schools, and contingencies in realising career aspirations and responding to prevailing policy directions. This change arises from settling on an aspect of personal and professional interest in an organisational context that is mutually sustaining, finding a *'niche'*:

> *'it's narrowed as time's gone on … maybe when I went into it I wasn't sure where it would take me really … it was an opportunity that came up that then started to direct me down to early career development … it's changed over time by my own interests … finding my own niche … early career development of teachers … always moving forwards and I'm moving with the times'.* (Teacher B)

For Teacher B, an important aspect of their niche, in contrast to previous schools, is *'a lovely balance on our team here'* with a *'50-50'* gender split. In Teacher B's current role, it has been *'great to meet like-minded females who have that career drive but [are] still … sentimentally attached to their family and home lives and actually demonstrate you can do both'*.

Teachers A, C and F articulate changing perceptions towards professional learning, away from CPD, associated with different confluences of factors. For Teacher A, this has occurred through their external work with exam boards and publishers, with a related shift in mindset:

> *'I think I do more of what I would consider to be professional learning, i.e. sort of off by own bat, for my own benefit really and less CPD. And I think that's because over time I'm moving further away from school, if not physically, I think mentally'.*
> (Teacher A)

However, this does not signify a loss of interest in the core teaching purpose of working with young people, rather a scepticism of wider organisational practices:

> *'I do what I need to do for the kids and I spend as much time as I can with them, and I think I struggle to see the point of a lot of the things that go on in school, whereas I can see a lot of point in what I do outside'.* (Teacher A)

Teacher A describes changing CPD provision, with budgetary constraints ending buy-in of external trainers for school INSET days and events now run by senior leaders. Teacher A adds, *'I never feel like it's had enough thought gone into it … because the people that are in charge of putting the thought into it are too busy themselves'*. However, for Teacher A, external providers are not necessarily the solution, for example *'fun activities'* recommended on one INSET day were *'not the right advice for us'.* Soon afterwards, during inspection, the school was told that students *'have a lot of fun but they don't really learn anything'*, though Teacher A lacks confidence in inspectors to make such judgements, adding *'I don't trust Ofsted at all'*. Having witnessed the recycling of ideas, receiving differing advice from CPD providers, Teacher A says:

'I think everything goes round in circles and I think now I've been teaching for a certain amount of time, I'm seeing things coming in that weren't considered to be very good before … 5-10 years ago it was make everything exciting, and now it's very much make them right'.

Although increasingly Teacher A is drawn towards working for external organisations, subject interest and working with young people remain attractors for professional growth, with resource production holding them together. For Teacher A, professional learning is *'shaped by whoever I'm working with and for. … Sometimes the kids, you know if you get a really nice bunch of kids you really want to do something different with them'*. Here, the discordant note of selectivity towards innovating with *some* students is at odds with and tempered by an inclusive disposition permeating written accounts and conversations. For example, at another point in conversation, Teacher A says, *'…that's what keeps me here [students, kids] … generally, you can see the good in all of them, can't you, and even the ones that come in moaning are actually quite positive'*. This reinforces that parts of recorded material, words and phrases used in passing, need interpreting in relation to the whole. However, complexity thinking prompts another interpretation, that students who meet teachers half-way and whose complicity in schooling is positively expressed might encourage more innovative teaching.

As a senior TSA leader providing initial teacher training and CPD opportunities, Teacher C describes ongoing shifts seen in their role:

'It was very much about the CPD and then the joint practice development and then this more professional practice linking in with the whole accountability, where I feel it's more of an ongoing process, but I don't think we're there yet'.

Joint practice development (JPD) raises questions over simple one-way transfer or sharing of practice between one teacher and another, suggesting 'receptivity' and 'embedded values that appeal' through joint working (Fielding *et al*, 2005, p.32). In an influential blueprint for a 'self-improving school system', Hargreaves (2014) elaborates JPD in terms of a commitment to innovation among all parties, deemed 'critical to systemic improvement' (p.704). Teacher C's articulated extension to a more *'ongoing process'* of *'professional practice'* linked to *'accountability'* resonates with this systemic view of JPD. However, Teacher C adds, *'I worry we're actually going to take a significant step backwards, because CPD budgets have been*

squeezed … inevitably, CPD is the first thing that's going to go and the joint practice development'.

Teacher E has become '*addicted to learning*' over time, having '*grown in confidence*', fuelled by a confluence of personal factors and increasing '*passion*' and '*interest*' in educational issues. Teacher E says, *'you get to a point where you don't realise how much time you've spent, actually learning, reading things, writing, analysing them, but you're doing it because you want to do it, you enjoy doing it'*. This perception of professional growth attunes to Teacher E's tendency towards post-graduate study, with several certificate, diploma and masters courses completed, and doctoral study contemplated. Such courses provide both learning and development opportunities for Teacher E, with a choice of study meaning '*you're going to put a lot more effort and a lot more time into it'*. However, a growing desire to achieve and learn is also traced back to Teacher E's own experiences of school:

> *'… you'd have some of the negative teachers who would say, no you won't achieve things, you're not going to be things. … I'll turn that round, use that as a positive, because that'll make me … drive even more than I would have done before, because I want to achieve even more'. (Teacher E)*

Turning negatives to positives or using setbacks to fuel ambition also features in Teacher E's experience of *family and friendships*, changing their perceptions of professional growth.

In Teacher F's case, professional learning has '*definitely evolved'* and *'become more of a priority for me'*, partly due to increasing interest in broader applications of educational leadership, for developing capacity of school systems in post-conflict countries. Initially, when newly-qualified and simultaneously a subject-leader, Teacher F focused on *'building a team'* in school and acquiring skills for the job, perceived as CPD. Recently, priorities have shifted to more personal interests beyond the school, which Teacher F associates with professional learning, and line-managers have been supportive. This change of career direction has been prompted by *'pressures'* associated with *'workload'*, *'expectations'* and *'Ofsted looming'*, and because *'friends and family really have a negative view of the profession'.* Teacher F has proactively sought out and financed courses and qualifications to pursue new interests and career routes, combining academic and professional opportunities to study and meet *'like-minded'* people. Thus, a confluence of *personal fulfilment* and ambition, pressured *external accountability*,

questioning *family and friendships*, and a new external *range of situations* have generated an attractor for professional growth.

Teacher A has also considered leaving the profession and describes a respected former colleague who has taken this step and now *'works shifts'* in a local factory – *'I think it's such a tragedy that he's not teaching any more, but he's a lot happier'*. Teacher A mentions other colleagues who entered teaching *'because they care'*, but now *'say that they are only in the job because they can't get the same pay elsewhere'*, becoming *'trapped'*. Further pursuit of a role in publishing remains a possibility for Teacher A, though the attractor of working with young people and recently more supportive *leadership and management* keeps them teaching. The School Workforce Census in England shows that teachers moving 'out of service' each year has increased from around 30 thousand in 2011 to just under 40 thousand in 2016, nearly ten percent of the total workforce (DfE, 2017a, Table 7a). These aptly and unfortunately named 'wastage' statistics do not include teachers retiring, and some may be working in the further or higher education sectors, or teaching overseas. Discussing this situation in terms of a recruitment and retention *'crisis'*, Teacher B suggests that *'we were churning them out and we haven't nurtured them, we haven't looked after them and that's why they've left the profession'*. The attractor of early career development, now shaping Teacher B's own career, offers hope for longer-term teacher retention:

> *'I think if you put that programme in place for them, and you care about them, they will care about the pupils, they'll enjoy the job, they'll see the rewarding aspects of the role and they'll stay in the profession, and they'll strive as well'*.

Chapter Five – The Role of Practice-based Inquiry in Professional Growth

Practice-based inquiry (PBI), discussed in Chapter Two, is conceived as a form of insider practitioner research, offering a vehicle for professional growth. This chapter draws together twenty examples of PBI carried out by the six case study teachers through masters or doctoral assignments, providing substantial opportunities for learning and development. A distinction can be made between 'inquiry as stance', which implies 'a critical habit of mind, a dynamic and fluid way of knowing and being in the world of educational practice' exercised by teachers across settings, and 'inquiry as a project', which takes place in specific bounded contexts (Cochran-Smith and Lytle, 2011, p.20). While examples considered here are assignment-based and thereby constitute time-bound and context-specific projects, the critical ways of working they promote have, for some teachers, become closer to an 'everyday habit of professional practice' (Kendall and Herrington, 2009). In all cases, the focus for inquiry is self-determined by the teachers and linked to practices they wish to explore and develop, following the principle of 'inquiry as stance' that responsibility for knowledge generation and transformation of practice lies with practitioners themselves (Cochran-Smith and Lytle, 2011, p.20).

There are clear parallels between PBI and action research, and most of the twenty examples extend beyond 'technical', efficiency-seeking and instrumental forms, to support co-operation and deliberation through 'practical' inquiry (Cain and Harris, 2013, p.345). In some cases, self-determination has extended to 'emancipatory' approaches that challenge prevailing or habitual practices and prejudices, combining critical reflection with joint practice development (Carr and Kemmis, 1986, p.204; Cain and Harris, 2013, p.345). Teachers' written accounts, combined with follow-up questions and further related conversations, provide insights into the intended purposes of their endeavours, the enacted opportunities for implementation, and the lived responses of those involved in terms of application and further action. First, a *possibility space* for practice-based inquiry is introduced, comprising further categories of description, unfolding from and entwined with those already articulated for teacher professional growth in Chapter Four. The chapter then turns to the identified questions for further understanding experiences of PBI, encompassing perceived impacts, benefits and limitations, independent and collaborative working, and situational enablers and inhibitors.

Possibilities of practice-based inquiry

The initial model of teacher professional growth visualised in Figure 1, proposes two dimensions of variation in intended purposes – situational-external and transmissive-transformative. The examples of PBI discussed in this chapter tend towards the situational-transformative corner of this quadrant, through core purposes of better understanding or further developing workplace practices to benefit learners or colleagues in identified ways. In the proposed informal-formal, incidental-planned quadrant of enacted opportunities, PBI associated with higher education studies occupies the formal-planned corner. For the quadrant of lived responses, PBI varies across the individual-collective dimension, but is always more proactive than reactive in self-determining purposes and opportunities. Further categories of description are identifiable in the instances discussed, pertaining to purpose, opportunity and response, as well as organisational contexts and external conditions in which they take place. Again, these features are interpreted as woven together and mutually constitutive, forming a possibility space for PBI, as summarised in Table 7 and Figure 4 (below), which complements and expands the possibility space of professional growth presented in Table 6 and Figure 3 (above). The examples spawning these further categories of description are discussed in this chapter, with additional detail in the *practice-based inquiry summaries* (Appendix Two).

Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
Variation of experience in: • Practice focus – teaching, assessing, supporting, leading • Level of practice-base – learner, team, organisation • Locus of influence – personal, relational, organisational	Variation of experience in: • Participant role – self, informant, collaborator, co-inquirer • Evidence-gathering – perception, observation, dialogue, documentary • Action and change orientation – recommended, planned, implemented	Variation of experience in: • Self-critical reflection – recognition, internalisation, projection • Application to practice – proposed, actualised, fulfilled • Dissemination to others – personal, collegiate, public	Variation of experience in: • Organisational integration – limited, facilitated, applied, integrated	Variation of experience in: • External stakeholders – parents, community, partner organisations

Table 7 – A possibility space of teacher practice-based inquiry, in conjunction with professional growth (Table 6).
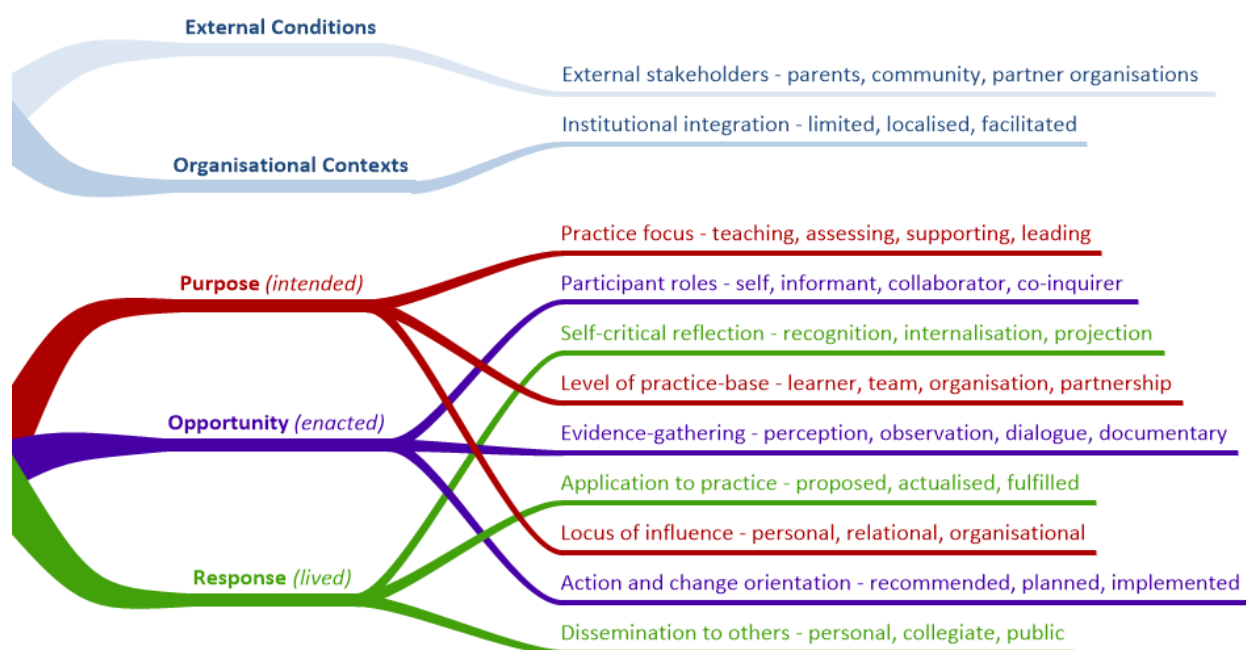
Figure 4 – A possibility space of teacher practice-based inquiry, in conjunction with professional growth (Figure 3).

In all twenty cases, a *learner focus* is traceable as a purpose for PBI, however this is not always direct or explicit. Discussed in Chapter Four as a category of description in purposes of professional growth, *learner focus* is reinforced and complemented by a *practice focus* for PBI. Based on the case examples, *practice focus* varies across aspects of teaching, assessing, supporting and leading, in confluence with other identified variants, such as *pursuing values* through *professional roles*. For example, Teacher A's inquiries into rapport-building and behaviour management, use and impact of geographical information systems, and the effectiveness of examination revision techniques, have a *practice focus* on aspects of teaching. Teacher D's inquiry with an autistic learner focuses on supporting, while Teacher E's investigation of technology to support physical learning activities for those with special educational needs is concerned with both supporting and formatively assessing. Teacher B's research on leadership performance, Teacher C's inquiries into many aspects of initial teacher education and Teacher F's investigation of monitoring and observation have a *practice focus* on aspects of leading. For some, PBI is close to 'pedagogical research' as 'inquiry into making learning situations better for students' (Castle, 2006, p.1101), however others extend this to colleagues, teams and organisations.

A related purposive dimension concerns the *level of practice-base* intended for inquiry, ranging from the immediate teacher-learner interface, whether in classrooms or other settings, through teams or departments, to the whole school or organisation and partnerships beyond, including parents. This category of description broadly matches the three levels of practitioner inquiry identified by Lofthouse *et al* (2012, p.180), as individual, collaborative and institution-wide. However, it also implies roles of participants, discussed below as an opportunistic category of description. Choosing an appropriate *level of practice-base* for inquiry, often supported by a colleague or tutor as a consultative 'agent of inquiry' (Cooperrider and Whitney, 2000), usually relates to *professional role* (subject, pastoral, leadership) and *range of situations* (workplace, partnership, external) as opportunities for learning and development. The self-determination of practitioners taking responsibility for these decisions, towards a meaningful and viable *practice focus* for the confluence of professional practice concerns, again signals the heutagogical nature of PBI (Hase and Kenyon, 2013).

A third category of purposes found in accounts of PBI concerns the intended *locus of influence*, whether this is personal, relational and/or organisational. A less anticipated possibility from this study is that PBI may be instigated for ostensibly personal reasons, with more professional and/or organisational intentions emerging through recursive response. Teacher B's doctoral studies into leadership performativity are the prime example, viewed as a '*hobby'* and without intended practical impact, they have nevertheless influenced leadership practice, as discussed in the next section. However, most of the twenty PBI examples have a purposively relational *locus of influence*, concerned with the development of a *practice focus* that also affects others. In other words, the inquiries do not intentionally stop at gaining personal knowledge and understanding, they also seek educational praxis 'for the good of each person' involved (Kemmis, 2011, p.11). For instance, Teacher D's inquiry with an autistic learner seeks to better understand and support this student's needs, with consent from all involved including family and colleagues. In some cases, such as Teacher C's inquiries into systems for supporting new teachers, purposes extend further towards an organisational *locus of influence* whereby collective praxis is changed.

The purposive categories of description, *participant focus*, *level of practice-base* and *locus of influence*, invite the rigorous yet flexible, even playful, 'design thinking' proposed by Chua (2009) for 'exorcising the terrors of performativity'. PBI thereby supports a shift from

'*exploitation*' of pre-determined goals to '*exploration*' of new possibilities (*ibid*, p.163, original emphasis), in pursuing more immediate activities of value and benefit to the self and/with others. Purposes for PBI also encourage a negotiation of the boundary between subjective understanding and objective knowledge (Davis and Sumara, 2006, p.75). Together they imply 'intermediary levels of complex coherence' (*ibid*), for which the purposes of inquiry point to sources of wider knowledge that can be explored or applied, thereby enhancing subjective understanding of praxis. Davis and Sumara (2006, p.75) offer 'classroom collectives' and 'curriculum structures' as examples, however other nested layers through which teachers pursue PBI can be identified. For example, several of the inquiry examples involve collegial collectives, with a *practice focus* on leadership, a team *level of practice-base* and a relational *locus of influence*.

Purposes for PBI promote enacted opportunities with further categories of description. First, there are *participant roles,* in the extent to which learners, colleagues/team, leaders, parents, wider stakeholders, and sometimes several of these, are involved in inquiry. *Participant roles* may be restricted to the self as inquirer, or may involve others as informants, collaborators, or co-inquirers. More reflective instances of PBI, such as Teacher C's critical accounts of coaching, mentoring and observation experiences and Teacher A's commentary on the application of behaviour management techniques, can be considered self-inquiries or retrospectives. Often a temporal process of *looking-back*, there are no direct participants apart from oneself, although practices reflected upon may include others. Planned PBI, *looking-forward*, typically involves others directly, sometimes as informants but often as more active participants. Who they are arises from the purposive *practice focus*, *level of practice base* and *locus of influence.* For example, Teacher A's foci on subject teaching require PBI *participant roles* for self, students and sometimes colleagues. Those in leadership roles choose *participant roles* among colleagues, teams they lead, and other leaders. Teacher D's pastoral responsibilities enabled *participant roles* for parents, initially as informants, but becoming more collaborative through further application. In most instances, insider PBI is partially self-focused and reflective, hence written accounts provide valuable insights into professional growth. Participation through collaboration with students or colleagues, beyond informants, is found in Teacher C's lesson studies and Teacher E's assessment for learning projects. However, the extent to which participants are co-inquirers, involved in planning and design of PBI, is limited in the twenty examples, discussed below in relation to individual and collaborative working.

PBI, as a form of practitioner research, usually involves *evidence-gathering* and often an *action and change orientation*, providing two further opportunistic categories of description. Variation in ways of experiencing *evidence-gathering* range across typical data-collection methods, such as observations, questionnaires, interviews and focus-groups. Schools as places of learning are evidence-rich and more context-specific variants of these methods and other sources emanate from student work, curriculum materials, assessment data, policy documents and practical frameworks. For example, Teacher C's inquiries into support for trainee teachers closely analyse actual examples of documentation used to support the processes of observation and qualitative target-setting. Where participants are directly and materially involved in the inquiry process, their perceptions might be sought through conversation, diary, survey or other recorded response, or their actions captured through observation or recording, with appropriate permissions. For example, Teacher D, seeking a deeper understanding of the needs of an autistic learner, combined observation with a diary of support. Dialogue, as a process of intersubjective meaning-making, is used to make sense of others' or shared experiences, such as Teacher B's inquiries into leadership performance and Teacher F's investigation of changes to monitoring teaching. Crucially, evidence-gathering in PBI extends to sources of knowledge and research found in published material, whereby experiences reflected upon are diffracted through theories, ideas and possibilities found within the literature.

In many cases, PBI combines meaning-making with action-taking, or steps towards it, through an *action and change orientation*. This varies in written accounts with the scale and scope of inquiry, from recommended to more planned and projected changes to practice, through to fully implemented development. PBI, when utilising an action research approach, facilitates a shift from the intersubjective to interobjective, whereby actual changes are made that materially influence practice involving others. An example is Teacher E's implementation and evaluation of two-way communication logs to improve dialogue and team-working between teachers and teaching assistants, in support of learners with special educational needs. Here, collaborative *participant roles*, dialogic and documentary *evidence-gathering*, and an implemented *action and change orientation* combine. This can be considered a formalisation of tweaking and tinkering, as previously discussed, although teachers do not necessarily make this connection. For example, Teacher A associates ongoing resource production and tweaking with *'practical application'*, not inquiry – *'I did research for the masters but I wouldn't do it normally'*.

Responses within PBI, within a recursive ongoing process or in following-up more discrete opportunities enacted, suggest further categories of description. *Self-critical reflection* in response to experience, evidence gathered, or action taken, varies from articulated recognition of self-knowledge, to internalisation or projection that might lead to deeper *integration and application* through professional growth. For example, Teacher A's reflections on experiences of coaching and mentoring recognise their natural occurrence in collegial relationships, but when they become more supervisory than supportive teachers can be left with self-doubt and powerlessness. Teacher C's account of teacher trainee feedback as a predominantly one-way process, moves beyond recognition to an acceptance of potential shortcomings in mentoring, before internalising the need to act for positive changes. Professional growth opportunities to enact this change, for the purpose of ~~developing~~ others through capacity-building, are afforded by Teacher C's *professional role* as a leader and further PBI via their masters *course and study*. PBI thereby entails a second responsive category of description through *application to practice*, with variation from changes or actions proposed, to their actualisation or implementation, through to fulfilment in satisfying purposes as intended or recursively adapted.

The purposive *locus of influence* for practice-based inquiry may begin as personal in gaining deeper understandings, for example Teacher D's investigation of the influences of parental educational experiences on those of their children. However, understandings gained through PBI, alongside their application to practice, may be shared through *dissemination to others.* Variation in this third responsive category of description ranges from the personal, i.e. not disseminated, to collegiate sharing within close teams, through to wider organisational distribution. The role of PBI as a *form* of research is illuminated here. An often-repeated definition of research is 'systematic inquiry *made public*' (Stenhouse, 1981, p.104, original emphasis), but PBI offers more modest, yet arguably more practicable and viable, distributive potential. In Teacher D's case, internalised *self-critical reflection* on parental confidence emanating from educational experience is accompanied by proposed *application to practice*, through *dissemination to others* in their pastoral team:

> '… the practice research and the inquiries that I did, yeah, I definitely think that it's
> helped me work better with the team of staff. … I've used experiences to help me,
> not necessarily share with the school, but to share with the year group I work with,
> so through pastoral meetings we might look at certain areas that I've drawn on my

experiences from doing my research. … my understanding when working with parents has improved'. (Teacher D)

Here, the crucial point is that dissemination of PBI took place first and foremost at the level where Teacher D's *locus of influence* offered the greatest positive potential for *application to practice*. This does not, of course, preclude wider *dissemination to others* at a school level, or even the making-public of PBI.

An additional contextual category of description, related to those for professional growth, is *organisational integration*, varying in the extent to which PBI is integrated with school-wide development priorities. In the previous examples of Teacher D's inquiries, *organisational integration* remained localised to the specific teams for whom *application to practice* was most relevant. Similarly, Teacher A has responded to PBI through *application to practice* and *dissemination to others*, for example by sharing understanding of effective revision techniques with students and departmental colleagues, again with some localised *organisational integration*. However, for Teacher A, while school leaders facilitated inquiry through the funding of masters study for a group of teachers, there has been a *'lack of acknowledgement'* and very little school-wide follow-up. Likewise, Teacher E's senior colleagues facilitated PBI but have shown limited interest in *organisational integration*, even where there is clear evidence of potential benefits. These situational enablers and inhibitors of PBI are further discussed below.

External conditions for PBI identifiable in teacher accounts again overlap with those for professional growth, in relation to *policy direction*, *external accountability* and *family and friendships*. PBI is seldom carried out for the *sole* purpose of increasing measurable outcomes and, as Castle (2006, p.1101) points out in relation to 'pedagogical research', 'often emerges from teachers' worries about what is wrong with education'. These external conditions can be explored through a relevant literature base, across published accounts of policy, practice and research. In some cases, a further category of description involves *external stakeholders*, particularly parents and partner organisations. Teacher D's inquiries into parental support for their children's education, including the influence of parents' own education, directly involved parents in a *participant role* as informants, with coherence between *policy direction* and a purposive *practice-focus* for promoting positive home-school relationships. Teacher B's investigation of leadership performance and Teacher C's inquiries into purposes of observation included participants outside their immediate organisation, but within the wider trust or

alliance of schools. The possibilities for involving *external stakeholders* in PBI relate to *professional role* and *range of situations* as opportunities for professional growth.

Categories of description drawn from teacher accounts distinguish PBI as both a form of research *and* a heutagogical vehicle for professional growth. It is inherently participatory, with the teacher positioned as insider, whose self-determining purposes, opportunities and responses exhibit an 'inquiry stance' even when pursued as a project (Cochran-Smith and Lytle, 2011, p.20). PBI shares with action research an orientation towards positive changes to practice, but it is not a deficit model solely intent on solving problems, often entailing an 'appreciative' and 'constructionist' approach to change, building on strengths and identifying new possibilities (Mohr and Watkins, 2002, p.5). PBI promotes fluid 'design thinking' (Chua, 2009) and 'deliberative thinking' (Holt, 1995, p.9), not driven by performance and targets but concerned with studying processes, 'why as well as how'. Utilising established methods for a 'practical curriculum', PBI is neither 'inductive' in aiming for generalisations, nor is it 'deductive' in applying general principles to specific cases (Schwab, 2013, p.618). Rather, it is 'deliberative', a 'complex and arduous' process that 'treats both ends and means and must treat them as mutually determining one another', weighing up alternative possibilities (*ibid*). PBI is also 'abductive', offering exemplary knowledge through lateral extension of possibilities from one context or situation to another (Bateson, 1988; Shotter, 2009b; Thomas, 2010).

Perceived impacts, benefits and limitations of practice-based inquiry

The six teachers tend to perceive the impacts and benefits of PBI in relation to immediate concerns and interests, both personal and professional. Here, the purposes of PBI overlap with those of professional growth, such that *personal fulfilment*, *learner focus*, *pursuing values* and ~~*developing*~~ *others* also become benefits and potential impacts. Again, these unfolding benefits are enacted through opportunity and lived through response. For example, self-confidence can be a purpose of growth, enacted through professional role, as well as a response to successful PBI. For Teacher A, gaining a masters degree through their inquiries, *'a good qualification to have'*, is an important source of self-confidence that *'made me feel a little bit more positive … about my own ability … restored my faith a little bit'*. Similarly, Teacher B's research into leadership performance, begun out of personal interest and enacted both through study and

leadership role, have '*had an impact on my professional persona … I do now believe that I've got far more confidence in what I do*'.

Three examples from Teacher A directly address learning needs: improving classroom behaviours and building rapport with students; investigating the impact of geographical information systems on attainment; exploring the effectiveness of examination revision techniques. Conversation with Teacher A reveals a passion for developing resources, '*for doing things smarter*', sometimes to '*tweak them in the lesson sometimes, if they're not working*'. In relation to the PBI on revision techniques, Teacher A '*wanted to know whether what I was doing was actually beneficial and to what extent … so that I could improve results*', and also '*because … when they've got the tools to do things for themselves they will be more independent*'. A direct *learner focus* permeates these examples, with the *practice focus* for inquiry on teaching, pursuing values that range across behaviours in terms of independence and rapport, rights to a curriculum entitlement for students accessing GIS, as well as outcomes through attainment and exam success.

Closer consideration of PBI undertaken by Teacher A, through written accounts and subsequent dialogue, suggests transformative learning about teaching, tangible benefits to both teacher and students, as well as wider awareness of performativity. Teacher A describes their study of examination revision techniques in transformative terms:

> '*Previously I have been at a loss to explain poor exam results when so much revision is carried out in class. It has been a revelation to me to discover that it is essential for students to continue their revision following this preparation in class*'.

Teacher A's carefully constructed PBI combines expected and actual GCSE outcome data with a student survey of revision habits and techniques. It suggests that students in this cohort who spent more time on '*independent revision at home or outside school*' tended to be successful, regardless of their attendance at '*booster or revision classes in school time*'. Teacher A also finds that '*note-taking and mind-mapping appear to be more effective than simply reading through notes and books*' and that '*more able students require fewer hours of revision than their less able peers*'. Benefits from revision at home using more productive techniques is reinforced by more recent practice, which Teacher A shares with GCSE students and embeds into routine teaching, encouraging them towards greater responsibility for independent study.

Teacher A is aware of shortcomings in examinations that assess *'simple recall'* over *'complex links'* and *'test knowledge rather than ability'*. When asked about the predictive GCSE data that this PBI draws upon, Teacher A explains:

> *'I'm very wary of any targets. I think they're divisive and used in the wrong way. I'm not sure you can attribute numbers to human characteristics and abilities in such a simplistic way. I feel targets have been the root of many problems in education as teachers have more to fear by them than students. This leads to teachers doing a disproportionate amount of the work'.*

Perceived impacts, benefits and limitations of this PBI are further illuminated from the holistic perspective of Teacher A's professional growth, to which it contributes. Discernible attractors and repellers include: sharing a love of geography with students through efficient teaching resources and approaches; continued desire to work with young people, encouraging their independence *and* examination success; concern that examinations do not assess or value subject breadth and depth; over-reliance on school-based boosting rather than independent study, stoking student dependency and teacher workload; scepticism over targets, league tables, inspection and the pressures they exert on leaders and colleagues. This confluence highlights the complexity of teacher experience and the complicity of professional growth.

Teacher B's doctoral studies were pursued through personal interest more than for impact on professional practice:

> *'I don't intend for it necessarily to have that impact, I do it because I enjoy it … and I choose … my assignments more for what I have an interest in, on an extra level. So, I mean it would have been easier if I'd done something on teaching schools and initial teacher training, for instance, but I didn't, I did it on something because it was more personal to me, about performativity'.*

Performativity, in Teacher B's studies, is less concerned with responding to handed-down performance targets and measures (Ball, 2003, p.215) and closer to Barad's (2007, p.49) terms of material enactment. More specifically, it considers leadership *as* performance in either literal or metaphorical terms (Peck *et al*, 2009). For Teacher B, personal interest comes from recognising and asking, *'… stand me up in front of an audience I'm a shivering wreck, why is that, what do you need to do building it, do I need to have training on that, do I need that CPD element on that?'*. Studying leadership performance, interviewing many leaders, has led to the

conclusion that '… *performance and enactment skills are required to successfully deliver messages to a variety of audiences in order to gain following and fulfil the role of a leader'* (Teacher B). Here, relational reciprocity of leadership and followership is heard, implying complexity through the unfolding of one through the other; their distinction and conjunction.

Despite no intention for practice-based inquiry to impact on professional practice, Teacher B has come recognise its influence on their role and identity:

> *'I don't know whether I've just moulded myself into my thesis or whether my thesis has moulded me, but I do now believe that I've got far more confidence in what I do. … My own study has probably shaped what I've ended up doing, without actually realising it … Yeah, the more I reflect on that, I think that has taken a big shape of who I am as a professional now'.*

External conditions for leadership recruitment feature in studies undertaken by Teacher, who says in conversation, '*I think the leadership recruitment crisis was inevitable, if you put pressure on people to do things that aren't necessarily necessary*'. Again, a purposive orientation towards ~~developing~~ others is heard in Teacher B's conversation, which is unintentionally influenced through studying leadership performance. While the *locus of influence* for PBI began as personal, it has become professional and organisational too:

> *'I think where my interests and my passion now lies is … let's focus on developing our own leaders, those who have that demonstration, those who have that drive. It's not something everybody should do, but those who have that drive in developing leadership skills will then be confident with their performance in doing that, and will be the next leaders. And so that will answer, ultimately, the leadership recruitment crisis'.* (Teacher B)

Impacts and benefits of PBI are personally fulfilled for Teacher C, finding time to *'sit down and read and research and … go off on tangents … really quite interesting'*. However, an inquiry orientation, or *'inquiry as part of what we're doing'*, has also been encouraged and is becoming ingrained for professional and practical purposes too:

> *'… a good example of that would be the target setting one. When we were Ofsted-ed as a SCITT, our main target was that the targets set [for trainees] weren't developmental enough … Ofsted were only in for two days, I wanted to actually look*

at this myself, and by doing a proper analysis of actually what the data was looking like and then moving things forward, rolling out some training, working with staff and interviewing people … then analysing it again to see if the practice has improvement, that certainly is quite powerful … I think that's something that, again time allowing, I would want that practice to continue really, and it's certainly something I encourage the team to do when we're looking at things'. (Teacher C)

A tangible impact from this example is the introduction of a single *'rolling document'* rather than a *'different form each week'*, with specific *'tasks'* as well as *'targets'* so developmental progress over time can be discussed and monitored easily. Discussing limitations of PBI, Teacher C identifies *'people's perceptions'*, in terms of *'sniffiness about research and development in education'*, even in a TSA, where *'we've got a lot of young, ambitious teachers who are interested in this sort of thing'*.

Impacts and benefits of PBI are discussed by Teacher D in terms of *'more knowledge'* and enhanced understanding of others, where, *'it's helped my interaction with people, because you look at things differently because of the work you've done'*. Discussing relative contributions of two key facets of PBI, engagement with published research and evidence-gathering/action-taking, Teacher D says:

> *'… the research gives you the starting point, but it's not the research that gives me the answers. I think the answers are going out to find it. … I think it's the doing, the actual finding out, interacting with people, finding out stuff is what gives you that greater understanding. So, I think they both have a role to play'.*

An example is Teacher D's participatory inquiry *'to improve my knowledge of autism so I can offer more help and support'*, at the learner *level of practice-base* with an autistic student and a *practice focus* on supporting their additional needs. The *locus of influence* is thus personal and relational, but also organisational, as Teacher D articulates the additional purpose that *'staff need to share knowledge of autistic pupils with each other'*. The *participant role* played by the student is both informant and potential beneficiary, enacted through informed and parentally consented *evidence-gathering* via a short questionnaire on perceptions of school learning and observation by Teacher D in lessons. A further *participant role* is provided by the special educational needs co-ordinator (SENCo), with documentary *evidence-gathering* in the form of background and assessment information about the student, again with informed consent.

There is also an *action and change orientation* to this inquiry, recommending ways of working to support the student, then planning and implementing some of these changes.

Teacher D's *self-critical reflection* in response to this inquiry is initially documented through recognising situations and ways of acting that benefit the autistic student studied. These include careful explanation over seemingly minor changes of routine, the avoidance of metaphors or jokes and use of visual aids when giving instructions and recognition of attainment in preferred subjects, including science. However, by the time of writing-up the inquiry Teacher D had both proposed and actualised *application to practice* in their ways of working with the student, noting: *'In this short space of time, I have enhanced my knowledge, I have altered my approach … and it has already had positive consequences'*. The handling of an incident disruptive to routine provides an instance of such alteration, where a broken bulb led to different changing arrangements for PE. Teacher D's more deliberatively calm and considerate manner helped to maintain the student's calmness in a situation that would typically lead to anxiety and potential behaviour difficulties. Teacher D concludes that knowledge of individual learners and related research helps teachers to be *'more understanding'* and to *'make reasonable adjustments to become more supportive'*.

This knowledge is taken further through *dissemination to others*, in this case immediate colleagues, where alterations to ways of acting are most likely to further benefit this autistic student and others with similar needs. Considering this inquiry several years later, Teacher D confirms longer-term *integration and application* through professional growth that could be considered transformational:

> *'As a head of year I have worked with more students with autism and my previous experiences have enabled me to understand thoughts and feelings. An example is when there is a change of routine to the school day, I ensure that form tutors with autistic students are clear about the changes to the day so children with autism are aware of this'*.

In terms of lived response to PBI, *self-critical reflection* has become internalised and *application to practice* has been fulfilled. Here, the temporal distinction between PBI as a short/medium-term vehicle for professional learning and development in contributing to a longer-term process of development and growth is exemplified. It suggests 'deutero-learning', or 'learning of context' (Bateson, 1988, p.144), where Teacher D's ways of acting with autistic learners,

different in every instance, have been transformed. Discussing this inquiry and others involving parents, Teacher D says, *'the research has guided me … it informs you and it's always there in the back of your mind to think differently, or to support children differently'*.

In conversation, Teacher D speculates on limitations in using published research to inform practice-based inquiry, asking rhetorically:

> *'… does it make you only look in one way because you've read this bit of research and do you then forget to look at it a different way? … you might have only looked at it from one angle, so you might be missing something else'*.

Assuming they *'would be oblivious'* to whether this happens, when reminded of the multi-perspectival aims of practice-based inquiry, Teacher D adds, *'you try and take different approaches, but sometimes do you narrow it, because you've looked at one and focused in and that works and you forget a different angle? I'm not sure'*. This insight, albeit speculative, on the guiding agenda of evidence-based practice implies that a rigid approach to *what works* might unconsciously inhibit flexible thinking. If educational practice is best understood in terms of complexity, and problems faced are more wicked than tame, then teachers need response-ability. This way of acting involves decisional capital, or the capability to make 'wise' and 'discretionary' judgements when faced with situations where no single approach or stable and secure evidence-base applies (Hargreaves and Fullan, 2012, pp.93-4).

Considering further examples of impacts and benefits from PBI, Teacher E's two interconnected masters assignments, explored the development of two-way communication logs between teachers and teaching assistants (TAs). The first of these inquiries incorporated the introduction of the logs, with the intention for TAs to become more aware of what teachers require of them through in-class support, and to feedback important qualitative evidence of student responses. Teacher E explains the rationale and potential benefits of this approach:

> *'Teachers didn't have time to talk to TAs, with fast change-overs between lessons, no lag time and no opportunities to speak. Two-way logs gave onus to teachers to direct TAs and allowed TAs to feel part of the process. Quite specific information can be transferred/shared in this way'*.

Perceived impact includes *'some meaningful, purposeful, specific, targeted communication taking place within classrooms'*, used by teachers to *'inform their future lesson planning'* and *'to*

feed back to parents'. This latter step showed potential for three/four-way communication, between teachers, TAs and parents, plus students, and Teacher E reports evidence of TAs taking the initiative in providing additional resources and support to address specific aspects of students' learning difficulties. Thereby 'proximal activity' among teachers, TAs and parents, working relatively independently towards student benefits, become more 'contributory' and 'collaborative' through reciprocal exchange of information and 'shared labour for a common purpose' (Lofthouse *et al*, 2016, p.530).

Further evaluating two/three-way communication logs as part of a second PBI, Teacher E highlighted variation in TA practices, some writing *'two pages with little helpful communication'*. This initiated refinement towards greater consistency of communication and support, developing more *'detailed dialogue which could be utilised by the teacher to help with the planning of future lessons'*, acknowledging that *'purely stating the actions of the teaching assistant within a lesson does not help teachers'*. Training for TAs was provided in quality feedback, asking: *'what was the student able to do independently?'*; *'what was the student able to do with support?'*; *'what did the student find difficult/unable to complete?'*. Teachers' perspectives on the benefits of two-way communication logs were gathered through PBI and summarised by Teacher E in conversation:

> *'They were really positive about the two-way logs, because … there's some kind of relationship now with teachers and TAs. They can actually clearly see what the TA has done in that lesson, they can clearly see what the student has been able to do and they can also direct the teaching assistant to work with certain students and do a certain thing'.*

Discussing limitations of PBI, Teacher E describes post-graduate study experiences that were not integrated with workplace practice, finding accessibility and relevance of reading material to be important, concluding *'practice-based articles are easier reading than the more scientific-based, … based on qualitative studies, … interviews and observations, more small-scale but go really in-depth, into detail, I think they've been really beneficial'*. Teacher E takes a critical view of large-scale studies, where *'research is often generalised'*, asking *'what benefit does that have to … different kinds of schools in different areas'*, considering that *'schools are different on a case-by-case basis'*. Here, Teacher E revisits long-standing debates over evidence-based/informed practice, the 'usefulness of probabilistic evidence to a teacher' and the value

of 'qualitative analysis of meaningful actions and interactions in particular situations' (Elliott, 2001, p.571), finding the 'exemplary knowledge' of the latter more useful and applicable (Thomas, 2010, p.578). Similarly, complexity thinking is sceptical of 'best practices' that make sense only for mechanical systems, not adaptive and structure-determined learners (Davis and Sumara, 2006, p.100). PBI has the potential for generative situational study, utilising published research and re-contextualising generalised evidence or exemplified evidence from other contexts. PBI, rather than pitching research against practice, reinforces the 'reciprocal, recursive, and symbiotic relationship' between them (Cochran-Smith and Lytle, 2011, p.19).

Two of Teacher F's inquiries took a bricolage approach to *evidence-gathering*, exploring colleagues' perceptions of changes resulting from inspection, with *deemed effectiveness* found lacking and the school *'requires improvement'*. One *practice focus* concerned monitoring of teaching affecting *working relationships*, specifically the introduction of a check-list approach to classroom visits and *'drop-ins'* by senior leaders known as *'taking the temperature'*, ostensibly prioritised to help the school to be *'Ofsted-ready'* for re-inspection. Previously, teachers associated observation with *'professional development'* and *'joint practice development'*, reporting the new process as *'strange'* and more to with *'monitoring'*. Interviewing leaders, Teacher F found the reason for change was disparity between Ofsted's judgements of teaching quality and those of school leaders, prompting more frequent and widespread monitoring to judge teaching quality, replicating inspection. This was not communicated to staff, precipitating *'increasing levels of mistrust between senior leaders and teachers within the institution'*. Teacher F concludes, *'teachers that participate in teacher assessment processes need to feel that they trust the aims, objectives and agendas of the senior leaders delivering them'*.

Short classroom visits, sometimes known as 'learning walks' or 'instructional rounds', are conceived as '[p]owerful modes of collaborative learning' (Stoll et al, 2012, p.7) but, as this example shows, they can easily become utilised or experienced as monitoring of teaching. Berry (2016, p.259) draws attention to the 'learning walk', 'Mocksted' and 'book-trawl' as processes of 'self-policing' by school leaders, and Hargreaves (2016, p.127) suggests that 'lateral transparency' through peer sharing of practice and ideas becomes 'downward transparency' in shifts towards evaluative surveillance. A year or so later, in conversation, Teacher F explains that some colleagues who contributed to this inquiry, discussing the issues, have how moved into senior leadership positions. They are changing the emphasis of classroom observations

again and regaining trust through monitoring approaches that are *'healthier … no more tick lists and things like that … it's very open, very fair'* (Teacher F).

This example illustrates the temporality and complexity of learning and change, which is not immediately and directly attributable or traceable to an event, in this instance PBI into assessment of teachers. However, the intra-actions and response-abilities of those involved, unfolding over time, have influenced praxis in terms of a perceived common good (Kemmis, 2011, p.10). In this case, *application to practice* from the inquiry has gradually been actualised and is beginning to be fulfilled, but only through a drawn-out confluence of contingent eventualities. Teacher F also describes *application to practice* from PBI that was proposed and actualised, then abandoned when priorities from leadership changed. Collegiate *dissemination to others*, including governors, for a project implementing video assessment *'moved very quickly, it got support … for our own programme'*. However, Teacher F continues, *'that sort of thing gets phased out when new leadership … comes in, it's a completely different focus, … why are we doing that … everyone else is doing this, let's do this. … So that's difficult'*. In this way, *organisational integration* is at first facilitated and then abandoned.

In a related PBI, Teacher F explored discursive patterns in teams to understand how middle-leaders can manage change through dialogue and social interaction, promoting *'trustworthiness'* and *'more creative and successful outcomes'*. This overlapped with the school-wide establishment of coaching groups to *'build teaching and learning capacity … working as a team'*, but also the *'taking the temperature'* approach to checklist monitoring. Teacher F describes this confluence of initiatives and circumstances:

> *'The premise, the concept was great … coaching groups. … What it became was … you need to be able to cram in the teaching to the test … within that twenty minutes or so. … It didn't work, it wasn't sustained and it wasn't reflected upon, so there was no evaluation. … It was done so that it could be put into the SDP [school development plan]. … It's a shame. … It's done in the eyes of Ofsted, that's all it is'.*

Here, *external accountability* experienced as pressured and accommodated perpetuates more stressed and less trusting *working relationships*. However, responding to this, Teacher F shows an *organisational awareness* of self-justifying significant changes to professional development practices to satisfy perceived inspection demands. In this case, the *organisational integration* of

practice-based inquiry is limited and temporary, although as Teacher F notes following the subsequent abandonment of checklist monitoring, this has *'now changed again'*.

To summarise, some of the perceived benefits and limitations of PBI for professional growth are clearer to identify and interpret than others. This might be anticipated for a complex process and, as the foregoing examples indicate, benefits and limitations are often distinct yet conjoined. The more expected, obvious and hoped-for benefits include: links to professional and academic qualifications (all Teachers); engagement with research and literature (all Teachers); more detailed, practical investigation of ideas and roles (Teachers A, C, D, E and F); increased knowledge and understanding of practices and situations (Teachers A, D and F); and greater confidence (Teachers A and B). Other stated benefits include: hobby-like personal interest and enjoyment (Teacher B); embedding a team-wide inquiry orientation (Teacher C); interaction with and understanding of others (Teacher D); the use of naturally occurring evidence through bricolage (Teacher F). However, as shown above, PBI can have personal and organisational impacts that may be unintended, even unconscious until articulated in conversation, unfolding over varied timescales, fleeting or sustained, influencing identity and praxis in quite profound and important ways.

Lack of time is an oft-cited limitation to PBI, further discussed below as both a situational enabler and inhibitor. For Teacher C, *'possibly the only limitation'* of an *'inquiry approach'* is knowing *'as a senior leader, that you could do things a lot better ... if you just had a bit more time to do them'*, and Teacher F says *'I'd love to have time, just doing that! [meaning inquiry]'*. Also, despite the benefits found in embedding a team inquiry orientation, Teacher C recognises that for some teachers, research and inquiry remains *'nebulous'*, *'academic'* and *'isn't rooted in reality'*. Teacher A completed PBI for masters study, but *'wouldn't do it normally'* due to time limitations. However, it could be argued that Teacher A's commitment to creating, tweaking and tinkering is close to PBI, through cycles of action and reflection. While it is not evidenced and written-up in academic reports, it is documented in resource-production and students' work. Further, outcomes of non-formalised PBI reside in distributed knowledge and changes to individuals, co-acting through collaboration, intra-acting within phenomena, each enacting and embodying their own *lived* learning. Another limitation for Teachers A and E is lack of *organisational integration*, whereby PBI carried out through qualifications are funded and facilitated, yet not taken-up or followed-up systematically in school development despite clear

potential. Nevertheless, *application to practice* and *dissemination to others*, as responses to PBI in the cases considered, often have greater relevance and utility among smaller collectives, offering localised *organisational integration*.

Situational enablers and inhibitors of practice-based inquiry

Situational enablers and inhibitors of PBI are, again, distinct yet conjoined, clearly relational to benefits and limitations. The most obvious, mentioned by all as both enabler *and* inhibitor, is time, described in terms of dynamic confluences of situational factors, professional roles and personal ways of responding to them. Teachers A, D, E and F report time being made available by senior leaders to carry out PBI, write-up assignments or attend related courses and meetings. This basic requirement of *leadership and management* is important and experienced by teachers as enabling. Haydn *et al* (2008, p.48) conclude that 'simply providing teachers with time to think, and to talk to each other, is a comparatively cost-effective form of continuing professional development'. In a funded two-year project, teacher-determined and inquiry-oriented approaches proved relatively inexpensive compared to contemporaneous top-down CPD initiatives, with participants reporting considerable 'motivation, engagement and sense of professionalism' (Haydn *et al*, 2008, p.48). However, Teacher C concludes that '*I don't think we'll ever get the profession to the stage that we're all … researchers and evidence-based practice because frankly there isn't enough hours in the day and that is the main barrier to it'*.

There are other time-related, personal or occupational, enablers and inhibitors of PBI and qualifications and courses through which PBI is often pursued. Teacher A says of PBI as well as publishing work for external organisations, *'another enabler is the holiday time'*, treated protectively, *'I think the fact that my holiday is holiday gives me a lot of time to do these things'*. Contrariwise, Teacher A finds *'an inhibitor in term-time is the workload'*, particularly marking. The choice of part-time teaching, which is *'not bad paid really, when you've been in teaching for a few years'*, has also enabled Teacher A's study and *range of situations* for professional growth. Teacher F similarly points to reasonable teachers' pay enabling further study, *'I earn enough to be able to finance these qualifications, if needed'*. For Teacher D, *'time-management became something I learned from a really young age',* when both working as a sports coach and studying*, 'and that has really followed me through … I think that allowed me to juggle masters,*

school, social life'. The inquiry orientation that Teacher C has brought to teamworking and managing change is facilitated by a time-related *'sense of urgency'*:

> *'I think if you've got a sense of urgency, and there is something that you need to get done, then that can be the … first factor that can motivate you and the team to look at that inquiry and to try and develop that'.*

Teacher E, who has pursued many courses involving PBI, associates time-limitations with an increased workload, arising from cuts to SEN budgets alongside increasing parental expectations for school SEN support. When multiple demands are placed on available time and finance, opportunities for professional growth through PBI are not necessarily the highest priority. The squeezing of budgets is further described by Teacher C:

> *'… in the financial climate that schools find themselves in … they can't afford to send people out on things. … if you talk to any head they'll tell you the most important thing for teachers is CPD, but they don't put their money where their mouth is … that's the first budget to go. … before, in many schools, teachers maybe had a bit of non-contact time, that's been … eroded, and teachers have not been replaced'.*

Teacher C suggests this is a *'significant step backwards'* from JPD and PBI to *'one-day CPD'*, which is *'cheap, it's easy, it's got limited effect on cover'*. In relation to the peer observation afforded by lesson study, Teacher C explains that financial constraints mean that *'non-contact periods for teachers will be reduced and the time for such activities will be limited'*. Here, *policy direction* is experienced as conflicting and *external accountability* is accommodated, as *'limited CPD time is focussed on content for new specs [examination specifications]'* (Teacher C).

Another obvious yet important feature of practice-based inquiry, seen as both benefit and situational enabler, is its location in the workplace or practice context. As Teacher C, states *'that's the beauty of the masters as its constructed, that it's based on things that are happening in your own practice'*. Teacher C adds the converse as a potential inhibitor, '*it isn't something that is separate from that, as I think if it was it purely couldn't happen*'. Teacher F, who has simultaneously undertaken professional leadership courses alongside academic study, has been *'able to use similar projects for both qualifications'*. Teacher F further explains that *'all the qualifications that I've done have been quite clear about linking it to your current role and they've sort of facilitated that really'*. The situating of formal professional learning and

development in the workplace context through PBI is a key feature of professional courses pursued by Teachers E and F as well as in academic qualifications, with potential for overlap. This reinforces the participatory epistemology of PBI, knowledge grounded in experience (Heron and Reason, 1997, p.284); a nested topology with learning taking place at the enfolded boundary of personal understanding and collective knowledge (Davis and Sumara, 2006, p.62).

While all six teachers have found ways to respond to PBI through reflection, application or dissemination, *leadership and management* can be facilitating of such responses without seeking wider *organisational integration* or follow-up. Teacher A describes this starkly, *'you've got current research that you've paid for, that's been done in your school, that's come up with points that you could act on, and you don't even look at it. I find that astounding really'*. Despite this, Teacher A has responded to PBI, for example, by sharing understanding of effective revision techniques with students and departmental colleagues and through passing on of published sources used and new resources made, including online. Similarly, Teacher E's senior colleagues have facilitated PBI but have shown limited interest in what was gained or could be taken-up more widely:

> *'They never really asked anything about it … They're happy for me to do the interviews with staff, I can use the work I've done in school, that's fine … It doesn't bother me because … I'm not doing it to keep them happy, but it would be nice if they at least asked the question about what's the benefit, or at least benefit for the students'.*

These examples suggest the practical enabling of PBI at school-level, coterminous with a lack of school-wide acknowledgement and take-up, which Teachers A and E discuss as inhibiting while nevertheless pursuing more localised *organisational integration*. This prompts a more nuanced perspective on the consensus that leadership of effective CPLD entails 'organisational arrangements that support ongoing learning and the application of new learning' (Stoll *et al*, 2012, p.8). Situational enablers and inhibitors extend beyond the mainly practical concerns of time and finance, to influence teacher motivation in organisational contexts where *leadership and management* is experienced as trusting as well as facilitating. For example, inquiring into ways of observing teaching, Teacher C concludes:

'Teachers will respond and develop when they perceive that they are trusted to do a good job and to have the best interests of students at heart. Where there is suspicion and a lack of transparency, there is the potential for mistrust and a demotivated workforce'.

Similarly, for Teacher B, key situational enablers for PBI include *'working in a friendly and supportive school and being listened to by senior colleagues'*.

The confluence of successful *deemed effectiveness*, supportive *leadership and management* and trusting *working relationships* provides an organisational context that is enabling of both professional growth and PBI. Positive school cultures featuring *'learning pathways'* for all, with *'mutual respect'*, a *'pastoral ethos'* or *'community feel'*, are associated with these conducive conditions and contexts in teacher accounts. Despite working in a school deemed lacking, Teacher F states that for collaborative PBI, *'having colleagues that are open and trusting, and want to try and do things, I think that's really useful'.* Similarly, Teacher C reports that *'in order to professionally develop teachers and improve teaching and learning, schools must first ensure that the culture and ethos is right'*. From PBI into lesson observation and contextual *working relationships* in different schools, Teacher C concludes that *'peer observation comes with its own pressures and, in a competitive environment, can be perceived as much of a threat as an appraisal observation by a superior'*. In this study, constructive feedback from observations for either developmental or quality assurance purposes, which was found more likely to occur in schools deemed successful, was a key to supportive *working relationships*:

> *'Where feedback happened as a matter of course, teachers within the schools reported that their schools had a positive ethos in terms of the development of teaching and learning development, that teachers were more willing to work with one another and that teachers had the skills and knowledge to do this effectively'.*
> (Teacher C)

Teacher C identifies a *'dichotomy'* at the heart of JPD, also indicative of PBI, that its transformational potential is recognised but difficult to realise, *as 'schools can't afford … the joint practice development approach, because … it takes a long time and it's complicated and it's expensive'*. Teacher C questions the manageability and desirability of JPD and PBI:

'… sometimes teachers think that they don't want that approach either, because they like to go to a course and come back with lots and lots of ideas that then they can go and do in the classroom. … it's more complicated … it evolves and it takes a lot of thought and it takes a lot of analysis and critical thinking, I think teachers don't necessarily always have the time to do it. And, I'm not always sure some of them have the desire to do it either, in many respects'.

However, for Teacher C, commitment to JPD and PBI among colleagues is a key enabler:

'… where you have got that approach, and that's working well with staff who are committed to it and can see the benefits of it, then I think the differences can be quite profound. Much more so than when you're inspired on a day's course and then you've forgotten all about it a week later'.

Another dichotomy, between responsive, self-determined learning and managerially imposed CPD, is identified by Teacher C, where benefits of the former encourage attempts to mandate it through the latter to reap the rewards, but risks nullifying the benefits. For example, leading the introduction of a *'triad approach'* to lesson study and joint practice development through peer planning and observation, Teacher C describes well-intentioned colleagues:

'… they've said, when we've tried to do things like this before it falls flat on its face because people are very busy, we need some sort of stick, so for example the stick meaning performance management – we need to do it'.

Teacher C's reflections suggest *organisational awareness* of self-accountability and self-improvement, relating to school developmental stages and *deemed effectiveness*:

'If you've got that stick, that to me completely negates … the whole purpose of professional practice, which is self-directed and is developmental. … to me, it was completely the opposite of what we want to be trying to achieve, but I can also see why they want to do that, because when they've tried to do things like that before it hasn't necessarily worked. … perhaps that's a stage an organisation has to go through before, to get people to see the benefits of it, before then you can come out the other end, I don't know'.

The inherent quandary, even oxymoron, of mandated self-determination recalls tensions between accountability and autonomy previously discussed. It also exemplifies 'contrived

collegiality' or regulated and controlled forms of collaboration (Hargreaves and Fullan, 2012, p.118), which can be considered a form of complexity reduction, attempting to speed-up and formalise naturally-occurring collective actions. Of course, PBI itself could fall into this trap. Teachers B and C, who in their respective TSAs have responsibilities for teacher development, are organisationally aware of these difficulties and dilemmas. Their response is to create opportunities for self-improvement and self-accountability, modelling this in their own practice and coaching it in others, but knowing that to mandate it could also negate the benefits. Teacher B, identifying temporality as a key factor, explains that:

> *'if you give people opportunities to develop themselves, to reflect and move their practice forwards, where they want to move it, then surely, it will take time and that's obviously where the issue lies, you'll end up with people who* do *want to lead schools, because they're passionate about why they came into teaching and the outcomes that are there'.*

Independent and collaborative working through practice-based inquiry

In PBI, collaboration occurs within *participant roles*, but can also take place through JPD, working with tutors or engaging with published ideas. PBI may be largely self-reflective and independent, or vary in extending opportunities for participation to students, colleagues, parents or other *external stakeholders*. As PBI shifts from looking-back on personal experiences to looking-forward, collectively planning actions and gathering evidence, additional ethical considerations arise. An established aim of participatory or co-operative inquiry is that participants become co-inquirers, beyond informants, involved decision-making and planning (Heron, 1996, pp.22-3). While *collaboration* in varied forms is an identifiable opportunistic category of description in teacher professional growth, *co-inquiry* within the twenty cases of formalised PBI is not prevalent. Perhaps this is explained by the self-determined provenance of PBI carried out through higher education, where assessments and awards are largely individualised. Despite the nomenclature, heutagogy has emphasised since its inception collaborative forms of learning and inquiry between tutor and learner *and* among learning communities (Hase, 2016). Here, a challenge for tutors as agents of inquiry is to encourage students as self-determined learners to collaborate with each other, as well as the tutor, through PBI. None of the twenty PBI cases studied involve participants as co-inquirers

throughout, though several examples include extensive collaborative working and one study involves co-inquiry in part, through lesson study.

Teacher C charts the development of more collegial approaches to observation and feedback, including lesson study, whereby 'teachers seek to learn in collaborative groups from their classrooms' (Dudley, 2013, p.108). Teacher C took part in lesson study with two colleagues, exploring the learning habit of perseverance: *'throughout the cycle we discussed, trialled and evaluated different ways in which this could be done and we adopted a range of methods which were successfully utilised'*. Peer observation of these methods focussed on *'how students learn and specifically how we encourage them to persevere',* enabling a *'sense of observational freedom'*. Teacher C further reflects that:

> *'I noted a clear difference in the way I observed as I felt much more able to hone in on the learning and behaviours of individual students without the distraction of worrying about how the teacher was performing, free from the confines of quality assurance'.*

In conversation, Teacher C refers to this approach as *'flipping around, so it's observing from the point of view of the learner rather than the point of view of the teacher'*. Importantly, the decisions were taken by this lesson study *'triad'* together in a series of meetings, with:

> *'detailed discussion focussing on individual students, how they learn best and how the learning habits can be embedded in a profound way. … Our conversations turned to working out how best to cater for these individuals, a level of detail that I had not experienced with previous lesson observations'.*

The potential for transformative teacher learning through lesson study, as a form of co-inquiry with colleagues, is clear in this example, although it stops short of enabling students to become co-inquirers.

In several inquiry examples teachers record personal perceptions of experiences alongside documentary *evidence-gathering* through a reflective journal or diary. For example, Teacher A records the practicalities of various forms of coaching and/or mentoring, working with GCSE students to boost achievement, a beginning teacher on placement and external teachers through a subject association. Some experiences are reflected upon retrospectively, while for others naturally-occurring evidence, with permission, in pro-formas or e-mail communications,

is gathered and discussed as experience unfolds. Participants are more than informants because they intra-act within the coaching/mentoring processes, shaping and sharing the experience through collaboration. However, participants do not make decisions about how experience is interpreted or documented by Teacher A through inquiry, and their perceptions and dialogue are not recorded. The purposive *locus of influence* is personal and the response is through *self-critical reflection*. In this example, reflection becomes diffraction, reading experience through insights from published perspectives, recognising coaching as inherent in teacher-student relationships and ongoing relationships between colleagues as holistic mentoring process.

Teacher E's development of two-way communication logs between teachers and TAs is another example of collaboration through PBI, which comes close to co-inquiry in parts. While participants were not directly involved in decision-making, the implemented *action and change orientation* of this inquiry required extensive, consenting collaboration. *Application to practice* is actualised through *'meaningful, purposeful, specific, targeted communication taking place within classrooms'* between teachers and TAs, in some cases extended to four-way communications with parents and students. Similarly, Teacher F pursued PBI with the purpose of determining *'how middle leaders can lead and manage change during … face-to-face meetings through collaborative dialogue and social interaction'*. This involved *evidence gathering* through observation of teaching team interactions, with informed consent, seeking *'conversational processes whereby teacher teams identify and solve problems'*. Teacher F proposes *application to practice* whereby middle leaders *'grant greater autonomy to the teacher team to explore, improvise and create ideas'* based on *'a whole-group vision for the project, helping to foster and promote a level of trust and cohesiveness'*. In some cases of PBI, a responsive *application to practice* brings about greater collaboration, for example in Teacher D's follow-up work with parents to provide more coherent home-school student support.

While collaboration through *participant roles* is found in PBI cases, it is not always straightforward or practical to achieve. In the examples above, collaboration is integral to the purposive *practice focus* for inquiry, through aspects of teaching, supporting or leading. In Teacher F's inquiry on teaching teams and middle-leadership, *'I think having a shared goal, a shared purpose and collaborating that way, so as a team, was really good … supporting each other'*. Teacher C makes a very similar point:

> *'… if you've got that common purpose as a team, and you're all sort of working towards that clear vision, and if you can get that vision right, then that very much helps the fluidity, I suppose, of that inquiry-based practice'.*

However, Teacher F states collaboration *'can be a positive, it can also be a limiter'*, due to time challenges, synchronising busy schedules and the pull of *'different directions'*. For Teacher A, inquiry involved participants, but the school-based masters group worked *'independently really'*. Again, the reasons for this are mainly related to time and workload, and when asked if more collaborative study and inquiry might have been beneficial, Teacher A replies:

> *'I think, if there was more time, then yes … I do remember times in schools when I've had time to do that and it has been useful, but at the minute I think that people are kind of treading water. … one thing that kills people in this school is the marking'.*

Teacher C also expresses limitations in collaboration and a more nuanced perspective on what it might entail. A collaborative disposition towards JPD and PBI is articulated, Teacher C saying, *'the more people that you can get involved, if you're able to do that, the better the outcomes'*. However, reflecting on experience, Teacher C adds, *'it's funny because I actually work better on my own. I'm contradicting what I said. … I am definitely a team player, but I'm not somebody who likes working in groups'*. Clarifying this apparent contradiction, Teacher C explains:

> *'I like having an initial, sort of, brainstorm with other people and getting other people's ideas and viewpoints on board, but then I like to go away and just do it myself, without anybody else's input at all. But then I very much like to go back to people and get people's viewpoints, and as we talked about before, sort of tinker with things in that respect. … Getting ideas … I think that's something that is one of my strengths … taking those ideas of others and then developing things from that, that work'. [pausing, thinking] Yeah, I would say that is definitely more my approach. … what I would never do, is sit in a room, develop something, and then roll it, roll something out across this as a school or the alliance'.*

When the suggestion is made in conversation that this is a consultative approach, Teacher C says, *'it's consultative [pausing to consider], yeah, consultative rather than collaborative I think, if that makes sense'*.

In some cases, *application to practice* following PBI involves further collaboration, proposed in its documented form and later actualised and recounted in conversation. For instance, in Teacher D's inquires with parents, initially in an informant *participant role*, led to identification of 'boundary spanning activities', particularly flexible 'systems of engagement' (Price-Mitchell, 2009, p.21). Increased contact with parents through *'two-way communication'* has ensued, *'mainly by telephone, but also meetings'* and Teacher D explains that, *'sharing my email address has been really beneficial as parents can contact me, even if I am teaching'.* Following collegiate *dissemination to others*, Teacher D is aware that *'other form tutors have also used this method after telling them about it'*. Teacher D is clear that the purpose of such two-way communication is to *'link back to the support they have at home'*, as *'understanding their backgrounds help you work with them in different ways'*. Expansion of collaborative potential, post-PBI, also features in Teacher E's development of two-way logs, teachers and TA's sharing subject and student information, which has subsequently been used with parents and students. These examples illustrate more 'contributory' and 'collaborative' support for students between home and school, beyond their typical parallel proximity yet separation (Lofthouse *et al*, 2016, p.530). More broadly, they also exemplify the time-boundedness of PBI projects carried out for *courses and study*, which are nevertheless further-reaching in confluences of *application to practice*, indicative of an inquiry stance (Cochran-Smith and Lytle, 2011, p.20).

In four of the six teacher cases a further type of collaboration involved me as university tutor, and all six teachers have worked with other tutors in the same or different universities. This is an established form of 'insider-outsider partnership' in teacher education, whereby inquiry is 'owned' by practitioners and 'guided' by tutors (Schaenen *et al*, 2012, p.92). As discussed in Chapter Two, when supporting self-determined learning and inquiry the tutor becomes a 'process consultant' (Schein, 2011, p.4) or 'agent of inquiry' (Cooperrider and Whitney, 2001, p.72), guiding or facilitating heutagogy through collaboration more than direction (Hase and Kenyon, 2015, p.11). In conversation with teachers, without explicit prompting, aspects of the tutor role experienced as enabling include: providing a *'foundation'*, '*helping hand'* or *'starting point'* to *'build on'*; having a *'good relationship with the person'* so *'you feel more at ease and comfortable'* and *'it's more enjoyable that way'*; *'reassurance'* through *'informal conversations'*, asking *'does this sound right'* or *'is this looking OK'*.

Tutors often provide or recommend reading material, so that teachers *'engage in that literature base before doing anything'* (Teacher C) or can *'delve into some of the research'* (Teacher E), or which *'triggers something to try it this way'* (Teacher D). Implicit in these examples is a *response* to ideas and theories, drawn from policy, research or relevant literature, through *self-critical reflection* or *application to practice*. This aspect of drawing on, utilising and contextualising external sources of knowledge, affords PBI considerable potential as a vehicle for professional growth. It is a means of collaborating with research knowledge and theoretical knowledge *through* practice knowledge, using the 'tools for thinking' offered by PBI (Poulson and Wallace, 2004, p.17). It is also a way providing 'external expertise' and 'critical friendship' in the form of published material, alongside tutor support, which are widely recognised as features of effective CPLD (Stoll *et al*, 2012, p.5). Through PBI, such material and the knowledge it conveys becomes more than a refracting lens through which to view practice. As exemplified above, materially working with ideas from relevant literature *through* practice is diffractive, concerned with 'making a difference' (Haraway, 2000, p.104). Teacher C, discussing inquiry into observation of teaching, says *'the research that I looked at and I read … really helped that practice and helped that to evolve'*. Teacher D explains that, *'literature gives me the starting point for the research'*, then relates collaboration through inquiry to personal ways of being, *'I think I use my personality to investigate, find out more, and you get quite a bit back because you're approachable and you build those relationships that allow for that'*.

Unexpectedly, in conversation, one teacher participant who was not my student says, *'I think, my first real collaboration has probably been with yourself [i.e. me], in the sense, of you've enabled me to reflect back on my own practice, what I'm doing, through your questions over the last few months'*. The realisation that my own PBI might be perceived by participants as collaborative within their *own* experience of inquiry is important. Another teacher conversation teacher shows how the tacit becomes explicit through inquiring and listening: *'you're making me think here [both laughing]. It's quite reflective, you don't actually take this time to think about it, so it's quite nice, you just get on with it'*. I say that, for me, it's interesting and the teacher replies, *'it's interesting for me because it's making me think'*. Another teacher compares me to a *'counsellor'*, saying, *'you work out what's going on in my head ever so well [laughing], it's very nice!'*. Respectful of time, when I mention not wanting to bother them too much more, this teacher says, *'I don't mind, it's interesting. It's like having a therapist!' [both laughing]*. Listening again to recorded conversations, I am explicitly guarded, perhaps over-

cautious, keen not to be suggestive, stressing that I seek teachers' own views. I set out to be a second-person interlocutor, a listener and interpreter. However, perhaps inevitably, I have become an *intra*-locutor, part of the research apparatus, contributing to teachers' shaping of accounts in ways I did not anticipate. Having located this study within a participatory paradigm, offering co-inquiry with what seemed limited take-up, contingent collaboration through conversation is nevertheless apparent. In other words, there is *complicity*.

Chapter Six – The Lived Experience of Teacher Professional Growth

This chapter turns to the third research aim, to explore how teacher professional growth, comprising learning and development, is experienced or *lived*, through interpretation, integration and application in practice. The previous two chapters attempt to unravel critical aspects of purpose, opportunity and response in teacher accounts of professional growth and practice-based inquiry, their organisational contexts and external conditions. Having disentangled these threads in Chapters Four and Five, in Chapter Six they are woven back together to focus on professional growth as a holistic process. Utilising both phenomenography and complexity thinking, understanding how teachers experience and make sense of professional growth offers potential to understand the phenomenon itself, relating parts and whole (Booth, 2008, p.451; Morin, 2007, pp.6-7). At the same time, the message of bricolage and complexity is heeded, that 'there is no one final picture of the world with all of its puzzle pieces in their correct places' (Kincheloe and Berry, 2004, p.89).

The first three sections of Chapter Six address questions following from the third research aim, including ways in which teacher learning is experienced and interpreted in the workplace, integrated and applied within existing practices and shaped through ongoing intra-actions. In this chapter, the main inter-disciplinary perspectives that have guided this work – complexity thinking, enactivism, relational being and agential realism – are drawn together to explore professional growth. The term *intra-action* is used in preference to interaction, acknowledging parts played in the unfolding phenomena of teacher learning and development in realising or rejecting material possibilities. From their overlapping disciplinary domains, *co-action*, e*naction* and *complicity* are understood to hold similar, yet subtly different and complementary meanings – nuances explored in what follows. Throughout Chapter Six, without continuing to identify explicitly the individual contributions of teachers, the *process* of professional growth is summarised and foregrounded, with instances re-drawn from the six case teachers. However, in many of these examples, presented in boxes as vignettes, the individuals remain recognisable. The final section of this chapter summarises ways in which learning is central to being and becoming, through professional identity and growth.

Ways of experiencing and interpreting teacher learning and development

Teacher professional growth can be experienced foremost as a personal, aspirational journey, aimed at fulfilling ambitions and realising aspirations relating to occupational role and career direction. When interpreted in this way, personal and professional goals seem well-established and understood, becoming drivers for seeking opportunities to gain the knowledge, experiences, credentials, capabilities and confidence to achieve them. Opportunities are realised and enacted through workplace positions and promotions, taking on new duties and challenges, as well as courses and qualifications that provide vehicles for the journey, with colleagues as fellow travellers. The response to these opportunities is characterised by self-determination, taking responsibility for joining-up experience and ambition in the formation of identity to reach the intended destination. However, this perceived endpoint is a moving target – seemingly well-defined goals become re-defined, subtly or substantially, as opportunities unfold through receptive and adaptive response.

A teacher aims to become a headteacher, strongly influenced by family history and pride, but on this aspirational journey, through the opportunities enacted, they discover a passion for nurturing new teachers. A role is established in a supportive, trusting and successful school, to pursue this new professional interest, leading a teaching school alliance.

Another teacher holds the general ambition of leadership without a specific goal, receptive to opportunities arising, progressively taking on roles as a subject, pastoral and achievement leader. Pressures of working in a school deemed lacking, questions raised by friends and family about continuing in teaching and contacts in international development combine to shape a new pursuit, beyond school, of strategic educational planning.

Teacher professional growth can also be experienced foremost as a continuous, constructive process, simultaneously drawing on and building on experiences. There are not necessarily any clear *personal* aims or ambitions guiding this process nor destinations in mind. Purposes for learning and development are oriented towards everyday activities, teaching and leading, pursuing agreed educational values, supporting learners and colleagues. Opportunities to build

the confidence and capability to fulfil these occupational priorities are found in professional duties, experiences and practices, and various forms of collaboration or inquiry. Self-determined responses to these opportunities are characterised by openness and receptivity, reflecting on practices and seeking to adapt or transform them to what works well or to do a better, more efficient job. In the process of integrating and applying these adaptations or transformations, their purposes are subtly or substantially re-shaped.

A school leader identifies, following external advice, limited awareness among colleagues of how teaching and extra-curricular provision impact on student learning, so they set about trying to measure it with targets and assessments. Through a series of inquiries and investigations linked to a role in teacher development, they recognise that assessments are proxies for learning and begin to look more closely at students' actual experiences.

Another teacher uses communication and interpersonal skills gained through sports coaching to take on new roles in pastoral support, building relationships with students, colleagues and parents. Receptivity in noticing the specific needs and circumstances of others, with empathy for their feelings, finding out more through connecting and conversing, they learn to provide support in different ways.

These two qualitatively distinct ways of experiencing professional growth, can be characterised by two metaphors, using the language of teacher accounts – *journeying* and *building*. Both require self-determined action or agency, but *journeying* can follow many routes using different vehicles, encountering obstacles, with a shifting destination, and *building* involves many contributions and adaptations, without completion. Teachers do not deliberatively pursue one over the other; their talk about professional growth tends to foreground one of these two metaphors, but aspects of the other can also be heard. They can be considered as simultaneities, not discontinuities, understood as 'events or phenomena that exist or operate at the same time' (Davis, 2008, p.51). They are continual but experienced in different time-frames or speeds, distinguishable through conversation. *Journeying* characterises teacher *development* more than learning, as 'systematic career progression' (O'Brien and Jones, 2014, p.684), a longer-term, slower-speed pursuit, spanning months and years. *Building* emphasises teacher *learning* over development, as 'critically reflective and less performative' (*ibid*), in a

shorter-term, faster-speed process, unfolding over days and weeks. Here, the German word *bildung* is particularly apt, meaning 'self-formation' or 'educating oneself' (Fellenz, 2016, p.272), resonating with heutagogy. However, integral to bildung is 'the social, political and cultural context in which this self is formed' through the 'reciprocal interdependence of the forming and formed self and its changing and changeable context' (Fellenz, 2016, p.273). Bildung is thereby a complex concept and yet another expression of *complicity*.

A teacher who describes their professional growth in terms of personal drive and ambition, also expresses the desire to make family proud, to give something back and be the best they can be. In addition to achieving personal goals this teacher focuses their efforts on nurturing others in collectively providing the best possible learning experiences, pastoral care and outcomes for students.

Another teacher, who describes their professional growth in terms of drawing on experiences and building relationships, interacting with others, also holds the personal drive to take on risks and new challenges. A sense of needing to do more and placing oneself in new situations leads to a series of changing roles, in coaching, teaching and pastoral leadership, before choosing part-time teaching as a parent.

When teachers recount their learning and development, the 'content' or 'direct object of learning' is oneself, teaching subject(s), students or colleagues, parents and others, while the 'capability' or 'indirect object of learning' is how to act or respond in pursuit of related and identified values (Marton and Pang, 2006). As the focus or content of teacher learning concerns people, including oneself, content and capability are closely intertwined – the person or people and the ways of understanding and relating to them. Together, these become intended purposes of professional growth, which are enacted through opportunities to build the necessary understanding and capability, either in practice itself or through courses and study. The self-determined response to these opportunities establishes to what extent new understandings or capabilities become integrated and applied to practice and specific purposes become re-shaped. Therefore, teachers tend to interpret their own learning and development in relation to those with whom they work, their professional roles and the work that they do, their practice. Teaching and leading thereby exist through relational being, meaningful only in co-action with learning and following (Gergen, 2009, p.39).

A leader is inclined towards changing school-based teacher training practices for the better, moving forward, establishing programmes, designing processes and systems, building individual and team capacities. This is achieved by consulting, trialling, rolling-out and evaluating, a process associated with joint practice development and practice-based inquiry. A strong sense of self-accountability, responsive to students, trainees, parents and colleagues in partner schools, shapes the core purpose of these developments. Measurable student outcomes and value for money are balanced with less visible, everyday impacts on students – what, how and why they learn – in meeting their best interests.

Listening to teachers talk about their learning, purposes are often articulated in generalities, or *features* – e.g. to ensure best practice, to reach a common goal, or to meet student needs – because the particularities, or *instances*, are different every time. But teachers like to use instances to explain these features, drawing on recent experience, often from the same day when fresh in mind. They provide snapshots of what they do and how they make sense of it, but through generalising they also make meaning, they 'construct a new theory of the unique case' (Schön, 2011, p.68). This is possible because teachers are fully-implicated in their own practices, they are complicit with other participants in unfolding events and the normative system of contexts and conditions in which they occur. Teachers generate 'living theories', formed through first-hand experience, practice and inquiry, and the continual feedback of others (Whitehead and McNiff, 2006, p.32). The researcher as interlocutor achieves only a second-person interpretation of a first-person account, which is itself a second-person interpretation of others' accounts. However, the interlocutor inhabits some of the same wider complex system of norms, sharing interobjective experiences and reaching intersubjective interpretations. Responsive listening entails 'both speakers and listeners coming to share a set of determining surroundings for their utterances' (Shotter, 2009a, p.39).

A teacher researches the impact of different revision techniques, pursuing personal and professional interest in how best to remember subject knowledge, including for examination success. Ongoing, independent and home-based revision is found to be more effective in reaching expected targets, so this is embedded in courses and homework, with school-based booster classes in this subject dropped. A general view is held that too much time is spent chasing results, discouraging student

responsibility and increasing pressure on teachers, in a system distorted by performance league tables that creates winners and losers.

A pastoral leader is interested in how parents' experiences of education impact on their children's achievement, carrying out a school-based inquiry. Parents with different circumstances are consulted and all are considered ambitious for their children, but those with less positive educational experiences lack confidence to support them. These students respond well to more support and encouragement at school and showing this to parents through frequent personal communication starts to break down home-school barriers.

The motivation propelling professional growth, laced through teacher accounts, is articulated as *'drive'*, *'ambition'*, *'confidence'*, *'interest'*, *'challenge'*, *'passion'* and *'enjoyment'*, attributes pertaining to the 'incentive dimension' of learning, fuelled by 'mental energy' (Illeris, 2009a, p.10). When teacher accounts foreground longer-term *journeying* these motivators signal personal fulfilment of professional growth, but when translated into shorter-term *building*, they become agency. As Priestly *et al* (2016, p.138) show in their 'ecological model', teacher agency iteratively builds on both life and professional experiences, exercised in contexts using 'cultural, structural and material resources available' towards a future-oriented purpose. An important aspect of this recursive process is that teachers do not necessarily act in routine or habitual ways, but are selective in using past experience to shape current activities and project future actions (*ibid*, 2016, p.139). In other words, they use 'decisional capital' to make sound judgements in adapting to unfolding and uncertain events (Hargreaves and Fullan, 2012, pp.93-94). It is through this process that teachers learn through *building* on experience and, more gradually, develop through *journeying* towards new roles and situations. Building and journeying are complicit, because a new leg of the journey demands further building, which in time opens-up new routes on the journey.

A teacher describes how further study has become a passion and enjoyment, close to an addiction, shared with students to show them how learning can be an enjoyable lifelong pursuit. This enthusiasm for learning gains respect from students, which is put to work in helping them overcome learning difficulties. Building on relationships formed in this way, the teacher creates classroom environments

where students feel comfortable to learn from mistakes, for instance solving maths problems, through self and peer assessment. Seeing increased student confidence through this approach *'makes you realise, again, why you do the job'*.

Another teacher describes how they have chosen to put themselves in different situations over their career, to make them adapt, to avoid getting stuck, and to provide experience for professional learning. These active choices include initial training experiences in different schools, taking up new pastoral roles, undertaking masters study and teaching non-specialist subjects. This teacher recognises that putting oneself in new situations – *'taking risks'*, *'having to adapt'*, *'meeting new people'*, *'sinking or swimming'* – shapes their personality and identity.

Ways of integrating and applying teacher learning and development within practice

Integrating and applying teacher professional learning within existing practice is associated with *building* more than *journeying*. This is a process of responding to, drawing on and re-working instances – the examples given when teachers talk and share ideas, reflections on everyday practices and encounters, or the specific knowledge gained through courses, study or inquiry. Using cognitive terms, integration might be 'assimilative' in *adding* to established capacities and practices, or 'accommodative' in *adapting* them (Illeris, 2009b, p.142). Teachers tend not to use these Piagetian terms, but talk instead about *'reflecting'*, *'adapting'*, *'tweaking'*, *'tinkering'* and occasionally *'transforming'*. The metaphor of *building*, typically associated with structures, when explored through complexity thinking holds biological rather than architectural connotations (Davis and Sumara, 2006, p.13-14). The structure-determined learner as an agent adapting to circumstances, embodying its own history, is '*incompressible*' (*ibid*, original emphasis). In other words, the structure of the learner, resulting from the complex process of learning or *building*, cannot be reduced to a simple architectural plan.

As discussed above, the object of learning in professional growth is the self *with* others, *within* the situations and activities they inhabit and share; the persons and actions in context, or *en-co-* and *intra-actions*. In the process of learning and developing, also of living, subject and object are thereby 'constitutive of each other' (Morin, 2008, p.26) – the self as subject cannot

be dismissed as 'noise' or 'error', because it is simultaneously the object of learning. Thus, the suggestion that 'expansive learning … eventually leads to a qualitative transformation of all components of the activity system' (Engeström and Sannino, 2010, p.8) points towards the *interobjective* potential of professional growth. A reflective integration of learning, is articulated in terms of thinking about practice, or registering propositional knowledge gained, without necessarily applying it through action. Such reflection might remain purely deliberative, but it can also be a precursor to action or indicative of transformation, in confluence with the relational responses of others.

A teacher finds that reading research articles relevant to their workplace role, through masters study, has made them more reflective, deliberating on evidence before implementing plausible initiatives that seem like good ideas. This sometimes slows them down, which can be frustrating, but they also believe they have become a better practitioner. Engagement with research in this way is described as having real transformational potential for practice. Enacting their leadership role, colleagues are now encouraged or *'nudged'* to think critically and look for evidence in support of any initiatives they are inclined to embark upon.

A teacher describes coming back to school, following maternity leave, in a different role and teaching new subjects. There have been changes of staffing, including leadership, so while still familiar the school has a different feel to it. New challenges are experienced and more economic use of time is needed in juggling parenting with work for the first time. This process is articulated as drawing on older experiences, not starting afresh, recreating and adapting them to meet present teaching demands. This mix of the familiar and new, experienced as stimulating and challenging, is welcomed and enjoyed.

Here, learning through reflective individual response escalates through adaptation towards personal and potentially collective transformation. This is experienced and articulated as a cumulative and integrative building process, which seems to exceed cognitive associations of 'cumulative' learning with 'mechanical' recall and 'automation', or 'replication' and 'repetition' of knowledge (Illeris, 2009b, pp.141-3, drawing on Eraut). Different contexts for professional growth may share similarities, but qualitative differences in events, actions, circumstances and

contingencies, requiring self-determined responses, continually re-shape experience. This is heard in teacher accounts that articulate reflection, adaptation or transformation, all of which are experienced cumulatively, resonating with 'practice development' (Lofthouse, 2015), in contrast with the longer-term career progression associated with professional development. Practice development concerns *building* more than *journeying*, deliberatively focusing on the 'details, characteristics and outcomes of practice through engagement in cycles of action, often in some form of collaboration with others' (*ibid*, p.36). In this view, 'both the vehicle and objective for professional learning can be practice development' (*ibid*). Or, in the terms used in this thesis, both the enacted opportunities and intended purposes of professional learning can be the building of capabilities and capacities, including variants of PBI, which are self-determined through active, lived responses.

A teacher is sceptical about external CPD courses in general, feeling that they rarely learn anything useful. However, if events sound interesting and there is clearly something to be learned, attendance is sought. Following a course on geographical information systems (GIS) the software is used successfully with students, developing teaching resources that are sent to the software company. This leads to work with this organisation, including television programmes and a GIS book. In another example, after a course to gain web-publishing skills, the software is familiarised by making a subject-based website, where teaching resources are posted regularly. This attracts many visitors and a network of between four and five hundred geography teachers has grown.

A SENCo attends a two-day course about person-centred annual reviews for students with statements or education and health care plans. The purpose is for the student to feel part of the process, giving their opinions, rather than being talked at and talked about. Returning to school with a family already in mind, the teacher plans a person-centred review involving a TA, the student and their mother. The family reports that the meeting felt much more relaxed and informal, and they were inclined to give more accurate responses to questions because they did not feel scrutinised. For the teacher, the importance of establishing strong and trusting relationships with learners and families is reinforced.

Formal courses and study can be beneficial to teachers when sufficiently relevant to personal interests or professional roles and they can therefore *do something with it*, integrating and applying knowledge gained from a disconnected experience. Professional growth, both learning and development, building and journeying, cannot simply be *done to* teachers, as an external intervention or treatment. Policy shifting towards development as 'delivery' (Timperley, 2011, p.4), which teachers tend to associate with CPD, does not prevent the recipient responding or learning self-determinedly. The teacher as learner remains 'a thinking, feeling human being, with an identity, a personality, a unique history and background, a person with goals, motives and intentions', embedded within a 'complex system of interrelations' (Ushioda, 2009, p.220). Teachers can choose how they respond to professional development experienced as delivery, from embracing or accepting to ignoring or rejecting, even ultimately seeking alternative employment. Self-determined response to developmental life experiences provides agency for learning and growth. This also raises the possibility of 'non-learning', misunderstanding what was intended or actively resisting or rejecting it (Illeris, 2007, p.158).

A leader of school-based initial teacher training attends a course promoting sustainable change for the better as a key benefit of coaching. This provides a *'trigger'* for critical reflection on existing approaches to trainee mentoring. PBI is undertaken, looking at mentor lesson observation feedback to trainees. In one case, detailed, coherent and insightful feedback is given but in an entirely one-way process, prompting questioning of methods previously considered as *'good practice'*. A shift is precipitated from mentoring to coaching, through realisation that one's own way of teaching is not the only or necessarily best way for others to teach, building a team of learning coaches. This leader describes as profound a related transition from focussing on teacher or trainee performance to student learning in observations. Coaching has also become integral to their approach to leadership, even with family members, eliciting ideas and solutions to problems.

Cumulative experiences triggered by single events, yet recursively re-shaped through reflection and inquiry, can lead to transformation of practice and self-determination of identity. Learning considered 'transformative' or 'expansive' brings about a more profound change in cognitive structures and in sense of identity, implying that what is learned is not simply 'remembered and recalled', but 'has become part of the person' (Illeris, 2009b, p.142). However, for

Engeström and Sannino (2010, p.8), expansive learning is less concerned with manifested changes in the individual person and is more interested in 'changes in the object of the collective activity'. In the previous vignette, the object of collective activity is a set of complex practices concerning the education and formation of new teachers, involving collaboration among a team of colleagues. This self-organising collective (Davis and Sumara, 2006, pp-81-3) *includes the individual teacher*, who also experiences a process of professional growth. The collective activity in this incomplete account is an emergent phenomenon, still unfolding, through a process in which 'specific agential intra-actions' determine its 'boundaries and properties' such that 'particular embodied concepts become meaningful' (Barad, 2003, p.815). The set of individual and collective practices emerging from this process can be considered as 'intra-objective possibilities' in the 'flow of everyday life' (Shotter, 2013), or *complicities*.

A teacher describes their *'professional identity'* and *'self-identity'* as different, comparing this to putting on a *'work hat'* at school and a *'family hat'* at home. However, this teacher questions whether it is possible to keep these identities separate, as some colleagues suggest, finding that reflecting and questioning work-based experiences often takes place at home in family situations. This is described as a *'natural crossover'* and, in terms of the two identities, the teacher concludes *'I don't think you can be one without the other'*.

Another teacher has established two professional identities. Their school work is oriented towards subject-teaching and being with students, with some institutional expectations considered pointless and working relationships experienced as stressed. While enjoying this core practice of teaching, there is limited appreciation and support from school leaders, who are perceived as criticising. Outside school, pursuing publishing and subject networking, this teacher has earned considerable respect as a knowledgeable, efficient and capable practitioner. Resource production and trialling provide the crossover for these professional identities.

Self-determination, application and integration of professional learning, combined with organisational awareness, as responses within professional growth, contribute to the formation of professional identity and the pursuit of personal fulfilment. Mockler (2013, p.42) describes 'identity anchors' emerging from teacher professional learning connecting 'the essential

identity question "who am I (in this context)?" to the broader question of purpose: "why am I here?"', in the 'interplay' of 'professional context, personal experience and external political environment'. A 'tangled pattern' of 'part-identities' relating to work, family, interests, nation, culture, politics and religion, form around a 'central', 'core' or 'personal' identity (Illeris, 2014, pp.74-79). These are fractal-like, with each part-identity consisting of a more stable core surrounded by increasingly flexible layers, susceptible to change through transformative learning (Illeris, 2014, pp.75-76). As a whole, this complex identity is indicative of modern living through the 'ambiguity of the possibilities and the difficulties of making things fit together', with transformative learning offering potential for greater coherence (Illeris, 2014, p.76).

> A school leader pursues post-graduate study as a personal hobby. Their doctoral focus is leadership performance, through interest in observing colleagues perform and from personal anxiety in performing as a leader. Studying has been treated as separate from working in this leader's career, never shared with colleagues, with no intention to influence professional practice. However, through reflection on experience natural impacts are recognised from having studied leadership performance while taking on new roles. Changes in persona and identity are articulated, arising from greater understanding and growing confidence, with the realisation that performance is easier when secure in the knowledge and information to be conveyed. Professional roles are increasingly oriented towards building leadership confidence in others, *'growing your own'* in a recruitment crisis, within a school partnership where this leader has found their *'niche'*, a place where they are *'comfortable'* but is not a stagnant *'comfort zone'*.

The 'identity anchors' generated in the interplay of the personal, the contextual and the external (Mockler, 2013, p.42) can be considered as *attractors* or 'the organising forces that guide behaviour' (Kuhn, 2009, p.80). These are articulated through teachers making meaning of their professional growth, but they are not necessarily obvious to teachers themselves. Meanings emerge in conversation and are confirmed, rejected or adjusted in the process of their articulation. A distinction can be made between sense-making, through openness to the significance of a specific situation and a responsive orientation (Thompson, 2011, pp.119-120), and meaning-making in which we 'incorporate the culture of our life-world into ourselves' (Jarvis, 2009, p.27). Learning from experience need not demand attribution of meaning,

because emotions, beliefs, attitudes and values can be affected and acted upon, though meaning is given to sensations as they are reflected upon (Jarvis, 2009, p.29). Through learning 'we become changed persons and so only in being can we become and in learning we experience the process of becoming' (*ibid*). Crucially, this change or transformation of the person also changes the social context, as Jarvis (2009, p.29) states, 'I am changed and so, therefore, is the situation in which I interact'. This situation, or relational and recursive 'domain of interactions' (or intra-actions) between person and context is mutually sustaining and can be considered a 'niche', which 'does not exist by itself' (Maturana, 2006, p.92).

A teacher talking about their professional growth describes an instance of supporting, over many months, a student with literacy difficulties. In-class support has been wide-ranging, covering many aspects of literacy, but *'re-igniting a passion for reading'* is considered particularly significant. Reading together in school has encouraged parents to buy books, the student is now reading at home and impact back in school has been striking. Many colleagues have commented on increased confidence and self-esteem, and the student feels they *'can do things'* including in maths and science. The teacher, returning to their professional growth, says this experience *'makes you realise what you're in the teaching profession for'*.

Ways of shaping of teacher learning and development through ongoing intra-actions

When teachers talk of 'finding a niche' this implies a favourable situation for their professional growth within one or more organisational contexts. These tend to be described in terms of the deemed effectiveness and leadership and management of these organisations, and the working relationships of those who work and study there. While successful organisations, supportive and empowering leaders and trusting relationships are conducive to learning and development, individual and collective responses to these circumstances can re-shape them. For teachers in this study, these are prominent 'satisfiers' in confluence with student, collegial and family contact, while the key 'dissatisfiers' are their absence combined with bureaucratic pressures and performativity (MacBeath, 2012, p.13). These attractors and repellers to professional growth, are mediated by self-determined response in varying and unpredictable ways, re-shaping the personal fulfilment of individuals as well as their contexts or domains of intra-

action. In teacher professional growth, intra-actions make a difference, they determine what matters through inclusions and exclusions in the play of possibilities (Barad, 2007).

> An experienced teacher self-identifies as someone who is not particularly innovative, though has felt more so in the past, and now generally works best when following clear instructions. They enjoy teaching and like to produce resources and introduce subject specifications or topics, but these are increasingly geared towards more efficient working than new ideas. External performance pressures translate to stressed working relationships in school, with demands for intensive marking eclipsing stimulating lesson planning, the latter considered equally if not more important. This teacher struggles to see the point of many school improvement initiatives and expresses uncertainty of expectations. They also like to be appreciated, respected and valued, gaining this through external work with publishers and subject associations more than from school leaders. Professional growth revolves around working for others and following instructions, meeting deadlines and being *'easy to manage'* by feeling appreciated and earning respect.

Here, the autonomy of choosing how to act is exercised through willingly following the clear and purposeful guidance or instructions of others. Autonomy is relational, such that teachers are prepared to enact the wishes and expectations of others when they can see the point of doing so, experienced as acting 'with a full sense of willingness, a sense of volition and concurrence' (Deci and Ryan, 2013, p.29). In contrast with school autonomy, where supposed freedoms (e.g. curriculum) are given with one hand and taken with the other through 'output regulation' (Leat, 2014), collective autonomy is concerned with the more immediate responsibilities teachers and schools have to each other and their students (Hargreaves, 2016, p.129). While teachers' intra-actions within specific organisational contexts might be constraining they are not determining, as new possibilities are opened-up or reconfigured (Barad, 2007, p.177). Similarly, from an enactive viewpoint, the particular niche brought forth through the structural coupling of the teacher and context might be entraining, but teachers can adaptively modulate or 'surf' these unfolding events (Thompson, 2011, pp.120-1). In complexity thinking, autonomy is not in opposition but complementary to dependence, as our dependencies on culture, policy and education are also triggers for learning to acquire increasing autonomy to mediate and retroact on these dependencies (Morin, 2008, p.114).

A teacher and leader pursues a professional leadership qualification, including the implementation of a *school* development project. Linked to pastoral role, an initiative is planned with measurable targets to increase the attendance of a small number of students with special educational needs. A transport club is established to help the students travel to school, combined with a breakfast club on arrival. This improves attendance among this group of students significantly and the initiative is considered sustainable. The work is described in organisational and personal terms of *'building projects'*, *'gaining skills'* and *'adding strings to your bow'*.

Responding to learning and development opportunities, it matters both *what you do with it* and also being *in a position* to do something with it; taking responsibility and receiving response-ability. This involves '[i]ntra-acting responsibly' and 'being responsive to the possibilities' for our own and others' flourishing (Barad, 2007, p.296). Responding to purposes and opportunities for professional growth, self-determination begins with receptivity, noticing what is needed or possible and choosing to act on it. This can be considered as 'readiness-for-action' or a '*microidentity*' in our immediate, lived experience in any situation or '*microworld*' encountered (Varela, 1999, pp.9-10, original emphasis). The teachers in this study, using their own words and phrases, show such readiness-for-action by *'getting involved'*, *'giving something back'*, *'nudging and flipping'*, *'needing to do more'*, *'seizing opportunities'* and *'bringing back ideas'*. Taking responsibility for one's actions in putting purposes and opportunities to work, requires the reciprocal *response-ability* from others with power to sustain or constrain. Response-ability can be considered in terms of possessing the personal capacities to act (Oyama, 2000, p.149) or the 'ability to respond', both gained and afforded through the responsibility of 'inviting, welcoming, and enabling' this responsiveness in others (Barad, in Kleinman, 2012, p.34).

Three teachers, working in schools deemed lacking, express strong expectations for their students' learning, achievement and independence. They work hard to build knowledge, skills and practices and those of colleagues, to realise positive outcomes required for their schools to be deemed successful. They are aware that they are *'playing a game'* in *'trying to achieve the unachievable'*, their leaders *'don't have the answers'* and inspectors are *'focused on data'* and *'can't give advice'*. These teachers are *'looking for ideas'* in other schools deemed more successful,

sometimes finding their counterparts spend less time on what it is (e.g. marking) that they have been told is lacking. All three teachers have considered leaving; one is actively pursuing a different career and another a parallel career. They are staying for the time-being, because they enjoy working with young people and close colleagues, finding immediate efforts as fruitful, but they know this does not guarantee deemed success for their school.

Teachers and leaders talking about their practices express self-accountability to their students, parents and colleagues in their intentional focus on learning, developing and pursuing values. Again, accountability is reciprocal and relational, where those held to account for their actions can reasonably expect to be afforded the capability and capacity to meet expectations (Elmore, 2002, pp.20-21), or to receive *account-ability* by those doing the accounting. In hierarchical systems, this requires balance between upward and downward transparency, while avoiding erosion of individual autonomy and 'unwarranted intrusions upon privacy' (Hargreaves, 2016, pp.127-9). Teachers also articulate self-improvement through intra-action in pursuing more successful, beneficial and effective ways of teaching and leading. While conceptions of effectiveness are inevitably linked to external accountability measures, particularly examination results, these are periodic and transitional outcomes. Teachers and leaders are more concerned and absorbed with *building* processes and they interpret achievement in ongoing, everyday terms. Awareness of limits in realising externally defined and measured outcomes, often semi-spoken, is also perceptible, accompanied by the realisation that students are more likely to be successful if they are independently self-motivated and less teacher-dependent.

A teacher with leadership roles works in a school deemed lacking due to below-average performance measures for age-16 students, particularly those considered disadvantaged by below-average family income. The school is second-choice for many families, in an area where selective schools admit higher-attaining students. There is acceptance that helping students gain results at the end of five years is part of the job as currently defined and awareness of having to *'play the game'*. Recently, acting on ideas brought back by this teacher from a conference, the school has placed student achievement at the heart of everything done, treating people better, opening doors earlier in the day, offering students breakfast, giving praise rather than sanctions and providing extra evening and weekend classes. This

seeks daily impact on students' behaviour, attendance, attitudes and progress, which is starting to be seen and recognised. Hope is expressed that this will translate into better results and the school will be deemed effective at the forthcoming re-inspection. This teacher loves teaching but is considering a change of career, influenced by the pressures of sustaining improvement at a time of perceived funding cuts and associated questions raised by friends and family.

Teachers often articulate 'a deep appreciation of the structure-determined nature of their students and their classes' (Davis and Sumara, 2006, p.100). While they may not spell this out clearly, it is heard in features and instances of provision, of *building* with others, with awareness that sustained and valued benefits or outcomes cannot be guaranteed. Just as teacher professional learning is determined by *what they <u>do</u> with* opportunities for development, so it is for their students. Hoped-for behaviours and responses may be observed and recounted, exams might be passed successfully, but teachers express uncertainty over deeper or longer-term impacts of their work, because they know that this depends on their students' responses and response-abilities. Or, following an age-old proverb, teachers and educational leaders know that *you can lead a horse to water, but you can't make it drink*. Teachers appreciate this structure-determinedness, yet they 'lack schooling contexts and curricula that enable them to act responsibly to these embodied understandings' (Davis and Sumara, 2006, p.100). Learning may sometimes be made visible, formally through assessments and informally through dialogue and '*light-bulb moments'*, but tangible and liveable future outcomes for each student are aspired to but unknowable. Outcomes based on normalised measures are competed for and thereby determined by individual performance *and* the performance of the whole cohort. Teachers show awareness of this when they talk of *'playing the game'* or *'trying to achieve the unachievable'*, and of their complicity.

Two teachers describe the strong influence of friends and family on their professional lives and growth. For one, much of their *'drive'* to achieve is motivated by family, to *'make them proud'* and *'pay them back'*, and by friendly competition with their university peer group across different careers. The other teacher expresses similar *'drive'* to achieve and *'internal pride'*, but fuelled by lack of support and encouragement from teachers at school and close family, to *'turn that round'*. This teacher wants to *'be even further apart'* from peers and family

members who have made *'bad choices in life'* and have *'given up on learning'*, but strongly wishes to earn their daughter's pride. Both teachers associate these experiences with wanting to <u>do</u> and <u>be</u> their *'best'* as professionals and they seize and act upon opportunities to learn and develop.

External conditions affecting professional growth, such as family and friends, can be experienced in different, even opposite ways, as attractors or repellers, but fuel similar purposes for personal fulfilment and pursuit of values through response. Self-determination in taking responsibility for being and doing one's best is influenced as much by friends and family as by external accountability and performativity pressures. This is more than a personal disposition, because it can be nourished and nurtured or eroded and lost within school contexts (Day, 2012, p.17). Organisational awareness of self-accountability and self-improvement, striving to be and become the best one can be, is a response entwined with professional roles and pursuit of values. This is a *building* process, encouraged in contexts with empowering leadership and management and trusting working relationships, even when deemed effectiveness is lacking. However, policy directions and external accountability experienced as conflicting and pressured are also described by teachers in confluence with more criticising leadership and stressed relationships. Fellenz (2016, p.273) describes an unresolved 'autonomy paradox' arising from the two-fold concept of bildung, questioning how 'autonomous self-formation' coexists with 'reflective and responsible action' within a normatively prescribed profession. There are no simple answers, but potential resolutions through *complicity*.

A teacher is told by colleagues they are *'sociable'* and *'always happy'*, prompting reflection on the possibility of being this way due to the varied situations they have put themselves in and through having to adapt. This means talking to people and being approachable, whether others are approachable or not, and gaining *a 'better understanding'* of the school by *'interacting with different staff'*. New experiences, such as becoming a parent, are used to connect with others, adults and children, and have *'new conversations'*. This teacher talks of using their *'personality to investigate, find out more'*, building relationships that allow them to *'get quite a bit back'*. It is though these interactions and relationships that school becomes, for this teacher, a *'little community'* in which they feel *'stimulated and challenged'*.

Here, ways of being and acting shape the responses of others, which in turn provide greater understanding of the organisational context. This is a form of 'learning as belonging', participating in a community in which worthwhile pursuits and competences are discussed (Wenger, 2009, p.211). As Wenger explains, '[s]uch participation shapes not only what we do, but also who we are and how we interpret what we do', our practice, identity and meaning-making. For this teacher, such intra-actions are generative of a niche or microworld that is favourable to further professional growth, as enactively brought forth. Whether this space of possibilities is similarly conducive to the growth of others is a relational matter; it is only favourable if experienced as such. From each individual perspective, the microworld enacted through the context in which one is structurally coupled as a cognitive agent offers *'surplus signification'*, which may or may not be valued, giving rise to '*intentions*' (Varela, 1999, p.56, original emphasis). Teachers in this study are aware of colleagues for whom a sense of belonging in teaching is elusive so they look elsewhere, which reinforces their intentions towards supporting and nurturing self and others. This illustrates the recursivity and complicity of learning through *building* and development through *journeying*, whereby lived responses to enacted opportunities (re)generate intended purposes for professional growth.

> The leader of a TSA describes routes in and through teaching as a *'conveyor belt'*, considering the current recruitment and retention crisis to be the result of *'churning out'* teachers without *'nurturing'* them, so they have *'left the profession'*. This teacher and leader, despite earlier career setbacks, feels *'looked after'* in their current school, having found their niche with like-minded colleagues. The focus for this TSA has become the first five years of teachers' careers, to keep them in teaching. Nurturing new teachers, providing opportunities for *'study and practice'*, is described in terms of *'giving back'* one's own experiences of being looked after. This leader firmly believes that if teachers are cared for they will care for their students, enjoy their job, see the rewards, work hard and stay in the profession.

Teacher professional growth – ways of being, becoming and belonging

The temporality of teacher professional growth is visualised in a further heuristic model (Figure 5), offering additional elaboration to previous versions. The intertwined threads of intended

purposes, enacted opportunities and lived responses are shown as dotted arrows, suggesting different timescales over which *learning* and *developing* unfold as simultaneities. In a continual process of learning through building and developing through journeying, teacher sense of self or identity, of *being* at any given moment is also, always, *becoming* in the next. The relational and organisational contexts, or domains of intra-action, for professional growth constitute a niche or microworld through which teachers experience a sense of *belonging.* Of course, this space is inhabited by many others over time, particularly students and colleagues but also family, friends and contacts, *intra-acting* to shape phenomena, *co-acting* to make meaning, each *enacting* their own growth. As suggested in Figure 5, some of these relations are with those outside the immediate niche, forming part of the external conditions for professional growth, although their reciprocal influences may be mediated through the organisational context. Both spatially and temporally, *being* and *becoming* are vital to experiences of professional growth, within contexts conducive to a sense of *belonging*.
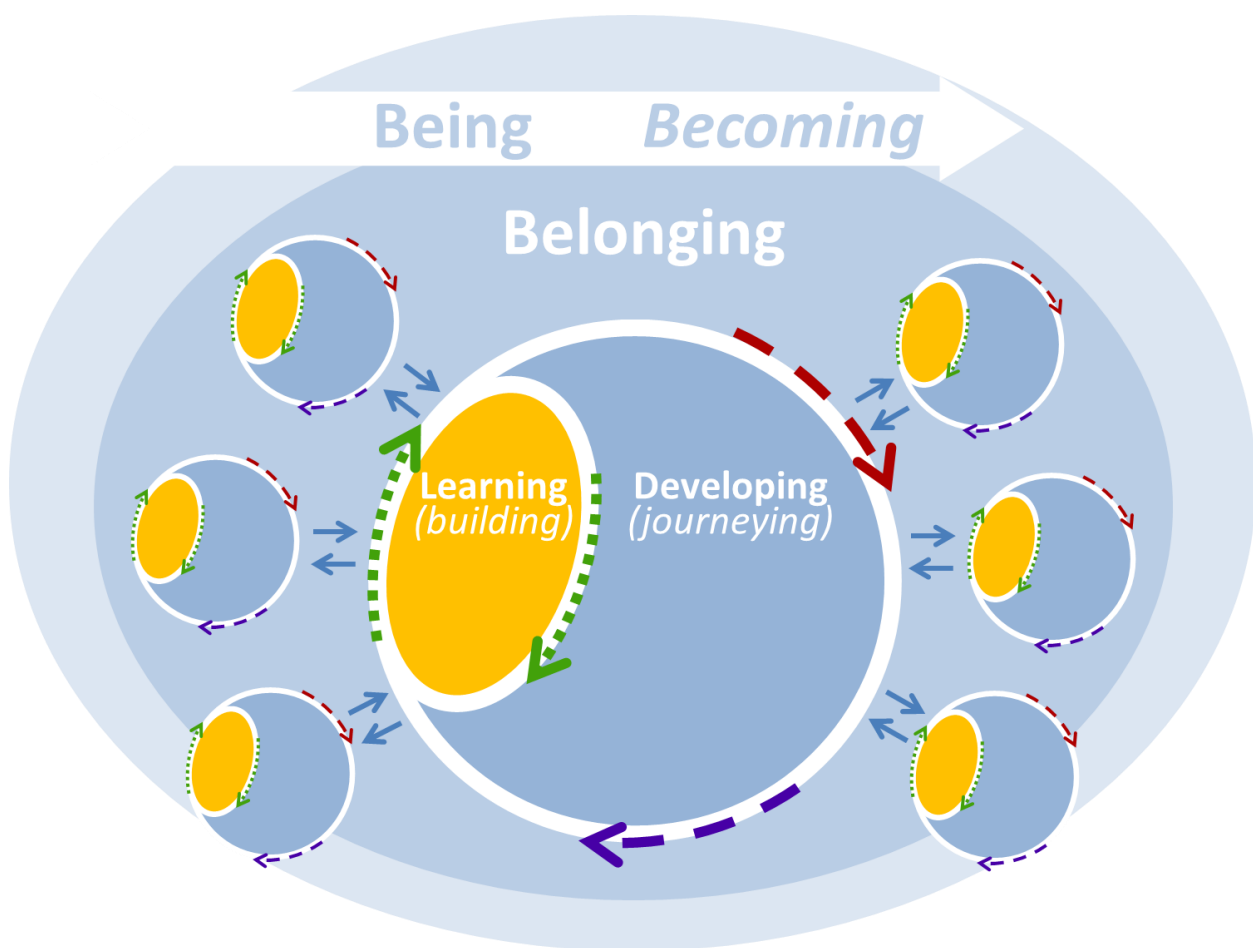
Figure 5 – the being and becoming of the teacher in context, through professional growth over time as a complicit process of *building* and *journeying* through *belonging*.

Lived responses to experiences of professional growth embed and extend knowledge and skills acquisition, through the ontological embodiment and enactment of capabilities and identities. Professional growth is thereby a 'process of becoming' or an 'unfolding and transformation of the self over time' that is 'open-ended and always incomplete' (Dall'Alba, 2009, p.43). As Jarvis (2009, p.30) explains, 'as long as I can continue to learn, I remain an unfinished person – the possibility of more growth, more experience and so on remains – or I am still learning to be me!'. Considered through complexity thinking:

> 'Self' is not a thing, but a process, which preserves an apparent sense of identity even as it changes complicitly with everything around it, both inside and outside the mind. As time passes, what seems to be the same 'you' changes, but it does so with enough continuity that it still *seems* to be the same 'you' even though it isn't. … In a similar manner, environment and culture maintain the continuity of the human sense of self, and that, repeated across many individuals, in turn maintains the continuity of environment and culture. (Stewart and Cohen, 1997, p.224, original emphasis)

This is a contemporary articulation of ancient understandings of constant flux, captured in the saying attributed to Heraclitus, that *you cannot step into the same river twice* – both the water has changed, and you have changed (*ibid*).

It is through our structure-determined, self-determined, organisationally *closed* being that we maintain identity, integrity and autonomy, while simultaneously we are relationally and culturally *open* to and part of our world (Davis and Sumara, 2006, pp.5-6; Morin, 2008, p.113). As knowledge is gained through this participation, knowing and being are inseparable and are 'mutually implicated' – an '*onto-epistem-ology*' (Barad, 2007, p.185, original emphasis). However, 'since each intra-action matters', materially and ethically, this becomes an '*ethico-onto-epistem-ology*' (*ibid*). A similar position is taken in enactivism, whereby 'knowing is doing' and our bringing forth of a co-created world carries 'ethical meaning' through 'reflection on the legitimacy of the presence of others' (Maturana and Varela, 1992, p.246-8). As Maturana and Varela (*ibid*) explain, social life is generated by the biological 'acceptance of others', for them an act of '*love*', where coexistence remains viable even through conflict, without one negating another. It is mutual acceptance that leads to coexistence, the co-creation of a shared world and a sense of belonging.

The ongoing process of being and becoming, of growing, does not imply a self-centred boundedness. Bounded being suggests an independent sense of self, wherein self-determination can lead to isolation, excessive personal evaluation or blame and damage to self-esteem (Gergen, 2009, pp.6-12). However, self-determined learning or heutagogy, as a 'child of complexity theory', emphasises emergent capabilities within the collaborative context of a 'living curriculum' (Hase and Kenyon, 2007, pp.114-5). Thus, self-determination understood through complexity thinking is rooted in relational being, not bounded being, where becoming entails 'self *with* others' (Gergen, 2009, p.7, original emphasis). Autonomy is only possible biologically within a sustaining and sustainable environment or niche and socially within the constraints of cultural and linguistic conditions (Morin, 2008, p.44). An awareness of the relational complexity of self-determination *with* dependency can be heard and read in teacher accounts of professional growth, which is self-similarly articulated in perspectives on the learning and development of students and colleagues. Such awareness of complexity may be experienced as contradictory and confusing (Morin, 2008, p.45), when matters of subject-object, cause-effect, voluntarism-determinism, and agency-structure are considered in binary opposition rather than as mutually defining simultaneities and complicities.

The teachers participating in this study, in their professional roles and responsibilities, exercise degrees of micro-autonomy, in micro-worlds with micro-identities, despite the inevitable constraints of external expectations and conditions. For example, while *what* should be taught may be defined by the curriculum or examination specifications, *how* it is to be taught remains largely the decision of teachers, teams and leaders. The six teachers articulate and aspire to self-improvement as educators and self-accountability to their students, colleagues and communities for the immediate and ongoing benefits of their work, aside from periodically measured outputs, including through PBI. They express hope that self-accountability for these means will translate to positive and measurable ends, thereby satisfying external accountability, but they know this cannot be guaranteed as they do not bear sole responsibility for anticipated outcomes. These concomitant demands, configured in performance tables and inspection regimes, do not necessarily help teachers fulfil their micro-autonomous responsibilities. They can encourage unintended, even 'harmful' consequences through 'more superficial, more mechanistic and more repetitive' learning experiences (Mansell, 2007, pp.245-6). Teachers and leaders show organisational awareness of self-justification in accommodating or mediating external policy or accountability constraints through their work. More than

resilience, some teachers resist the damaging by-products of hyper-accountability by focusing on the quality of day-to-day learning experiences and relationships, against the grain of government policy, through concern for processes *and* outcomes.

In these performative times, a sense of teacher belonging can be sustained by coherence between policy direction, external accountability, deemed effectiveness of the organisation and the values pursued therein. Inevitably, schools deemed effective are those at or above average in prioritised measures and they can afford to be less concerned by hyper-accountability. They become 'facilitating environments' supporting self-determination and autonomy in internalising shared beliefs and practices as 'a way of connecting and feeling belongingness' (Ryan and Deci, 2013, p.199). Where performativity is experienced as conflicting and pressured in schools deemed lacking or barely stable, working relationships can become stressed, trust eroded with leaders more criticising than empowering. It is not surprising that in such situations teachers seek or find attractors elsewhere (e.g. publishing and networking, professional and academic studies and personal interests in related careers), which can fulfil a greater sense of professional belonging. Paradoxically, these outside interests may also be enough to sustain their work in these schools. A sense of belonging is therefore relational and experienced variedly across multiple contexts. However, what makes these teachers stay in school are day-to-day educative experiences with students and colleagues that are mutually rewarding and beneficial despite the challenging circumstances faced. For some, this is reinforced through empowering and facilitating school leadership, and trusting working relationships, which help to mediate the pressures of external accountability.

The *dynamic process abstractions* (Appendix Three), in addition to key attractors for professional growth for each teacher, envisage sense of belonging as a further attractor emerging from organisational contexts and external conditions. These encapsulate the niche or microworld brought forth by each teacher in context, which sustains their sense of occupational belonging. In more facilitating environments, sense of belonging as an attractor draws on sustaining contextual and external features; in those less facilitating, it is sustained by professional activity or found elsewhere. These additional attractors are summarised as follows: appreciative and respectful individuals and external organisations (Teacher A); supportive family, like-minded colleagues and nurturing organisation (Teacher B); influential colleagues and family, strong teams and alliances (Teacher C); friendly, inclusive and supportive

working community (Teacher D); own and other's learning, in challenging circumstances (Teacher E); like-minded colleagues and contacts, leadership roles (Teacher F).

The intricate causalities of teacher professional growth as a continual, living process are not easily separable into discrete and linear causes and effects. Temporal sequences of events can sometimes be identified in teacher accounts, for example when a desire to gain new subject knowledge is sought through a course, leading to fresh ideas applied to practice. Or an opportunity to fulfil new workplace responsibilities points to role-specific training, brought back to the organisation and implemented. However, through these interpretive, integrative and applicative processes, co-acting with others, a self-organising domain of recursive intra-actions and agentive responses unfolds wherein initial purposes and intentions are re-shaped or erased. Assessing and evaluating acts of teaching and leadership through perceived impact on others, continually and informally more than periodically and publicly, including through PBI, can help to ascertain benefits and limitations. However, no causal certainties follow our own actions through to the self-determined actions and responses of others, and assessing too narrowly or for the wrong reasons risks missing what may be of greatest value. Present intentions combine with past experiences and future aspirations, as well as organisational contexts, cultural expectations and social influences, such that precise causes and effects remain elusive and untraceable. Thus, teachers and leaders are often content to attribute benefits associated with their actions to good fortune or the positive contributions of others.

Considered through complexity thinking, the emergent features of teacher professional growth cannot be adequately measured or predicted through narrowly-defined assessments that pitch one student, teacher or school against another. Instead they reside in the responses and capabilities, or learning, of those involved and are therefore 'necessary to the process that creates them', implying recursive causality (Morin, 2008, p.61). This enfolded and unfolding process of building and journeying, prompts a move away from the disjunction of causes and effects to their mutual implication and complicity or, in relational terms, 'a shift from influence to confluence' (Gergen, 2009, p.58). Beyond prediction of influence that cannot be assured, more productive and future-forming is to identify confluences that lead to positive '*relational pathways*' (*ibid*, original emphasis). Such confluences can be considered as attractors to professional growth, formed by the intricately entangled purposes, opportunities and responses of teacher experiences and intra-actions. The prominent attractors for the six

participants, outlined in Chapter Four in terms of each person in context, share common threads as well as crucial differences. Most prevalent is the attractor of helping others to learn and develop, students and/or colleagues, such that teachers' own professional growth is complicit with that of others.

Patterns of complicity are shaped by professional roles, across subject, pastoral, coaching, leadership and special education interests and capabilities enacted. Significant others in teachers' lives beyond the workplace – families, friends and contacts – feature in these confluences, such that different starting points may lead to similar attractors; a hallmark of complicity (Cohen and Stewart, 2000, p.417). For example, the attractor of personal drive to achieve, succeed and be one's best is traceable to both supportive *and* discouraging families and friends; attractors and repellers that, responded to differently, form new attractors around similarly positive purposes. Complicity is evident through change, 'differences that make a difference', which are noticeable and informative (Bateson, 1988, p.105). Teachers adopting more positive behaviours notice that, self-similarly, student behaviours become perceptibly oriented towards positive relationships and achievements. For example, when the anxieties of an autistic student are noticed and calmed, where rapport is built with a challenging class who acknowledge the teacher's care, and where school is made more inviting and accessible and student attendance increases. Through team-working and collaboration, teachers and leaders engage in self-organising development processes, with material changes to practice and experience. For example, when refining observation protocols with recognisably improved learning dialogue, or exploring assessment techniques that encourage safer learning spaces and confidence to take risks. There is complicity too where leaders nurture the next generation of teachers, who self-similarly nurture their students, through a concern for valuable educative experiences and well-being, thereby developing themselves, their organisations and their profession. Complicity is *still present without such changes*, reinforcing established practices. However, differences and possibilities can be seen and acted upon if we 'move in relation to them' (Bateson, 1988, p.230), which entails 'meeting the universe half way' (Barad, 2007).

Finally, there is of course my own complicity, as an educator supporting teachers and leaders to investigate their practices and roles. This thesis is my practice-based inquiry, supportive of the next stage of my professional growth; an account of my current sense of being, future becoming and professional belonging. I hold hopes for our education system inevitably shaped

by experiences as a school pupil, teacher, school leader, parent, local government adviser, school governor, teacher educator and researcher. Too briefly, I aspire to a system that values a wider range of educational experiences and accomplishments than currently prioritised, that democratically seeks equality, esteem, success and fulfilment for all, prioritising collaboration and co-operation over competition and comparison. As an agent of inquiry or facilitator of heutagogy I am complicit in the learning of my students, some of whom participated in this study. There is no hiding from performativity in this role, as I am aware that some of my students seek qualifications as much to further their careers as to become more capable practitioners; perhaps I do too. While I cannot and should not impose my educational hopes and fears, neither should I hide them. However, I can encourage criticality, deliberation and reflection on personal and collective educational practices that affect the lives of others. The lived experience of professional growth, learning and development, is one of sense-making in precarious conditions, collectively reaching towards more sustaining and sustainable educational circumstances for all. Jarvis (2009, p.30) supplies perhaps the most pertinent expression of *complicity*:

> I only am at the moment 'now' and since I cannot stop time I am always becoming; paradoxically, however, through all that becoming I always feel that I am the same self. Being and becoming are inextricably intertwined, and human learning is one of the phenomena that unite them, for it is fundamental to life itself.

Chapter Seven – Conclusions and Contributions

In this study, exploring professional growth as a complex *process*, the question of *what* is learned, while important, is secondary to *how* and *why* learning takes place. Practical knowledge (know-how) is fulfilled, grounded and continually refined through experience (Heron and Reason, 1997). What is learned carries particularity within each instance, knowledge is contextual and knowing is doing, but understanding features of how and why learning occurs builds capability and applicability in new situations. Learning is thereby 'situated' and the learner gains 'knowledgeability as a flexible process of engagement with the world' (Lave, 2009, p.204). The contribution made by this thesis is a re-working of conceptualisations of teacher professional growth, combining identity, experience, learning and development, in a continual and complicit process of being and becoming, sustained through a sense of belonging. The resulting possibility spaces offer exemplary knowledge and tools for re-thinking teacher professional growth as a complex adaptive process. They draw on categories of description from teacher accounts, through a series of heuristic models developed during the study, for interpreting past experiences and envisioning future possibilities, accepting that they are not definitive or complete. They visualise incompressible processes, drawn from a small number of cases where each instance is unique, inevitably entailing complexity reduction. However, as possibility spaces they point to critical aspects and features of teacher professional growth, simultaneously projecting its 'future forming' potential (Gergen, 2015).

The complexity of teacher professional growth arises from our biological and cultural evolution and the processes of learning and development entailed. As complex adaptive beings we are organisationally closed and structure-determined, maintaining our autonomy and viability in changing situations. Yet, simultaneously, we are materially and energetically open and structurally-coupled with our organisational contexts. We are self-determined yet relationally dependent, embodying our own histories as we learn and develop over time within our occupational workspaces, which are socially, politically and culturally influenced. These descriptions – closed yet open, self-determined yet dependent – are not binary opposites or dualities, but complex distinctions and conjunctions (Morin, 2006), simultaneities and complicities (Davis, 2008). Arriving at this view, complexity thinking as a 'transdisciplinary' concern embraces physical, biological, psychological, sociological and philosophical contributions to educational inquiry, bringing these disciplines together in fruitful ways (Davis

and Sumara, 2006, pp.7-8). The three research aims – to explore accounts of teachers' perceptions and conceptualisations of their own professional growth, to scope the possibilities of individual and collaborative practice-based inquiry in teacher learning and development, and to explore teacher professional growth as a lived experienced, through interpretation, integration and application in practice – addressed, respectively, in Chapters Four, Five and Six, are summarised here.

Perceptions, conceptualisations and future formations of teacher professional growth

The six teacher accounts of their perceptions and conceptualisations of professional growth suggest similarities as well as differences, with common distinctions between CPD and professional learning. Typically, CPD is directed *towards* the individual or collective, sometimes imposed or expected by managers or external policies through formal, often one-off, courses. Professional learning is more personal and situational, self-determined *by* the individual or collective, often considered enjoyable and useful for practice. However, there is also conjunction between CPD that is actively and purposively chosen and professional learning through meaningful response and application, together becoming CPLD. Increasingly, the teachers value heutagogical professional learning more than delivered CPD, partly through their pursuit of practice-based study although an inquiry orientation can be difficult to sustain. Professional growth, synonymous with CPLD, encapsulates this complexity and is associated with occupational roles and identities as well as expertise and capabilities.

The purposive categories of description drawn from teacher accounts of professional growth encompass *personal fulfilment*, *learner focus*, *pursuing values* and ~~developing~~ *others*, particularly colleagues. Intended purposes are highly relational, such that personal fulfilment is seldom mentioned without referring to reciprocal benefits for students and colleagues in pursuing stated values. Purposes are enacted through opportunities categorised in terms of *professional roles*, *courses and study*, the *range of situations* experienced and *collaboration* within them. Purposes and opportunities for development and learning both shape and are shaped by individual and collective responses. Responsive categories of description entail *self-determination*, *integration and application* to practice, *relating to others* and *organisational awareness*. Ways of experiencing purposes, opportunities and responses in teacher

professional growth, are intertwined in a process that is recursive, adaptive and thereby complex. This complexity can be understood by considering the features or threads through illustrative instances and the lived experience of the person in context through their ways of being and becoming. In each case, variation not only illustrates possibilities for learning and development but invites speculation on potentially different ways of acting.

Contingencies feature significantly in teacher accounts of professional growth. Time and place opportunities, courses or workplace roles are important, as well as changing circumstances including colleagues and leaders, external or personal events. While teachers have limited control over these eventualities, or tend to attribute positive contingencies to good fortune, their responsiveness and response-ability is vital. Self-determination in various forms is evident, from receptivity, openness and seizing opportunities, to taking responsibility for learning in seeking out development. Professional identity is not only shaped by occupational standards and workplace roles but also self-determined through active, agentic responses. This is an interpretive, integrative and applicative process, perceived as change by the individual learner, with potential for wider influence on others within shared contexts, and thereby the context itself. In terms of practice-based inquiry, the purposive locus of influence is often towards others and the organisation, leading to development opportunities with an action and change orientation, expanding the possibilities for professional growth.

As a holistic process, professional growth takes place within one or more organisational contexts, influenced by external conditions of policy, society and culture. This study concerns *ways of experiencing* these contexts and conditions, focussing on what matters to the teachers rather than a full account of all contextual and external circumstances. Experience and awareness of *policy direction* and *external accountability* are heard in teacher accounts, as well as the influences of *friends and family*. Policy direction may be experienced as coherent with purposes for professional growth, for example when building stronger home-school links, or as conflicting when curriculum plans deprioritise certain subjects. In some cases, policy is reinforcing of opportunities, for those taking on new responsibilities in teacher and leadership development across school partnerships. External accountability pressures and performativity can be mediated through self-accountability and self-improvement, particularly in schools deemed effective. However, where the downward transparency of teacher scrutiny

accommodates external accountability, mainly to satisfy inspectors, trust can be eroded, and false impressions created, with potential loss of collective responsibility.

Organisational contexts are typically described in terms of their *deemed effectiveness*, through established performance and inspection measures, predominant *leadership and management* approaches and *working relationships* with colleagues. When schools are deemed lacking, for teachers in this study, leadership is experienced as more criticising and relationships as stressed. Collaborative opportunities for learning, building effective practices through trusting and empathic relationships, can become side-lined in demands for quality assurance evidence. In some cases, teachers are organisationally aware of self-justification, where leaders feel obligated by pressures of external accountability or conflicts of policy direction. The six teachers, in different ways, pursue continual development through their practice, self-improving and self-accountable to the everyday needs of their students, colleagues and wider communities. They are aware of partial and collective responsibility for measurable success. These teachers do not seem to *require* the pressures and distractions of external accountability to assure their commitment, although they are realistic about public expectations for their accountable actions.

The pressures of performativity felt most prominently by the six participating teachers stem from league tables and school inspection. Again, *how* teachers interpret and respond to these mechanisms of public accountability is pertinent to professional growth. Performativity is mediated through organisational response to deemed effectiveness, via self-improvement and self-accountability to the immediate and agreed needs, interests and values of students and colleagues. While the parameters of these relationships and interactions are inevitably constrained by policy expectations and performance metrics, the six teachers in various ways inhabit micro-autonomous spaces in their daily practices. The practice-based inquiries of all six teachers have enabled them to explore and expand the possibilities for agency in their professional lives. The ultimate response to performativity is to leave the profession and two teachers have considered this, citing related pressures. They have paved a way for this eventuality, seeking or seizing interest-related professional growth opportunities, in educational publishing and in strategic planning. However, for now, the perceived attractors of working with young learners and supportive colleagues keep them in teaching.

The possibilities for practice-based inquiry in teacher professional growth

It has become clearer through this study that practice-based inquiry offers teachers opportunities to exercise responsibility *and* response-ability in investigating their professional roles and practices. PBI expands the possibility space of professional growth through its formalisation, enabling purposes to be intentioned, opportunities to be enacted and responses to be lived. Further possibilities afforded by PBI include a purposive *practice focus* on what matters in teaching, assessing, supporting and leading, alongside the *level of practice-base* at which they are pursued and their *locus of influence*. Opportunities for PBI offer *participant roles* to students, colleagues and others including *external stakeholders*, with increasing involvement towards co-inquiry, combined with *evidence-gathering* using established or context-sensitive methods. The *action and change orientation* of PBI offers potential for recommended, planned or implemented initiatives to tangibly develop or improve the chosen *practice focus*. Lived responses to PBI encompass *self-critical reflection*, further *application to practice* and *dissemination to others*, with varying degrees of actualisation and fulfilment. To some extent, this is augmented or curtailed by *institutional integration* and facilitation of PBI, however teachers can often bring about localised benefits through their immediate collectives.

PBI involves reflection, evidence-gathering and meaning-making, as well as resilience to imposed changes but, further, offers micro-autonomous spaces for praxis (Castle, 2016). Responsibility to act in the interests of others requires the ability to respond to their diverse needs, seemingly tautological and taken for granted in everyday acts of teaching and leadership. However, these needs are not always served by current policy agendas and schooling arrangements, and complexity thinking is a reminder of relational reciprocity and complicity. Teachers need willing learners and leaders require ready followers if they are to be effective in these professional roles. Learners and followers are self-determined agents who can *afford* response-ability to their respective teachers and leaders, just as teachers and leaders can afford response-ability to them. In other words, learners, teachers, followers and leaders all intra-act within educational processes; they are complicit. PBI can help to explore and chart these intra-actions among consenting groups of co-inquirers or collaborators, enabling practical and experiential knowing to become presentational and propositional (Heron and Reason, 1997, p.281). However, as an educative process this happens continually, teachers tweaking and tinkering to develop their practice and build relationships, forming 'living theories'

(Whitehead and McNiff, 2006). Conflicts occur when response-ability diminishes and learners/followers stop responding to teachers/leaders, or vice-versa. Power relations across these roles place responsibility with teachers and leaders to recover temporary losses of response-ability. This is perhaps the essence of 'wicked leadership', recognising the uniqueness and provisionality of each instance, exercising inclusivity, trust, reflexivity and humility in responding to problems (Wright, 2011, pp.355-6).

Formalised PBI brings further important dimensions to developmental and relational cycles driven by reciprocity and complicity. PBI encourages engagement with and critique of wider sources of knowledge from literature, research and policy, facilitating 'research literacy' (BERA, 2014). In the twenty cases studied, diverse sources have been utilised, putting them into practice and evaluating their usefulness. This process exemplifies the long-held assertion that 'using research means doing research' (Stenhouse, 1981, p.110) and more recently that 'research is the servant of professional judgement, not its master' (Pring, 2010, p.141). Others, such as Hattie (2009, p.22) have claimed that 'the biggest effects on student learning occur when teachers become learners of their own teaching, and when students become their own teachers'. However, Hattie states that teachers should be 'evaluators of their impact' but when it comes to 'the whole research side, leave that to the academics' (Stewart, 2015). Insider PBI may have different aims and purposes to academic research, but it remains a *form of research* promoting critical reflection, action and change. Some form of planned practice-based inquiry, or 'enquiry-based practice' (BERA, 2014, p.37), formal or informal, is necessary if published research is to be operationalised in practice.

As previously stated, this thesis is *my* practice-based inquiry. Listening to teachers talk about their professional growth and reading their accounts of PBI, unravelling entwined threads of purpose, opportunity and response to understand and interpret their experiences, reinforces the contingency of the research process. Different cases might have spawned other possibilities. Perceptions and experiences are shared, questions answered and responses offered, but inevitably there are matters missed or forgotten, misinterpreted or misunderstood. Conversation can clarify, intersubjectively, and re-listening or re-reading aids and shifts interpretation, but the complexity of experience is reduced, with research rendered inevitably partial and unfinished. The pool of evidence comprises snapshots and reflections expressed in certain places and moments, which might differ on other occasions or change as

time passes. However, through PBI, co-/intra-action can inter-/intra-objectively shape identity, lived experience and shared reality, so that both inquirer and agent of inquiry are changed. In other words, there is *complicity*. More distantly now, I am aware of ongoing changes in the lives of the six teachers – the complex, wicked process of professional growth has no 'stopping rule' (Wright, 2011, p.355) – but for now the practice-based inquiry must stop.

In a study concerned with processes, it seems appropriate to question whether the unravelled threads of purpose, opportunity and response matter as much as the process of unravelling them. For it is through (re)-reading, (re)-listening, (re)-interpreting that the complexity of teacher experience and ongoing professional growth emerges. In many ways our intentions, whether self-determined or guided by others, our enactments towards or with others, and who we are and who we become are inextricably entwined. Unravelling is a way of making sense of and meaning from this complexity, engaging with and handling the material gathered, albeit imperfect and incomplete. Sense-making and meaning-making through listening, reading and dialogue is also a complex process. We use our own words and phrases, without necessarily sharing common interpretations or understandings. Utterances or explanations are not simple, neat and tidy, however carefully written accounts are structured or conversations planned. The descriptions and visualisations in this thesis are my attempts to account for this process, however what matters more is how I put them to work in my practice with teachers and educational leaders. An initial example is offered in Appendix Four – an invitation to re-think professional growth through practice-based inquiry using the possibility spaces herein.

Rethinking the lived experience of teacher professional growth

Teacher professional growth can be (re)conceptualised as the complicity of learning through *building* and development through *journeying*, both ongoing, inevitable, intertwined and lived processes. In this complexity-informed view, these two processes are simultaneities, unfolding over different but mutually dependent time-frames, with learning experienced in shorter, faster periods of days and weeks, while development evolves over a longer, slower periods of months and years. Teacher professional growth materialises through a changing of self *with* others, a continual and relational process of being and becoming, individually and collectively formed. Learning through *building* (bildung) and developing through *journeying* always takes

place within one or more organisational contexts with social, political and cultural dimensions, constituting a space-time of *belonging*. Learning through *building* is experienced in each instance or professional encounter, from which patterns and features emerge that are recursively re-applied and re-shaped in future intra-actions. Developing through *journeying* draws and feeds on the cognitive, collective and material products of building to shape longer-term knowledge, skills, status and professional roles, projecting future possibilities and intentions. The journeying is *driven* by the building, which is *guided* by the journeying – a two-speed process in flux, unfolding within more or less facilitative places of belonging.

A temporal distinction between learning through ongoing *building* and development through more gradual *journeying* may seem esoteric or trivial, perhaps reinforced by synonymous usage or varied meanings of these terms. However, this distinction can explain, even resolve, tensions, distortions and unintended consequences of the shift from development as a natural process of growth (Eraut, 1977; Deci and Ryan, 2013) towards delivery of required competences to meet performative demands (Ball, 2012; Timperley, 2011). Much of the research in this field acknowledges complexity arising from individual or collective interpretations of experience associated with professional growth, yet policy-makers seek simple input-output causal chains in the global quest for educational improvement, underpinned by a belief in 'deliverology' (Barber *et al*, 2011). This way of thinking assumes teacher development leads to better practice, more effective learning, manifested in improved student performance (DfE, 2016b), attributable to related teaching that immediately precedes it. This overlooks that what is tested may have been learned many years before, with different teachers, then recalled during independent revision for the assessment. Similarly, development as delivery (quick-fix, drive-by, spray-on) expects immediate changes to teaching following exposure to what is delivered.

The quality and value of CP(L)D courses or events cannot be ascertained by types of opportunity, stated purposes, nor immediate reactions of those attending via ubiquitous evaluation forms. Nor are they wholly attributable to measurable outcomes of students subsequently taught by teachers experiencing these opportunities. This would deny or de-value the agency or self-determination exercised by learners, as well as longer-term educational experiences laying the foundations for achievement. In addition to the embodiment of educational histories, the student (and teacher) arrives in school as a 'multi-being', already

embedded in educational 'circles of participation' encompassing parents, siblings, friends and peers (Gergen, 2009, pp.245-6). Individual or collective responses, indicative of learning, in the ways that opportunities are re-purposed, interpreted, integrated or applied to ongoing practice, or simply forgotten and ignored, are hallmarks of complexity. Through responding, intra-acting, following-up, contingent on agency and volition, professional growth is *emergent* within the system of intra-actions between already complex adaptive, structure-determined beings. As a generative process of learning and development, this might depend on events, courses, experiences and studies but is not determined by them (Davis and Upitis, 2004, p.124). Professional growth is *expansive* such that changes take place not only in teacher perceptions and behaviours, but also in the collective activities pursued, generating new objects of learning from those intended or planned (Engeström and Sannino, 2010, p.8). However, objects of learning are also subjects, causes are also effects, mutually constituted within phenomena through the intra-action of one part or participant with another (Barad, 2007, p.337; Morin, 2008, p.26). Teacher professional growth is thereby *intra-objective* in patterns of complicity between own and others' learning, between shorter-term learning and longer-term development, within overlapping organisational contexts (Shotter, 2013).

Temporality pertaining to learning through *building* and development through *journeying* self-similarly enfolds student *learning* and *performance*. In our schooling system, a student 'learning orientation' is towards 'improving one's competence' and a 'performance orientation' concerns 'proving one's competence' (Watkins, 2010, p.3). Improving learning is an everyday 'formative' concern, while proving performance is periodic and transitional in students' lives through 'summative' assessment (Wiliam, 2014, p.87). What takes place routinely in classrooms and other learning spaces, teachers and students learning together, is different to what happens in the examination hall periodically throughout schooling, students alone and teachers immobilised. While these spatially and temporally distinct scenarios are conjoined, the latter a by-product of the former (Watkins, 2010, p.12), in a climate of performativity, performance increasingly shapes learning and education is reduced to 'teaching to the test' (Mansell, 2007, p.245). Assessment purposes become blurred; 'summative' assessment for 'describing individuals' is conflated with 'evaluative' assessment for 'institutional accountability' (Wiliam, 2014, p.87). As standardised examinations increasingly dictate what is taught, so external accountability shapes school provision. The school curriculum can be swiftly changed without consultation or legislation by re-specifying performance metrics, a backwards deliverology,

exemplified in the EBacc by privileging certain subjects. Above average results in these measures ensures provision is deemed effective, so policy concerned with 'outcomes, not methods' (DfE, 2016d, p.9) justifies ends over means.

These spatio-temporal distinctions are crucial to understanding the precarious conditions for teacher professional growth. This study proposes that many of our linear assumptions – leadership creating the necessary conditions for teaching and teacher development, which leads to student learning, with learning leading to measurable outcomes – are untenable. In some cases, for certain individuals, the simplexity in this chain of events may unfold as assumed, but listening to teachers and leaders suggests complicity. Organisational contexts considered conducive to teacher development, with supportive relationships and trusting leadership, may be deemed successful through above-average student outcome measures. However, this success reduces performativity pressures, enabling leaders and teachers to prioritise more developmental uses of time and self-accountability over quality assurance for inspection-readiness. Teachers in schools deemed lacking are aware of demands made on them considered unnecessary in schools deemed effective and they are no less committed and self-accountable to their students. So, it is not surprising that correlational studies find links, albeit with wide variation, between more developmental practices and positive student outcomes. Either may influence the other, in a pattern of complicity.

There is no shortage of proposals for these wicked, intractable problems. Interminable and polarising debates over the pre-eminence of *either* knowledge *or* skills in education continue to overlook their vital mutuality (Astle, 2017), downplaying or neglecting incentive and interaction (Illeris, 2009a). A suggested 'National Baccalaureate' maintains existing academic, vocational and technical qualifications within a broader framework of personal development and projects, attending to 'head, heart and hand' (Astle, 2017, p.125-6). Coffield and Williamson (2011) go further, proposing a democratic shift from 'exam factories' to 'communities of discovery', built on personal enhancement, partnership and inclusion, rather than consumerism and competition. For Mansell (2007, p.247), current hyper-accountability needs dismantling without returning to the 'secret garden' of 1970s schooling adduced by Prime Minister James Callaghan, when parents were supposedly unaware and teachers unaccountable. Reflecting as a child of this era, looking at school work and reports my parents kept, I am unconvinced that public awareness was lacking as claimed. There were surely 'variations in focus and quality' and

'unevenness in implementation' across the system (Hargreaves and Shirley, 2009, p.5), but these remain after decades of educational reform, and social inequality and injustice persist (Dorling, 2015). Performance measures *designed* to gauge unevenness in school rankings, *inevitably* find one-third effective, one-third lacking, the other third stable (Taylor, 2015, p.244). Reflecting again, eight years in local authority services convinced me that improvement activity driven by metrics, inspection, and delivery of training, tends to de-professionalise and disempower teachers more than develop their capabilities or improve their schools.

Mansell (2007, p.249) proposes that school inspection be re-focused on qualitative student experiences rather than measured outcomes, with policy impacts assessed for their benefits and detriments. Some make a case for measured accountability by sample rather than census, like PISA, with representative groups of students assessed periodically to gauge overall school standards (Mansell, 2007, p.254; Hargreaves and Shirley; 2009, p.103). Refocusing accountability on the system, rather than individual students, teachers and schools, may address perverse incentives and unintended consequences but maintains 'ministerial tinkering' when we 'probably need to rethink the whole system properly' (Waters, 2013, p.262). Crucially, none of these proposals addresses underlying normal-curve/snake-plot conditioning, above-average thinking, IQ-ism and the competitive tendencies of the GERM, which fuel inequality and injustice (Dorling, 2010, 2015; Sahlberg, 2011; Taylor, 2015). As Dorling (2015, p.87) points out, '[t]o believe that your children are in the top fifth requires first, to believe that there is a top fifth', because 'how we treat each other reveals how we see each other'. In a final autobiographical note, seven years working in a comprehensive school with just one rule for all, *be kind*, and a single co-created credo, *learning together, achieving together*, showed me better ways to act through acceptance, diversity and belonging (Imison *et al*, 2013).

The guiding principles and questions for our educational practices are paramount and must change. *What works* implies separation, prescription and delivery, denying response-ability; *what works best* assumes general applicability, overlooking person- or context-sensitivity. Treating teaching or developing as medical intervention implies no place or need for a self-determined response – we sit back and wait for the treatment to do its work, until we get 'better'. However, in a normatively measured system only a certain proportion of us are deemed fully-fit and some will always be convalescing. Instead, asking ourselves *what matters* acknowledges complicity, celebrates diversity, and invites us to consider our educational goods

and values. Asking *how should we act* promotes collective responsibility *and* response-ability, including a deeper concern for the educational aspirations and achievements of students and colleagues. Persisting with (mis)measurement of learning via standardised assessments designed to rank and sort, demands, at the very least, public information 'about the limitations of tests and exam statistics' (Mansell, 2007, p.250). We must acknowledge our complicity in this process and share responsibility for those whom this system unjustly deems below average. Policy demands 'high expectations for all' (DfE, 2016d, p.8), but defines and designs 'fair' measures as 'highlighting where a school is doing better for a child than the same child would have done elsewhere' (p.21). Complexity thinking challenges the premise and coherence of such demands and measures, considering personal achievement, school context and the exam system as complicities.

The six teachers have limited influence over policy that perpetuates competition for outcomes but, aware of the narrowness of these measures, they safeguard other educational values in reaching for them. In a system that conflates education with schooling and training, it is unsurprising that teachers perceive and enact their occupational roles towards fulfilling political demands. However, these teachers also pursue the internal goods of education (Elliott, 2001) in their everyday work with young people and colleagues, striving to provide meaningful, enjoyable experiences that lead to learning and sense of achievement, as well as marketable results. Positive behaviours, success beyond exams only, student well-being and independence, access to curriculum subjects and quality of learning experiences, all feature in teacher conversation as values pursued. Teachers may appreciate that securing success for their students can deny it to others in a competitive system and some find ways to articulate this. However, they also aspire to achievement for all, as heard in policy directives and guidance, despite the impossibility of achieving this system-wide aim when normatively measured. The complicity of teachers and leaders in the education system can perpetuate both its most beneficial and deleterious features, but simultaneously this complicity holds the greatest potential to nurture and change the system for the good of all.

A first step is to reclaim teacher *development* as a natural and active process (Eraut, 1977, p.10; Deci and Ryan, 2013, p.41), by disassociation with current conceptions of CPD and 'delivery' (Timperley, 2011, p.4). Development is as much a self-determined process as learning, for 'it is the teacher who develops … not the teacher who is developed' (Eraut, 1977, p.10).

Development through *journeying* over time, is simultaneously constituted by learning through *building* every day. While teachers and leaders talk of ~~developing~~ others as a purpose for professional growth, development is not something we can *do* to others or have *done* to us. However, we *can* be guided, helped and supported to develop ourselves, a process in which we are fully involved and implicated, mostly *with* others. In this sense, development is akin to learning more than teaching, despite its entanglement with performativity. Acts of teaching and leading are also acts of learning and developing, complicities in which students change but so do teachers and leaders, processes that can be formalised, capabilities expanded and better understood through forms of practice-based inquiry.

Professional growth concerns self-accountability and account-ability, such that teachers and leaders should expect to access and afford each other meaningful self-determined opportunities for CPLD. Self-similarly, teachers should be self-accountable to students, parents, colleagues and communities for *provision* of democratically agreed and valued educational opportunities, with political leadership expected to put in place adequate resources and capacities, affording account-ability (Elmore, 2002, pp.20-21). Trust placed in teachers to fulfil their professional responsibilities (Evetts, 2013, p.780) should not be blind and when provision or actions fall short of reasonable expectations there must be appropriate recourse. However, accountability is relational – educational opportunities are only valuable and meaningful if experienced as such. If these opportunities contribute to successful measured outcomes, then students themselves should be *afforded* the response-ability to *take* responsibility for this success, recognising *all* who have helped and contributed over their educational lifetimes. Evaluation through judgement on others can be replaced by valuation through co-action between them (Gergen, 2009, p.340). Individual teachers or schools should not be accountable for standardised outcomes, competed for across cohorts, over which they have partial influence. Such outcomes are only measurable, if at all, over periodic and transitional timescales, with multiple and untraceable contributions, including the 'shadow schooling' of private tuition (Kirby, 2016).

The *individual* outcomes of teacher development through *journeying* – knowledge, skills, qualifications, professional roles and status – are periodic by-products of the accumulated experience of everyday learning through *building*. These processes are complicit with each other, *and* with the learning and development of others, *and also* with the contexts in which

they take place. Re-thinking teacher professional growth as a participatory, co-active, intra-active, enactive and complicit process is much more than a re-emphasis on context or niche as a kind of container. As Freire (1998, p.55) explains, our relationship to the world is essential to who we are, not simply adapting to something 'external', but 'belonging essentially to it'; we are not 'passive, disconnected', but 'maker[s] of history'. Beyond spatial situation, teacher intra-action in the unfolding phenomena of professional practices affords understanding and accounting of the ways in which these practices *matter*, both materially and ethically (Barad, 2007, p.91). How we act and our co-action with others, play a part in the wider intra-actions that shape the reality of shared phenomena for all involved, each participant making sense of and bringing forth, or enacting, their own lived experience. It is through this complicity that possibilities remain open for teachers to make a *difference*.

Ways of being and becoming within the complex process of professional growth are contingent on self-determined responses, through receptivity to unfolding situations and the acceptance of others and their needs, taking responsibility for making differences. Answering the question for complexity thinking, of *how should we act*, different in every instance, entails 'meeting each moment, being alive to the possibilities of becoming', which 'is an ethical call, an invitation that is written into the very matter of all being and becoming' (Barad, 2007, p.185). None of us is situated completely outside our inherited education system, within which we participate, that has shaped us, and we have shaped – we belong to it and it belongs to us. We are all *accomplices* – 'associates', 'confederates' or 'partners' (Harper, 2017). It is therefore our collective responsibility to nurture and nourish our ways of educating each other – learning, developing and growing together in sustaining and sustainable times and spaces, rich with possibilities for flourishing and belonging.

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Appendices

Appendix One – recorded conversation summaries

The summaries below are based on recorded conversations, for which audio recordings and detailed fieldnotes, including close to full transcriptions, are available.

	Professional Learning	Professional Development (CPD)	Changing Perceptions
Teacher A	'Professional learning I would see as having an emphasis on the useful and I would pick that up as learning something new … I would look at professional learning as what I do outside of school [working for exam boards and publishers], which I think I find more useful.'	'Continuing professional development in my experience is not always useful, and I would say that's more about refresh, refreshing. … a hoop-jumping exercise, to tick boxes … we must do five days' worth, so we're going to do it. … I never feel like it's had enough thought gone into it and I think that's because the people that are in charge of putting the thought into it are too busy themselves.'	'I think I do more of what I would consider to be professional learning, i.e. sort of off by own bat, for my own benefit really and less CPD. And I think that's because over time I'm moving further away from school, if not physically, I think mentally. I come in and I do what I need to do for the kids and I spend as much time as I can with them, and I think I struggle to see the point of a lot of the things that go on in school, whereas I can see a lot of point in what I do outside.' 'I think everything goes round in circles and I think now I've been teaching for a certain amount of time, I'm seeing things coming in that weren't considered to be very good before … 5-10 years ago it was make everything exciting, and now it's very much make them right.' 'I remember schools being like that in the past [more positive], but I don't know whether they're rose-coloured spectacles, you know. I do remember getting quite a lot of praise, you know, staff feeling quite valued.'
Teacher B	'More of a journey … an aspirational journey of where you want to go as a professional …. my professional learning is what I've then done with	'Courses and one-offs to support an additional aspect of your role … keeping abreast with what's going on. … box-ticking exercises … when I started	'I think it's always been my own personal drive, I do think that does underpin it absolutely … it's narrowed as time's gone on … maybe when I went

	that [courses and CPD] to take my career forwards, because actually I could have just done all those one-offs and still not taken my career anywhere… the way in which I've reflected and joined those [courses and CPD] up with my own ambition, with my own aspirations and my own interests, which have then shaped my professionalism, my identity, my learning.'	out as a science teacher, as an NQT I'd go for a day here to learn about some kind of engagement in STEM, or I'd go to A-level courses to support that sort of teaching, and that's what I kind of know in my head is more sort of my CPD. And then I've gone through middle courses, middle leadership, senior leadership courses and I still see them really as CPD … were all great courses, I got lots from them and I'm sure they had an impact on my classroom practice and pupil outcomes.'	into it I wasn't sure where it would take me really … it was an opportunity that came up that then started to direct me down to early career development … it's changed over time by my own interests … finding my own niche … early career development of teachers … always moving forwards and I'm moving with the times.'
Teacher C	'Professional learning is very much a continuous process, focusing on inquiry, analysing what you do, reflection and evaluation. … Professional learning may be a little bit more self-directed … more about looking at students and what would help them to learn potentially. …. Professional learning comes through, maybe, more of the lesson study approach, that inquiry practice, where you're looking at how people learn and how people develop. … Professional learning is perhaps something that's a little bit more ongoing and constructive.'	'CPD, it felt like more of a done-to thing … CPD was more about what you wanted teachers to do. … to me CPD sometimes feels like a bit of a deficit model, where there's a problem and you put somebody on a course to fix that problem. … CPD was, you went out on a course for a day and came back, and I think the only thing you thought about or talked about was what you had for lunch. … you're inspired on a day's course and then you've forgotten all about it a week later.'	'It was very much about the CPD and then the joint practice development and then this more professional practice linking in with the whole accountability, where I feel it's more of an ongoing process, but I don't think we're there yet. … I worry we're actually going to take a significant step backwards, because CPD budgets have been squeezed … that's the first budget to go.'
Teacher D	'From professional learning you're developing continually and you're gaining experiences along the way and improving on what you already know and then building on those experiences. … professional learning is more about the whole of you and the experiences you use to build on … professional learning helps you almost teach anything, so the skills to be a teacher … the skills to teach and relationships with kids, your behaviour management and all those things, learning just happens anyway … those experiences you have used over the years to then go in and deliver lessons … I see professional learning as drawing on experience.'	'CPD is more about the development in a certain area – so, specific to something in your teaching that maybe you need developing further… CPD it's very much subject-specific and focusing in on an aspect of your teaching, so it could be assessment and moderation'.	'You continually learn and you will never know everything, but the aim is to gain an array of experiences to help you continually learn and to support your teaching practice … I guess they haven't changed, because you're always going to learn … maybe the intensity of what you're going to learn will change over time … it speeds up and slows down depending on your journey at the time'.

Teacher E	'Professional learning is a passion and enjoyment. Something to, kind of, develop my mind and develop personally and something I enjoy doing as well. … I get to choose what I'm learning about, something I'm interested in … if you've obviously got a passion for something you're going to put a lot more effort and a lot more time into it. … I think after a time really it becomes quite addictive … you get to a point where you don't realise how much time you've spent, actually learning, reading things, writing, analysing them, but you're doing it because you want to do it … you can see it makes you better in your role, in your job and whatever you do.'	'CPD is something you're told you have to do it. You know, you don't always get the choice about what kind of CPD you're doing. It's sometimes a case of, we're doing this because it's a whole-school thing and we have to do it. …, it's a hoop you've got to jump through, you'll jump through it because you're told you've got to do it, you've got to conform'.	'I have grown in confidence and gradually become more passionate and kind of addicted to learning. … I just want to achieve as much as I possibly can, because I think as I've got older, really, and I've learned more things in education and I've seen more things and more changes etcetera, I think I get more passionate about education and the different subjects that get more interesting.'
Teacher F	'Reflection and self-development. … The professional learning … that's more self-directed really … looking at a completely different aspect, you know, yes to do with education leadership, but it was to do with something I was interested in as well. … professional learning could also be developing your interests outside of school, using that sort of leadership focus but then doing something slightly different, a different, maybe route outside school as well.'	'CPD I've seen it as this idea of skill-building within the school, within your environment. Actually, you know, my route into leadership has been, well I need a specific set of skills and so I'd do the NPQSL [National Professional Qualification for Senior Leadership] and then I'd do the masters programme through the university, which has really helped with leadership, and all of those things have helped me build skills and that sort of thing with that, and that's what I sort of see as CPD.'	'It's definitely evolved, I've put down it's become more of a priority for me. For instance, year one of teaching, or year two, it wasn't necessarily about getting the qualifications, it was about building a team here. But then, you know, for instance this year I've done three professional qualifications, finished the masters and looking to do an Ed doc, so it's become a real shift, and it feels like a priority for me to build on that. And again, actually it's even more than that, it's something that I'm happy to finance.'

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
Teacher A	Subject interest: • curriculum, topics and specifications • knowledge, content, skills and activities • new ideas and approaches	Courses and qualifications: • undertaking masters study • attending training and courses • running courses and outreach work	Confidence and status: • growing confidence in own capabilities • feeling fortunate through external roles • unintentionally influential, protected	School deemed stable: • under pressure for continual improvement • competing, striving to be as good as other schools • seeking answers and solutions	Policy coherence *and* conflict: • pay enables retention (for some) and part-time role • changing governments and changing priorities

	Working with students: • teaching and equipping the whole-person • independence and responsibility • outcomes and results Working efficiently: • smarter rather than better • always meeting deadlines • clear direction from others Personal gain/value: • satisfaction and confidence • appreciation and respect • gaining qualifications	Resource development: • publishing resources and media • developing a subject-related website • trialling and adapting teaching resources Part-time teaching: • facilitating external work • spending time with students • affordable and possible Wider connections: • inspiration from current/former colleagues • working with subject associations and publishers • being in the right place at the right time	Offering and sharing: • understanding of learning benefits • sharing teaching resources • support offered to others Getting involved: • always saying 'yes' • external work sustaining teaching role • following instructions Being reasonable/pleasant: • strong sense of justice • seeing the good in students • easy to manage when well-treated	Leaders support *and* criticise: • punitive approach, looking for problems • enabling professional learning opportunities • change of headship, more supportive Relationships trusting *and* stressed: • supportive department team and leader • lack of time for collaboration, workload stress • marking and target-setting eclipses planning	• league tables mean competition, winners and losers Accountability pressured: • Ofsted judgements not trusted • pressure to cheat the system, whatever it takes • results at the expense of student independence Contacts and external roles: • skilful colleagues leaving teaching • widening organisational contexts • potential escape-route
Teacher B	Personal drive and ambition: • career aspirations and plans • confidence and performance • interests, enjoyment and comfort Student learning and care: • best learning experiences • results and outcomes • pastoral ethos, care and support Embedding practice: • common goals and reasons	Promotion and career roles: • fortunate, right place at the right time • moving into leadership • development initiatives (e.g. TSA-related) Courses, events and study: • role-specific one-off courses/events • doctoral study as a personal hobby • researching leadership performance Work-life balance: • professional commitments	Drive as response: • acting on opportunities, linking aspirations • competitive with peers • determination after setbacks Giving something back: • believing in and supporting others • making family proud • influence of study incidental Shaping of identities: • sense of belonging, niche • study moulding self, not shared	Partnership deemed effective: • outstanding school in a multi-academy trust • teaching school alliance and SCITT • exciting, innovative and forward-thinking Empowering leadership: • influential, aspirational and like-minded leaders • senior team with gender balance • homegrown leadership across partnership	Policy coherence *and* conflict: • conveyor-belt into teaching without nurturing • current recruitment and retention crisis • school-led system Accountability accommodated: • external follows from, not drives, internal accountability • unnecessary external pressure • external pressures vary across schools

	• doing what is right for students • changing and improving practice Nurturing staff: • recruitment and retention of teachers • early career development • homegrown leadership development	• family commitments Community feel: • like-minded colleagues • collaborative learning culture • finding a professional niche	• work/home hats, crossover Self-accountability: • being and doing one's best • self-conscious questioning, reflecting and acting • performing comfortably with confidence	Supportive working relationships: • learning pathways for all, staff and students • trusting and collaborative culture • niche, where comfort lies but not a comfort zone	Family and friendships: • proud parents working in education • supportive and caring partner • competitive peer group •
Teacher C	Personal and professional aims: • being trusted to do a good job • doing the right thing • transforming practice, moving forward Impact on student learning: • quantifiable outcomes, links with finance • less visible progress, what-how-why • best interests of students Developing others: • establishing programmes • self-directed learning • building individual and team capacities Implementing change: • common purpose, clear vision and rationale • involvement, taking others with you • designing processes and systems	Joint practice development: • practice-based inquiry and inquiry-based practice • courses and masters study • lesson study and triad peer review Team-working: • consultative and competitive • brainstorming then self-developing • developing, trialling, rolling out, evaluating Coaching conversations: • collegial questioning and listening • talking things through with partner • career opportunities Leadership roles: • specialist schools programme • TSA and SCITT management	Inquiry orientation: • engaging with research and evidence • becoming more reflective • tweaking, tinkering and tangents Nudging/influence: • sense of urgency, motivation • getting others to think/inquire • balancing coaching and suggesting Pragmatic flipping: • observing learning over teaching • seeking/sharing strengths over gaps • self-justification, pragmatic decision-making Self and organisational awareness: • internal accountabilities • managing dilemmas, sticks and motivators	Partnership deemed effective: • Ofsted-rated outstanding school within partnership • Teaching School Alliance and SCITT • performative culture, also developmental Empowering leadership: • influential senior leaders • focus on building capacity, developing others • young ambitious teachers and middle-leaders Supportive *and* stressed relationships: • strong team-working, collegial • teachers very busy, lack of time • squeezed funding for JPD, limited inclination for PBI	Policy coherence *and* imposition: • school-led system • financial and curriculum constraints • support for evidence-based practice Accountability accommodated: • focus on outcomes not processes • measures linked to curriculum impositions (e.g. EBacc) • mediated through self-accountability Family and social networks: • pragmatic and influential partner, also a headteacher • partnership arrangements and networking • wealth of web-based resources and social media

		• departmental line management	• recognising resistance and opposition		
Teacher D	Personal drive and role: • drive, stimulation, challenge, taking a risk • being a role model, students and family • firm foundations, teaching and inquiry skills Building relationships: • understanding students and situations • communication skills, talking to all • two-way respect, all equal Organisational skills: • time-management • being thorough, fine-detail, noticing • doing things well/properly, right reasons Holistic experiences: • learning from others, including students • linking learning to real-life experiences • knowing how other schools operate	Experience as opportunity: • sports coaching, mentoring then teaching • working in several schools • becoming a parent, taking a step back Changing roles: • subject teaching (PE) • pastoral route, head of year • part-time teaching, outside specialism Interactions with others: • conversations, connections and common ground • working confidently with parents • collegial co-coaching and modelling Masters study and inquiry: • guidance on starting points • reading as a trigger • doing and finding out	Being a people person: • empathy, sensitive to needs and feelings • taking time to find out, acknowledging differences • sociable and approachable, outgoing not loud Self-determination: • needing to do more, nothing just comes • juggling time and roles • putting oneself in new situations Drawing and building on experiences: • using experience without realising • helping with new experiences • adapting, sink or swim Putting learning into practice: • applying and re-creating research • supporting children differently, more ways to think • sharing with relevant teams	School deemed effective: • working hard, a treadmill • a different feel but still familiar Leadership and management: • supportive of study, providing time and funding • enabling different roles • recent change of headship Supportive relationships: • a community of people working together • changing staff, new colleagues	Policy reinforcing of values: • student inclusion and targeted support • parental engagement and relationships • addressing intergenerational underachievement External accountability: • self-accountability more prominent • to parents, students and the community Supportive and growing family: • encouragement from own parents. • studying alongside partner. • becoming a parent, spending time with family

Teacher E	Personal development:	Range of school experiences:	Seizing opportunities:	Deemed effectiveness lacking:	Conflicting policy direction:
	• developing own mind and thinking • growing in confidence and pride • achieving as much as possible, the best one can be Student learning: • involving students, learning for enjoyment • small steps in progress over time • peer and self-assessment, learning from mistakes Meeting complex needs: • formative assessment and modelling • knowing students, establishing relationships • gaining respect of students and parents Staff and team development: • upskilling TAs in numeracy and literacy • enabling sharing of student information • closing gaps in special needs knowledge	• teaching different subjects and students • mainstream and special education experience • becoming a leader and SENCo Supporting students: • own learning intertwined with student learning • trialling new courses and appropriate qualifications • communicating and interacting with parents Courses and post-graduate study: • integrated with workplace practices and roles • tutor support and relationships • time for practice-based inquiry Working with TAs: • observing and identifying successful practice • two-way logs to share information • providing targeted CPD and opportunities to feed back	• taking all available opportunities • reacting to perceived missed opportunities • encouraging others to find time Turning negatives to positives: • distancing from family or educational discouragement • support for students let down by limited resources • seeking leadership and support for improvement Enjoyment and passion for learning: • a sense of addiction, absorption • rich examples over broad data • supportive relationships for learning Valuing and leading: • helping TAs to see their contribution • enabling TAs to gain specialist know-how • caring for students, showing the way	• special measures, based on low achievement in maths • deprived and disadvantaged school catchment • lack of practical guidance and support Leadership supportive but distant: • senior colleagues supportive of CPD and PBI • leaders disinterested in outcomes from CPD and PBI • no answers or solutions to underachievement Stressed working relationships: • reduction in TA support, spread thinly • deployment to roles, outside SEN support and co-ordination • some TAs more proactive than others	• funding changes reducing support for SEN • increasing parental expectations for SEN support • students let down through lack of funding and support Pressured external accountability: • narrow Ofsted agenda focused on data • Ofsted judging but not helping • accountability shift from government/LA to academies Influential family and friends: • schoolteachers and family dismissive of ambition • friends and family making bad life choices • role model to daughter •
Teacher F	Personal development: • skill-building within the school environment	Gaining qualifications: • academic qualifications – masters and doctoral study	Questioning and competing: • knowing how to play the game	Deemed lacking, requiring improvement: • narrow gaps for disadvantaged students	Challenging policy direction: • non-selective surrounded by selective schools

• becoming a capable leader, ahead of the curve • identifying new interests and career routes Student achievement: • securing best possible outcomes and narrowing gaps • celebrating achievement at the heart of everything • behaviour, attendance and well-being alongside achievement Leadership and management: • establishing shared goals and purposes • seeking team buy-in • managing and organising systems School and wider development: • getting the 'good', improving results • building teaching and learning capacity • strategic education projects and planning	• professional qualifications – leadership and planning • linking academic and professional qualifications Professional relationships: • key people, peers, colleagues and mentors • colleagues in other schools and universities, networks and hubs • working within supportive teams and coaching groups Professional dialogue: • listening to others, talking things through, difficult conversations • planning opportunities through line-management • like-minded colleagues, gaining perspectives, being able to discuss Implementing projects: • reading around priorities, using research • taking and tracking actions, gathering evidence • distributing and delegating leadership	• responding to pressure and stress, sustaining roles • pursuing and financing own career interests Bringing back and acting: • learning from courses and colleagues, good and bad • thinking, planning and acting holistically, for achievement • being in a position to act Building trust/ownership: • trusting others and building own trust • finding colleagues who want to try and do things • taking ownership of quality assurance Treating people well: • finding out how others feel • respect for students breeding respect for staff • providing reasons for actions and purposes	• focus on results, but cohorts different • local school competition and changing cohorts Shifting leadership and management: • considerable changes of senior staff and union representation • initiatives dropped, others introduced • empowering middle leaders, less top-down Stressed and trusting relationships: • workload pressure and expectations, Ofsted looming • playing the game, massaging figures, taking the temperature • need for a staff forum	• LA maintained, reduced funding, arts cuts • changes to progress metrics, from C/D borderline to all students Pressured external accountability: • inspection ambivalence – real/false driver • rigid time-frames for improvement • threat of special measures and academisation Questioning family and friends: • negative view of the profession • raising questions over career route • prompting alternative careers

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
Teacher A	'when you're trying to achieve the unachievable [results], people who are in charge of that, I suppose, are just looking for ideas like the rest of us' 'the key moments, for me, have always been doing something for somebody that they've not necessarily asked for, or that they've not been able to kind of pay me for' 'confidence is the main thing really, because I think that's perhaps something that I didn't have very much of' 'I think I'm quite easy to manage, in that you've just got to appreciate me' 'actually what I care about is this subject [geography] and being with the kids … what I'm not very good at is any kind of pointless exercises or clearing up after other people, which I think the higher you go up a school the more you have to do things that are pointless or clean-up activities' 'I do what I need to do for the kids and I spend as much time as I can with them'	'what I do outside of school, which I think I find more useful' [working for publishers, exam boards, media companies] 'I think there's been specific people that I've worked with that have maybe inspired me' 'the headteacher at my first school that I worked at, who was a geographer, so obviously I worked quite closely with her. I found her really inspirational because she would often say, you know, you can do as well as they can' 'I found her inspirational, because when I first went to that school I didn't get on with her at all, because she wanted a full-timer and I came in as a part-timer … she was really resistant to that and made life quite difficult. … it was just that she really cared … and I could understand her motives. She was a fantastic geographer, so I found her quite inspirational' 'the organisations that I'm lucky enough to work with are all quite innovative and	'I would say that in some areas I'm really confident now, to the extent that I probably wouldn't be that easily … intimidated by certain things in school that a lot of people find intimidating like lesson observations' 'protection, yeah. But I also feel … that's put me under fire as well [success with external work]' 'if you're going to find something wrong anyway, I'll just go and focus on something else, where I get … a bit more satisfaction' [on being observed] 'I think I struggle to see the point of a lot of the things that go on in school, whereas I can see a lot of point in what I do outside' 'I think in my head I'm always planning my exit strategy. I don't need it at the minute, but one day I will' 'I just do what I'm told really … in reality I just follow instructions … At least I know what I'm supposed to be doing. So, I think I'm just very lucky to work with them' [external organisations]	'Once the funding got a bit tight, that stopped' [INSET from external providers] 'it felt like he was trying to assert his authority, re-assert his authority, put me in my place a little bit. He didn't say all horrible things, but he'd certainly got an issue that he couldn't suggest a solution for, which I thought, why would you do that really?' [on being observed] 'I think the style of management that we've got at the minute, and I don't know if this is representative of many schools, is very punitive, looking for problems … under pressure' 'it feels like it's coming from above the people above, it feels like they're under pressure and that's why they have to be so unpleasant as well' 'I don't think there's time [for collaboration], everybody's so stressed. … there's quite a lot of people upset nowadays in this job … doesn't seem to be the opportunity.' 'there's a lot of people that I work with, that say that they	[Outside trainer on INSET day] 'spent the whole day showing us lots of fun activities to do with kids, and then we had an Ofsted shortly after and they said the trouble is the kids at your place have a lot of fun but they don't really learn anything, so it was completely not the right advice for us.' 'I don't trust Ofsted at all. Having worked in different schools and compared them myself and seen their comparison, I don't trust them at all' 'we are encouraged to do whatever it takes [to get results] there are a lot of kids in the state system that are dragged through, where I perhaps put more work into that than they do' 'I'm not sure I agree with that as a system really. I'm not saying we should, you know, put them all somewhere and let them all fail, but I just think that the lengths that we go to and what we put up with'

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	'that's what keeps me here [students, kids] … generally, you can see the good in all of them, can't you, and even the ones that come in moaning are actually quite positive' 'I get an awful amount of respect from them [external contacts], even though … I don't do what they do. I get clear instructions from them' 'they'll give me a deadline … and I'll always get it in early' 'the need to introduce new topics and new specs. I quite like that sort of thing because it's motivating, there's something new there' 'Sometimes the kids, you know if you get a really nice bunch of kids you really want to do something different with them' 'Sometimes SLT [senior leadership team] will give me a job to do … I really got into it, I spent far more than a day on it, because I thought, I feel appreciated, I feel like they're asking me to do something' 'I am always making new resources, whether it's teaching resources or more	exciting, and there's lots of people with ideas in them. … Good organisations.' [working for publishers, exam boards, media organisations] 'I'm, always thinking, that'll be useful, I'll put that on the site' [teaching resources on own subject website] 'I tweak them in the lesson sometimes, if they're not working. I did it today. Sort of put the freeze button on and just tweak something' [teaching resources] 'we had the humanities status there [previous school]. … I did some outreach work and I didn't teach very much there really, I just had a lot of time to develop new ideas and so I'd done a lot of work on revision strategies. And then for the [subject association] I used to run these revision courses there' 'it's shaped by whoever I'm working with and for' [professional learning] 'a good qualification to have' [masters degree] 'I did research for the masters but I wouldn't do it normally'	'I just say yes, always say yes, and I think they quite like that' [external organisations] 'I think I've been lucky, but also I think they just appreciate somebody who's quite nice and just does the job really' [re work outside school] 'I would then give out to the rest of the department. But in terms of, you've put how does it influence practices in and beyond the workplace, I think it has minimal impact, in that it impacts on me and the people directly around me' [teaching resources] 'how can I do it more efficiently … I knock some on the head and try something different' [teaching approaches] 'understanding the benefits *so* that I could improve results' [revision techniques] 'all the kids that got their target grade or above did a greater amount of revision independently than they did in school. … I actually use that now when I do the revision assemblies … I show them that graph. I just say to them,	are only in the job because they can't get the same pay elsewhere. … it's not even so much the holidays any more, because I think people are working harder through them, they're worrying through them.' 'they've never announced that we've even done it, they've never asked to see the research, they've never asked for any feedback' [school leaders' interest in masters study] 'you've got current research that you've paid for, that's been done in your school, that's come up with points that you could act on, and you don't even look at it. I find that astounding really … lack of acknowledgement really' [school leaders' interest in masters study] 'I don't think they're [school leaders] the sort of people that think they've got all the answers … they can't be, surely, because things aren't working' 'one thing that kills people in this school is the marking, it's got to be done so thoroughly	'the system has sort of fallen apart a little bit really, because I think there's no responsibility taken by students, it's all on teachers' 'it's the same with league tables, somebody has always got to be at the bottom, otherwise the system wouldn't work' 'they've [private schools] got less pressure to cheat the system, which to me feels more ethical' 'I don't think most people come into a job like this for money. They come in because they care, and actually it's created a system where people are in it for money, rather than what they originally set out for, so it's a completely different job' 'I think some people have got used to a certain sort of lifestyle and are now trapped, because their lives have been built around it'. 'A friend of mine who was a geography teacher locally … really well-respected, he's given it up to go and work at [local foodstuffs factory] and he works shifts. He's on

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	efficient ways to mark or, you know, new activities'	'I think independently really, yeah. I'm not a natural academic really, and so I do tend to put things into place rather than initiate things' [on collaboration through PBI]	look, if you want to achieve, if you want to achieve your target, you have got to be doing more at home than you do at school'	now. … we've got to have a target for everything even if they don't need one … I can't cope with the marking, never mind about trying to plan nice lessons. …, I would guess that most people would spend 80 or 90% of the time marking and 10 or 20% of the time planning'	decent money because it's really boring. And he said the thing is, he said, you know I drive to work and I'm thinking about nice things, and I come home and I forget about things. And I think it's such a tragedy that he's not teaching any more, but he's a lot happier, you know'.
	'a lot of my intention's been on doing things smarter, rather than better, because we've got less time than we had before'	'I think, if there was more time, then yes … I do remember times in schools when I've had time to do that and it has been useful, but at the minute I think that people are kind of treading water' [on collaboration through PBI]	'I think I'm quite clear about what I'm good at and what I'm not good at, and I am good at following instructions.'	[school leadership] 'largely supportive' [of PBI, attending external meetings or CPD]	'Whilst this is over-simplistic, I think most things stem back to league tables … a lot of the problems are about us trying to get as good as the next school and, like we've said, you can't all be winners in a league table'
	'I used to feel I was much more innovative, I'd come up with new ideas, and now it's all about how can I get that onto the page without having to spend hours and hours and hours marking it. How can I do it more efficiently?'		'I'm not really a leader and I'm not very good with new ideas … I can solve things on a practical level I suppose, but coming up with … innovations I'm probably not so good at really. So, it's perhaps inevitable that what I do is shaped by what people tell me to do'.	'another enabler is the holiday time as well … but an inhibitor in term-time is the workload' [of PBI, attending external meetings or CPD]	'If it wasn't for league tables I think kids would be taking more responsibility. But I don't know what the answer is, because without the league tables and without the pressure, there would be some teachers that would coast and not do so well'
	'I guess I really wanted to know whether what I was doing was actually beneficial and to what extent' [revision techniques]		'I'm not sure that I could do this job without having those other things on the go, because I don't think it would be enough for me, and not getting enough from it' [external work]	'I remember schools being like that in the past, but I don't know whether they're rose-coloured spectacles … I do remember getting quite a lot of praise, you know, staff feeling quite valued'	'I do think league tables have been a massive driver in standards going down, because we're doing so much of it for them now, and morale plummeting really'.
	'understanding the benefits so that I could improve results … was what I was getting kids to do effective and were there better ways than others' [revision techniques]		'I don't do after-school boosters any more, from what my research has shown quite honestly they're better off without them, because the more they depend on me	'there's a couple of people recently that have said to me, you know, people really listen to you in this school. And I think I'm just a no-body'	
	'I think kids need to be more independent and think when they've got the tools to do things for themselves they will be more independent. And to me a kid that is independent and gets good				

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	exam results is a much better employee than a kid that's been dragged through and gets the same exam results. So it's about the whole person really'		the less they'll do for themselves' '[gaining a masters degree] made me feel a little bit more positive as well about my own ability. … I could cope with that masters, and I got a merit, so it wasn't just a scrape through. I think for me personally it's restored my faith a little bit' 'I'm very reasonable and very pleasant with people that are reasonable and pleasant to me, because sometimes we get a lot of the opposite' 'I've got a real strong sense of justice, to the extent that perhaps sometimes I would get myself into trouble on somebody else's behalf'		'We haven't got a true representation of what people can do any more. When kids leave school with grades, I don't think those grades are indicative of what that kid can do at all. I think they're indicative of how much help they've had. And that's not true with all kids, that's really mean to say that about some, but then you can't tell the difference' 'when I've read things, it doesn't seem to be a requirement of Ofsted [detailed marking]. And it doesn't seem to be the things the outstanding schools are doing … so I'm not really sure why we've got an obsession with it and I don't think we're the only school that has'
Teacher B	'impact on my classroom practice and the pupil outcome and all that sort of thing' [attending courses] 'aspirational journey of where you want to go as a professional' 'my own ambitions, with my own aspirations and my own interests'	'CPD one-offs … a day here to learn about some kind of engagement in STEM … A-level courses to support that sort of teaching … middle courses, middle leadership, senior leadership courses … they were all great courses' 'I wouldn't have become a middle-leader and I wouldn't have done the senior, if I	'what I've then done with that to take my career forwards' 'the way in which I've reflected and joined those [CPD opportunities] up with my own ambitions, with my own aspirations and my own interests, have actually then shaped my professionalism,	'in education that accountability is there from day one, you know, whether you're a classroom practitioner, your accountability is huge, because those pupils have got to go out into the big wide world and accomplish something themselves. … All the other bits, the external bits come along with it,	'we've all gone down very different career lines, but we all strive to be the very best we can be in our careers' [peer group friends] 'education has moved with the school-led system it's actually grown massively' [early career development in schools] 'I don't know whether we've had a bit of a conveyor-belt,

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	'I really do, truly believe that if you nurture young teachers and embed that practice you've got life-long teachers who care about the pupils'	wasn't making that direction, if I hadn't learned those skills, and coaching and things'	my identity, my learning that way'	because at the end of the day if you're doing that bit right, you know, the likes of Ofsted – surely you're doing that bit right. But actually, which one matters more? … I never think about the external ones in that sense; if we're doing the right job and we're making sure that everyone's getting the best outcome out of what you're doing, then the other bit will follow'	which has obviously now come to an end with the recruitment crisis that we're experiencing … that we were churning them out and we haven't nurtured them, we haven't looked after them and that's why they've left the profession'
	'ultimate aspiration, honest aspiration and not an assumption of where individuals ought to be going in their career'	'when you are a line manager with someone, you're engaging them in their own development, … where is that person coming from'	'one's got to move the other forward' [on the relationship between professional learning and CPD]		'I come from a really caring background. My parents were both in education, my father was a principal for many years and my mum was my teacher, she was my secondary science teacher, and I get a lot from them'
	'I've always been ambitious … I do plan where I am going … I do have my own personal goals'	'I've been very fortunate …I do think I've been in the right place at the right time as well'	'It's what you do with it, yeah absolutely'	'I think, my first real collaboration [through practice-based inquiry] has probably been with yourself [i.e. me], in the sense, of you've enabled me to reflect back on my own practice, what I'm doing, through your questions over the last few months. And the work that I do and the research that you [i.e. me] send to trainees and discussions we have around that, I think that's probably the first and only thing I have with collaboration'	'both of them combined have had a massive influence on me … they've always worked hard for us as a family and this is my way of paying them back' [own parents]
	'my future … I'm going to get somewhere. … I never imagined it would be education … But from that I did set myself goals and I was really determined'	'friendship groups definitely made a difference there … a group … who were also very determined, and set goals and planners … we all knew what we wanted to do. And we were competitive with each other and even now we're still close ... and we've all gone down very different career lines, but we all strive to be the very best we can be in our careers'	'I had to re-sit my A-levels … I started again and I think that was a massive turning point in my own mindset, of my own learning from that point. … I'd always enjoyed school … but I did lots of other things, had lots of interests and I never really found my niche. … so I started again, which meant I went to a complete new school, and that really did re-shape my mindset of where I wanted to go'		'My parents have set it all up and I've gone with that and I've been very fortunate to meet somebody that has allowed and supported me in doing that [partner]'
	'I always had my sights set on that end goal of making sure I could be the best I could be at each level and be as high as I could be, and I always strived to be headship'	'I moved from my first post and took a pay cut and people thought I was mad … I was going to a school that was very challenging … and again people questioned why I would do that … I said, well it's an opportunity for me'	'I've just taken opportunities, which has obviously shaped my professional learning … if there's something there I will do it'	'I don't think we've done it right. I think we've concentrated on, we need leaders, we need leaders, let's get people fast-tracked through to becoming these	'All the other bits, the external bits come along with it, because at the end of the day if you're doing that bit right, you know, the likes of
	'an opportunity for me to progress and learn and deepen my understanding of learning for pupils'		'everyone does things very differently, some of which I've agreed with and some I haven't necessarily, but will go along' [towards professional stance]		
	'your professional stance, you do as you need to do in the interests of the school'				

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	'I have to have something' [goal, challenge] 'again, it's my personal drive that's really taken me forward' 'at the end of the day, the thing that calls anything that I do, even my leadership research that I do, I want to make sure that it's better for the pupils that are going through the education system' 'my core belief of why I became a teacher, despite my professional learning growth, my changing – I'm not even in the classroom any more in that sense – everything I do still stems back to making sure the schooling system is where it ought to be' 'initial teacher training … mentoring … coaching aspect … NQT [support] … I've had most experience in that, so that's built my confidence, built that performance' [aspect/purposes of niche]. 'I guess I've got a real passion … early career development. I really do, truly believe that if you nurture young teachers and embed that practice	'I've had, again, opportunities to look at different leadership and different individuals, and obviously when you get a new head you often get new senior teams moving underneath … and everyone does things very differently' 'I went to see him for career advice … but he was really quite dismissive' [a former interim headteacher] 'an opportunity that came up that then started to direct me down to early career development … but even so, when that first arose, I had another opportunity with gifted and talented, so I still kept my options very, very open' [teacher early career development] 'become an area of specialism in that sense … narrower but not narrower because of the way education has moved with the school-led system it's actually grown massively' 'Despite the fact that you think, oh, a narrow down will close doors to you, in fact with the way in which education's gone or going,	'I've always been like this, if you tell me I can't do something I'm probably more likely to go out and do it, so that kind of made me more eager' [on knock backs] 'that really knocked me at that point … So, again I delved myself into my own personal research and things like that more because I have to have something' [on dismissive interim headteacher] 'again really knocked me. But I had the same mentality … I said, no, I'll just prove him wrong, I'll just prove him wrong, and … so I did have to drag my career back up' [on criticism from a senior colleague] 'I'm not saying I bit back straight away and really went for it straight away, but I certainly, you know after reflection, I just took the attitude of, well no I'll just to carry on' 'You're asked to do something and you don't need to prepare massively to do that … where I feel most comfortable' [on niche]	leaders, and actually are they people that we want leading our establishments' 'I think that's because of the culture here. It's such a learning, everybody is on a learning pathway here, no matter who you are, where you're at. Pupils. It's such an exciting, innovative, it really is so forward-thinking about education. Obviously it helps that we're in an exciting time with regards to some of the key changes, but again I really don't think that the organisation of this MAT is driven by those external agendas' 'they're still accountable for results and things at the end of it, but I don't see staff here like I saw staff at my last one [school]. I saw people really down-trodden, really just waiting to get out, because they were just fed up with it being so top-heavy, you know, you're now implementing this, you're now doing that. Whereas here they work together … it's very much, as I say, a collaborative approach on absolutely every level'	Ofsted – surely you're doing that bit right. But actually, which one matters more? … I never think about the external ones in that sense; if we're doing the right job and we're making sure that everyone's getting the best outcome out of what you're doing, then the other bit will follow' [self-accountabilities] 'the accountability is yourself and the external factors will then just follow' 'maybe the school system, how it's been over the last twenty-thirty years, you could have predicted this end really. …, I think it's really shifted in the last few years. I think the leadership recruitment crisis was inevitable, if you put pressure on people to do things that aren't necessarily necessary, then they're going to dip out. And if you train people up for something that they're not really wanting to do, they'll dip out'

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	you've got life-long teachers who care about the pupils.' 'make sure it is the right thing … to make sure I can do the very best I can and having the best outcomes I can for the individuals that it impacts on' 'If I write an NQT programme it doesn't impact on me, it impacts on the NQTs, so I'm conscious, is it the best thing for them, have I incorporated everything … because ultimately they then go back into a classroom and have an impact on pupils and they're our next generation' [purpose and response] 'pupils have got to go out into the big wide world and accomplish something themselves' 'it is a hobby, and I don't intend for it necessarily to have that impact, I do it because I enjoy it … and I choose the topics of my assignments … more for what I have an interest in, on an extra level' 'I did it on something because it was more personal to me, about performativity' [doctoral study focus]	actually it's opened doors for me' [focusing on early career development] 'It's become an area of specialism' [early career development] 'I think if you put that programme in place for them, and you care about them, they will care about the pupils, they'll enjoy the job, they'll see the rewarding aspects of the role and they'll stay in the profession, and they'll strive as well' 'My own study … writing this piece of work for the last seven years' [referring to thesis] 'I've been very lucky with some of the leaders I've had … I've worked with some really aspirational individuals as well who've definitely had an impact on my professional learning' 'I think just talking with yourself over the last eighteen months, going through aspects has really helped, and my own drive and my own career and just made me really interested'	'they've always worked hard for us as a family and this is my way of paying them back … it's really to make them proud' [on parents and family] 'I'm not the most confident of people, which is where my thesis [leadership performance] kind of came from really, because I have to believe in what I'm doing and I don't always, if I'm completely honest. So I think it's my own self-consciousness that's driven me, to making sure that I can be doing the best I'm doing, and I'm always questioning it' 'in education that accountability is there from day one, you know, whether you're a classroom practitioner, your accountability is huge' 'actually writing a self-evaluation, writing your action planning is part of your process, of your reflection of improving things the next time anyway' 'I'm always very happy to change things, for me it's just about timing of when's	'I think that's [a focus on best outcomes] all they had at my last MAT. And you can see why MATs get bad names for themselves in that sense then'	

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	'it's more my interests that drives my research, it naturally has an impact but not purposely'

'I think where my interests and my passion now lies is, can we develop, let's focus on developing our own leaders, those who have that demonstration, those who have that drive. It's not something everybody should do, but those who have that drive in developing leadership skills will then be confident with their performance in doing that, and will be the next leaders'

'I'm not here to be massively judgemental, I'm here to just see what you do on a daily basis. Now, I've always seen that as a positive thing, because actually if you're not quite there you get feedback to say how to improve. Or if you are there, then don't worry about it. … I'm here to make sure that the pupils are learning in the classroom under your care, and if they are, great. It's about instilling the reason people are coming into the profession and | 'moving here to [current school], with recent announcements you know, [new headteacher] is a phenomenal leader to aspire to and actually has been my first female leader, I've always worked for males up to now. … It's great to meet like-minded females who have that career drive but still … sentimentally attached to their family and home lives and actually demonstrate you can do both'

'to be able to have conversations with people and again, have that sort of drive and incentive to continue to improve our professional learning, because people are doing it around me as well, so you know, it was a really good move'

'[until current role] I've never been able to sit and talk research with somebody in an education setting, as well as have that … understanding of personal work-life balance in the same mind-set that I have it'

'I've never worked for a female leader, until now and | suitable to change things and I don't always get that right, in all honesty, but if I know something needs to be changed, it needs to change' [purpose, opportunity and response]

'My own study has probably shaped what I've ended up doing, without actually realising it ... Yeah, the more I reflect on that, I think that has taken a big shape of who I am as a professional now'

'Maybe I've just become what I have written … I'm not sure, but I certainly think it's subconscious or coincidental … but I do think it's moulded who I am … I've grown with it the more I reflect on what I'm doing, and not just on the idea of performativity … I think just the way in which I approach things, possibly, experiences, has definitely developed … opportunities have arisen and I've gone for it … it's that reflection of moving things forward and being comfortable, if something's not right, to then change it'

'I've mentioned a couple [of leaders worked for] that | | |

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	embracing that' [on observation] 'embed that learning and the results will come at the end. Because if you get it right, if you get the learning right for the pupils from Year 7, well from Reception, because it's a primary and secondary trust, if you get it right then the results will follow, and attitudes will follow' 'it's more than just making sure that the pupils have the best outcomes, because you'd hope that's a common goal in all schools, but it's more than that … I think it's that pastoral ethos as well, not just for pupils but for staff as well. People are in it because they enjoy it, and if you don't enjoy being a teacher then … you're not in the right profession, but you're certainly not in the right school, because you've got to really want to do it here, for the right reasons' 'I do think it's about leadership, definitely … it's about homegrown leadership as well, because actually if you look across our schools … there's an element of	there's a lovely balance on our team here, it's about 50-50 … now I've experienced the fact that you can get the balance of a senior team right, I couldn't go back to one that's perhaps not in the balance that I feel most comfortable with' 'Has that come with experience, has that come with time and does it come with position?' [confidence and performance] 'I do sort of put a work hat on and then a family hat on. … From my own research, a lot of leaders do *do* that, some more consciously than others, and some better than others' 'if you give people opportunities to develop themselves, to reflect and move their practice forwards, where they want to move it, then surely, it will take time and that's obviously where the issue lies, you'll end up with people who *do* want to lead schools, because they're passionate about why they came into teaching and the outcomes that are there'	probably made me bite, but again, really good in the sense of my career because I've risen to the challenge' 'They [former leaders] didn't have that empathy and relation, and perhaps personal skills in their role to be able to try and understand the angle in which I took my work and where I was coming from, which is what made me move on' 'My own inquiry/research, the work that I've done, even with my masters, even with this current study … I never share it with anybody in school. Other people do and they even seek the funding through the school and they'll bring it back, I don't because to me it's a hobby' 'has it then had an impact on me? Yes. And that must have therefore had an impact on my professional persona within my working establishments since doing it … I do now believe that I've got far more confidence in what I do. … if you ask me to present about something about initial teacher training routes … or anything like that,		

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	homegrown leadership in all of our schools. … we've got vice-principals in the school who trained through our SCITT … they care and they're giving something back'	'I think as my career's progressed and as the school system's moved forward over time, it's then shaped where I am and where my beliefs are' 'My own personal inhibitor for my own professional life is just finding that work-life balance, but I think that's for everybody, and being comfortable with whatever that is for you. … School-wise, role-wise, it's just that drive to be whatever I can be' 'Moving here has definitely been the best move I've made career-wise, but I said that about my last move because I learned so much. But I think for the first time in my career I'm not twitching to go, right, what's next, what's next, what's next' 'I don't want to hierarchy it … science colleagues will give me just as good pastoral support as … senior team office. … it's a proper community feel, which is nice, a like-minded feel'.	I now have that confidence in doing that, because I believe in that, I understand it, I can do it and I can give something back about it' 'I certainly think it's made me focus on developing myself' [research and inquiry] 'my self-identity and my professional identity, I would say, are different. There's natural crossover, I don't think you can be one without the other' 'I take a professional hat off and put a family hat on, but I still take bits home to discuss and question' 'the accountability is yourself and the external factors will then just follow.' 'It's only fortunate that I've been able to … look further down this idea of developing leaders and linking in that performance in there, which I think is again why professional identity has taken more of a role within it than I initially anticipated' 'I'm not grown here, yet I feel that as if I was, because maybe it's just instilled all the		

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			way through what you do' [on homegrown leadership]		
Teacher C	'CPD was more about what you wanted teachers to do … CPD sometimes feels like a bit of a deficit model, where there's a problem and you put somebody on a course to fix that problem' 'professional learning was more about looking at students and what would help them to learn potentially … you're looking at how people learn and how people develop' 'the whole purpose of professional practice … is self-directed and is developmental' 'any time I want to try and do something different or change the way, you've obviously got to have the rationale for doing that, but unless you build that urgency in, then things just trundle along and nothing much happens' 'it does have that real transformational aspect on your practice' [masters study and engaging with research]	'professional learning comes through, maybe, more of the lesson study approach, that inquiry practice' '[teachers] like to go to a course and come back with lots and lots of ideas that then they can go and do in the classroom' 'I think we've moved … to more of a joint practice development approach … when we started working as a Teaching School … was a moment when I realised the significance of that difference. So when I'm designing for example CPD programmes, or when looking at CPD programmes, I'm trying to balance that' 'we're planning … to develop more of a triad approach of professional learning. Looking at different classes and looking at teachers who are teaching similar students in the same classes and work within the triad across the year. Which I think will be really good, but then, I was	'[JPD] evolves and it takes a lot of thought and it takes a lot of analysis and critical thinking' 'I can also see why they want to do that [use a stick], because when they've tried to do things like that before it hasn't necessarily worked, and perhaps that's a stage an organisation has to go through before, to get people to see the benefits of it, before then you can come out the other end' 'if we try and get that urgency built in right from the outset, then that just gives the momentum of its own and you've got that intrinsic motivation then from people, rather than the extrinsic motivation' 'for me, by looking at the research and reading journals and reading research … it's made me a better practitioner because it's made me more reflective. Sometimes, that has a negative effect because it	'I think probably as a school and maybe as a profession that we're only really starting to scratch the surface with professional learning' 'you just have so many things hitting you in a day' 'teachers are so busy they haven't all got the luxury of a lot of free periods or a lot of free time, because to be frank they're just marking, marking, marking at the moment, they haven't got the time to do all this' [JPD, practice-based inquiry] 'if you talk to any head they'll tell you the most important thing for teachers is CPD, but they don't put their money where their mouth is in that aspect at all, that's the first budget to go' 'I don't think we'll ever get the profession to the stage that we're all … researchers and evidence-based practice because frankly there isn't enough hours in the day and that is the main barrier to it'	'It [quantifiable target-setting for specialist schools] wasn't a bad thing at all, it was just a little bit over-done' 'the financial climate that schools find themselves in at the moment, where they can't afford to send people out on things … CPD budgets have been squeezed' 'Twitter, which has almost developed its own communities, if you follow some interesting bloggers and educationalists then you can get some really interesting things from that' 'things like the old National College [for School Leadership] website, which has now gone was fantastic resource, and TES, there's lots of fantastic online resources' 'something that I've looked at … is that performative culture and actually is that a positive thing. … It comes purely from the government accountability measures that they put in place and then

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	'look at the things that have worked well in the department and have had an impact on results' 'he [LA specialist schools adviser] was the first person really who made me think, which seems ridiculous really because it was probably my fifth or sixth year of teaching, who made me actually think about the link between what I was doing and the impact that that actually had' 'it was very target-driven and quantifiable targets' [specialist schools] 'more conscious of the link between finance, impact, what we do and how we do it' 'you sort of come out of that the other end and realise that quantifiable outcomes is just a small aspect ... of what we do as educationalists and the other stuff is, as equally, if not more sometimes, important' 'when you have got limited resources … limited finances and limited time you do have to look at what works best and what has an impact'	talking to the two people who we've tasked with developing it … fantastic people, they're great … they've said when we've tried to do things like this before it falls flat on its face because people are very busy, we need some sort of stick … meaning performance management – we need to do it. But then if you've got that stick, that to me completely negates, I suppose, the whole purpose of professional practice' 'talking about things that have been … light-bulb moments in terms of my development, starting the masters would have been one of those because, although I was interested in educational research, like most teachers you've … read bits in bite-size chunks … but never really properly engaged in it ... as much as I could have done before starting that' 'I was lucky to have a very, very good head of department, which is extremely fortunate isn't it as an NQT. If you haven't got that, your colleagues are about the most important	slows me down, which is frustrating. I don't always do things as quickly as I would like to do them' 'I've tried to flip it a bit … looking at what another subject does particularly well and trying to transfer that practice and doing it that way … it's trying to get other people to think, maybe, in that little bit more critical way and try to engage with the research' 'if it gets people just thinking a little bit more critically about what they do then it's starting to nudge people in the right direction.' [on using evidence and inquiry] 'I suppose I modelled my own leadership style very much [first head of dept.] … did everything himself and led by example … put in a lot of hours, he did a lot of extra-curricular activities, cared about the kids' 'I would say it had a significant impact really in the way I thought about things' [specialist schools leadership] 'however much you don't want that to be the case	'I think I am closer than most people in the school to seeing the partnership as my workplace, because of the role that I do, but it's still very much [name of school]-centric as, inevitably, it's going to be when you're based there' 'People are thinking about their jobs and their schools and what they need to do, but I'm not sure that we always do things that are in the best interests of the students.' '… where I sort of saw red really, I think in leadership group, when people try to justify it, in the sense that, you know, it's really important that kids do a modern foreign language, it's really important for our future and our economy. Well hang on, we weren't making this argument two years ago or three years ago. I would have felt much more respect for that person if they'd made the argument then, but now we're making it and we're trying to almost justify why we're putting these policies in place	schools are forced to go down that route' 'We had a big argument in leadership group a few weeks ago about the EBacc and we're making our kids, not all of them but where they can, do the EBacc. I haven't necessarily got a problem with that, in terms of that balanced curriculum, but as a result we've gone down from four music groups, which we've currently got in year eleven, to one that's opted for it next year, which is really sad.' 'I think probably over the years, particularly with coursework, there's been a lot of malpractice as well in terms of getting those outcomes. You know, I haven't got any firm evidence to support that but I strongly suspect the rules are bent' 'if they get that C then it's opening the gateways for them isn't it, into all sorts of things. That's the key that unlocks the door for these kids'

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	'[leadership] it's not about doing everything yourself, but it's about developing others … and developing the capacity in others to do it, because that builds the capacity as the team' 'certain issues and certain things that you need to develop and you want to develop' [supportive colleagues] 'don't tell you what to do but trust you to do that good job but ask you the right questions' 'my thinking has changed on that very much from the teacher performance to what the students are learning and how they're learning, and different ways of learning and looking at what the teacher does that impacts on that' 'We realised quite recently that there still wasn't enough emphasis on pupil progress' [in trainee lesson observations] 'We developed, sort of, a whole coaching approach rather than the mentoring approach' [to supporting trainees]	thing I think you can have at that stage' 'It [specialist schools management] was a really good leadership experience' 'a lot of these one-days … old-style model because that's what schools want, because it's cheap, it's easy, it's got limited effect on cover' 'My [partner] is a headteacher and I talk through lots of things … very much a pragmatic nature … a lot of common sense … a very good person to talk things through with, that's certainly … a profound, I suppose, impact on my practice and the things that I do' 'talking things through with [colleagues and others] can give you those light-bulb moments, which then enable you to move forward. … having those conversations at certain times when they're needed as well' 'the masters and working on that has had quite a big impact really on my professional learning and the way I see things'	[CPD/JPD budget cuts] you've just got to be … pragmatic as an education leader … you need teachers in front of your classes at the end of the day' 'it did change the way I thought about lesson observation, about lesson feedback, but also just in day-to-day interactions with people' [coaching course] 'it's trying to get that balance between giving advice when it's needed and trying to coach people in seeing things and coming up with their own solutions to problems' 'it's sort of flipping around, so it's observing from the point of view of the learner rather than the point of view of the teacher' [response leading to opportunity] 'What we were finding, very much so, was that the comments that were coming back were all behaviour and classroom management, because it's really visible' [observing trainees] 'We changed and we tweaked the lesson observation form as a result, we analysed what we were	because of the wider, and I can understand why we do it, we have to at the end of the day' [organisational awareness] '… what I hate most on leadership group … constantly it was about, because Ofsted want us to do this, Ofsted want us to do that, and it just drives me mad because personally I think that's weak leadership. If we're doing something because Ofsted want it, then we're not doing the right thing, are we? … I think you want to self-justify if you are going along those lines, that you feel you have to, because it is being imposed from above. But I think, I suppose, a strong leader doesn't want to necessarily admit that they are just doing it because of accountability measures, because it is quite a weak argument … in terms of your staff. So you have to sort of flip it and, whether you believe it or not, you have to come up with, I suppose, your own rationale for why you're doing something and for your own self-	

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	'we're trying to see the impact of the tinkering as well, if that makes sense. But it's whether what we're looking at in terms of impact, is the right impact sometimes' 'the only reason for re-designing the form is to get the trainee teachers and their mentors to reflect on their practice, to help pupil learning' 'move to the next stage about what actual impact is that having on the learning of the students … when you're working with people in lots of different schools, and you haven't got that direct daily contact … with some of them, you've got to design processes and systems to almost force them to reflect a bit more in that way' 'joint tinkering. I think that is the right way of going about it, and if you are trying to do anything or change anything, you can't do that in isolation' 'get other people involved, maybe a cross-section of different faculties and working groups to look at	'start off as coaching conversations but then it would be … listening to him, but then he would tend to put things in place which would then have a profound impact on my next move and the next thing I did' 'I went on a coaching course … three or four years ago now. I don't think I properly understood the concept of coaching before I went on that course' 'although that was something that I led on it was very much a team approach … it was everybody that was involved, it wasn't just one person imposing on others' [developing trainee coaching and observation] 'some of the CPD that we've developed as a teaching school … has been something that I've worked with other people on, rather than, sort of sitting in a room in isolation' 'I like having an initial, sort of, brainstorm with other people and getting other people's ideas and viewpoints on board, but then I like to go	doing and then we provided training for mentors across the school' 'We're constantly tweaking and tinkering, and we actually get on each other's nerves a lot of the time, because there's too much tinkering!' 'the research that I looked at and I read as part of that really helped that practice and helped that to evolve. I think it would have been a lot more superficial if we hadn't done it like that' [lesson observation] 'if you just do something and roll it out then immediately people's reactions, when you've got experienced staff, it's immediately sometimes one of, sort of, resistance and opposition' 'trying to get them [keen middle leaders] to think a little bit more long-term about how you take people on that journey with you' 'starting the masters … made me engage, I suppose, with the literature much more, and I think that's really important. … I think that when I've finished my	justification. So, you can argue that to somebody else without just saying, very weakly, well I'm sorry I don't agree with it, but this is just what we have to do' [complex response, organisational awareness] 'I do still think there's a bit of sniffiness about research and development in education. I do still think people think it's a bit, I don't know, a bit nebulous and a bit academic and isn't rooted in reality' 'I think a lot of SCITTs and Schools Direct do a good job of blending, as do universities, but I think there are some programmes out there that almost are disengaged in the whole theory aspect at all and the practice-based inquiry'	

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	that, and then tinker again before rolling it out further then I think that has an even more profound effect' 'building programmes that are suitable for colleagues within our organisations, and not just our own organisation in isolation' 'trying to move the SCITT team from being really good classroom practitioners to have that little bit more of a hard-nosed business edge' 'building that common purpose, and if you've got that common purpose as a team, and you're all sort of working towards that clear vision, and if you can get that vision right, then that very much helps the fluidity, I suppose, of that inquiry-based practice'	away and just do it myself without anybody else's input at all. But then I very much like to go back to people and get people's viewpoints' 'that's the beauty of the masters as its constructed, that it's based on things that are happening in your own practice'	masters, that that is something that will stay with me' 'you sort of know a lot of the time in education, and particularly as a senior leader, that you could do things a lot better and you're not doing things as well as you perhaps could if you just had a bit more time to do them' 'when actually you've got the time to do it and sit down and read and research and, sort of, go off on tangents, it's really really quite interesting' 'Ofsted were only in for two days, I wanted to actually look at this myself, and by doing a proper analysis of actually what the data was looking like and then moving things forward, rolling out some training, working with staff and interviewing people' 'it's certainly something I encourage the team to do when we're looking at things, is to try and have that inquiry as part of what we're doing' 'consultative rather than collaborative I think, if that		

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			makes sense' [ways of working with others]		
Teacher D	'improving on what you already know … something in your teaching that maybe you need developing further' 'deliver those lessons with confidence' 'I think if you've got the skills to teach and relationships with kids, your behaviour management and all those things, learning just happens anyway' 'working with children … that's all I've ever done, worked with children, obviously now in a teaching capacity' 'coaching … gave me the basic skills in life, like communication, projecting my voice. …, those kind of skills … are going to really help you as a teacher. … the skills of working with people' '[coaching skills] taught me how to build relationships with children, and I really feel that that's why I have good relationships with children in schools'	'Teaching just followed on really from the coaching … from that, then became head of year … now I'm back to school part-time … but I feel that all these experiences have given me the confidence' 'eventually I've led down the pastoral route, because of being a people person' 'my next big moment was doing the masters degree, because I'd never really even thought I'd do a masters, and of course the school I ended up at gave me that opportunity' 'experiencing it and coming from a bit of a football background has really helped me to engage with, maybe some of the more difficult students. … I probably don't realise actually, it just comes, it's only talking about it now that you think, oh yeah, that has really helped. You just do it, until you think about it' 'doing the head of year role made me realise that there are more aspects to school	'I see professional learning as drawing on experience, I feel that I've just used my professional learning to help me, sort of integrate back in'. [returning to work following leave] 'coaching gave me the confidence to work with children of all ages' 'I decided I kind of need to do a bit more now, I feel I can't go that far with coaching any more, where do I go? And that's where it led me to teaching' 'that [masters study] made me then think about things. So, it makes you more reflective and then all the different assignments you focus on really make you look into teaching so differently' 'the main thing I ever got from that [apprenticeship combined with A-level study] was, how do you juggle everything? So, time-management became something I learned from a really young age and that has really followed me through'	'[The football club] had links with schools' 'maybe, further down the line, I would look at another school, but right now, no' '…there's a lot of new staff, quite a few have left, so it actually has a different feel to it. We've got a new Headteacher, so in a way there is a feeling of you're in a different school, but you're not' 'It's interesting for me because it's making me think, oh yeah, you're kind of in a new role, and it's all different, even though you're in the same school' 'to me it's just a community of people working together' 'I think it allows for that. I think, the students allow for that as well' [on the school as a supportive community] 'From the school, I could say can I have some time, or can I not be used for a cover lesson today, because I need that lesson to look at certain things. Not always, but	'being a mum, I still want time with my baby' 'I wrote down family, that's the first thing that came to my head. Why I wrote it I don't know, but it just came to my head' [external influences on professional learning] 'you always want to be that role model to the children in school, but there's a time where you have to think about your own family' 'factors outside that drive your professional learning, so yes, you've got family and the other thing was, literally, just using your own experiences in life to help you, and that could be absolutely anything, like coaching in America, talking about the Grand Canyon in a geography lesson, or however it may be. You come up with different things of your own experiences in life that you've seen or done, and trying to bring that into the classroom' 'I know that my mum wanted to go to university and my

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	'doing the head of year role made me realise that there are more aspects to school life other than the curriculum'	life other than the curriculum. There is so much more outside of the classroom and doing the pastoral role has made me realise that' [purpose, opportunity and response]	'what helped me do my masters … I was so strict with, I've got to do this … I'd have a timetable written of when I'm working, when I'm doing my assignments, when I've got free time. … I did that when I was at college, because I had A-levels and then apprenticeship to juggle'	towards doing the dissertation I asked the school for more time in that sense' [for practice-based inquiry]	dad did, but they didn't feel their parents pushed them enough at the time. They didn't push me at all to go to university, but when I decided I wanted to they were really supportive. So, I think it's not necessarily about what your parents did but it's the support they offered, and I think that'll be the same for me'
	'right now, I don't want to be full-time and be on that treadmill as much, but I also know that I need to keep learning, because I don't want my brain to get stagnant'	'it's kind of like time to take a step back but to realise that the route's still there eventually, and I still feel I know my route is more pastoral than curriculum. …I know that doing a head of year takes up so much time, so much, but I did really enjoy it when I did it, but it was a lot easier without a baby'	'I talk to them about what I did, so I used to work at a football club, so when you have disengaged boys suddenly they've really switched on to you. And obviously I played football, so being a PE teacher, sometimes it's harder for a female to get boys onside, but I've never struggled with that'	'I feel that it was certain areas of the school that you used it for. … some of my assignments were PE-based, so then things that I'd implement were not for whole-school but just for the PE department. So, as a whole school, I guess, I guess the answer's no, but as certain areas of the school, yes' [on whole-school interest in practice-based inquiry]	'my grandad, he had the opportunity to go to university, but his parents could never afford it, so he always used to massively support me when I was in education. … So, it's sometimes just about being supportive and letting you do whatever you want to do, but with the support'
	'I think I'm thorough … I had to be organised … fine detail is important to me' [on noticing]				
	'I want to be a good role model to my daughter, so although you want to be a good role model to the children, you want to work, you want to achieve, you want to show them you work hard, so that they can then eventually, hopefully do the same'	'that's where I started, so I think that's where my strength is' [studying relationships through masters]	'There is so much more outside of the classroom and doing the pastoral role has made me realise that'		'now I've just had a baby, I guess my professional development is kind of put on hold a little bit, and you do things to suit your family now rather than yourself'
	'using life experiences to make real-life links to teaching and learning'	'during the masters I learned a lot more then, so maybe the intensity of what you're going to learn will change over time, sometimes you'll learn lots, sometimes, like for the last nine months I feel that, I've learned a lot about parenting, but in the education system I haven't learned so much because, you're taking that time out.	'what I've learned from my masters I still know that I'll be using that later in life'		'my mentor, which was you …, I think the support from that used to give me the foundation to then go and, go away with it I think. I used to struggle to start something
	'I'm drawing on my, not just my own experiences out of the classroom, but other children's and bringing them in to sharing their		'you also learn by having a baby, because you maybe mother the younger kids that little bit more. You have a better understanding of their		

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	experiences. Because, you don't just learn off a teacher, you can learn off everybody' 'they become mini-teachers, because they have experiences outside of the classroom as well … the kids are so engaging with that, so, it works' 'I'll be a role model, but nobody has to do exactly what I did, but I'll talk about the experiences and support you' 'gain life experiences … you haven't got to do it this way … it's letting them know there is no set way of doing things' [guiding student choices] 'life experiences … have taught me how to speak to people, how to be organised, how to manage my time' 'I didn't want to be stuck in one school because I wanted to know how other schools operated' [placements when training] 'being a role model for students, offering them the best, being put in different situations and learning to	So, I think it just, it speeds up and slows down depending on your journey at the time' 'when I always met parents … I didn't feel out of my depth and that I hadn't got a clue, because I wasn't a parent, but again I guess that's working with children for half of my life' 'I guess it goes back to the professional learning, the holistic teacher really, the whole experience. He's a maths teacher, he's brilliant at maths and he could help me when I'm delivering my maths lessons, but it's I suppose about sharing the learning, so I'm going to do that a little bit more with him now. I've said I'll take form a few times, so that he can take a step back and watch somebody else, but again I stress to him, that doesn't mean that's how he has to deliver it, because we've all got our own personalities' [purpose, opportunity and response] 'I've been put in a situation to teach RE, I'm not necessarily that strong in it, but I'm confident to deliver it	needs and sometimes you think from a motherly point of view now, rather than just an educational point of view' '… probably more empathy now. … I think you push barriers a little bit and make allowances that maybe before you might not have understood … you're learning in a different way aren't you, in that you're using your own experiences now, that help you link them into school … you try and think more like a parent now rather than just a teacher' 'noticing … taking the time to find out, and I think that's my pastoral side' 'I guess I'm still using my pastoral experiences without realising … I'm out of the pastoral role, but in a way, I'm not. It's always there … actually using it to help other staff that are coming in' 'factors outside that drive your professional learning … you've got family and … just using your own experiences in life to help you, and that could be absolutely anything'		but once I'd got the foundations I could then fly with it' [enabler of practice-based inquiry] 'we were both focused on learning, so I think that helps. You didn't have those moments where, oh I should be socialising with you and going out for a meal. Actually no, we've both got assignments to do so let's do it' [partner also studying]

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	adapt' [internal drivers of professional learning] 'my brain is still stimulated and feeling challenged, so I don't feel that a knee-jerk reaction is I need to get out right now, because my brain is still being challenged, but in a different way' [on gaining new experiences in the same school] 'now I'm not juggling, so whether it's my own subject, or RE or English, I can fully focus on the curriculum aspect of things now' 'I don't feel like I'm becoming stagnant, because I'm just using my brain differently in my teaching … I feel that I've got new challenges' 'you become more economic with your time as a teacher, so you've already got resources planned and things like that' 'I feel that the quality of my teaching could actually improve now, because the time I've got in school can be fully focused on my lessons' 'trying to link things to the real world … helps to build relationships with students …	because of my teaching experiences'. 'I didn't go into teaching until a lot later, but I think that's made me a better teacher, because I've got all those other life experiences' '[The football club] had links with schools and when I was looking for a job when I was leaving university they worked with, like, mentors in schools. So, actually one of the guys at [the football club] helped me find a job in a school, to be a mentor and that's what said, OK maybe I'll go into teaching.' 'I did a PGCE, but at the school I did the mentoring in, they offered me a GTP, and I thought, well then I'm only ever going to know one school. So, I wanted to do a PGCE' 'being put in different situations and learning to adapt, I guess is what I chose to do … to give me the experiences for my professional learning' [purpose, opportunity and response]	'I think you have to put yourself in a situation for something to happen, but we don't know what's going to happen and that's where I think you're not in control … going to happen, but if you don't help things happen, then it won't ever happen' 'I think I'm quite outgoing and sociable, not loud, but sociable' 'it shapes your personality to, well, to adapt … because of the situations I've put myself in, it's shaped me to be that way … putting yourself in so many situations, you have to sink or swim' 'You can draw on those older experiences and, you know, recreate them to help you a little bit, but you're not spending as much time as you used to when you began teaching, because you've already got the experiences. So, it's just adapting slightly differently' 'It helps you to understand children a bit better or even to think how the parents are thinking when they send their kids off to school. Yeah, it just		

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	they become a little bit more stimulated sometimes. Because I think you're giving different experiences … I try and engage children with things that are going on in the real world, rather than just what's on a PowerPoint.' 'I think when you start linking things to real-life, they start to try and put their experiences to it as well.' 'Child development's the example, but I feel like, when I start giving children outside of the classroom experiences, they try and link their experiences to it as well, so it's stimulating their learning and making them think differently' 'the new challenge now is trying to think of the new subjects that I teach, how I can bring it [real life experience] into those subjects as well' 'you get a better understanding of the school as well by interacting with different staff' 'That's me, I don't know if everyone's like that, but whether it's a senior leader	'I almost feel like I am in a new school in many respects, because my role is so different' [switching to a part-time, teaching only role] 'I've worked in three different schools, one at mentoring, then two placements … so I've seen a little bit more of other schools to get an insight' 'I've then had to meet new people, talk to people to help me along in my professional development and, you know, sometimes some people are approachable, some aren't, but you still have to do that' 'although it might only be part-time, I actually get to put the focus back into my own subject a bit more as well now, because, when I was head of year, you're juggling pastoral and curriculum' 'it's almost like a new start, coming back in a different role' 'juggling being a mum and being a teacher sets new challenges for you' 'I almost feel like I am in a new school in many respects, because my role is so	gives you a new outlook' [becoming a parent] 'I am just me, and I think people like that because they can come and talk to me. People don't usually shy away from having a conversation with me because, I don't know, I think we're all equal really' 'sinking or swimming and adapting to different situations has probably helped me become the personality I've got now, which helps me interact with different people in the school in the same way' 'treat them all differently, because all kids are different and they all come from different backgrounds. And I think understanding their backgrounds help you work with them in different ways' 'the research gives you the starting point, but it's not the research that gives me the answers. I think the answers are going out to find it … I think it's the doing, the actual finding out, interacting with people, finding out stuff is what gives you that greater		

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	or whether it's a student, they all require respect as a two-way thing' [on sense of community] 'we like to hear what the students want to say and … give them that voice, and they feel like they are listened to' 'I thought that it's just given me more knowledge. That's been the key thing and …it's helped my interaction with people, because you look at things differently because of the work you've done. So, understanding the students … the confidence of working with parents … understanding all different kinds of students … understand situations … understanding their backgrounds' [on practice-based inquiry] 'a foundation, to push you, then, on to go and find out other things' [on practice-based inquiry] 'time-management, I think that allowed me to juggle masters, school, social life … I was always used to working and learning, so I guess I drew on those old	different. But I'm really enjoying my role now, because I've got the time to deliver quality teaching, because I can use my free lessons to do that, whereas before my free lessons were ringing parents, dealing with children, sorting out incidents' 'I think the key thing with me is, I'll interact with anyone in the school. It's not just the teachers or just the students, you know, it's everybody because, you're like a little community. As sociable as I am, I think it's important that you talk to everybody, the receptionist, you know, the teaching assistants. Some of my good friends in the school are not teachers' 'having different conversations because you've had new experiences. So, using pregnancy and having a baby is one, you suddenly start connecting with other teachers … so you're having new conversations all the time and again, that's not just with adults but with children'	understanding. So, I think they both have a role to play' [on practice-based inquiry] 'I think I use my personality to investigate, find out more, and you get quite a bit back because you're approachable and you build those relationships that allow for that' [on practice-based inquiry] 'that could be something that might be a limitation … you might have only looked at it from one angle, so you might be missing something else. … you try and take different approaches, but sometimes do you narrow it, because you've looked at one and focused in and that works and you forget a different angle? I'm not sure' [limitations of practice-based inquiry] 'doing research on children and their parents. I always use that now because … you look and think right this child needs more support because they're not getting it from home. In the back of your mind that's because you've done that research. Or, I need to inform this child with		

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	experiences and skills and organising myself to make sure that I could get everything done properly' 'I'm quite driven in that sense, if I do something I put everything into it … I like to do everything well … I think that's why I have come back and not taking on a head of year role, because I don't want to do a bad job as a head of year and try and be a mum' 'I'm quite driven and motivated and can do things myself, even for me I found that really important. Because you need that reassurance that, am I doing the right thing, am I going down the right lines' [on tutoring/mentoring for masters study] 'you're always learning, aren't you, but sometimes you just, you know, like we give children a little bit of a hand and they go off and flourish. We just need that little bit of a guidance, because then we can go off and do what we need to do … everybody just needs a foundation to get them	'the research gives you the starting point' [on practice-based inquiry] 'I think the formal stuff that was done was the foundation for me and then the practical going and doing, I do think it gives you more ways to think by doing the assignments' [masters study] 'as a head of year, I feel that … I've used my experiences to work better with form tutors and the attached staff to the year group. So, the practice research and the inquiries that I did, yeah, I definitely think that it's helped me work better with the team of staff' 'it's not just a sit and listen, it's actually going to then be put into practice… so I've been able to make it purposeful … I think staff have taken things from me because it has been relevant so they've been switched on to it and it's not been pointless' [purpose, opportunity and response] 'I think everything I do I try and do well, so I guess I was lucky with the factors in my life that allowed me to do the	autism that the day is going to change today, because it's a half-day or something. And I know I need to do that because the research has guided me … whereas before you might just forget about them' 'because as well every child is different, so you'll use your old experiences to support you, but sometimes that won't always work exactly for a different child. So, again, you're still adapting, you're still learning, you're still trying different things, but you're using those previous experiences to support you with where you're going' 'the research has guided me …it informs you and it's always there in the back of your mind to think differently, or to support children differently' 'I've used experiences to help me, not necessarily share with the school, but to share with the year group I work with … in pastoral meetings, based on the inquiries' 'you implement things based on your experiences, but it		

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	started' [purpose, opportunity and response]	inquiry quite well. Other than a full-time job, there wasn't really anything that got in the way' [masters study] 'informal conversations of, does this sound right, how does this sound, is this looking OK. Yeah, fine. Then you suddenly get that little motivation again to go and push on a bit more.' [tutoring/mentoring process for masters study and practice-based inquiry]	might not work for one year group or for one form group' 'what you're feeding back and what you're delivering or sharing is relevant to the people that you want to share it with. I remember doing some more subject-specific inquiries at the start, and it may have helped me to share that practice with other subjects, but I feel that the practice I shared was more beneficial to the PE department. … conversations with the attendance team, sometimes they might go away and take more from it than sharing it with a teacher, because it's relevant to them.' [on using practice-based inquiry]		
Teacher E	'professional learning is a passion and enjoyment. Something to, kind of, develop my mind and develop personally and something I enjoy doing as well … I get to choose what I'm learning about, something I'm interested in, I've got a passion for' 'I think if it's targeted to your role, and if you're involved in	'one of the CPD courses I did … was called person-centred review, so it was a new way of holding annual reviews for students with statements or EHC [education and health care] plans … the student felt part of the process, rather than being talked at and talked about really. Whereas, they are involved, they're giving their opinions … I actually finished that course,	'professional learning is something you're passionate about, you enjoy it, and I think after a time really it becomes quite addictive. You know, you get to a point where you don't realise how much time you've spent, actually learning, reading things, writing, analysing them, but you're doing it because you want to do it'	'Their focus as a special school, I don't really agree with it but it is what it is, all students with special needs were put into one school because of the geographic area basically' [on a former school] [Teachers] 'were just bogged down in summative assessment, data from one	'the goalposts moved, funding changes' [ending up in a different role to expected] 'I saw a lot of students who'd got literacy difficulties, but because of funding etcetera they couldn't get support in from the local authority' 'I've a lot of friends and mates over the years who have gone the opposite way,

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	that process, and I think if people are clear on the expectations they have of you' [benefits of CPD] 'I'm not someone that will stay in a certain place if I don't enjoy it and don't feel I can have an impact, and it's beneficial for myself and the students really' 'I was first of all thinking about looking at how physical activity can be a reward and influential to improve students' behaviour … I wanted to learn about students who had behavioural difficulties … I didn't get to do that' [initial interests for masters study] 'in the end I decided to look at something more generic really, assessment for learning … a big focus from the government … involving students more in their learning, rather than purely … conducting a test and looking at how they've done … because some of our students had quite complex needs, I think it would have to be formative anyway, so you could show the small steps in progress in their learning	a two-day course, and I thought yeah that's something I could use in school. I can use that and I know which student I can use that with, and I know for a fact that it will be beneficial' [purpose, opportunity and response] 'I'm someone in teaching who moves around quite a lot really … I've been able to work in a range of different schools really … my focus for professional learning has always been impacted by the experiences I've had in the schools I've worked in' 'the first school I worked in was a school for students with emotional and behavioural difficulties, and I started off doing some research for a masters' 'my second school, the students there had a huge range of special needs, students from profound and multiple learning difficulties to students with severe difficulties' 'as part of an MA, I did some interviews with some of the teachers in the school,	'after that meeting, when I'd gone back into school and I actually tried … doing the person-centred review with a TA, the student and the student's mum. The student's mum said, this is much better, it feels much more relaxed, much more informal, and she's much more inclined to actually give accurate responses to questions, because she doesn't feel like she's being scrutinised' 'Some teachers didn't really understand how assessment for learning could be used to actually develop them as teachers and also support student progress' 'I was able to show some of the teachers how assessment for learning could really be a powerful tool. And it could be a powerful tool too, to influence some of the disaffected students' [via NPQML} 'I was able to share that with the team in the AfL project' [working with iPads] 'you'd have some of the negative teachers who would say, no you won't achieve	half-term to the next half-term, to the next half-term' 'Luckily, there were some TAs who'd worked with some good teachers, who'd got a really good grasp of what assessment for learning was' 'there probably wasn't really time on the curriculum to really go back to those absolute basics … because of the pressures of … students having to make x-y-z amount of progress' [difficulties of meeting SEN] 'Without being too negative, I think we've had to be very selective about which staff we've asked to go on those courses, because I think some members of staff don't really feel they get a lot out of it, they wouldn't want to be there, and I don't really feel that they would feed back to staff in the department in a meaningful and beneficial way' 'when I first came … one of the TAs said to me, I haven't done any CPD for fifteen years, outside the school … going on a course and learned something that's	so that kind of again makes me want to go even further that way … they've stopped taking opportunities and they've made a lot of bad choices in life' 'I haven't lived with my dad since I was about two, my dad left when I was two. … I saw my dad when I was about twenty-two … I remember it like yesterday actually. My dad was saying to me, you think you're better than people, you're not going to be anything' 'I'll be able to look back to my daughter and say, I've done this, I've done the best I can' [on turning setbacks/ discouragement to positives] 'if we had an endless pot of money like ten years ago when it was a local authority school, I'd have signed any form you gave me, because it would have been fine … But nowadays … it's not going to happen and they've got to realise that' [providing CPD for TAs] 'I think their [Ofsted's] agenda was just too much focused on data. … they

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	over a period of time' [focus for masters study] 'looking back, I could have stayed in my last school … in many respects a lot easier, and I could have grown professionally in a different kind of way, but I don't think it would have given me the challenge' 'I wasn't giving them the answers … I was constantly saying, use your brain, you think. … I was showing them, getting them to think … by watching the model for myself, or a demonstration from someone in the group who was strong … it was positive because some students could see the fact that they'd achieved something' [using iPads to support AfL] 'I have grown in confidence and gradually become more passionate and kind of addicted to learning' 'I just want to achieve as much as I possibly can, because I think as I've got older … learned more things in education … seen more things and more changes … I	looking at how they incorporate assessment for learning into the curriculum' [current school] 'my first proper mainstream experience, because before I worked in the EBD school I did two year's supply, and I worked long-term in a couple of schools in [nearby town] for six or seven months, just teaching PE basically. So this is my first mainstream experience and my first … significant leadership role' 'in my last school … I did the National Professional Qualification for Middle Leadership' 'I started the post-grad certificate in specific learning difficulties … I thought I will do the course myself, that can benefit the school where I am now or, in future … I knew that would be something that would help me get a SENCo role' 'Yeah, Yeah, definitely, they're definitely intertwined, definitely' [teacher learning and pupil learning] 'they kind of respect and understand that you're doing	things, you're not going to be things … I'll turn that round, use that as a positive … drive even more than I would have done before, because I want to achieve even more' [response to own schooling] 'It was really, really beneficial and … re-ignites your passion for teaching really … that's what it was for me' [AfL project] 'I thought well, I want to do something about it myself because these students are being let down massively' [on lack of funding and LA support] 'One of those moments that makes you realise what you're in the teaching profession for' [having a positive impact on an individual student] 'we're giving them so much information and they don't always have time to process what we're asking them to do, sometimes. I think I learned that really, that was a good thing for me' 'I'm a big believer in take all opportunities given. … sometimes there are not	beneficial. But then, sometimes it goes the other way – I get requests for CPD from staff for things that are stupid' 'schools are different on a case-by-case basis … when I speak to teachers in this school and obviously colleagues I've worked with in other schools and you speak about how schools are so different and things are changing so rapidly. And a lot of times they're negative really because of … funding cuts and staff cuts … . I think it makes it more important that what you do is actually beneficial for not just yourself but the students that you're working with' 'sometimes it's easier for people to be negative and just say you haven't got time to do things' 'in schools like this and other schools in … highly-deprived areas, I think when you actually realise what some students actually go through before they get through the doors of school, I think it	mentioned a lot of things about, you know, starting points … you've got to make sure that students make progress from their given starting point. But … assessment systems are different from school to school … if their assessment system's different, how can we accurately assess their starting points from the primary school data? Although obviously we've got to do our own baseline assessments early … I don't think it's really an accurate picture … I think further up the school, definitely … it's quite clear that there's a lot of issues' '… the recent Ofsted report, I think the most important thing really are the recommendations …. But I don't really think they're interested in the passion, because I think their focus is just too much on data … it came across to me that they don't really have an opportunity to really be open about what they write. They've just got a small, very narrow agenda, and that is all

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	think I get more passionate about education' 'I knew I wanted to go on to become a SENCo eventually' 'We've looked at different aspects of literacy over time and I saw that student grow in confidence … when I've spoken to TAs as well, they've said that the student's showing brimming confidence, because he saw that he can do things … big impact on his self-esteem … remembering quite complex concepts … re-ignited his passion for reading' [working with a student on a study project] 'I think we give too much information sometimes and we don't always take the time to step back and actually think about the way we portray our messages to students, in terms of when we give instructions' [purpose resulting from learning response] 'read for pleasure really and for passion … he's enjoyed reading, his vocabulary is improving … because his confidence has improved so	things as well … you've got a life, you're a person and that wins their respect' [students responding to Teacher E gaining further qualifications] 'some of the TAs have gone on some of their autism-based courses and they've fed back to members of staff in the department' [purpose, opportunity and response] 'two of the TAs in the department are … really interested in autism, so they've gone away on some of the courses and they've brought back some really important things we could put into place' 'level 3 apprenticeship course in teaching and learning [for upskilling TA literacy and numeracy] … on the whole, most of them have seen it as a positive experience, it's upskilled them and it's reinforced, really, for them some of the things they are doing, you know, that are elements of good practice' 'the autism courses …they weren't very expensive … but even if they were expensive they would have agreed it	many opportunities given in different aspects of life, so … take all opportunities really' 'it makes me realise that there's more opportunities to be sought, there's more opportunities you know, there's more to learn' [seeing others miss opportunities] 'My dad was saying to me, you think you're better than people, you're not going to be anything. … I use that really as another positive … I think, I am actually. When I look back, really, I think I'm going to choose as much as I can' 'I've tried to do the best I can in whatever I've done. … internal pride so you can look back, you can reflect on life and what you've done' 'It affects you a bit, but I use it as a positive way to want to achieve more and more … I think it's too easy the other way, it's just an easy option to feel sorry for yourself … if you do that you're never going to achieve in life in my opinion' [reflecting on family difficulties]	changes your perspective even more' 'obviously young people are the most important things, but I think on a par, really, has to be the staff, because if we don't have staff who are really passionate and committed, and dedicated to young people, I think you can have the opposite effect where you're going to have more students who are disengaged, disaffected' 'that debate about leadership and management … there's a massive gap really. There is an overlap, but I think there is a massive difference, for example in some schools the leadership team is still referred to as senior management team … management, you get a picture of someone, an enforcer, a dictator, whereas a leader, is someone who's actually on a level with the staff they're working with' 'rather than people asking us the questions, about what are you going to do about, particularly Key Stage 4 students who are not making adequate progress in maths	it is basically' [on whether Ofsted see passion and care for students] 'Ofsted, although obviously they've got a job to do, which is tasked by the Department for Education … I don't think they have enough of a focus on helping schools … when I look through the report … most of it doesn't really give the school kind of scope to understand what they need to do to improve' 'It comes across like passing the blame really … when schools convert to academies … local authorities have got a vested interest to make sure that school A, B and C improve and they get a good Ofsted report. Whereas now … there's not the same accountability on local authorities and government, because they've passed the buck to academies … you're accountable now for that school's progress, whereas like you say, I don't think there's that same vested interest in an academy chain' 'Parents will go to them [external SEND advisory bodies] for independent

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	much he's able to phonetically build up some words' 'I'm obsessed with just achieving as much as I possibly can' 'I've had … conversations with students about … different things you're going to do throughout your life, learning does not stop when you leave school, and I think that wins some over … you've got some kind of leverage really and some kind of respect' 'I feel there's a gap. There's a lot of students with literacy difficulties but a lot of staff, myself included, have no real knowledge as to how we can influence, how we can have a positive impact, without seeking external support' 'a big thing there was the relationships with the students … knowing the students … if I wanted them to write sentences … explaining experiences or things they're interested in, they were going to need a lot of sentence starters, a lot of	because there's justification for it … we can say how that's going to influence our students and how it's going to help staff to support learning' [opportunity linked to purpose] 'I think talking with people like yourself [me], who are passionate about education and obviously really committed to what you do, who actually want to make positive change in education, and really care about young people, I think that kind of adds another notch really to the drive, I think in many respects' 'there's a lot that people can learn through professional learning in the workplace' [as opposed to large-scale research] 'interacting-wise, with parents is a big thing' [on learning in a school in a deprived area] 'when they see that the staff actually want to be there, want to work with them, value them as young people, I think you get a lot more out of them then, in that respect'	'they were comfortable with that [self and peer assessment] because they've got a good relationship with me and that's the kind of environment we try to create really' 'when you read … academic journals, which are based on studies of five hundred schools and research is often generalised, I just look at it … critically and say, well, what benefit does that have to … different kinds of schools in different areas' 'I always say to people, really, you have got time to do things, but obviously kill two birds with one stone if you like. So, the learning that you undertake, if that kind of underpins your practice and it's kind of mirrored, after a while it becomes really part of your job, so it's not something you're doing outside, it's not something you're doing extra anyway' 'I think it makes you take on more of a nurturing approach and a more caring approach, and it makes you realise that people are what makes education at the end of the	and English. Well, if I knew the answer then we wouldn't be in the same situation, would we? If the heads of maths and English knew the answer then we wouldn't be in the same situation. But I think ultimately, really, for me, it kind of highlights the fact that people above that, they haven't got the answers, because if they did it wouldn't be happening' [school in special measures] 'We need people to show us the way really, because we feel like we're letting students down but we know we're not. We know that we can hand-on-heart say, we're doing the best we can with the resources we have and we care more about the students, not about numbers and ticking boxes and Ofsted, they're all irrelevant. You know, ultimately our students are what we care about' 'a lot of teaching assistants feel that they're just like a cog in a chain, if you like, they're just part of a system. They don't really see anyone acknowledging what they actually do'	advice and because they're there for the parent, they don't see the bigger picture … the fact that schools have got smaller budgets. … Understandably, they want the best for their child but I think they're misinformed as to what their entitlements are and what schools can actually provide'

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	options and choices, a lot of vocabulary work' 'that [formative assessment] is much more important because that will be able to answer the questions, the what, what are students able to do, how they're able to do something, why they can't do something … as a teacher, a number doesn't really tell you a lot at all, really' 'self-assessment, some peer-assessment … students felt comfortable with that … it's good to make mistakes and you're only going to learn by making those mistakes' 'We've had the conversation, the fact that well, what are we actually able to do for students with mild autism, because sometimes we don't feel really we've got that knowledge to be able to support students in their learning' [discussing SEN with TAs] 'a big starting point, really, was to upskill the TA's skills in terms of literacy and numeracy' 'it's something that impacts on your job and makes your	[purpose, opportunity and response] 'the SPLD course I was doing at [other university] … for me, a big thing is the tutor of the course, because I think if the tutor had been the same one for the first module I'd have been more positive. Like working with yourself, if you've got a good relationship with the person and you feel more at ease and comfortable, I think it's more enjoyable that way' 'the masters in educational leadership, because of the fact that that's largely impacted on your day-to-day role in your job, I think that doesn't seem like a chore at all. It seems like it kills twenty birds with one stone' 'the practice-based articles are easier reading than the more scientific-based. And I think because a lot of them are based on qualitative studies … based on interviews and observations, more small-scale but go really in-depth, into detail, I think they've been really beneficial'	day' [working in a school with high deprivation, response linked to purpose] 'a leader, is someone who's actually on a level with the staff they're working with, and actually guiding them down the path, if you like, and showing them the way, which is the same for students really. … You're trying to direct them down a positive path, although obviously, with every student you can't have that impact, you have to be realistic' 'maybe I shouldn't say it but, my driver is not Ofsted, I'm not really majorly bothered what Ofsted say. The recent Ofsted inspection … it doesn't affect what we're trying to do …for our young people. We're aware that … we've got a lot of issues with … students, particularly SEN students, making progress in maths and English – we're aware of that. But what we need to happen now is, people to show us the way … someone to lead me and lead us, because we don't have the answers, we're not averse to someone	'TAs are just pulled in this way and every way … whole year-group vaccinations, mock exam invigilation, official exam invigilation … reading for students who have got access arrangements, or scribing for some students … I just think they're spread too thin to be honest, it baffles me how a school of this size can have such a small amount of TAs' [limitation for collaborative learning] 'Some people have this idea that as a SENCo you know everything about every special need under the sun, like a doctor, as though a doctor knows everything to do with medicine. Not the case at all.' 'They're happy for that, yeah. They never really asked anything about it … They're happy for me to do the interviews with staff, I can use the work I've done in school, that's fine, but never asked a question. … It doesn't bother me because, you know, I'm not doing it to keep them happy, but it would be nice if they at least asked the	

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	job easier, if you like, because you know that you're trying to improve, you're trying to be the best you can be, but ultimately you're trying to do the best for the young people that your trying to support and teach' 'when people see the fact that you're doing things outside of school to develop yourself, the department, the school and improve things for young people. I think when staff see that, they see that you're not just someone who is their head of department, or not just someone leading things, or you're not a guinea pig for the senior leadership team, you're not doing what you've been told. You've actually got a personality, you've got your own brain, you've got your own mind and thoughts, and ultimately they see that what you care about is young people' 'we've put it across to teachers really, the fact that it's an opportunity for you to direct teaching assistants and it's an opportunity for us to evidence, you know, how students are performing'	'It's something that you want to do more and more really, because you can kind of see it's got such a massive benefit' [practice-based inquiry] 'The students with special educational needs and disabilities are going to be the ones who will struggle. … if we could trial other, alternative-based courses maybe, you know, what's to lose … better to try something and fail than not try at all' 'I had time last year … to do research, like doing my teaching for the SPLD course, because I had a lot more non-contact sessions where I could actually work with the specific students … that flexibility was there, whereas now, because I've got a form group' [enabling practice-based inquiry]	showing us or even dictating what we need to do' 'They [TAs] were really positive about the two-way logs, because they were saying things like, there's some kind of relationship now with teachers and TAs' [response to practice-based inquiry] 'when you could actually have the conversations and give them examples of things they'd done well, because they didn't understand that … in the moment of delivering a session to a group of young people, whereas when you can actually say, this is brilliant what you've done and give them examples and say why, that really boosted their confidence' 'Although there were teething issues … teachers were on board, they would see the benefits of it and it's just a case of reiterating really, why are we doing it. The fact that it can be fed back to parents, the fact that heads of department can clearly see that staff are directing TAs and trying their best to support students with	question about what's the benefit, or at least benefit for the students.' [senior leadership interest in and support for practice-based inquiry]	

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	[two-way logs for TA-teacher communication]		special educational needs' [two-way logs for TA-teacher communication]		
Teacher F	'CPD I've seen it as this idea of skill-building within the school, within your environment' 'looking at a completely different aspect, you know, yes to do with education leadership, but it was to do with something I was interested in as well' [strategic educational planning course] 'professional learning could also be developing your interests outside of school, using that sort of leadership focus but then doing something slightly different, a different, maybe route outside school as well' 'let's look at your professional development, what are you doing, what are your interests, and what have you done, what do you need to do, I think this course, you know, it's constantly looking out for, err [pausing, thinking], that route, or sustaining that professional	'my route into leadership has been, well I need a specific set of skills and so I'd do the NPQSL [National Professional Qualification for Senior Leadership] and then I'd do the masters programme through the university, which has really helped' 'I took a week off this year, the head was great, and I did a course in London, chartered management course, strategic education planning. … his was in preparation for the course, the Ed doc' 'professional relationships and academic relationships and how they are so important. I kept coming back to that, relationships … thinking, those key people that have been mentors, or colleagues, you know, peers that you've actually sort of learned a lot from' 'the university and working with people there, with the music service, different positions but actually looking	'The professional learning … that's more self-directed really' 'helped shape my … outlook and my professionalism and how I go about myself as well. … particularly headteachers and senior staff, good and bad, that you sort of think … what would I do differently. Learning lots of lessons from them. And the best ones really have, I've felt myself really improving quite quickly with, you know, the good ones. The bad ones, you feel, you still learn lots of things from them but obviously you don't feel yourself developing or improving' 'it feels like a priority for me to build on that. And again, actually it's even more than that, it's something that I'm happy to finance' [professional learning] 'I'm in a position where I earn enough to be able to finance these qualifications, if	'we've had two headteachers here, lots of senior staff come in and out, have gone onto different things' 'lots of people have left, a lot of changeover, been lots of changes, lots of pressures … like at any other school. I think … that has put big strain on whether I did want to continue to teach' 'workload … I think it's the expectation as well, of staff, you know, obviously with Ofsted looming, that sort of thing, I think that's difficult' 'the changes that are coming in with regards to cuts and that sort of thing, actually looking at … whether we are going to be able to keep moving forward. And that's a pressure, I think, are we going to keep improving, keep going' 'ultimately I love … education … this idea of teaching, it's great, but I think there's lots of pressures there and lots of	'I'm in a position where I earn enough to be able to finance these qualifications, if needed, and I'd go down that route' 'friends and family really have a negative view of the profession' 'Our results … was about are we closing the gap, but obviously the higher attainers who would normally be [at the local grammar school] don't reach the top grades, then we're not doing our job. So then, but if our bottom grades, the PP [pupil premium], were to reach those top grades and they were to close the gap, then yes they would be doing well, but they [the higher attainers] wouldn't have done what they need to do' 'As I said, it wasn't very clear, but the higher achievers, if we were to close the gap, then it would mean that either they didn't reach what they need to do in order to

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	development' [line management, seeking purposes and creating opportunities] [professional learning] 'it's become more of a priority for me. For instance, year one of teaching, or year two, it wasn't necessarily about getting the qualifications, it was about building a team here.' 'to affirm what you've already, what you're doing is right [pausing to think]. Yeah, it's skill-building, affirmation' [purposes of courses] 'potentially doing some different work, different maybe career potentially' 'ultimately I love … education … this idea of teaching, it's great, but I think there's lots of pressures there and lots of different things that are happening, so we'll see' 'I think there is an element of competition as well, that comes into it. So you always want to be the … head of the pack' [also a response] 'it's the staff, so relationships that you build with colleagues. It is a lovely	at how that's shaped what I do' [also a response] 'building opportunities into my role … ensuring that there was a plan, that there feels like a plan for my development as well as everybody else' 'this year I've done three professional qualifications, finished the masters and looking to do an Ed doc, so it's become a real shift' 'actually meeting like-minded people on the courses, to be able to discuss. It's very difficult when you go on a course and then you bring it back, this idea of collaboration later on, it doesn't necessarily always happen' 'it's skill-building, affirmation, meeting like-minded people' [linked to purposes of courses] 'professional relationships, with people outside the workplace … other schools, colleagues there but also … the university … friends, colleagues as well … our music hub, through the music service, they are getting	needed, and I'd go down that route' 'if you've not experienced the same thing, that's difficult' [on collaboration and bringing back ideas from courses] 'they do ask the questions, you think, you do question what you do sometimes … You question, should I be doing this, is this the route' [family and friends] 'I think there are lots of worries, but not many, you know, this is great, what you're doing is really good, so you know' 'lots of people have left, a lot of changeover, been lots of changes, lots of pressures … like at any other school. I think … that has put big strain on whether I did want to continue to teach' 'I think it is sustaining what I'm doing. Sustaining the roles that I'm doing … workload … I think it's the expectation as well, of staff, you know, obviously with Ofsted looming, that sort of thing, I think that's difficult'	different things that are happening, so we'll see' 'within an RI [requires improvement] school you're constantly told that you are 'requires improvement', so there is that driving pressure to make sure that you ahead of the curve on lots of different things … it has that completely opposite effect – we're a 'requires improvement' school, yet actually we're probably the hardest working, getting all the qualifications' 'I think that does have an impact at all levels actually in the school, you've got to work that much harder' 'ultimately it's such a strange process, the whole thing, being put in RI and then, you know, but then the time-frames that are given, it's very rigid, there's no flexibility in it at all really' 'if we don't get a 'good', which is dependent on a completely new cohort compared to last time we were inspected, and lots of different things, lots of variables. If we don't get that	get these guys up, or they did reach that but the gap was too big. … with Progress 8 you're now scuppered anyway, because it's on the individual, how they've done. … so where teachers originally would bring a small group, trying to get them over the C-D borderline, it's now every kid. So the amount of [pausing, work/ pressure?], incredible' 'It's to do with conversations I've had with colleagues working out in these places, for UNICEF and others, these schools are being built, in some cases, and equipment's not far-off but the administration side of things and the leadership isn't there. They just don't have the capacity in some places, in some places they do'

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	school and the students and staff are fantastic' [keeping Teacher F in the school] 'It was attendance, you need to improve, what are you going to do' [purpose for NPQSL opportunity] 'I think a lot of the focus has been leadership and … how to tackle that and how to talk to people, have those difficult conversations, lots of different things … . It's been quite useful to add in those skills … strings to your bow' 'Everything we did is for the students. It sounds obvious but it was almost a case that we were at that point … for example, bad behaviour we would just sanction, sanction, sanction. It was no, praise and rewards were very limited' 'if they achieve then you'll notice improved behaviour and attendance at the same time' 'It's this idea that, you know, a sense of achievement everywhere, and so everything you do, whether it's extra-curricular, should be about students so that's	really good at organising CPD events for staff' 'PIXL [Partners in Excellence], we're a PIXL school, so I've been on a few of their courses and met a few people locally, part of the West Midlands group' 'You only seem to talk to teachers about teaching' 'Job role, out of necessity, qualifications needed to do the job, financial and resources there' [drivers to learning in the workplace, with teaching as reasonably well-paid] 'the concept was great, get into groups, coaching groups, threes or fours and then you watch each other teach … What it became was, it was a case of, right well now, you know, you need to be able to cram in the teaching to the test type thing within that twenty minutes or so' 'all the qualifications that I've done have been quite clear about linking it to your current role and they've sort of facilitated that really' 'the NPQSL looks at building in … leadership roles and you	'I think there is an element of competition as well, that comes into it. So you always want to be the … head of the pack' [also a purpose] 'I mean I've talked before in the research … It's false, it feels false sometimes … it's knowing how to play the game' 'It didn't work, it wasn't sustained and it wasn't reflected upon, so there was no evaluation' [coaching groups] 'It just changed the focus completely and I think, obviously having taken on this new role and having the opportunity to do it. … very often you hear people talking about it, saying oh I wish I could do that, but actually I had the opportunity to that, a role around achievement, so embed achievement as the core focus of the school' [response to PiXL course on achievement] 'this understanding [of achievement at the heart of everything] and changing the culture here of saying, well look you know, kids need a	then we go into 'special measures' and then from there it's academisation, and there it's uncertain who's going to take that'. 'I don't want to side with Ofsted, but at the same time it does get people moving when that happens, it is a driver. However, is it a driver for real improvement, or is it a false, sort of, you know?' 'teaching to the test and this idea of being able to show what you can do in twenty minutes, and taking the temperature and that sort of thing. It's false, it feels false sometimes. And it's that at a whole-school level, people constantly massaging the figures and changing things, yeah, it's knowing how to play the game' 'It was done so that it could be put into the SDP [school development plan] ... It's done in the eyes of Ofsted, that's all it is, so, not good' [coaching groups] 'I think we are in a very difficult position, as are many schools, but I think we are in a particularly difficult	

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	something you should think about at all times'	choose a project to do. … I chose an attendance project this year, looking at that, that's been quite specific. … I think it works really well … what are you going to do and track it, and then you read around the subject as well, which was really useful'	reason to come into school and give them that reason'	position. We are a small school, an affluent area but also has students from the estates, so the demographics are complex. … our funding has been cut, we don't get a lot of money anyway'	
	'Student achievement is at the centre of everything, and sometimes I think people can get lost by thinking it's about my professional development. Saying this I took a week off [laughing, for planning course], but it is, that has to be the focus'		'we started that this year and it's been fantastic, you know, we've seen massive changes in attendance, we're up by a percentage point' [attendance compared to the previous year]	'we've sort of been marked down on that closing the gap element between the PP and the higher achievers'	
	'think about all the different courses that people go on, really thinking about how that impacts the students' [purpoise, opportunity and response]	'being able to access data and access information and use that, and especially using the stuff that we've done before within this project as … that's been really useful. … a really good book … it was really useful … so we used a lot of that … trying to put it into place here … obviously journals … I really enjoyed it' [applying inquiry skills to NPQSL, partly a response]	'luckily I was able to bring that back. I was in a position that I could do something here with it. … I think that's had the biggest impact'	'we had Year 11s this year, so we had them in school till seven o'clock three days a week, with pizza. Getting them in, getting them doing it … extra work, English, Maths. Saturday school we've had, they've done the whole gamut. It's been fun [laughing], incredible. You can imagine … because this is last chance for us … Ofsted's coming and these results have to be good'	
	'positive in the community … changing the way we praise students, plenty of rewards … you're here to achieve and hopefully that translates to good results'		'think about all the different courses that people go on, really thinking about how that impacts the students' [purpose, opportunity and response]		
	'Obviously it becomes a major with outcomes when you're dealing with Year 11s … it gets to that point, but we're doing everything for that'#	'I think it comes back to those professional relationships as well, who's your team, who's around you. And hopefully if you have a good team then you are, you do learn a lot, a lot from them' [learning through practice]	'we've got a new sort of praise system in place, where they can earn points inside the classroom and outside the classroom' [response to achievement focus]	'But that sort of thing gets phased out when new leadership sort of comes in, it's a completely different focus, sort of why are we doing that' [video assessment project]	
	'It was powerful because it was such a simple thing, it's this idea. I suppose I just thought, we are in a school	'I find the qualifications and doing those extra things, you can go back and talk to people from lots of different issues. That's why I love the	'that time away, does I think ultimately, even though it wasn't connected … I think it did have an impact, positive impact, you know when you come back to school'	'It's a lot … healthier … no more tick lists and things like	
			'shaping … and changing the way you do things through …		

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	that could really benefit from that' [achievement focus] 'As a teacher, you know, you work in a school. Your job is to make sure that child A leaves in five years' time with results. That's the role, and that's everybody's role. And CPD, I think the ones that I've had, really should be focused on improving my job, my ability to do that. Professional learning, again, I'm looking at leadership skills and that sort of thing, that comes into play. And then obviously I've done things that are side-line as well, and I think that's important to have your own things there as well.' 'line-manage and organise systems and that sort of thing effectively' [purposes for teamwork and collaboration] 'leading a team you want buy-in from your team. And that idea of not just taking a lead, but encouraging others, that is so important, absolutely, in teams' 'It allows me to focus on a particular idea and explore that in detail. You know, obviously read around and	university … you bring people together from lots of different schools and you're talking about things, and you're building projects together' 'The attendance project .. Ofsted had picked up there's a small group of SEN students who are persistent non-attenders, they need to improve the attendance. So we started a transport club … every day, we would go a collect them, bring them in, we have a breakfast club. So really measurable … targets, this is what I'm going to do … that, that has really helped … action planned it' 'The biggest one, that's had the impact was a course, a PiXL course, from a headteacher in London, one about achievement. It just changed the focus completely and I think, obviously having taken on this new role and having the opportunity to do it. … a role around achievement' ''that course has directly impacted in what I'm doing	working with peers and colleagues, in different institutions as well' 'Being able to encourage different ideas and bring people forward, bring people in, delegation, but encourage people to take ownership of their ideas and being able to do that successfully' 'I think it can work [distributed leadership]. I think you have to put a lot of trust, it has to be someone that you put a lot of trust in and have built up yourself. You can't just land on them an enormous project, it needs to be something you talk through and then not involve yourself too much with it' 'I think you want people to take ownership but at different levels. It depends on how effective, how well you think they might do and how much support they might need in undertaking a project' 'Distributed leadership, for me, I think it works, the idea I think is sound. We obviously use that a lot here, but I think only when people are able to	that … it's very open, very fair … and I think it's good, it's moved a lot from then … following our Ofsted inspections, I think we've learned a lot from there, from them as well. It has changed' 'I think there's been a lot more shift onto people … to take ownership of the QA, quality assurance. … a lesser top-down approach, more distributed, which has been good, really good. Which is how a lot of outstanding schools operate also, it's not about just, you know, the top. Looking at everything, you know, empowering middle leaders to really drive it. So that's a big change as well, that's helped' 'as a school for instance when it's hailing and raining outside, the doors are still locked because the teachers are having a coffee in the staffroom, and the kids are outside, so we're expecting attendance to improve [both laughing]. And it's that sort of mentality, I'm not starting work until eight-thirty, the kids aren't in play so I'm having a coffee, they can wait	

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	bring in research there. A limiting factor can be time, especially in this sort of role, you're constantly trying to organise time and then not just my time but others' [practice-based inquiry] 'having done the course in London, I'd love to build something around this idea of long-distance learning, but maybe organise a project to support it. The loose idea is building leadership capacity in post-conflict, post-disaster areas' [response and purpose] 'to improve leadership capacity … to do more work with someone like the British Council … to get involved in education projects' [purposes for EdD and international work] 'a shared sort of purpose really, I think you know, looking at when we did the teacher teams research, it worked well initially because the goal was shared and it was quite clear, we're here to really build teaching and learning capacity'	and that's had a positive influence' 'think about all the different courses that people go on, really thinking about how that impacts the students' [purpose, opportunity and response] 'it was interesting to gain perspectives from different colleagues on the course. For instance, on that course I met with the education minister for Sierra Leone, and Mozambique was here. It was fantastic, a week course but there was eight of us, it was great. Actually … they want to learn all about our [pausing, education system?]. It was quite interesting learning how they did things' [strategic planning course] 'doing this qualification, leadership planning, the EdDoc and trying to tie them into something, and then hopefully start looking at jobs and things there' [also response] 'I think timing and collaboration. Timing, as in you just don't have the time and you're trying to fit in not	take on, have the capability to do it well' 'having done the course in London, I'd love to build something around this idea of long-distance learning, but maybe organise a project to support it. The loose idea is building leadership capacity in post-conflict, post-disaster areas' [response and purpose] 'a really good collegiate approach, collaboration's happening between different schools, that's great and that's happening. But it's taking it to the next level and how, you know, could you put in a leadership programme' 'collaboration … it can be a positive. It can also be a limiter … because you're trying to work with colleagues and again …it comes back to timing. But I think it can limit your research, they can be doing something here, you can be doing something there, bring it together you can go in different directions'	outside. Well hang on, if we were to open up and say we pay someone, you know, for half an hour, they could open up the library, kids can go in there. More kids start turning up, because they're not going to stand in the rain any more, and slowly but surely we now open up every single day at half-seven. We pay people to do it, we pay people to go out and they're happy to do it, because they either get an hour off in the afternoon, or they've chosen, they've volunteered to do that role, that duty, because they get extra, either time off or extra money for doing it. And then, yeah, we do breakfast club every day' 'I really do think we're going to get the good [Ofsted judgement]. I really do think, but you can never be sure'	

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	'everyone having that shared goal, I think whether it's student achievement, you know, everyone wanting to do the best for students and that's where we're all going'	only with yourself but with others, and I think obviously if you're trying to collaborate it can be difficult' [limitations to practice-based inquiry]	'later on, when it fizzled out it sort of lost that momentum but I think having a shared goal, a shared purpose and collaborating that way, so as a team, was really good as well, really good. Supporting each other' [teacher teams project]		
	'we're celebrating achievement. You know, it's that shared goal'	'Benefits, especially within the research in the practice-base, so … being able to talk to people in a different context, having conversations with people about what's happening and learning a little bit more has been really useful. And finding out about how they feel about certain issues has been great' [benefits to practice-based inquiry]	'the work on video assessment I think was my first assignment and the teacher teams I shared with the first headteacher, who was the one who initially put me through the course. … I think I sent copies to the other one, but it was only the first two really that I was able to present to him and others. I think the others, it was just sent to them to disseminate themselves, … I presented to governors … with the first ones, which was great. And that moved very quickly, it got support for, the video assessment one, for our own programme we got built there'		
	'they're holding doors, they're polite, it's just this mutual respect, which has been great'	'SLT have given me time to complete that professional learning course'			
		'I've been able to use similar projects for both qualifications, so it's been really good' [NPQSL and masters course]	'the taking the temperature assignment, I think that we've shifted a long way from there now. It's interesting, so they sort of got rid of the tick-list		

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			and it's more about development … rather than ticking things … they don't expect to see those necessarily in there. They've got set criteria but it wasn't as prescriptive'		
			'I think people talking about it and I think then … because we had a lot of movement into SLT, so the assistant head who's now head of teaching and learning was head of art, who's experienced that [taking the temperature] and actually has changed the way we do things as well'		
			'I think there's been a lot more shift onto people … to take ownership of the QA, quality assurance. … a lesser, top-down approach, more distributed, which has been good, really good'		
			'I think having colleagues that are open and trusting, and want to try and do things, I think that's really useful'		
			'everyone wants you to achieve and it's that very easy got [I think meaning quick/easy win?].'		
			'it's changing the mind-set, what you're doing is having		

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
			an impact on that student, that child's achievement'		
			'treating them better and understanding why we're here, what we're doing and where we're going. … That's been a real shift this year'		
			'we now need to start exploring a group for a staff forum to be able to, I think, take it forward'		

Appendix Two – practice-based inquiry summaries

These summaries are based on documentary analysis of twenty written accounts of practice-based inquiry from the six teachers, with follow-up e-mail and face-to-face conversations.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
Teacher A Benefits: • A good qualification • Self-confidence • Practical and useful 'bits that I do' Limitations: • Not taken-up or followed-up in school • Research for masters but 'wouldn't do it normally' Enablers: • School-funded • Masters study Inhibitors: • Lack of time • Marking and target-setting Collaboration: • Minimal • With pupils and colleagues as participants in inquiries	Managing potentially difficult behaviour/classes. Building positive relationships and rapport with learners. 'NLP strategies can either come with practice or naturally. I feel that my use of NLP is natural and therefore wish to celebrate its success and advocate its use'.	Reflecting on experiences of using neuro-linguistic programming (NLP) techniques in a challenging context. 'I am a naturally positive person so I use peripheral praise and anchoring.' 'I practise mental rehearsal, thinking through the lessons in advance and imagining how students will enjoy the work that has been planned for them'. In 'building rapport', 'the technique of 'matching' can be effective … the teacher adopts similar behaviours to the student, e.g. body posture, expressions, language and voice.	Successful NLP approaches are context-sensitive and person-specific. Teacher modelling of desirable behaviours can prompt learners to adopt them, seeing teacher as caring. Teacher A 'survives' a very challenging experience and is seen by potentially difficult learners as someone who could control them and someone who cares.	Challenging school environment, where habitual behaviour management had proved ineffective. 'This was the lowest point in my teaching career and I felt that nothing would enable me to manage students within this environment.' 'Some consider NLP to require greater use of terminology in order to align itself with credible scientific theory, but I would argue that it needs simplifying so that more people can access it.'	Inconsistent policy guidance on behaviour management from different governments. 'You can try and guide people towards these strategies, but with an understanding that they may never be implemented.'
	Investigating geographical information systems (GIS), impact on attainment, barriers to use and application in other subjects.	GIS tasks, activities and assessments, including in other subjects. Survey of geography teachers to ascertain views on and uses of GIS.	GIS aids recall of geographical features, assessed attainment and student enjoyment. GIS supports spatial exploration, awareness and	Access to ICT facilities and technical support can be a barrier to use of GIS, with more mainstream resourcing taking priority. 'Less so now, as schools have better facilities.	Use of GIS as an expectation in exam syllabuses; training and development with exam boards, advisory bodies and publishers.

		Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
		A specific and long-standing professional interest in GIS: 1. Does GIS improve levels of attainment in geography? 2. What are the main barriers to GIS use in secondary school classrooms? 3. Can GIS software be useful in other areas of the school curriculum?	'I think it's important as many websites now use GIS systems. However, it currently wouldn't make any difference if I chose not to use it. Therefore, it's important to the student but not really to the school.'	recognition in history and biology. 'More members of the GIS group could remember specific facts about the case study than the others, e.g. particular landmarks that were threatened by flooding and the extent of the flood'. Students also reported enjoyment in using GIS as well as increased understanding of subject content.	However, as budgets have become strained, the upkeep has become an issue, e.g. fewer IT technicians to maintain systems.' 'I think that mainstream developments will always take priority, i.e. investments in GIS would (I guess quite rightly) come after other things.'	'Should be more important than it is. The specs all list GIS as an essential skill, but then they don't always assess it properly as schools can't fulfil the criteria, e.g. I've been on courses where exam boards have said they'll accept annotated PowerPoint slides as GIS.'
		Reflecting on personal experiences of coaching and mentoring, both with teachers and with students. 'I still don't think that coaching or mentoring is done very well. There's no time or money and I feel it's viewed as a hoop-jumping exercise.'	Reflective journal of coaching and mentoring experiences, critiqued in relation to relevant literature and theory. PGCE subject mentoring: 'My approach with him throughout has therefore been one of asking questions, rather than giving answers.'	Coaching is inherent in teacher-student relationships. The ongoing relationships between colleagues can be a holistic mentoring process. 'In terms of mentoring and coaching, I think that one size never fits all. This is because individuals require personalised approaches.' 'If a more supportive and caring approach was taken towards the individual's development in schools, then mentoring would be a more appropriate term to use. … the on-going relationship between two colleagues is a process of	Limited time or funding for coaching or mentoring activities, which can be more supervisory than supportive, leaving teachers with self-doubt and powerlessness. 'Schools are complex environments, where mentoring and coaching take place at all levels. … I have rarely witnessed truly supportive structures.' Prevalence of 'supervision' and 'coaching' relationships in schools, rather than 'social care' associated with mentoring. 'Schools are highly pressurised environments,	Targets and expectations associated with coaching and mentoring in education depend on resulting behaviours of others. In a business context, 'targets were set, but they were much more realistic and achievable as they depended on the individual and not the behaviours of groups of students and their parents. They were also not politically motivated in any way'.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
			mentoring; the process is often formal in nature, but takes the view of the whole person'.	where professionals work independently with complex groups of students. The uncertainty of day to day working conditions can invariably lead to difficulties and at times self-doubt. '	
	Investigating impact and features of revision techniques on student attainment in GCSE geography. Exams 'test knowledge rather than ability. I think this is cross-curricular though' Study influenced 'also by my own inability to remember information'.	Student survey of revision habits and analysis of expected and actual attainment, shows importance of study outside school. Note-taking and mind-mapping appear to be more effective than simply reading through notes and books. Suggested finding that time is spent more profitably on independent revision at home or outside school, than in booster or revision classes in school time. Study also suggests that 'more able students require fewer hours of revision than their less able peers'.	Ongoing sharing of findings with students and embedding of revision in course, recognising exam demands placed on teachers as much as students. 'Previously I have been at a loss to explain poor exam results when so much revision is carried out in class. It has been a revelation to me to discover that it is essential for students to continue their revision following this preparation in class.' Using findings to change practice, 'every single week! I do a lot more revision now and embed it within courses rather than at the end of courses. I also talk about the findings of the dissertation with students'.	Limited leadership interest in applying learning from teacher inquiry, including revision practices found effective. 'I think there are too many other things to think about and so only 'obvious' and 'quick' fixes are considered in any detail.' 'Some students are able to learn facts and recall information easily and, in the current system of GCSE testing, they are deemed intelligent. Other students develop ineffective learning methods and are seen as slower learners.'	Public exams prioritise knowledge recall over complex subject links and abilities. Numerical targets are used inappropriately and simplistically. 'I'm very wary of any targets. I think they're divisive and used in the wrong way. I'm not sure you can attribute numbers to human characteristics and abilities in such a simplistic way. I feel targets have been the root of many problems in education as teachers have more to fear by them than students. This leads to teachers doing a disproportionate amount of the work.'

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
Teacher B Benefits: • A 'hobby' • Personal interest and enjoyment • Self-confidence Limitations: • Incidental impact on practice Collaboration: • Minimal (mentions me!) • With leaders as participants in inquiries Enablers: • Family • School learning culture Inhibitors: • Work-life balance	Exploring the planning and self-instigation of career progression towards leadership and headship. With ambitious drive to what extent can a senior leader plan their career? Are the career phases something you have to make happen?	Interviewing a leader to gain the story behind experience and leadership development. Has helped in feeling 'more comfortable about performing as a leader'. Unsure about future headship, despite ambition towards this. Considering taking NPQH, to help decide and understand the role on a personal level. 'The friendships between the head and/or other senior leaders are crucial to the succession of the aspirational leader.' Trusting relationships with mentors, providing the interviewee with 'the support and guidance necessary to complete his "journey"'.	Discovering oneself in deciding what to accomplish, actively learning and surrounding oneself with supportive others. Ambition is supported by credibility. The 'discovery of one's self' in deciding what to accomplish and planning a 'learning agenda'. 'The ambitious individual needs to take ownership of their own leadership learning development to enable them to plan and drive their career accordingly to progress successfully to senior leadership.'	Trusting relationships and friendship with colleagues. Reciprocity in being developed by others and developing others through succession. 'The keys are working in a friendly and supportive school and being listened to by senior colleagues'.	External pressures, responsibilities and accountability diminishing aspirations of some to reach headship. 'There is something innate, it can be seen in children, but it 'needs nurturing out'. This involves putting oneself forward and taking opportunities that are offered or arise. It also means 'not wanting anything back', treating leadership as one's own journey.'
	Understanding leadership as performance, its contribution to identity, the development needs and emotional costs. What are the implications of leadership as performance for the	Critiquing the literature of leadership as/is performance, and capturing the views of seventeen leaders through interviews. Researching leadership performance as prepared (transitive) or impulsive	Personal leadership performance and professional identity enhanced through studying it. Leadership development as mutual, reciprocal growth. 'Classroom and school leadership are absolutely linked but often seen	Leadership requires followership and context sensitivity. Followers expect leaders to lead, and leaders must be able to improvise, act and perform. Most important is 'support from particular individuals	Perceived educational leadership recruitment crisis. Families and friends are a source of emotional support for many leaders. 'Look after people and they'll stay. The government has tried to address workload issues, providing related guidance,

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	training and development of heads?	(intransitive) with potential for repetition. Distinction between 'leadership is performance' (organisational rituals) and 'leadership as performance' (everyday interactions). 'Performance and enactment skills are required to successfully deliver messages to a variety of audiences in order to gain following and fulfil the role of a leader. … The leader uses their professional identity as the 'role' in which they are playing in the performance. This identity can then be used directly to prepare and develop the enactments'.	separately. As a TSA leadership development programmes focus on relating leadership to classroom practice'. If leadership skills are built on experience, 'the idea of 'fast tracking' a leadership career does not sound favourable, as how would such experiences be encountered?' 'Improvisation through performance is putting an individual 'stamp' on the message being delivered with the key objective to the relative audience.' Leaders need confidence to put their 'neck out', making suggestions, sharing ideas and being pro-active. However, in teams, followership is more important. Wider leadership roles in networks attract more optional followership.	and their investment in time'. Confidence, influence and authority are expected by followers – 'they are expecting to see somebody who holds their head high'. Leaders confirm commonly stated strategies for leadership development 'mentoring and coaching, school-based experiential learning, job rotation, shadowing, internship, peer support, networking and formal leadership programmes'.	however schools are not adopting it. It is the same with Ofsted myth-busting. For example, there is no expectation for different coloured pens to be used for marking, yet some schools insist on this. Leaders need to be confident to take the initiative and ready for conversations with Ofsted.'
Teacher C Benefits: • Engaging with literature/research • Interest – 'tangents'	Exploring experiences and critical incidents that have led to shifts in thinking and practice. Coaching and mentoring, observing subject teaching	Reflecting on coaching and mentoring, observation of and feedback on teaching, triggered by external training.	Fundamental changes to feedback through observation, coaching and mentoring, involving two-way and subject-specific dialogue.	Working in a team that is fully empowered to make changes to practice in supporting and developing teaching.	Ofsted's move away from grading of lessons and individual teachers facilitates and coincides with a more developmental approach in school.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
• Inquiry-orientation Limitations: • Lack of time Collaboration: • Consultative more than collaborative • Teamwork through inquiry Enablers: • Sense of urgency • Masters study 'based on things that are happening in your own practice' Inhibitors: • Others' perceptions of research and development – 'sniffiness'	and judgements based on one-off observations.	'I had little more than a rudimentary understanding of coaching at this time, and had not ever been the recipient or provider of a coaching experience. … In essence the key message of this programme, indeed the key benefit of coaching, was to ensure sustainable change for the better.' 'I observed feedback being given to a trainee after a lesson which was detailed, coherent and insightful but it was entirely a one-way process'.	Realising that lessons observed by non-specialists can overlook important subject-specific aspects. Recognising that one-way feedback may not be helpful to the trainee. 'The initial trigger was the training session which led me to think and reflect on this and search out practical examples to justify this viewpoint. Analysis of an example of 'good feedback' we used led me to entirely question our feedback methods and these have now fundamentally changed'. 'The effectiveness of the Lesson Study process is that is focuses teachers' attention on the effectiveness of the lesson - and not on the effectiveness of the teacher.'	'In terms of the SCITT, I feel entirely empowered to make decisions, develop our practice and change policy without any constraints (other than collaborative agreement of the wider team that they buy into any new ideas).' 'Reducing teachers to a number is very simple and leads to artificial measures of improvement or otherwise. This is why leaders have favoured this approach and although I have no direct evidence, I believe that previously lesson observation data might have been manipulated to ensure a high percentage of outstanding teachers.'	Relationship between practice development and quality assurance: 'I think that this is a difficult balance to achieve which we have not yet got right. We need to find a better way as a school and as a profession of judging teacher performance in a more sophisticated way – but I don't have the answers to this!'
	Establishing consistency in coaching and mentoring trainee teachers. To what extent is lesson feedback to trainee teachers related to the	Analysing observation proformas and interviewing trainees, coaches and route leaders, arriving at a revised proforma for observation. Analysis of 30 lesson observation proformas,	Adopting and helping others acquire reflective coaching approaches, recognising a place for mentoring when necessary. I coach everyone now (much to the annoyance of	Distributed leadership culture, where those responsible are encouraged to lead, make changes and be accountable for impact.	Multi-layered accountability – to students, parents, trainees and partner schools – accompanies the autonomy and responsibility to train teachers.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
	revised Teachers' Standards. Establishing greater consistency of practice in mentoring trainees.	completed by learning coaches in six schools during their routine observations of secondary trainee teachers' lessons in mathematics, drama and science. Six semi-structured interviews with 3 route leaders, a learning coach and 2 trainees. A revised observation proforma, with a more explicit focus on the Teachers' Standards.	my [family]). But it can be difficult and there is certainly a time for mentoring as I do believe that the coachee has to be at a certain level of competence before coaching can be successful. Some coaches/mentors find it 'difficult to reflect on a lesson in a more pedagogical way'. 'Learning coaches often lack in confidence when reflecting on pedagogical aspects of trainees' lessons'. 'I think some people are more naturally reflective than others, but it is a skill that can be taught/ acquired. Those that are naturally talented in my view, find it more difficult, to coach/teach others as they've not necessarily had to reflect in the same way'.	A shift towards school-led ITE through setting up a TSA and SCITT. 'I think in general the leadership style of our headteachers is distributive whereby assistant heads are expected to take a lead on key areas, make changes and be accountable for the impact of these changes'.	'I think that as school we very much feel accountability to our students and their parents. As a SCITT this takes a slightly different form. We try to be more business headed in terms of the financial model and we are also acutely aware that our trainees pay £9,000 so giving them value for money guides our work. The third aspect of this is our accountability to our partner schools to provide outstanding teachers that are going to work within them'.
	Investigating and developing the quality of trainee teachers targets as set by learning coaches.	Analysing records of trainee-coach review meetings and using this to develop practice. 'Gathering evidence to meet a particular teaching standard was a target that was set on five different	Coaching entails a shift towards realising that one's own way of teaching is not the only way, and not necessarily the best way for others to teach. Simple changes to practice - a single 'rolling document'	A team culture of continual evaluation and planning for self-improvement, building team capacity through developmental meetings. Protecting time for trainee-coach reviews.	Coaching and mentoring as central to school-led reform. Ofsted as a key driver of changes to practice in target-setting.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
		occasions within the selected sample. Whilst it is a necessary evil of teacher training courses that the Teacher Standards do need to be met and evidenced, setting this type of target is tantamount to putting the cart before the horse, whereby the gathering of evidence becomes of primary concern, rather than using the teacher standards effectively to ensure progress for students.'	rather than a 'different form each week', with specific 'tasks' as well as 'targets' so developmental progress over time can be discussed and monitored easily. 'I think the key shift that comes from coaching rather than mentoring is the realisation that your own way of teaching is not the only way, not necessarily the best way, and certainly not necessarily the best way for someone else to teach. Once they have that realisation the transition from focussing on the teacher's performance to the learning is profound'.	School ethos of continuous self-improvement: 'Yes, and definitely there is within our SCITT – we evaluate anything that moves! That is the culture that we have developed and our improvement plan guides us through this process. We ensure that team meetings are developmental, not task-based and this really helps to build our team capacity'.	
	Understanding and charting the change process involved in setting up school-centred initial teacher training (SCITT), growing own teachers.	Analysing and synthesising a range of naturally occurring evidence of change, applying theoretical models. Using the Bridge model to identify ambition, directional and transformational levers. Using Kotter's first three steps to look at early change - urgency, guiding team, vision.	Collaboration, mutual respect and a non-judgemental approach, combined with friendly team competition, facilitate sustainable change. 'My team are quite competitive, so having a mutual target that they are all accountable for contributing towards helps the team ethos and its	The unlocking of middle leadership capabilities creates a more self-directed organisation, though accountability culture prevents self-directed pupil learning. 'Leading is not about telling others what to do – that is a short term and unsustainable approach. In terms of teaching and learning you need more of a	Advent of the school-led system for initial teacher education, leading to a 'grow your own' philosophy in schools. ''The advent of the school led system for Initial Teacher Education (ITE) ... has led to schools thinking differently about the training and development of teachers and a 'grow your own' philosophy has

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			approach to change and development'. Route leaders report greater collaboration, mutual respect and a non-judgemental approach: 'These are absolutely paramount factors in getting the ethos and the conditions for change to occur. Once you have that ethos, then everything else slots into place and change becomes much easier to implement and sustain'.	balance of approaches. The teacher needs to retain control of the learning and direction of it. In an ideal world, students would have more control and a more active role in the direction their learning takes. In today's accountability culture that is never going to happen and I fear it will only get worse!!'	been quickly established within different contexts.'
	Investigating differences in perceptions of classroom observation as a tool for development and/or accountability in various school settings. 'From discussions and interviews with senior leaders, it was clear that the improvement of teaching and learning was at the heart of everything within their schools. How this was carried out and perceived by staff was very different.'	Building comparative case studies of differing school approaches to observation, through documentation analysis, interviews and lesson study. Building comparative case studies of lesson observation practices across schools in the partnership. Using lesson observation documentation (policies, observation notes and feedback), plus semi-structured interviews of purposively selected leaders and teachers. Taking part in a cycle of Lesson Study with two	Living with and balancing expectations that development and accountability must co-exist, recognising the latter can erode trust in the former and is dominant in many schools. Feedback seen as crucial (linked to ethos), both who and how: recognition of distinct subject pedagogies '…too many observations take place without subject specialists…'; 'For any value to be attached to classroom observation it is also clear that mutual respect between the observed and	Ofsted ratings influence observation and the balance between development and accountability. Schools deemed effective can be more creative. Ofsted ratings appear to influence approaches to lesson observation, performance monitoring and accountability. RI schools tend towards forms of grading and compliance, partly to provide evidence for Ofsted, despite leaders' scepticism. Outstanding school more creative in allowing teachers to	Dichotomy between observation for teacher development and quality assurance, with teacher retention issues. What is observed are proxies for learning, often illusory. 'Don't get me started on this! Exam results are absolutely seen as proxies for learning and teachers are judged on this basis. However, we fail to appreciate that due to the huge range of external interventions that happen in schools (often not by the class teacher) and in some cases students having

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		colleagues, around the learning habit of perseverance: 'Throughout the cycle we discussed, trialled and evaluated different ways in which this could be done and we adopted a range of methods which were successfully utilised.' Observation is typically 'used as a tool to evidence the quality of teaching rather than develop it.'	observer is key. Only when this is in place can you change the mindset of an individual'; 'developing protocols around the importance and sanctity of the peer discussions could also have an impact'. Professionalism and trust: 'Teachers will respond and develop when they perceive that they are trusted to do a good job and to have the best interests of students at heart. Where there is suspicion and a lack of transparency, there is the potential for mistrust and a demotivated workforce.' Lesson studies focussed on 'how students learn and specifically how we encourage them to persevere. I noted a clear difference in the way I observed as I felt much more able to hone in on the learning and behaviours of individual students without the distraction of worrying about how the teacher was performing, free from the confines of quality assurance.' '…sense of observational freedom…'.	collaborate through observational development (e.g. lesson study). Quality assurance and teacher development:' I think that the two things have to co-exist, but getting the correct balance is extremely challenging, as teachers are naturally suspicious of any quality assurance processes. An example of this is where we have introduced a lesson dialogue approach to observation. As part of this we encourage teachers to select a class to be observed and a focus that they wish to develop. The aim of this is to encourage teachers to think about their practice, rather that put on a show for the purposes of an observation. This is fine whilst you are working with competent and committed teachers. Unfortunately when working with teachers who require improvement, this approach has then led to further support for those teachers, leading to them being mistrustful of the	external home-tutors, ineffective teaching can be masked. At least though there is some standardisation of judgements with external exams but in lower year groups quite often grades are at best non-standardised and at worse manipulated to show the illusion of progress. I fear though, that schools are so far down this path that there is no way back! The best we can do is encourage the triangulation of student outcomes, with observed teaching strategies and with the progress we can see in books.' 'Perhaps controversially, getting teachers to have higher expectations of students by seeing them in the wider context of the multi-academy trust was also a key facet in ensuring teachers aimed high and saw beyond their own settings. … it's a very strong argument for peer observation. Unfortunately we are now entering a national situation due to

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				process. … ultimately we are accountable to the students that we teach and we owe it to them to ensure that teachers that are not doing the business in the classroom are helped to improve quickly. Inevitably sometimes (in a very small number of cases) when improvement is not seen it will lead to the start of capability procedures. This then erodes trust in the process'.	financial constraints where non-contact periods for teachers will be reduced and the time for such activities will be limited. Any limited CPD time is focussed on content for new specs, so I fear it will be a while before we are able to really embed peer observation in this way'.
Teacher D Benefits: • 'More knowledge' • 'Interaction with people' • 'Understanding students' • 'Understanding situations' Limitations: • Potential narrowing Collaboration: • 'Work better with the team of staff' • 'Share with the year group I work with'	Understanding ways to support students with autism and sharing this with colleagues. 'I want to improve my knowledge of autism so I can offer more help and support. … staff need to share knowledge of autistic pupils with each other and I believe this could be done more at my school, which I why I wish to help address this'.	Observing and questioning with permission a case study student, keeping a diary of support and reviewing relevant literature. 'I was hoping the literature could explain some of the notes I had made in order to give me a deeper insight into autism'. 'During practical subjects, research has shown it is a good idea to let the students observe the activity before they participate'. Student likes science and prefers subjects taught in a	Becoming more confident and understanding of others' thinking, feelings and anxieties, avoiding unexpected changes of routine. A change of attitude and approach to handling the student to avoid their anxiety. For example, by checking instructions are understood, avoiding metaphors or jokes, and waiting while they change for PE in an unusual place. Realising that a seemingly minor incidental occurrence (e.g. a light not working) could have a major	Crossover of meetings to support both academic and pastoral needs of students, with form tutors and heads of year in key roles. 'As a head of year I have a strong knowledge of the pastoral system and I work closely with the curriculum team to ensure we offer academic support for students that need relevant support in certain subjects. 'I have now widened my knowledge and experiences with the pastoral area as I have been head of year for year 7 , 9 , 10, 11. This has allowed me to see how	Policy agenda of promoting inclusion through the presence, participation and achievement of students with diverse needs. 'Inclusion is about the presence, participation and achievement of young people with diverse needs.' 'I now consider inclusion to be more diverse. Including children with free school meals, SEN, pupil premium'.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
• With parents, pupils and colleagues through inquiries Enablers: • Tutor/mentor • Reassurance and motivation • Time from school Inhibitors: • None mentioned		more structured way. Less engaged in practical subjects like drama and PE, but more attentive when information put on a whiteboard.	influence on the student, as 'outside normal routine'. Staying calm enables calm. Personal knowledge of autistic students and related research helps teachers to be 'more understanding' and to 'make reasonable adjustments to become more supportive'. 'In this short space of time, I have enhanced my knowledge, I have altered my approach … and it has already had positive consequences'. 'As a head of year I have worked with more students with autism and my previous experiences have enabled me to understand thoughts and feelings. An example is when there is a change of routine to the school day, I ensure that form tutors with autistic students are clear about the changes to the day so children with autism are aware of this'. Noticing: 'It helps me from a pastoral point of view to observe student behaviour	different year groups work and how their academic needs differ depending on whether they are key stage 3 or 4'. 'Regular meetings are carried out for both pastoral and curriculum and this crosses over so both areas support each other'.	

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			to help identify their needs and to check they are ok. It also helps in class to identify student's understanding of work'.		
	Understanding and developing the role of parents in supporting their children at school, through becoming a head of year. 'I have worked closer with parents since becoming a head of year. And in particular, when being head of year with year 7 it has been important to work with some parents to help their child settle into secondary school. Previously I may have not been so aware of the importance'.	Interviewing high attaining students and students with behavioural difficulties, discussion with attendance officer, review of parental engagement literature and dissemination to pastoral team. 'My findings have allowed me to share this information with the tutors in my year group. I have shared this in a pastoral meeting. The attendance team also work very closely with the pastoral team so this has been very beneficial'.	Communicating regularly with parents to share student achievements and to bridge home-school gaps. Recognising diversity of family arrangements and a need for two-way communication. The 'colossal impact that parents can have on the education of their child' and 'many barriers to parental engagement', extends own role to 'be a supportive figure to parents who possibly have less engagement with their child'. 'Parents can find it difficult to communicate with teachers due to a lack of confidence or due to poor experiences they had of school and with this knowledge I can help to bridge this gap'. 'Alternatively, for parents who are supportive, it is important I communicate	Parental support and school support seen as working together towards the same goals for students. Parental support and school support: 'both parties are vital in working together to achieve the same goal'. The school communicates with parents through text messaging, phone calls, letters and sometimes home visits: 'Communication between parents and teachers needs to be a two-way process'. 'I have had positive two-way communication more so when being head of year 7. Parents will call to see how their children are getting on as some do worry more when their child begins secondary school. Communication two ways has been very positive. This is mainly via telephone, but also meetings.'	Policy promotes positive home-school relationships. Parental engagement influenced by parents' education, socioeconomic status, family configuration, ethnicity and first language. Influences on parental engagement include: parents' education and socioeconomic status; family configuration; cultural factors such as ethnicity and first language. Policy context: DfE reports that some parents find home-school partnerships a struggle because parents may feel intimidated when visiting school. Reasons include a lack of confidence, negative experience of their own schooling and perceptions of teachers being their superiors. DfE recommends building positive relationships with parents and working actively to embrace racial,

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
			with them to highlight the success of their child to ensure progression is continuous'.		ethnic and language differences. Government guidance on working with parents: 'I believe it has remained the same. I think it is down to the individual school / or even staff member to improve communication with parents. In my case, my masters has showed me the importance of communicating with parents, which has produced my positives in my experiences.'
	Investigating the influence of parental education on their child's education and the factors at home that help or hinder. What factors from home can help or hinder a child's school experience? To what extent does a parent's education impact on a child's achievement? Do any factors outside of parental influence impact on a child's academic achievement?	Case studies of four families with different backgrounds, achievements and perspectives on education, framed by a range of relevant literature and research. 'I still believe a parent's education can reflect that of their child. Usually because of the way the children are supported at home. Some parents can be more confident when helping their child due to their own strong background in education'.	Responding to varying degrees of parental confidence and engagement, being available to parents (e.g. via e-mail). Sharing pastoral information with academic teams. 'A parent's education can largely dictate the outcome of their child's education and although some parent's may be at an advantage due their own educational successes, barriers can still be broken down to ensure each child has a good chance of achieving.'	School encourages teacher-parent contact and student-led activities, believing students can still achieve despite challenges and disadvantages faced at home. Inner-city school with a high intake of students from low income and disadvantaged areas where a high number of parents will not have received further and higher education. 'Working in an environment that encourages students to run their own school	A large proportion of parents have not experienced further and higher education in a socially and economically disadvantaged area. 'Circumstances and family background determined what type of support each student would receive towards their education and this had positive and negative outcomes.' 'Parents who were well educated and career driven were able to fully support their children. This included parents having greater

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				'As a result of this, I am making a conscious effort to communicate with more parents'. 'Depending on their background, different students need different support.' 'Sharing my email address has been really beneficial as parents can contact me, even if I am teaching. I know other form tutors have also used this method after telling them about it. I have definitely communicated more with parents, as it is so important and has so many benefits. The curriculum team and pastoral team work very closely together and the pastoral team are now more hands on with academic data on students in their year group. In pastoral meetings I regularly promote the importance of contacting parents and getting to know all parents and not just those whose children get into trouble'.	benefits the students in so many ways'. 'Students will have a say about the charities we will raise money for. They can choose where they would like rewards trips to take place. In December they chose whether or not they would like a Christmas disco. They help with ideas on how to tackle litter in school, for example. And a team of students will meet with the head teacher each term'. 'Communication with parents is strong. I do believe it has improved. As staff we are encouraged to make contact with home, not just for behaviour issues, but for positive reasons too. Also, knowing the importance of parental contact, (due to my masters) I have continued to build positive relationships with parents and taken time to get to know as many parents as possible of the students in my year group'.	knowledge to help with school work, greater financial support, and appropriate parenting styles were used to help children learn and behave appropriately at home and in school.' 'Students whose parents were less educated and were not in employment … encountered greater struggles which did negatively impact on their education. Their parents were tested with financial restraints, they lacked knowledge in some subjects when supporting their children, and their time together was limited due to having other children to look after.' 'The students who were more successful had more stability at home.' 'The experiences that each parent went through at school mirrored that of their children. … Often a child's education ends up being similar to their parent's education. Parent's act as role models towards their children and their

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
					goals and aspirations can be dependent on their parent's achievements.'
Teacher E Benefits: • 'largely impacted on your day-to-day role in your job' • 'small-scale but go really in-depth' Limitations: • Large-scale studies less applicable Collaboration: • Extensively with parents, pupils and colleagues through inquiries Enablers: • Time from school Inhibitors: • Increasing lack of time due to SEN budget cuts • Lack of external SEN support • Limited interest from school leaders	Promoting assessment for learning through technology in physical learning activities for students with special educational needs (SEN), encouraging risk-taking. 'Action and reflection process expands purposes towards wider uses of technology to capture and assess 'technical performance' in physical learning activities (e.g. javelin and shot-put). To 'establish a safe learning environment for learners and encourages them to take risks within their learning'.	Working with and supporting colleagues in the use of technology-assisted assessment for learning, reflecting on this through learning logs and wider evidence/knowledge bases. Learning logs kept as part of National Professional Qualification for Middle Leadership (NPQML), linked to research and wider sources of evidence. Working with and supporting colleagues (teachers and teaching assistants) in their own use of technology to support learning and assessment. Further critical reflection on this process.	Sharing of recorded experiences supports a safe learning environment for students, as well as increased confidence and leadership among staff. 'Greater use of AfL teaching strategies, increased ability to lead a team and an increased level of confidence within group situations.' Enabling students to share recorded experiences helps to 'establish a safe learning environment for learners and encourages them to take risks within their learning'. Efficacy of AfL strategies varies according to 'needs of the learners, the adult-student relationship and the ability of learners within the group'. 'I have learnt that it is essential to pre-warn some learners what is going to be expected of them especially when they have additional learning needs which	Team-working establishes a supportive and collaborative environment, in which members feel comfortable to contribute. Team-working to 'establish a supportive, collaborative environment where others feel comfortable to contribute to team/departmental development priorities'. A focus on 'listening to other colleagues/project team members', while also seeing a need to 'be more assertive with staff members that do not perform to the required level of expectation' and to 'emphasise the project aims and consequences of non-compliance within all team/departmental meetings'.	Wider context of diminishing resources for supporting students with special needs and managing parental expectations. 'EHCP does not automatically trigger funding now. Students with more complex needs get high needs top-up funding on a case by case basis. E.g. a child with cerebral palsy needed almost constant one-to-one support.' 'Some students were staying on the SEN register for many years. Reasons for SEN identification are subjective, left to schools to decide, without consistency.' 'Many parents want labels, so parental expectations are an issue. Need to ask what impact a label will have, focusing on support.'

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
			include resistance to change and rigidity of thought'. 'I have also learnt how important it is as a leader to empower and support other team members when implementing new initiatives.'		
	Ascertaining and increasing teaching assistants' (TA) support for students through collaboration and communication with teachers. A feeling that the SEN team can work more effectively and collaboratively and that greater communication is needed between teachers and TAs. Three guiding questions: 1. How are TAs involved in the learning process? 2. What directions are they being given from teaching staff? 3. How are TAs supporting AEN learners within class? Intention for TAs to be more aware of what teachers require of them through in-class support,	Departmental audit to identify strengths and developments, implementing teacher-TA two-way log for in-class communication and support. Training opportunities are something to develop. Some TAs will be sensitive about training, in terms of what were they able to do and what they find difficult. Issues of staff subject knowledge have also been highlighted. People need to put the effort into brushing up on their own school specialisms, but sometimes.	Upskilling and refreshing of TAs through identified CPD opportunities. Potential for two-way to become three/four-way communication through sharing with parents and students. Recognition that worthwhile interventions to support pupils with AEN require initial pre-assessment and ongoing assessment to ascertain impact and progress. Identification of a government funded CPD opportunity suitable for TAs, involving 'upskilling' and 'refreshing'. Identification of a greater need for parental engagement and additional meetings set up to achieve this.	Reduction in TAs while large numbers of SEN students on register, requires more focused support, gradually withdrawn to encourage independence. 'TAs were saying they didn't have time to communicate and didn't understand what teachers wanted. ' 'Teachers didn't have time to talk to TAs, with fast change-overs between lessons, no lag time and no opportunities to speak. Two-way logs gave onus to teachers to direct TAs and allowed TAs to feel part of the process. Quite specific information can be transferred/shared in this way.' 'Schools used to have more TAs and sometimes consistent support can be	TA and SEN budget cuts, key research questioning TA roles. New SEN code of practice encourages integration and more general support. Influential research suggesting negative correlations between TA support and pupil achievement, and lack of time for joint teacher and TA planning. Policy agendas of raising standards for all, including pupils with SEN. New SEND Code of Practice, with further moves towards integration and general support. Overall budget cuts for SEN support, leading to reduction in numbers of TAs.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
	and to feed back important qualitative evidence of student responses.		Two-way communications logs suggest 'some meaningful, purposeful, specific, targeted communication taking place within classrooms'. Potential for two-way communications to be used by teachers to 'inform their future lesson planning' and 'to feedback to parents'. Also, helpful for strengthening joint accountability of teachers and TAs and for monitoring by leaders.	counter-productive as students become over-reliant. Need to gradually step back and allow more independence.'	
	Maximising TA support for SEN students in literacy and numeracy interventions, using two-way communication logs and providing CPD opportunities. 1) How successful do teaching staff feel teaching assistants have been in supporting progress of SEN learners in their lessons? 2) What impact have teaching assistant led literacy and numeracy interventions had upon the learning of AEN students?	Observing intervention sessions, interviewing TAs, analysing student data and two-way logs, in the light of relevant SEN policy and research. Engagement with relevant and recent policy and research on SEN support and deployment of TAs. Observations of literacy and numeracy interventions, analysis of pupil data and interviews with TAs. Further analysis and development of two-way communications, building	Developing and valuing the role of TAs in the teaching and learning process through reflective teamwork and more focused and detailed dialogue with teachers. Developing 'reflective teamwork' which aimed to equalise the relationships between teachers and teaching assistants' and which 'proved to be greatly beneficial in contributing to teaching assistant's empowerment and sense of value in the teaching and learning process'.	School in Ofsted 'special measures', mainly due to low maths attainment. Insufficient TA support precipitates a nurture group for underachieving Y7/8 students. 'Ofsted experience has focused attention on gaps in funding and lack of staff. The inspector suggested using reading age to track and show student progress, as well as evidence in English. This was the most beneficial aspect of Ofsted, as they can't give advice but after a while the inspector	Inspection framework in which schools are evaluated and judged, but offered little practical support for improvement. Learner/family-centred policies for SEN. Ofsted inspection framework. Overall budget cuts for AEN support, leading to shortage of TAs. New SEND Code of Practice and guidance from the National Association for Special Educational Needs (NASEN), placing 'learners and families at the centre of SEND accountability'.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
	3) What impact have two-way log books had upon communication and feedback between teaching staff and teaching assistants? 4) How has feedback supported teaching assistants in their continual professional development?	on work done in an earlier assignment. Two-way logs are 'work in progress. It has highlighted beneficial comments. For example, where a teacher gives clear lesson objectives, TAs can provide feedback related to this'.	Exploring more 'efficient means of supporting SEND students in-class by grouping SEND students' in order to 'ensure as many SEND students as possible have access to teaching assistant support within class'. Realising the benefits and limitations of this approach: for some better access to and consistency of TA support; others 'become disaffected within lessons due to their feelings of inadequacy'. Developing more 'detailed dialogue which could be utilised by the teacher to help with the planning of future lessons' as 'purely stating the actions of the teaching assistant within a lesson does not help teachers'. Training TAs in quality feedback, asking: 'what was the student able to do independently?'; 'what was the student able to do with support?'; 'what did the student find difficult/unable to complete?' Providing greater consistency of TA in-class	gave in and told me. Ofsted are not averse to qualitative information, but their main focus was on the data. A more two-way approach would be quite beneficial and powerful. Ofsted said our work is embryonic in the report, which is a fair point.' 'A clash exists here. Ofsted demands for evidence, but how do you know, how do you justify? We are providing people with time and resources (e.g. software) to deal with any shortcomings. When giving people guidance some refuse and want to continue with old ways. It is important to keep onside those who work hard for the department. Senior leaders have not always been supportive and have undermined me. Then others refuse because they have seen this happen.'	Wide differences in the ways in which TAs are utilised across schools, some becoming highly specialist and training/supporting teachers, others (emerging from literature). Minimum expectations at the end of Key Stage 2 leading to notions of secondary-readiness. 'With the national curriculum levels we could compare across feeder schools. There is not really a lot of work going on with primary schools. The English dept were planning to go into feeder primaries and take an English lesson with Y6 and also do some observations, to see how things are done differently. Maths too.' 'English is more successful than maths in the school. Maths results went down due to curriculum changes, a much more difficult course now. Ofsted identified low ability groups in maths as a major issue. Predictions produced by

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
			support, particularly in English and Maths, with targeting of TA strengths and specialisms.		senior leaders are often very high.'
			Recognition of the need for a 'multi-departmental whole school approach' to raising achievement among SEN learners.		
			'There is variation among staff, some TAs write two pages with little helpful communication.'		
			'There are difficulties with staff dynamics in creating collaborative culture of support, which would be the ideal world. There is risk of peer training being seen as patronising or intimidating.'		
			'In the past, staff have been able to do what they want to do without guidance. Some are stuck in historical ways of working, sometimes as a reaction to budget cuts.'		
Teacher F Benefits: • 'focus on a particular idea and explore that in detail'	Investigating changes to the monitoring and observation of teaching resulting from an inspection and the impact on relationships and trust.	Four-month study, conversing with teachers and senior leader over new observation processes. A perceived shift from joint	Teachers need to feel trust in the aims and agendas of leaders implementing assessment and evaluation of teaching, communicated clearly.	More frequent observations of teaching quality, resulting from disparity between leaders' and inspectors' judgements, not communicated to staff.	Both challenge and support seen as conducive to improvement, while inspection as monitoring not developmental process,

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
• 'read around and bring in research there' • Bricolage inquiry has been useful Limitations: • Organising own and others' time, which can also limit collaboration Collaboration: • With colleagues through inquiries • Conversing to find out what colleagues do and how they feel Enablers: • Time and support from school • Line-managers helping to plan CPD • Being in a position to act, in the right role • Linking PBI to professional and academic courses, plus role • Open, trusting colleagues, willing to do things Inhibitors:	Exploring changes made in school, 'as a result of an Ofsted inspection, to the way it observes and monitors its teaching staff; focusing upon the impact this has had upon relationships between teachers and senior leaders and exploring the impact this change has had upon teaching and learning outcomes within the school'. 'What factors contribute to or interfere with effective teacher assessment processes within an organisation?' 'Has the whole-school decision to shorten official teacher observations had an impact upon relationships and trust shared between teachers and senior members of staff?'	practice development to Ofsted-readiness. Teachers perceived changes to be focused on the school being 'Ofsted-ready', for a return visit. For the leader, changes were to enable more frequent observations of more teachers and to improve quality. The latter view had not been communicated to staff. Prior to changes, the teachers had perceived observations to be concerned with 'professional development' and 'joint practice development'. The short 'taking the temperature' classroom visits by leaders, were experienced as 'strange' and more to do with 'monitoring'. This 'taking the temperature approach' is shifting again, back to a more developmental approach to observation. Trust has improved, with various changes in senior leadership and also union	External pressure from Ofsted (from inspection itself and anticipated return in six months) recognised as external influence on internal decision-making. Decisions made to change teacher assessment process seen to suffer from lack of consultation and communication with staff, which was different to pre-Ofsted practice. 'Teachers that participate in teacher assessment processes need to feel that they trust the aims, objectives and agendas of the senior leaders delivering them'.	Following an Ofsted inspection, which found the quality of teaching and learning to require improvement and disparities between the judgements of inspectors and school leaders, the school introduced: ''Taking The Temperature' and 'Open Door' policies throughout the school year, whereby senior leaders would drop-in to a lesson for a short duration and make a summative judgment on the quality of teaching and learning happening within lessons'. Teacher observations reduced from full lesson to twenty mins, to emulate Ofsted practice at the time and inspection criteria distributed for teachers to plan accordingly. This shift away from professional development towards monitoring led to 'increasing levels of mistrust between senior leaders and teachers within the institution'.	creates fearful school cultures. Inspection known to create external pressures, with government, Ofsted and prominent academics (e.g. Fullan) claiming combination of pressure/challenge and support as conducive to school improvement. 'Culture of fear' in schools, generated by leaders' desires to satisfy Ofsted, who advise that schools should remain focused on providing best education for pupils, not simply pleasing inspectors. Inspection as a monitoring, not developmental, process.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
● Rapid change and leadership turnover leads to integration and application being dropped		representation, which is bringing staff back together.			
	Exploring discursive patterns in teams to understand how middle-leaders can lead and manage change through dialogue and social interaction. 'What factors contribute to or interfere with team decision making with regards to the role of the middle leader?' 'What discursive patterns are associated with leadership within teacher work teams?' 'What organisational conditions foster or impede leadership within teacher work teams?'	Observing, shadowing and interviewing teacher triads and a middle leader/coach in two teaching teams. Exploring the social processes within a teaching team 'focusing upon the relationships, communication, dialogue and discourse between the middle leader and the other members of the group'. Case study approach to observing, shadowing and interviewing teacher triads and a middle leader/coach in two teaching teams, including 'coaching lesson observation and two teacher team feedback/reflective sessions, led by core coaches'. 'Allowing time for the group to ask and respond to pre-written questions allowed for a successful discourse to develop within the meeting. However, due to the short duration of the initial meeting, meaningful discussion and discourse was curtailed and	Trust, involvement, creativity and more successful outcomes, arise from a teaching team working together on specific tasks towards a shared purpose, led through both active and passive discourse. Instigating and observing a middle leader's use of active and passive discourse in team meetings, to successfully facilitate interaction. Seeing this as an emergent leadership process 'often leading to more creative and successful outcomes'. The teaching team working together on a 'specific task' towards a 'shared purpose' (e.g. improving teaching and learning) seen as key factors for success. Concluding that all involved 'felt they could trust their colleagues and felt safe to explore and share their ideas, trials and dilemmas within a supportive environment and how, as a	Middle leaders are central to developing teacher quality for student learning as they are closer to it, hampered by lack of time in meetings for meaningful discussion. Role of middle leaders in developing teacher quality for student learning, as they are closer to it than senior leaders. Social distributed leadership as 'interaction, collaboration, dialogue, and communication between middle-leaders and their teacher teams'. Perceived lack of time for meaningful discussion to develop in meetings where teaching and learning are discussed. Time for meaningful discussion in teaching teams 'is a real and ongoing problem in a period of cuts and job-losses'.	Ongoing debate between school/teacher and home/student factors influencing on student learning, with policy emphasising teacher quality. Overriding, influential and oft-quoted political message (via McKinsey) that 'the quality of an education system cannot exceed the quality of its teachers'.

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
		consequently meant that there was only enough time to schedule future triad observations.'	result of this trustworthiness, the whole process produced more successful outcomes'.

Role of middle leaders: 'grant greater autonomy to the teacher team to explore, improvise and create ideas' based on 'a whole-group vision for the project, helping to foster and promote a level of trust and cohesiveness within a group'; 'reflect upon the social aspects required to effectively lead groups of people, identifying effective social discourse patterns that could be employed successfully within discussions and interactions'.

'Working across many different pastoral and subject teams, developing shared purpose and building trust are very important.' | | |
| | Investigating the impact of changes to teacher marking, assessment and workload in relation to school development. | Analysing, over a five-year period, changes to marking and assessment practices using a bricolage approach to documents, interviews, | Realisation that many assessment practices prioritise the evidence-base for inspection more than benefits to student | School continuing to 'require improvement' for five years, despite ongoing efforts of leaders and teachers, leading to increasing workload and | Government demand that all schools must be deemed 'good', while also attempting to address and reduce workload, with |

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
	Asking myself 'was the research worth doing?' supported me when identifying a research topic that, I felt, would support my own, colleagues' and institutional needs with regard to the impact of teacher marking, assessment and workload'.

'To 'analyse and evaluate internal and external factors that contributed to or interfered with the School's teacher marking and assessment process' during a period when the school was deemed to require improvement.

To 'examine whether particular initiatives the School's Senior Leadership Team implemented in response to these factors have been successful in raising the standards of teaching and learning'.

Rather than focusing on whether the school has improved in Ofsted's terms, instead trying to 'observe and identify the factors that have contributed to or interfered with school | reflections, observations and a questionnaire.

Case study using a bricolage approach to collecting varied and relevant evidence from documents, a questionnaire, observations and interviews. A particular focus on perspectives of three teachers and a senior leader, combined with questionnaire evidence from more staff.

A chronological analysis over five years of Ofsted recommendations for improving assessment and marking, compared with perspectives of teachers and leaders.

Teachers reported that the expected quantity of feedback was damaging the quality, with more repetitive comments. Also, subject-specific assessment practices were lost in demands for consistency.

Leaders surprised that their efforts to improve marking and assessment were not recognised by inspectors. | learning, despite the stated aim being the latter.

Realisation and perception that, despite Ofsted guidance urging caution over increasing workload via marking/assessment, repeated inspection recommendations have done precisely that.

Reflection on superficial or uncritical use of research evidence (e.g. Hattie) to justify changes to policy and practice, without looking more closely at details.

Suggestion/implication that proposed changes to assessment/marking practice are made to provide an evidence-based to satisfy Ofsted. A consequence is increased teacher workload, regardless of any benefits to students, with teachers doubting the latter.

'Results from this inquiry have been influential in helping to make assessment more manageable again, in line with Ofsted myth-busting.' | changes to assessment policy.

School continuing to 'require improvement' for five years, despite efforts of leaders and teachers. This in the context of Ofsted claims to improve schools, specific demands for more effort on the part of the school, yet a recognition of excessive teacher workload.

Repeated recommendations from Ofsted for improvements to assessment and marking led to numerous changes of school policy. Latterly, the school's own assessment policy is used by Ofsted to make judgements on school assessment practice.

'Continual amendment of the School's marking and assessment policy over a relatively short period of time was poorly communicated to staff and, therefore, impacted negatively upon the policy's effectiveness due to teachers not knowing how to apply it successfully to their own working practice'. | marking and assessment as key factors.

Emphasis on feedback to students through assessment in Ofsted criteria and via prominent research (e.g. Hattie). 'Deep marking' contributing to teacher workload.

Government and Ofsted demand/expectation that all schools should be judged 'good'.

Teacher unions and government attempting to address issues of teacher workload, recruitment and retention. Marking and assessment as a significant influence on workload.

Ofsted clarification and 'myth-busting' that schools should set their own marking/assessment policies, fit for purpose.

'Schools have to 'play the game' in order to satisfy these demands and the resulting workload pressures remain great. There have been many changes, with staff leaving'. |

	Purpose (Intended)	Opportunity (Enacted)	Response (Lived)	Organisational Context	External Conditions
	improvement processes over time'.	Examples of practices deemed effective by Ofsted (e.g. use of different coloured pens for teacher feedback and student response) used to establish school-wide policy.	The pressures of working in challenging circumstances and taking on many leadership roles have led to thoughts of a career beyond the school.		

Teacher A

homegrown leadership across partnership
current recruitment and retention crisis
unnecessary external pressure
teaching school alliance and SCITT
conveyor-belt into teaching without nurturing
external pressures vary across schools
school-led system
Ofsted-rated outstanding school in a multi-academy trust
exciting, innovative and forward-thinking
external follows from, not drives, internal accountability
trusting and collaborative culture
influential, aspirational and like-minded leaders
competitive peer group
senior team with gender balance
learning pathways for all, staff and students
supportive and caring partner
niche, where comfort lies but not a comfort zone
proud and caring parents, working in education
making family proud
family commitments
work/home hats, crossover
fortunate, right place at the right time
competitive with peers
career aspirations and plans
acting on opportunities, linking aspirations
role-specific one-off courses/events
interests, enjoyment and comfort
doctoral study as a personal hobby
study moulding self, not shared
confidence and performance
determination after setbacks
moving into leadership
changing and improving practice
like-minded colleagues
self-conscious questioning, reflecting and acting
results and outcomes
professional commitments
doing what is right for students
being and doing one's best
best learning experiences
collaborative learning culture
pastoral ethos, care and support
believing in and supporting others
recruitment and retention of teachers
development initiatives (e.g. TSA)
performing comfortably with confidence
early career development
researching leadership performance
influence of study incidental, non-deliberate
homegrown leadership development
finding a professional niche
common goals and reasons
sense of belonging

Policy coherence *and* conflict
Empowering leadership
Accountability accommodated
Partnership deemed effective
Family and friendship
Supportive working relationships

External Conditions

Organisational Contexts

Supportive family, like-minded colleagues and nurturing organisation

Personal drive and ambition
Promotion and career roles
Drive as response
Student learning and care
Courses, events and study
Giving something back
Embedding practice
Work-life balance
Shaping of identities
Nurturing staff
Community feel
Self-accountability

Purpose (*intended*)
Opportunity (*enacted*)
Response (*lived*)

Personal drive ambition, including to make family proud

Providing the best educational experiences for learners

Nurturing teachers through early career and leadership development

Teacher C

External Conditions

Organisational Contexts

Policy reinforcing values
Leadership and management
External accountability
School deemed effective
Supportive and growing family
Supportive relationships

a different feel but still familiar
recent change of headship
changing staff, new colleagues
parental engagement and relationships
addressing intergenerational underachievement
self-accountability more prominent
encouragement from own parents
working hard, a treadmill
to parents, students and the wider community
student inclusion and targeted support
supportive of study, providing time and funding
friendships, not only among teachers
studying alongside partner
community of people working together
enabling different roles
becoming a parent, spending time with family

Friendly, inclusive and supportive working community

Purpose *(intended)*

Opportunity *(enacted)*

Response *(lived)*

Personal gains and goals
Experience as opportunity
Being a people person
Building relationships
Changing roles
Self-determination
Organisational skills
Interacting with others
Building on experiences
Holistic experiences
Masters study and inquiry
Putting learning into practice

juggling time and roles
time-management
working with several organisations
noticing, taking time to find out
knowing how other schools operate
sports coaching, mentoring then teaching
being a role model, students and family
thinking differently to support students
subject teaching (PE)
understanding student differences/situations
pastoral route, head of year
adapting, sink or swim
two-way respect, all equal
working confidently with parents
empathy, sensitive to needs and feelings
becoming a parent, taking a step back
linking student learning to real-life
drawing on experience without realising
part-time teaching, outside specialism
learning from others, including students
putting oneself in new situations
drive, stimulation, challenge, taking a risk
collegial co-coaching and modelling
helping with new experiences
communication skills, talking to all
conversations, connections and common ground
sociable and approachable, outgoing not loud
firm foundations, teaching and inquiry skills
guidance on starting points and reassurance
applying and recreating research
doing things well/properly, right reasons
reading as a trigger
motivation to do more and make things happen
being thorough, fine-detail
doing and finding out
sharing with relevant teams

Building relationships with all to better understand and support their needs

Drawing from, building on and adapting to life experiences

Working and studying hard, in an organised and thorough way

Own and other's learning, in challenging circumstances

deployment to roles, outside SEN support and co-ordination
leaders disinterested in outcomes from CPD and PBI
students let down through lack of funding and support
reduction in TA support, spread thinly
funding changes reducing support for SEN
Ofsted judging but not helping
lack of practical guidance and support
narrow Ofsted agenda focused on data
special measures, based on low achievement in maths
increasing parental expectations for SEN support
accountability shift from government/LA to academies
no answers or solutions to underachievement
friends and family making bad life choices
deprived and disadvantaged school catchment
schoolteachers and family dismissive of ambition
some TAs more proactive than others
senior colleagues supportive of CPD and PBI
role model to daughter
a sense of addiction, absorption

Conflicting policy direction
Leadership supportive but distant
Pressured external accountability
Deemed effectiveness lacking
Influential family and friends
Stressed working relationships

External Conditions

Organisational Contexts

own learning intertwined with student learning
growing in confidence and pride
taking all available opportunities
teaching different subjects and students
achieving as much as possible, the best one can be
reacting to perceived missed opportunities
mainstream and special education experience
distancing from family or educational discouragement
developing own mind and thinking
integrated with workplace practices and roles
seeking leadership and support for improvement
tutor support and relationships
involving students, learning for enjoyment
rich examples over broad data
time for practice-based inquiry
formative assessment and modelling
trialling new courses and appropriate qualifications
peer and self-assessment, learning from mistakes
caring for students, showing the way
enabling sharing of student information
two-way logs to share information
small steps in progress over time
supportive relationships for learning
knowing students, establishing relationships
communicating and interacting with parents
gaining respect of students and parents
support for students let down by limited resources
becoming a leader and SENCo
closing gaps in special needs knowledge
enabling TAs to gain specialist know-how
providing targeted CPD and opportunities to feed back
encouraging others to find time
upskilling TAs in numeracy and literacy
observing and identifying successful practice
helping TAs to see their contribution

Personal development
Range of school experiences
Seizing opportunities
Student learning
Supporting students
Negatives to positives
Meeting complex needs
Courses and further study
Enjoyment and passion for learning
Staff and team development
Working with TAs
Valuing and leading

Purpose (intended)
Opportunity (enacted)
Response (lived)

Passion for self-study, turning setbacks to positives

Meeting complex student needs through formative assessment

Supporting development of others, building relationships

empowering middle leaders, less top-down
rigid time-frames for improvement
focus on results, but cohorts different
inspection ambivalence - real/false driver
local school competition and changing cohorts
non-selective surrounded by selective schools
narrow gaps for disadvantaged students
changes to progress metrics, focus on all students
playing the game, massaging figures, taking temperatures
initiatives dropped, others introduced
threat of special measures and academisation
changing senior staff and union representation
negative view of the profession
workload pressure and expectations, Ofsted looming
raising questions over career route
LA maintained, reduced funding, arts cuts
prompting alternative careers
need for a staff forum
trusting others and earning trust

Challenging policy direction
Shifting leadership/management
Pressured external accountability
Deemed lacking, requiring improvement
Questioning family and friends
Stressed *and* trusting relationships

External Conditions

Organisational Contexts

Like-minded colleagues and contacts, leadership roles

becoming a capable leader, ahead of the curve
professional qualifications - leadership and planning
learning from courses and colleagues, good and bad
academic qualifications - masters and doctoral study
skill-building within the school environment
key people, peers, colleagues and mentors
responding to pressure and stress, sustaining roles
getting the 'good', improving results
working harder, playing the game
planning opportunities through line-management
securing best possible outcomes and narrowing gaps
taking and tracking actions, gathering evidence
being in a position to act
listening to others, talking things through, difficult conversations
seeking team buy-in
providing reasons for actions and purposes
working within supportive teams and coaching groups
celebrating achievement at the heart of everything
respect for students breeding respect for staff
behaviour, attendance and well-being alongside achievement
reading around priorities, using research
thinking, planning and acting holistically, for achievement
building teaching and learning capacity
finding colleagues who want to try and do things
like-minded colleagues, gaining perspectives, being able to discuss
finding out how others feel
establishing shared goals and purposes
distributing and delegating leadership
taking ownership of quality assurance
managing and organising systems
linking academic and professional qualifications
identifying new interests and career routes
contacts in other schools and universities, networks and hubs
pursuing and financing own career interests
strategic education projects and planning

Personal development
Gaining qualifications
Striving and questioning
Student achievement
Professional relationships
Bringing back and acting
Leading and managing
Leadership dialogue
Building trust/ownership
Organisational development
Implementing projects
Treating people well

Purpose *(intended)*
Opportunity *(enacted)*
Response *(lived)*

Building educational leadership capability and capacity

Establishing holistic staff and student achievement and well-being

Pursuing international educational leadership development

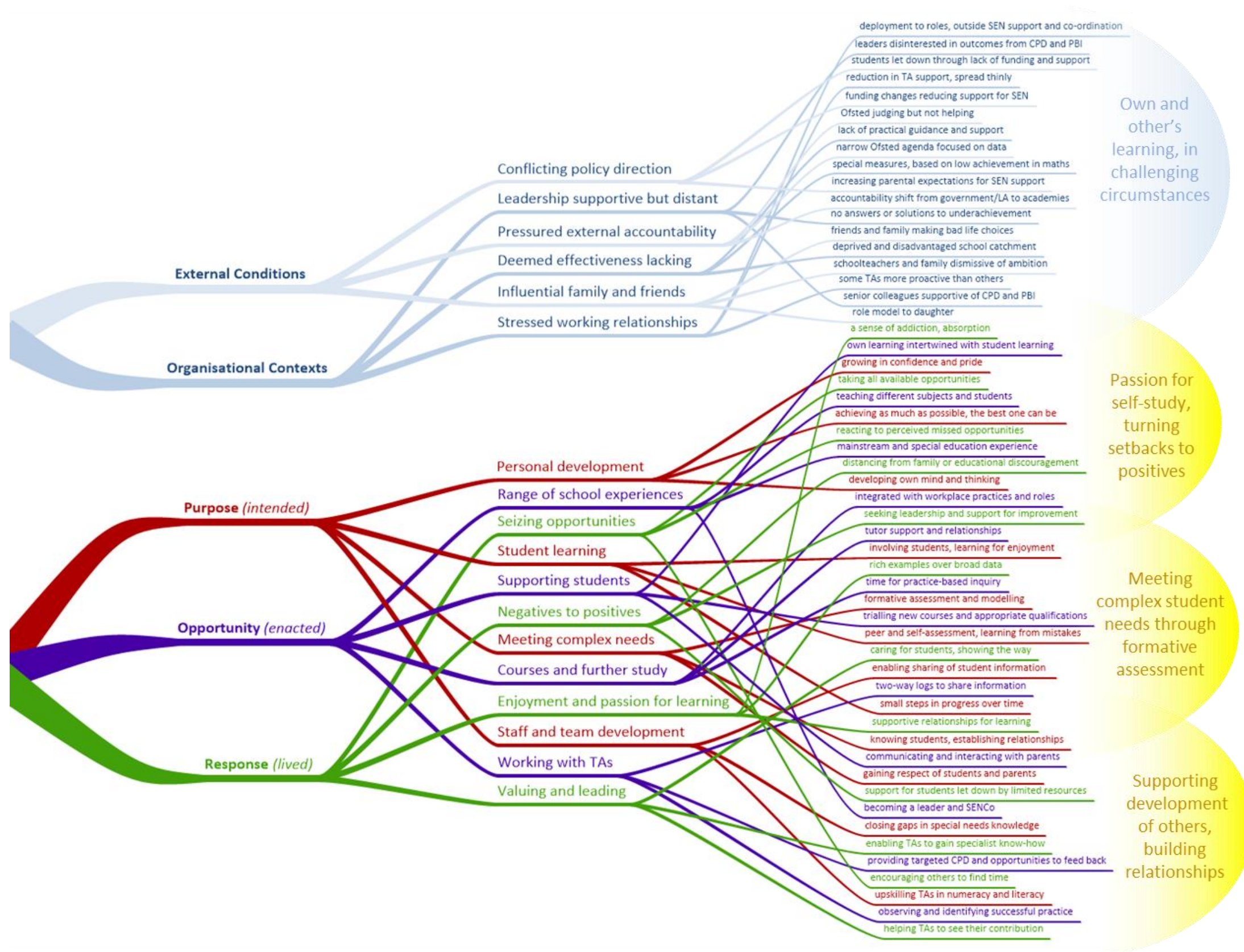**Appendix Four - A thinking tool and possibility space for teacher professional growth, expanded for practice-based inquiry**
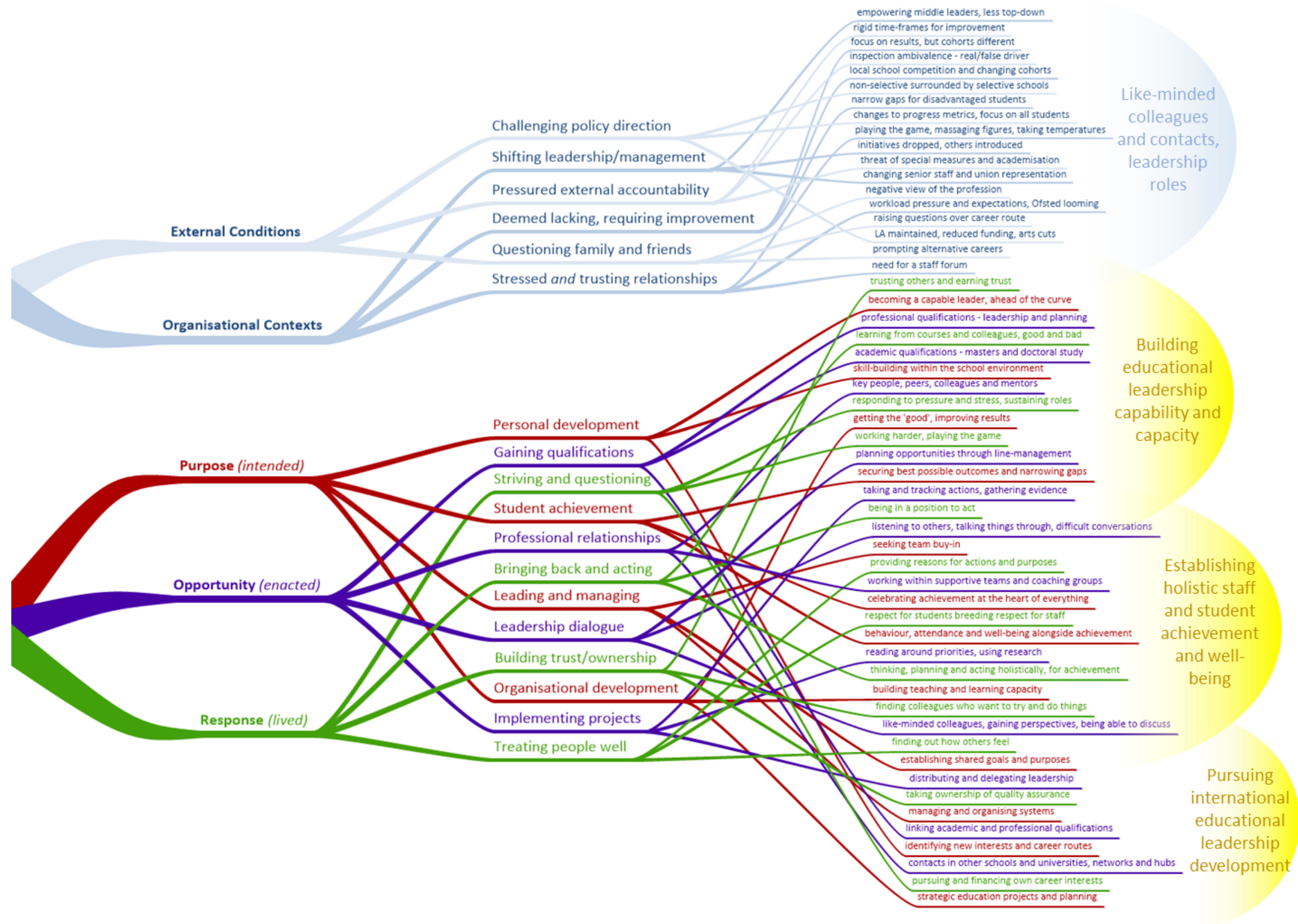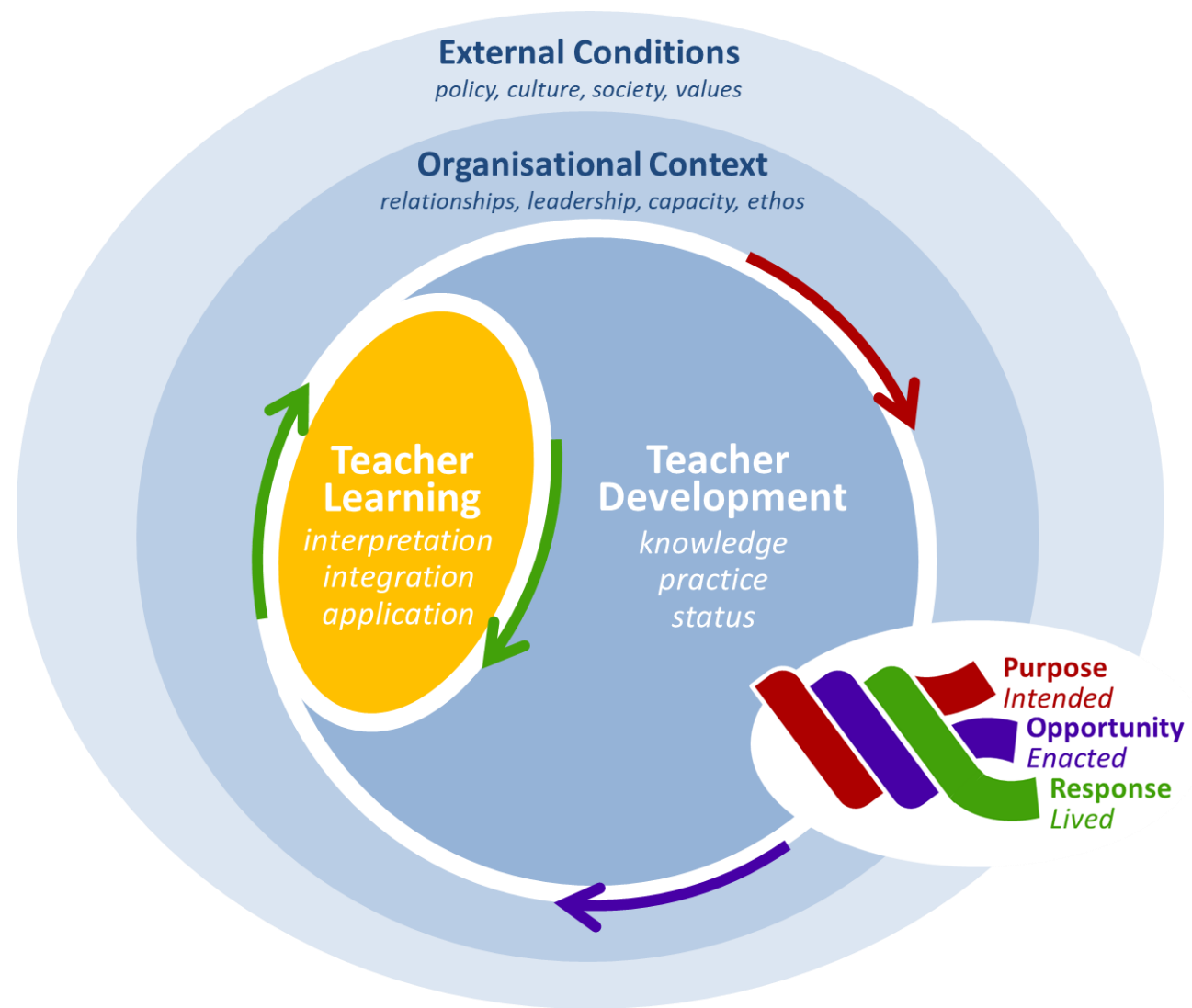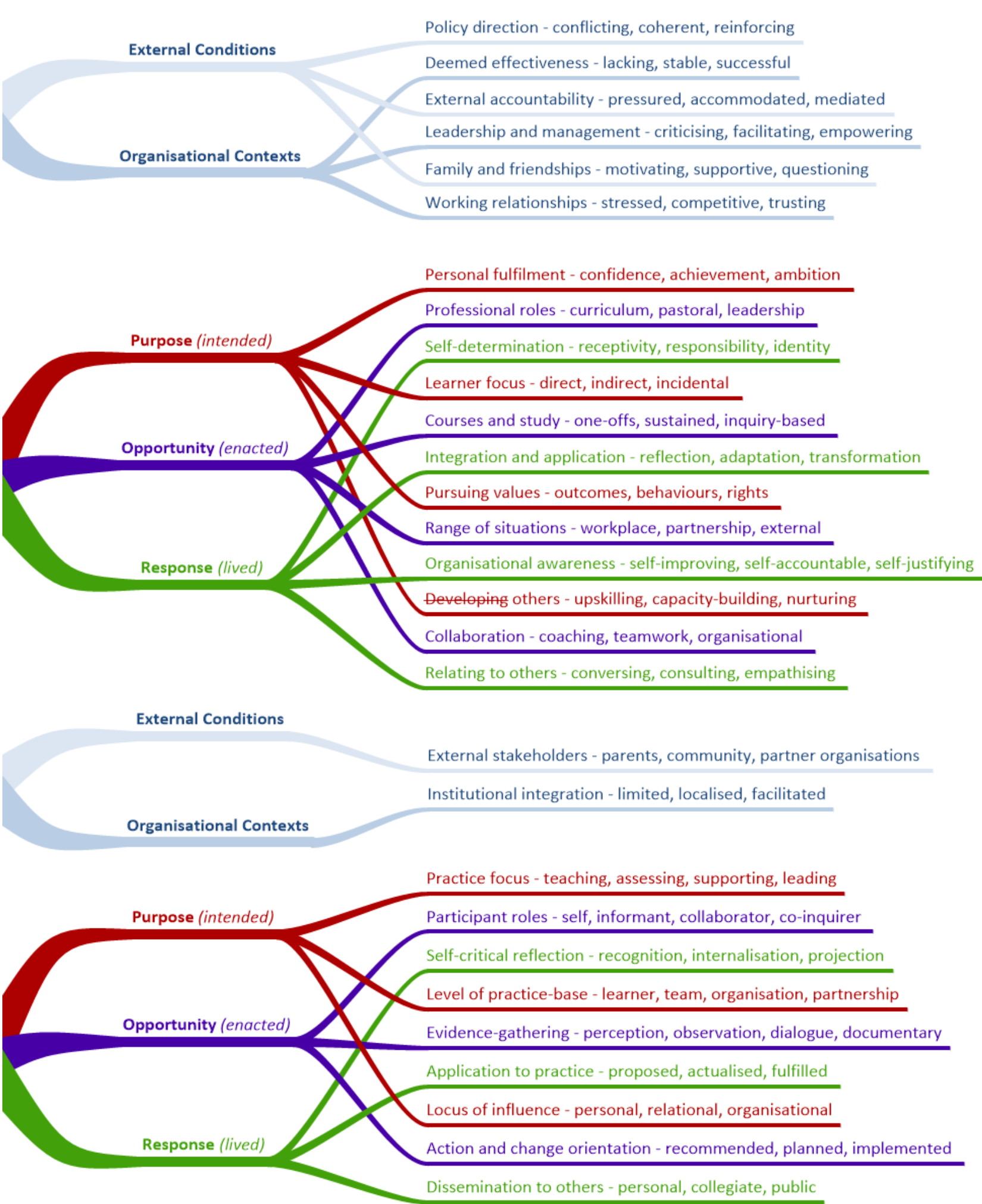

Teacher professional growth, explored through complexity thinking, is conceptualised as a relational, adaptive and recursive process, combining learning and development (top-left). Teacher learning is considered an ongoing, everyday process of *building* on experience through interpretation, integration and application. Teacher development is viewed as a continuous, longer-term process of *journeying*, more outward-facing to encompass professional knowledge, practice and status.

Listening to teachers suggests intended *purpose*, enacted *opportunity* and lived *response*, as intertwined critical aspects of professional growth, unfolding within one or more organisational contexts, influenced by external conditions. Unravelling ways of experiencing these critical aspects in teacher accounts points towards categories of description and variation that together form a *possibility space*, for both interpreting past experiences and projecting future professional growth (top-right).

Teacher reports of practice-based inquiry (PBI), explored as a vehicle for building and journeying, offer an expanded space of possibilities for professional growth (bottom-right). Summarised examples of teachers' ways of experiencing PBI are shown overleaf, plus an invitation to reflect upon past experiences or to project future possibilities for one's own PBI.

In the proposed possibility space for teacher professional growth, the purpose of ~~developing~~ others, heard in teacher accounts, is shown with 'developing' struck through. This draws upon a key insight of complexity thinking, that living beings, while influenced by their contexts, are self- or structure-determined (Davis and Sumara, 2006, p.100). Just as we cannot *learn* others, so we cannot *develop* them, but we can support and guide others to develop themselves.

Reference:
Davis, B. and Sumara, D. J. (2006) *Complexity and education: inquiries into learning, teaching, and research*, Mahwah, N.J, Lawrence Erlbaum Associates.

Examples and Possibilities of Teacher Practice-based Inquiry

	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Your own experience/possibility?
External Conditions	Public exams prioritise knowledge recall over complex subject links and abilities. Numerical targets are used inappropriately and simplistically.	Perceived educational leadership recruitment crisis. Families are a source of emotional support for many leaders.	Dichotomy between observation for teacher development and quality assurance, with teacher retention issues.	A large proportion of parents have not experienced further and higher education in a socially and economically disadvantaged area.	TA and SEN budget cuts, key research questioning TA roles. New SEN code of practice encourages integration and more general support.	Both challenge and support seen as conducive to improvement, while inspection as monitoring not developmental process, creates fearful school cultures.	
Organisational Contexts	Limited leadership interest in applying learning from teacher inquiry, including revision practices found effective.	Leadership requires followership and context sensitivity. Followers expect leaders to lead, and leaders must be able to improvise, act and perform.	Ofsted ratings influence observation and the balance between development and accountability. Schools deemed effective can be more creative.	School encourages teacher-parent contact and student-led activities, believing students can still achieve despite challenges and disadvantages faced at home.	Reduction in TAs while large number of SEN students on register, requires more focused support, gradually withdrawn to encourage independence.	More frequent observations of teaching quality, resulting from disparity between leaders' and inspectors' judgements, not communicated to staff.	
Purpose (intended)	Investigating impact and features of revision techniques on student attainment in GCSE geography.	Understanding leadership as performance, its contribution to identity, the development needs and emotional costs.	Investigating differences in perceptions of classroom observation as a tool for development and or accountability in various school settings.	Investigating the influence of parental education on their child's education and the factors at home that help or hinder.	Ascertaining and increasing teaching assistants' (TA) support for students through collaboration and communication with teachers.	Investigating changes to the monitoring and observation of teaching resulting from an inspection and the impact on relationships and trust.	
Opportunity (enacted)	Student survey of revision habits and analysis of expected and actual attainment, revealing importance of study outside school.	Critiquing the literature of leadership as/is performance, and capturing the views of seventeen leaders through interviews.	Building comparative case studies of differing school approaches to observation, through documentation analysis, interviews and lesson study.	Case studies of four families with different backgrounds, achievements and perspectives on education, framed by a range of relevant literature and research.	Departmental audit to identify strengths and developments, implementing teacher-TA two-way log for in-class communication and support.	Four-month study, conversing with teachers and senior leader over new observation processes. A perceived shift from joint practice development to Ofsted-readiness.	
Response (lived)	Ongoing sharing of findings with students and embedding of revision in course, recognising exam demands placed on teachers as much as students.	Personal leadership performance and professional identity enhanced through studying it. Leadership development as mutual, reciprocal growth.	Living with and balancing expectations that development and accountability must co-exist, recognising the latter can erode trust in the former and is dominant in many schools.	Responding to varying degrees of parental confidence and engagement, being available to parents (e.g. via e-mail). Sharing pastoral information with academic teams.	Upskilling and refreshing of TAs through identified CPD opportunities. Potential for two-way to become three/four-way communication through sharing with parents and students.	Teachers need to feel trust in the aims and agendas of leaders implementing assessment and evaluation of teaching, communicated clearly.	

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